Designmatters Case Studies:

Design Education Methodologies as a Tool for Social Innovation

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ABSTRACT

This paper presents two case studies of social innovation projects in partnership with NGOs in Chile and Guatemala that are informed by design solutions developed under the mantle of the Designmatters Department at Art Center College of Design in Pasadena, California. Founded in 2001, Designmatters (www.artcenter.edu/designmatters) is Art Center's social impact department and collaborates across all design disciplines taught at the college. Its purpose is to infuse the curricula with social and humanitarian design briefs that expose students to cross-disciplinary research in four main topic areas: global healthcare, social entrepreneurship, public policy, and sustainable development. The authors, which include the co-founder of Designmatters and two of the lead faculty of the Safe Agua project (a partnership with Un Techo Para Chile) and Creating Social Value Through Design (a partnership with Guatemalan NGO Atita'la), present an overview of design research methodologies and lessons learned from each case study. The practical implications of the paper are to offer insight about the pedagogical and social value that design education brings to the field of innovation for development.

Introduction

The new forces for development in the world are driven by the collaboration of teams of people who come from diverse professional, social, and cultural backgrounds and share the same passion to achieve a world without poverty. Such aspiration for positive social change is at the core of the foundational mission of Designmatters, the social impact department at Art Center College of Design in Pasadena, California. The two case studies led by Designmatters presented in this paper are: Safe Agua, a partnership initiated in 2008 with the nonprofit group *Un Techo Para Chile* and its umbrella organization, *Un Techo Para mi País* (Un Techo), and Creating Social Value Through Design, recipient of a 2010 NCIIA Course & Program grant that facilitated a partnership with the University of Rafael Landivar, Guatemala, and the NGO Atita'la, located in San Juan La Laguna, Lake Atitlán, Guatemala.[1]

Safe Agua addresses the challenges of safe water access for the families of Campamento San José, one of the transitional slum developments on the outskirts of Santiago, Chile that Un Techo serves. Embracing the motto "Youth building a Latin America without poverty," Un Techo serves fifteen countries throughout Latin America, recruiting young professionals and university volunteers to assist over 200 million people living in extreme poverty.[2]

Rather than parachuting aid handouts, Un Techo's fundamental model is concerned with connecting often divided sectors of society and ultimately building the commitment necessary for a more humane and prosperous outlook for all. This mission is aligned with prevailing views in sustainable development best practices, which argue for proactive and co-participatory creative problem-solving models across boundaries to tackle environmental and social challenges.[3]

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1   The faculty team of Safe Agua was Penny Herscovitch, Dan Gottlieb (Environmental Design Department), and Liliana Becerra (Product Design Department). The faculty team of Creating Social Value Through Design was Steven Montgomery (Graduate Industrial Department) and Liliana Becerra.

2   For more information about the social innovation mandate of Un Techo Para mi País, see www.untechoparamipais.org.

3   It is a transformative agenda for collaborative social change that also resonates with contemporary organizational learning theories, including that of MIT scientist Peter Senge: "The vast changes required for creating a regenerative society…will require inspiration, aspiration, imagination, patience, perseverance, and no small amount of humility. They will require networks of committed people and organizations who not only learn how to see systems shaping how things work now, but also create alternatives" (Senge et al. 2008).

Creating Social Value Through Design tackles design-based strategies focused on 1) vehicles to foster sustainable tourism and economic development in the Lake Atitlán region, in part through diversifying local artisan products and seeking innovative market opportunities for the diverse Mayan communities of the lake, and 2) a branding and communication platform for the nascent Atitlán Azul certification initiative, which addresses the environmental breakdown and dangerous bloom of cyanobacteria threatening the lake and the livelihood of its people.[4]

The extensive field research undertaken at the inception of these two distinct courses became paramount to gaining a richer understanding of the challenges and opportunities inherent in each project. Immersion in Chile and in Guatemala allowed the students and faculty to gain experience with the communities and make personal connections that proved instrumental to their ability to integrate design, business, and cultural factors into their proposals as they also appreciated the depth of the creative design process. Both the research methodologies and the outcomes of the projects clearly stand at the opposite spectrum from speculative "blue sky" and style-driven design briefs, and push students to embrace contextual and cultural constraints as part of the innovation process they are expected to undertake. Several of the project outcomes from Safe Agua have been undergoing a quantifiable and qualitative assessment process led by Un Techo in the past six months of the initial implementation of the solutions proposed by the students; more information about this ongoing process is archived and updated in the project's dedicated page in the Designmatters website.

Field Research Methodologies for Design Education

Designers are by nature very visual, hands-on, and quick to develop high levels of empathy toward others. This creates a window of opportunity to develop design research methodologies with a special nature, combining attributes such as clarity of tasks, practical functionality, engaging visuals, and empathy-based hands-on learning. Both case studies presented in this paper benefited from human-centered design methodologies developed by the design consultancy IDEO that used a mix of qualitative questions with a collection of more formal data to gain insights. In this sense, IDEO's Design for Social Impact workbook and toolkit, developed with the Rockefeller Foundation, is another valuable resource that can be applied to the general framework of engaging designers with NGOs.[5]

Unlike many studio classes, in which an instructor or partner company might assign a project brief that defines the problem to tackle, both Safe Agua and Creating Social Value Through Design embarked on a process to understand and define the problems based on observations and experience during field research. Each set of field research methodology tools clearly posed the question, "How can we best impact this area?"—constantly shifting the mindset to identifying design opportunities rather than focusing on preconceived problems.

The field research that we present on the next pages originated a unique new model that combines design education, design research, and social entrepreneurship.

Case Study 1: Safe Agua Project Context and Challenge

Our design challenge for Safe Agua focused on working with impoverished communities (campamentos)[6] in Santiago, Chile, to develop new tools for using, storing, and transporting water in order to alleviate daily and time consuming tasks and ultimately help families overcome conditions of poverty.

The challenge was not the absolute lack of water, but rather the physical and mental burden of living without running water. Families in Campamento San José receive water from a municipal truck one to three times per week. When the water is delivered, they store it in barrels outside their homes.[7] Women must hand-carry water for each daily task. Bathing becomes an arduous chore rather than a relief; laundry can take a full day of physical labor; and a glass of water can make a child sick. These perpetual burdens consume people's time, diminish their quality of life, impact health and dignity, and become an obstacle to earning a stable income and overcoming poverty. Six transdisciplinary teams designed innovative solutions on a range of scales—from product to system, to community spaces, to campaign—that addressed specific water-related needs identified through their field research. Although each project specifically targeted water-related challenges, the entire class worked toward a holistic goal: to make a positive impact on the lives of families in the

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4   Outbreaks of cyanobacteria have tipped the ecological and socio-economic balance of Guatemala's Lake Atitlán, periodically transforming the picturesque body of water into a toxic green mixture and wreaking devastation on a local population whose livelihood depends on the lake as a natural resource and as a magnet for tourism.

5   IDEO's Design for Social Impact workbook and toolkit is free and available to download at: http://www.ideo.com/work/item/design-for-social-impact-workbook-and-toolkit/.

6   "Campamento" (literally translated as "camp" or "encampment") is the Chilean Spanish word for a slum, including the transitional communities served by Un Techo Para Chile. UN-HABITAT defines a slum household as a group of individuals living under the same roof in an urban area who lack one or more of the following: access to improved water; access to improved sanitation; security of tenure; durability of housing; or sufficient living area. In 2010, according to UN-HABITAT, 110.7 million people in Latin America and the Caribbean live in slums, also referred to as favelas, villas miseria, or asentamientos.

7   The 20 families of Campamento Fundo San José live in media aguas, which literally translates to "shacks," transitional homes constructed by Un Techo Para Chile volunteers. These prefabricated wooden structures house a family of four in 18.3 m2 of interior space (6.1 m x 3 m)—smaller than a typical parking space.

campamentos.[8] In this sense, the empathy-driven research methodologies articulated below were key drivers of the final outcomes.

Exercise in Empathy: A Day Without Taps

We believe that at the root of all design is empathy. Therefore, one of our initial goals in the research process was seeking to understand people whose lives differ from our own in many ways. Establishing personal connections between students and families shifted our process from designing *for* people to designing *with* people.

Figure 1. Photograph showing how access to tap water was off limits during the "Day Without Taps" exercise conducted prior to the Safe Agua field research.

One of the things we take for granted is convenient, unlimited water from plumbing and faucets, yet the communities we worked with in the slums of Santiago must experience their daily lives without running water.

To better understand this limitation, we conducted an empathy exercise called "A Day Without Taps." The design team in California and our partners from Un Techo, in Chile, participated in this exercise together, which helped us bond as a group and set the tone for a truly collaborative project.

Each of us lived for a day using only five gallons of water, taken either from our nearest hose or from a previously filled five-gallon (19-liter) container—the average amount of water that a family in Africa consumes each day (water.org n.d.). We committed ourselves to use that limited water for all our daily activities (bathe, brush our teeth, cook, wash, drink, flush toilet, etc.).

We each kept a detailed visual journal of our "Day Without Taps," documenting it with photos, sketches, reflections, and questions. We noted how many liters of water we used for each activity, and whenever possible we consulted our water bill to compare how much we otherwise use on average. We often found ourselves changing our behaviors to cope with the challenge: skipping showers, postponing laundry, and coming up with different solutions to carry, store, and filter water.

Once we arrived in the slums of Santiago, we realized that as useful as this exercise in empathy was, our experience was nothing compared to the challenges people in the campamentos had to confront every day.

Figure 2. Visual journal of daily chores conducted during "Day Without Taps" exercise.

8   For a detailed overview of the six outcomes of the Safe Agua project, see [quote paper and book.]

Research Methodology Cards

In order to prepare ourselves for the field research, we created a toolkit of methodology cards specifically targeting our project objectives. We drew input and inspiration from different design research sources and methodologies, including IDEO's method cards and their Human-Centered Design (HCD) Toolkit,[9] and also from our own professional backgrounds, insights, and experiences in the field of design research.[10] The toolkit was fundamental for directing the focus of the field research. It provided our students with the confidence and structure to navigate completely new territory. It also introduced the concept of field research as a new key component of design education.

The set of six cards defined the outline of the research. Each card featured one research topic, and posed its fundamental questions with an inspiring image on the front and our recommended tips and strategies for gaining the relevant insights on the back. The cards were pocket sized, with waterproof surfaces, to enable students to carry them out in the field as a guideline. We included a blank section on the back of the cards corresponding to the date, so students could decide and mark the order of their research.
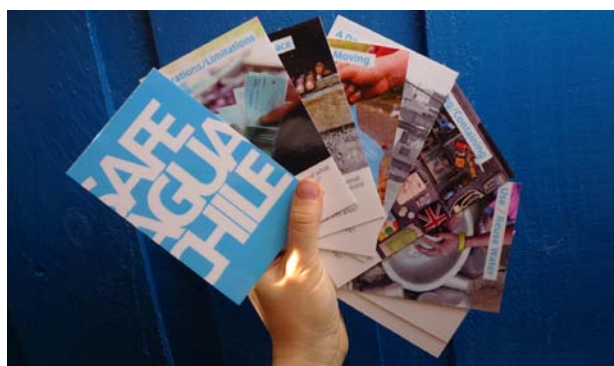

Figure 3. Safe Agua Deck of Research Cards

Broad Research Topics

We organized the research cards into broad and specific research concentrations. For the broad topics, rather than focusing only on the functional problems of storing, carrying, using, and re-using water, we decided to assess the "big picture" aspects of the problem. Understanding things such as people's core values, aspirations, and daily lives gave us further insight into the problem and helped us bond with the people.

The three broad research areas we considered were:

Aspirations and limitations

What are people's aspirations, and what prevents people from achieving them? How can we best impact this area?

Methodologies

Personal Inventory (Emotional):

Document the things that people identify as important to them as a way of cataloging evidence of their lifestyles (30 min. time limit).

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9   Patrice Martin, Practice Lead and Systems Designer at IDEO, notes that method cards were originally developed "to represent the diverse ways design teams can better understand the people they are designing for." IDEO also provides the HCD Toolkit, which is specially adapted for NGOs and social enterprises working with low-income communities in Africa, Asia, and Latin America. It is designed to help understand people's needs in new ways, find innovative solutions to meet these needs, and deliver solutions in a financially sustainable way. The resource is free and available to download at www.hcdtoolkit.com.

10   IDEO's Design for Social Impact workbook and toolkit for the Rockefeller Foundation is another valuable resource, which is free and available to download at: http://www.ideo.com/work/item/design-for-social-impact-workbook-and-toolkit/.

Collage or Card Sorting:

Ask participants to build a collage from a provided collection of images and to explain the meaning of the images and arrangements they choose (30-45 min. time limit).

Draw your Past/Future:

Ask participants to "draw the future you want" (if they won the lottery or otherwise had no limitations). Draw a path from the past to now to that future, with the steps and hurdles along the way (30 min. time limit).

Extra Tips

- First, gain people's trust.

- Gather direct, unfiltered quotes.

- Plan deep interview questions and practice interview techniques.

- Ask "why" five times, to get to the real "why."

- Prepare and print visual cards ahead of time.

Materiality and spaces

What is the material reality of personal and collective objects in the household and neighborhood? How can we best impact this area?

Methodologies

Behavioral Archaeology:

Look for evidence of people's activities, habits, and values inherent in the placement, wear patterns, and organization of things.

Social Networks & Spaces:

Notice different kinds of social relationships within a user group and map the network of their interactions. In what ways do objects, materials, and spaces express social relationships?

Personal Inventory (Functional):

Ask people to show and describe objects they handle daily—catalogue evidence of lifestyle (30 min. time limit).

Extra Tips

- How do things wear out?

- What can we learn from resourcefulness of the material culture?

- Be aware of materials and spaces throughout Santiago, not just in the slums.

A day in the life

A Day in the Life

Catalogue a day in the life of people in the campamentos, with special attention to the role water plays. How can we best impact this area?

<u>Methodologies</u>

A Day in the Life of a Family:

Catalogue the activities and contexts that water users experience throughout a day.

Shadowing:

Tag along with people to observe and understand their day-to-day routines, interactions, and contexts (1-2 hr. time limit).

Timeline:

Create a branching timeline of household members' activities. Every person in the household plays a different role. How do the roles of different people relate to each other?

<u>Extra Tips</u>

- Each team member can shadow a different household member.

Focused Research Topics

To focus on more specific functional, water-related issues that would directly target our project objectives and deliverables, we created the following three research topics:

Storing and containing

Storing/Containing

How do people store, contain, and protect valuables, food, water, and everyday objects? How can we best impact this area?

<u>Methodologies</u>

Error Analysis:

List all the things that can go wrong when storing/containing water and determine the various possible causes (30 min. time limit).

Scenario Testing/"What If?":

After your initial research, show users a series of cards depicting possible future scenarios for storing water and invite them to share their reactions (30 min. time limit).

Guided Tour:

Ask participants if you can accompany them on a guided tour of how they contain objects. Why did they choose a specific means of storage? (45 min. time limit).

<u>Extra Tips</u>

- Be aware of cultural biases and preconceptions.

- Consider differences between storing valuables versus daily objects.

- How does the house itself serve as a container to keep out rain, store water, etc.?

- Survey containment solutions that exist on the market and that families have invented.

Carrying and moving

Carrying / Moving

How do people carry objects, water, and themselves around? How can we best impact this area?

<u>Methodologies</u>

Behavioral Mapping:

Track the positions and movements of people within a space over time and note what they are carrying or moving around while doing it (45 min. time limit).

Flow Analysis:

Represent the flow of water through all phases of use. Consider water's behavior, not only on a map or plan, but also as it moves up and down.

Fly on the Wall:

In public spaces, such as markets, neighborhoods, or public transit, observe and record behavior within its context, without interfering with people's activities (1-2 hr. time limit).

<u>Extra Tips</u>

- What do people carry around (wallet, phone, children, jewelry, etc.), and why?

- Take "what's in my bag" photos.

- Survey carrying solutions that exist on the market and that families have invented.

Use and reuse of water

Use / Reuse Water

How is water used over the course of a day and week? What objects have been reused for a function or task different than its original purpose? How can we best impact this area?

Methodologies

Storyboard of Water's Day/Week:
Illustrate a character-rich storyline describing the context of water use. Water is the main character; if water could tell its story, what would it say?

Camera Journal:
Distribute a kit with camera, journal, and instructions. Ask participants to keep a diary of activities related to using water (time limit: 15 min. / 1–2 days).

Narration:
As they perform a task or process, ask participants to describe aloud what they are thinking—to reach users' perceptions, concerns, and motivations (45 min. time limit).

Extra Tips

- Other documentation methods: Script photos—ask people to re-enact each step of a process; time-lapse video.
- Ask the family what's missing?
- Be sensitive to private activities (e.g., showering).
- Buy cameras ahead of time.

In the Field

Figure 4. Students Ramon Coranado (Graphic Design) and Diane Jie Wei (Product Design) interview a family in the Campamento San José outside Santiago,

Chile, as part of field research for the Safe Agua studio.

> "It was quickly clear to me that my research trip wasn't just about acquiring raw data, quotes, and statistics. My research was to listen to stories, study faces, sympathize with difficulty, and share in excitement."

This statement by Stephanie Stalker, one of the Environmental Design students in the Safe Agua studio, speaks to the fact that during the research process, students developed and personalized the guided methodologies, making them their own.

Figure 5. While taking a break, students Diane and Ramon look at the documentation of the research findings they have just created in the field.
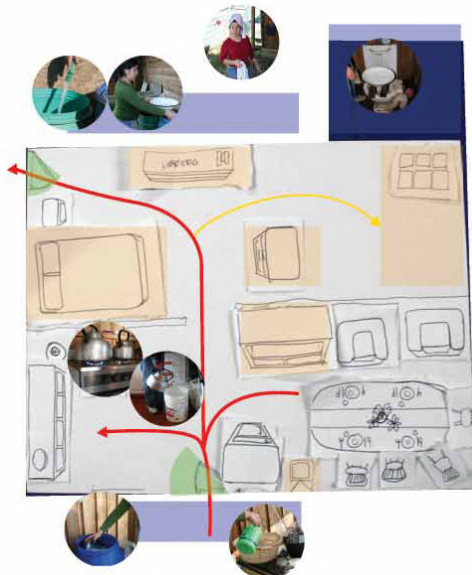

Figure 6. Students Stephanie Stalker, K.C. Cho, (Product Design) and Nubia Mercado (Transportation Design) created a paper space-planning tool. Campamento resident Maria used this kit to design her ideal home configuration.

Case Study 2: Creating Social Value Project Context and Challenge

Figure 7. Mayan women selling their crafts, field research, San Juan La Laguna, February 2010.

"There's a place in the fields which is so wonderful and pretty and shady that all the girls get together—seven or eight of us—and sit under the trees and hang up our weaving. We talk and weave. It is how we enjoy ourselves with our friends."[11]

As this San Juan resident's statement attests, Mayan women are weavers. Weaving is their way of life and part of a woman's domestic role, passed from generation to generation for more than 300 years. In most cases, weaving is also their only means of income to support their families. Since all women in San Juan La Laguna[12] are basically weaving the same patterns and creating the same products to be sold to tourists, they are challenged by high competition and very small or non-existing profits.

Currently, in order to create new products, Mayan women rely on the outside help that nonprofit organizations offer to local weaver associations.[13] However, when a new product is created, it is also quickly copied, contributing to an endless cycle of low profit margins and high competition. In addition to the lack of product diversification and the resulting poor framework for sustainable development in the region, Lake Atitlán is experiencing a deep environmental crisis. For decades, the lake has been collecting an excess amount of phosphorus from human waste and agricultural runoff. There are currently no water treatment facilities for the thirteen towns that surround the lake, and local farmers use (essentially free) inorganic fertilizers. Poverty combined with political handouts keep residents from building water treatment plants and from using organic, phosphorous-free fertilizers. Industry has also changed the natural ecology of the lake by introducing non-native species. Phosphorous has currently reached such a high level that phosphorous-eating cyanobacteria now blooms across the lake twice a year. The blooms have caused a sharp decrease in tourism (estimated at a 40-60% decline), which is one of the primary sources of income for local residents.

Preliminary Research

Before the field research trip to Lake Atitlán in February 2010, the class conducted three weeks of overall preliminary research. A chief purpose was to map the environmental problems of the region and also develop a better understanding of the Mayan culture and meanings associated with textile patterns and designs.[14] The latter process included looking into specific design elements such as figures, iconic symbols, and use and proportion of color, as well as understanding how different communities use color in different and unique ways.

Although many Mayan symbols have lost their meaning within the current culture, they can still be found in clothing, accessories, and ornamental textiles. For example, diamond shapes and stripes are key visual elements found on Mayan textiles; the diamond symbolizes the universe and vertical lines symbolize the foundation of the earth, community, and history.

Figure 8. Detail of Traditional Mayan Weaving

Field Research

Planning the field research activities in advance was critical in order to maximize time and resources. For most women, stepping away from their daily tasks to participate in research activities implies taking time they could be using to sell their products, and therefore it represents a potential loss of income. The purview of this project did not allow the team to have financial incentives, i.e., paying the women to participate in the research, and therefore the participation of the subjects was based on long-established relationships of trust with the local NGO Atita'la, which facilitated many of the introductions and meetings with key community members.

### Getting to Know the Women: Stimulus Cards

In order to get to know the women's visual preferences and also to establish their trust and engagement, a series of stimulus cards was created around different topics, including lifestyle, graphics, patterns, and pendants.

11   San Juan La Laguna resident Rigoberta Menchu recorded in conversation with author Liliana Becerra, February 2010.

12   San Juan La Laguna is a municipality located at the southern shore of Lake Atitlán in the region of Solala, Guatemala. The research conducted for the Maya Color & Design project took place in San Juan La Laguna. The population is approximately 95% Tz'utujil, an ethnic subgroup of the Maya.

13   It is estimated that in San Juan La Laguna alone, there are currently fifteen women's weavers associations. Some of them are supported by local NGOs and others by international nonprofit organizations such as Design Without Borders, whose mission is to empower people in developing areas around the world by transforming the spaces in which they work and live while fostering the fundamental belief that we are all global citizens by design. For more information visit: http://www.designwithoutborders.org/.

14   To find more information related to the symbols utilized in Guatemalan textiles refer to the book Textiles from Guatemala by Ann Hetch, published by the British Museum Press in 2001.
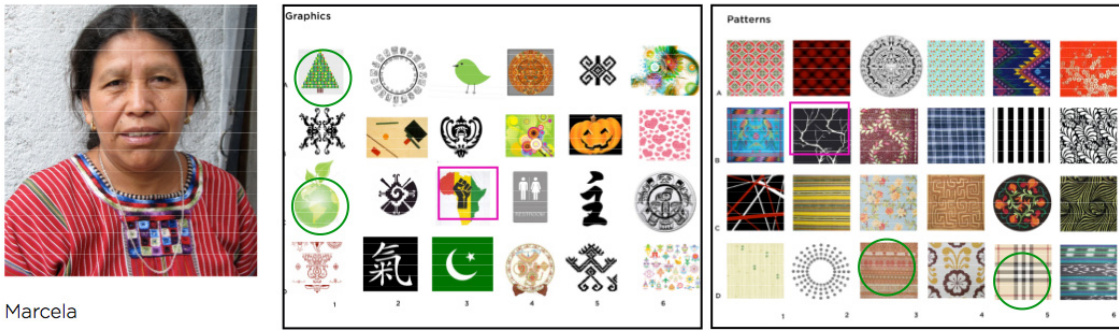
Figure 9. Detail of Stimulus Cards

Women were tasked with choosing their likes (green circles) and dislikes (pink squares) and explaining why they chose those images. Many of the women working in the associations speak little to no Spanish, and few are educated enough to read and write, hence the importance of the stimulus cards as a purely visual tool that they could look at and easily understand.

Figure 10. Student Denise Diaz (Product Design) presenting the stimulus cards to the Mayan women.

> "Observing the way women lived, worked and interacted was the best way to learn about them. The Guatemalan cards were essential to keep track of the specific details of my research."[15]

Field research cards

Figure 11. Maya Color & Design deck of cards for the Creating Social Value through Design studio.

The Maya Color & Design field research cards were designed to make sure that the important aspects of the research weren't forgotten during fieldwork. Often while in the field, there are many situations when designers are forced to improvise and adjust to unpredictable circumstances. Keeping the cards handy helps them bring back their focus to the task at hand.

15   Student Denise Diaz, in a summer 2010 Independent Study report, reflecting upon her second phase of field research in Guatemala.

The cards were organized into relevant categories for the project; each had a reminder of specific observations and questions to be made while in the field.

A day in the life

A Day in the Life

Everyday use

What textiles do the men and women wear? and what role does it play in their daily life?

Shadowing

Are all the textiles worn in various communities differently?
What are their differences and similarities?

Observe and List

Not only observe the different textile designs but what are they are being used for?

What role does the usage of textile represent in Maya culture?

How can we best impact this area?

Extra Tips

Visit multiple communities and keep an eye on color, design, patterns, materials and use.

Ask the men and women what makes theirs unique

Aspirations and limitations

Aspirations and Limitations

Personal Inventory

Document the things that people identify as important to them as a way of cataloging evidence of their lifestyles.

Activity

Give an activity that list everything from money to family and ask them what has the highest value to them and why?

Important questions

Where do you see yourself in five years?
How do you see your life right now?
How did you see your life three years ago?

What are their aspirations? and what is keeping them from acheiving them?

How can we best impact this area?

Extra Tips

Gain peoples respect and trust

Gather direct quotes

Ask "why" five times to get real why

Generation down generation

Generation Down Generation

Creative Minds

Where and how do women learn how to weave? who taught them? and why do they use the current design pattern?

Limitations

List all the limitations the weavers have in their techniques or process.

Likes and dislikes

Have the men and women perform the activities of patterns, graphics, etc.

Is weaving an opportunity for creativity or is it seen as only cultural, that is passed down every generation.

How can we best impact this area?

Weaving

Weaving

Color, patterns, & materials

Watch the women work and pay attention to their selection of color, pattern, and materials

Behavioral Mapping

Take note of how they preform while weaving and how they both interact and collaborate with the other weavers.

Important questions

After shadowing do not forget to ask
. why they made their selections?
. What makes it unique?
. Why did they make that choice?

Observe how the women weave and the steps and the choices they make to reach they're final result.

How can we best impact this area?

From Thread to Product

From Thread to Product

Storyboard the life cycle of a Mayan Product

What is the process of coloring, preparing the thread and weaving

Creative Minds

In what stage of working the textile or product does the women feel the most creative.

Important Stages

Do they plan out before creating textile/product?
When dying the treads, choosing colors or weaving do they feel most creative?

Observe and list the stages that many of the textiles go through to become a finished product.

How can we best impact this area?

Extra Tips

Document each process

Find out why they make certain choices

If anything inspires them

Maya Color & Design: Project Outcome

The outcome of this solution proposed by Denise Diaz, who concluded a summer independent study after her initial participation in the Creating Social Value course, is a toolkit intended to help women working in small associations innovate their products by using their own creativity and knowledge of weaving. It is organized into three sections: color swatches, color proportions, and threads. All the colors in the tool kit came directly from the colors Mayan women utilize, including both natural and artificial dyes.

Figure 12. Maya Color & Design Toolkit

The toolkit allows women to flip the swatches to choose the colors they want to work with. If they feel unsure of the color selection, as often happens, they can refer to the ready-made color proportion section in the book. Once they have selected colors, they can select their own threads from the toolkit, and can add or remove threads to create their own unique palette. This process gives them an idea of what they are designing and a sense of ownership of what they create.

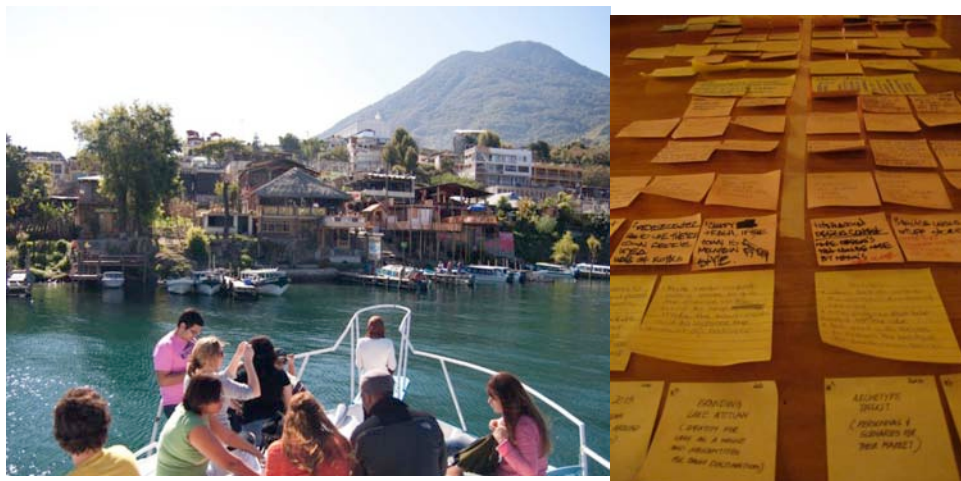## Creating Social Value Through Design: Course Vision and Outcomes

Figure 13. Field research on Lake Atitlán, and ideation session with posted notes with rapidly ideated sketches that covered twenty concepts per student.

Starting with a blank-slate approach, and informed by the rigorous field research methodologies described above, the students in this course were charged to conceive of a variety of futures and outcomes that would encompass social, technological, economic, environmental, and political dimensions, engaging the complexity of design as a world-shaping force. Students were expected to apply design-thinking methods (accumulating a set of human-centered insights from which to be creative) and rapid prototyping techniques in order to generate a variety of concepts and scenarios that would benefit the multiple stakeholders of the region (tourists, expatriates, business owners, various Mayan residents).

The comprehensive outcomes of the Creating Social Value course, including the Maya Color & Design Project, are centered around the Atitlán Azul certification initiative, a proposal to engage and mobilize the whole Lake Atitlán community by co-creating principles, programs, and products for sustainable livelihood. The course positioned the acute pollution and environmental breakdown of the lake as a catalyst for social innovation.

The following is a brief summary with a visual reference of key project outcomes:

Students Jonathan Goldman (Advertising) and Mariana Prieto (Product Design) developed a fresh identity for Atitlán Azul, the lake s eco-certification system, and proposed a new outlook on a partnership with lake tourism to promote eco-tourism and create participatory tourism around the lake. They created the tagline   A Culture of Harmony   to reflect a diverse community that lives in harmony with the planet as well as with each other. The duo created and published a website that has been implemented by the NGO Atita'la that promotes and informs the effort at www.atitlanazul.com.
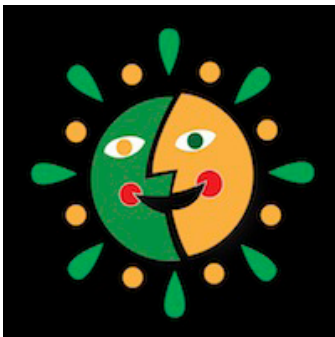
Student James Chiang (Graduate Industrial Design) focused on the new type of eco-tourists we wish to draw, and developed the Maya Tourist Guide, a GPS smart phone guide tool. Upon arrival, a tourist may rent a GPS smart phone guide (at a hotel or kiosk) that is pre-loaded with a database of current and topical sightseeing tours, restaurants, hotels, and daily local info. To help and promote to cultural and eco-conscious tourists during their stay, the tours will feature activities and places that specifically fulfill the ecological and cultural requirements of the Atitlán Azul charter.

Student Tarangini Jindal (Graduate Industrial Design) developed A Walk with the Maya, a curated street walk, as a way of experiencing the Maya's past, present, and future, as well as their stories and mythologies. Designed to preserve and display the culture and heritage of the Maya people around Lake Atitlán, this "street museum" will extend the tourist's experience beyond scenic beauty and souvenirs.

Student Sara Moore (Graduate Media Design) developed Weaving Wisdom, storytelling and weaving workshops that focus on the weavings of local Maya, a modern-day tradition that stretches back 300 years. The patterns and colors the Maya use in their weavings contain fascinating stories and myths, yet these narratives are not shared with the common tourist. These workshops will create genuine person-to-person interactions by getting tourists involved in weaving while educating them about the cultural significance behind the textiles.

Student Jules Moretti (Graduate Industrial Design) developed Eco Link, a system for assigning unique Radio Frequency Identification (RFID) tags to products that are created by local weavers who are true to Mayan traditions and use fair trade. Designed to expand and diversify the market among the lake's weavers and to establish product value to worldwide customers by promoting genuine Mayan-made products, these inexpensive hidden tags would be encoded with information that includes background information on a product's origin, design legacy, and producer in order to assure authenticity and document the contribution their purchase makes for the local ecology.

Student Emmanuel Darden developed the Pila Park Project, an initiative that promotes an eco-friendly laundering solution for the Lake Atitlán community. The project aims to change the reliance on toxic household chemicals that affect the delicate ecosystem of the

lake, while preserving cultural traditions and empowering communities with new economic opportunities. The project proposes local manufacturing of a new "Para Pila" detergent, an organic alternative to nitrogen-and phosphorous-rich detergents, as well as building "Pila Park," an open-air public laundry center with an adjacent playground, which would serve as an attractive and convenient alternative to trekking from villages and washing clothes directly in the lake.

Conclusion

Safe Agua and Creating Social Value Through Design are key exemplars of Art Center's commitment, through Designmatters, to lead with educational curricula that encompass meaningful outside engagement in order to promote cross-pollination of expertise, new forms of knowledge, and an immersive and experiential learning process that allows students to develop tangible, "real-world" outcomes.[16] The human-centered research methodologies activated in these projects, the ongoing development work underway in terms of metrics for evaluating their impact both in the lives of design students and in the community, also reflect a socially bold approach to contemporary pedagogy that is redefining the role of artists and designers as potent catalysts for social innovation—design education and design, as described by design educator Tony Fry, "in the frontline of transformative action."[17]

With a critical shift toward design for social impact gaining momentum, such projects demonstrate how design schools have the unique opportunity to become vital laboratories for best practices in human-centered research and creative engagement, playing a significant role in driving social innovation and shaping a more equitable society.18

References

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16   Art Center students and faculty participate in interdisciplinary studios, elective courses, independent study, special projects, and international internships that focus on the social responsibility of design and business practices. The outcomes and wide visibility of many of the Designmatters projects implemented to date derive from the strength of the educational collaborations that the initiative has brokered. These partnerships focus on four pillars of investigation: human sustainable development, global healthcare, public policy, and social entrepreneurship, and expose students to a meaningful range of expertise and experience. In 2003, the United Nations Department of Public Information designated Art Center an NGO (non-governmental organization) in recognition of Designmatters' service to society. Other unique affiliations now include civil organization status with the Organization of American States, and another NGO designation by the United Nations Population Fund (UNFPA).

17   Regarding metrics for assessing learning outcomes of these projects, significant work is underway through the Designmatters Department at Art Center which is closely monitoring in process implementation of the outcomes of these studios (Fry 2009).

18   For an excellent anthology of the current debates and discussions about what it means to teach art and design in the 21st century, see Buckley and Conomos 2009.