Kiosk Design

The Food Project

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Background Research

Most modern-day Americans would not consider hunger a critical national issue. Yet, one in six Americans are severely lacking in proper nutrition. In many cases, these Americans do not lack calories; they lack the proper nutrients that are important to a healthy diet. Unfortunately, many lower income communities are food deserts where cheap, healthy food is non-existent. The Food Project is a non-profit organization whose mission is to increase access to healthy food in low-income communities. However, TFP's reach is limited is the very reason that those communities experience a lack of resources in the first place. The natural coagulation of diverse backgrounds in the concentrated area of eastern Massachusetts has led to dramatic disparities in wealth, health, and knowledge. These disparities are not only the problem, but an obstacle to the solution; for example, less wealth translates to less healthy diets, stress, and decreased medical coverage, which in the long run, decreases longevity and time spent working/ learning new skills to earn more wealth. In an effort to overcome these outreach barriers , The Food Project is exploring the use of kiosks as a tool to distribute information and establish a physical presence in its target community.

The Food Project (TFP) operates in the socioeconomically and ethnically diverse region of eastern Massachusetts. TFP has established farms in rural, suburban, and urban areas, and seek to pull youths from both the city and the suburbs. Although TFP’s programs is meant to benefit people from all levels of socioeconomic status, it is less well known in lower income circles. This can be attributed to the organization’s lack of physical presence in the immediate community; without a tangible structure that the community identifies with The Food Project

“brand,” TFP can’t interact with or advertise itself to low-income communities very well. TFP intends to form a more meaningful relationship with these communities and help them lead healthier lives. Because it is difficult to stumble upon a TFP Facebook page or website without prior interest in food and health, it is important for TFP to bring their mission directly to the community members they serve. By stationing a kiosk outside community centers like churches, TFP can reach people that normally be unaware of its programs.

The people that TFP wants to reach occupy low-income and minority communities, which tend to be food deserts. These disadvantaged consumers have limited food choice due to low income and mobility, which makes it more difficult for them to eat healthy (Wrigley 1). As a result, ethnic-minority neighborhoods have larger rates of poor health. Residents in those neighborhoods have easy access to empty calories, foods that are high in calories but have little to no nutritional value, which are easily available at convenience stores and fast-food restaurants. The quality of nutrition in this food is not a priority when money is a limiting factor. According to the American Society for Nutritional Sciences, “price reductions resulted in a four-fold increase in fresh fruit sales.” Furthermore, since people tend to make dietary choices based on what's available in their neighborhoods, the lack of healthy food in food deserts is compounded by the convenience of unhealthy foods (Walker 2). This could be due to the fact that some providers may be unaware of the damage that is occurring to their families and are concerned with keeping their family full, rather than making sure there are enough nutrients and vitamins in their diet.

Health problems due to poor nutrition are compounded by other factors that minorities and people with low-income face: racial and class discrimination can result in stress that adversely affects health (Williams 1). In addition, residents of low-income communities often work stressful jobs with long hours, making it difficult for them to cook or actively seek out healthy food.

It is difficult reaching out to disadvantaged communities. People in those communities may have trouble accessing online sources of information and do not have the time to actively seek out nutritional information. According to a survey held in low-income Minnesotan communities, many of these residents knew what they 'should' eat to stay healthy. A majority of respondents agreed that fruits and vegetables were part of a healthy diet regardless of income level or race. These respondents also agreed that there were significant barriers to eating healthy, with 38.5% agreeing that cost or money situations made it difficult for them to purchase healthy foods. Twenty-three percent of respondents agreed that having a personal garden would make eating healthy easier (Eikenberry 1158). This is where the Food Project and similar outreach programs enter the scene.

The increase of obesity throughout the US has not gone unnoticed. Programs similar to TFP have formed to educate people on food choices and healthy habits. The federal government created the Supplemental Nutrition Assistance Program Education (SNAP-Ed) to help the low-income demographic buy nutritious food in order to reduce health conditions associated with obesity such as type two diabetes, heart disease, and cancer. This program focuses on educating adults since they are the ones who make food decisions in the home and influence the eating habits of

their families. SNAP-Ed has reached out to these communities by physically going to housing projects, Women Infant Children (WIC) programs, and parental organization at schools; distributing posters and fliers; and holding hour-long classes with recipe cards and shopping tips on how to eat healthy on a limited budget. From these efforts, the number of families who suffer from food insecurity has been reduced significantly. In an effort to make information easier to access, TFP is exploring the use of a kiosk as a way to put information directly in the hands of their target audience. This will widen the number of people they can reach and spread the knowledge on food sustainability and health.

TFP has a similar goal to SNAP-Ed and aims to educate the public on making healthy food choices. A majority of TFP's programs are directed towards youth. Their Summer Youth Program, Academic Year Program, and Internship Program involves adolescents with agriculture by having them cultivating urban and suburban farms. The youth program integrates information on sustainable agriculture and food justice in order to educate these youths about larger food issues affecting their communities. The Food Project wants to target more of these youths living in these lower income communities to let them know that there are resources available to help them live healthier lifestyles. Youths living in these communities are often more likely to be overweight, get into trouble, and live sedentary lifestyles. The Food Project seeks to provide these adolescents with safe and active activities in order to educate them about food justice and keep them off the streets.

TFP's programs to combat these problems revolve around a central value: enhancing its relationship with the surrounding community. First, they want to create authentic relationships

based on shared values. Second, TFP wants to reach out to a new audience. Community members already involved with TFP have access to its resources and food education programs. Now, TFP wants to bring these resources and programs to people who currently don't know of TFP.

In order to reach out to these people, TFP is focusing on establishing a stronger presence in these communities. The Kiosk will engage community members in open communication by providing a physical forum to leave opinions and take information. This provides both a tangible presence for TFP and an interactive experience for community members. A physical presence is more effective than a website or a static advertisement for several reasons. This is related to TFP's target audience: many immigrants and low-income families may not have the access internet sources. Furthermore, community members who lack internet access are less likely to be exposed to or take notice of information made public by TFP. Having a physical presence would circumvent this issue by minimizing the time and effort involved in obtaining information.

It is important for TFP to collaborate with existing organizations in the area. By fostering relationships with like-minded organizations, they will be able to share existing audiences. The Kiosk can facilitate these relations due to its versatility, allowing content for both organizations to be easily interweaved to have the most context in its present location. In addition to its versatility, the Kiosk's mobility will make it possible to easily bring information to the community members. Its collapsibility allows it to be moved from event to event, giving TFP the opportunity to meet numerous community members who show interest in issues relevant to nutritious eating.

Since food inequality is a symptom of wealth and information inequality, an effective solution to food justice issues must increase access to resources. The Food Project already has programs in place to facilitate access to food education, nutrition, and gardening resources, but has had limited success in becoming a staple name in the community. The Kiosk aims not only to amplify the effect of these programs by broadcasting their existence, but also brings in local youth to leadership programs that educate them to improve the health of their families. By bringing health to the forefront of the community's mind and making it a topic of conversation through these programs, the overall health and knowledge level of the community rises, contributing to the development of the community at large.

Works Cited

Eikenberry, Nicole and Chery Smith. Healthful eating: perceptions, motivations, barriers, and promoters in low-income minnesota communities, Journal of the American Dietetic Association, Volume 104, Issue 7, July 2004, Pages 1158-1161.

Walker, Renee E., Christopher R. Keane, Jessica G. Burke, Disparities and access to healthy food in the United States: A review of food deserts literature, Health & Place, Volume 16, Issue 5, Sep 2010, Pages 876-884, ISSN 1353-8292, <http://dx.doi.org/10.1016/j.healthplace.2010.04.013>.

"The Food Project." *The Food Project*. N.p., n.d. Web. 13 Dec 2013.

Williams, David R., Harold W. Neighbors, and James S. Jackson. "Racial/Ethnic Discrimination And Health: Findings From Community Studies." American Journal Of Public Health 93, no. 2 (Feb 2003): 200-208. Environment Complete, EBSCOhost. 10 Dec 2013.

Wrigley, Neil. 2002. "'Food Deserts' in British Cities: Policy Context and Research Priorities." Urban Studies (Routledge) 39, no. 11: 2029-2040. Business Source Complete, EBSCOhost (10 Dec 201). Page 1.

Project Discussion

SUMMARY

This pilot project allows The Food Project (TFP) to explore an alternative method of community outreach. A kiosk allows TFP to establish a physical presence in the community, and a prototype allows the organization to experiment with the most appropriate specific features to include. The prototype kiosk is multi-configurational, collapsible, and customizable. If viable, the results of this pilot project could prove integral in TFP's long-term outreach plan.

KIOSK OVERVIEW

Figure 1: A side-by-side comparison of concept sketch and prototype.

PANELS

Figure 2: Pegboard with hooks.

The panels will be made of pegboard, distinctive due to its gridded holes. Pegboard is ¼" thick and the holes are 3/16" in diameter and spaced 1" apart. The consistent mounting holes allow for easy rearrangement of content via hangers and hooks, giving the kiosk the capability of catering to different audiences. The strength of pegboard informational posters as well as heavier, more tangible items, such as planters, to be hung without sacrificing kiosk stability. Each panel will be 2.5' by 3', with 3' as the horizontal dimension.

There are two types of appropriate pegboard material: polypropylene and hardboard. Polypropylene, a type of plastic, is inherently non-permeable and will not be damaged by rain or snow. Hardboard, alternatively called high-density fiberboard, is comparable to clipboard backing. The natural wooden appearance of the hardboard is keeping with the theme of TFP's focus on natural and healthy food. In order to maintain its structural integrity, the hardboard pegboard will be have to be treated with a waterproofing clear enamel.

SUPPORTS

The supports will be tentatively constructed from 1.5" by 1.5" wooden beams; however, these dimensions are subject to change based on kiosk stability. There will be eight supports, one positioned along each vertical edge of the pegboard. Each overall support will consist of a top and bottom support, each 3 feet long, bringing the combined height to 6 feet. The supports are separated into top and bottom beams for ease of transportation - it is easier to fit shorter than longer beams in the backseat of a sedan.

The panel top edges will be flush with the top support top edges, placing the presentation space range 3.5’ to 6’ off above the ground. This places the presentation space solidly within the average adult’s line of sight, boosting content visibility. Information can also be hung from the bottom rows of the pegboard to lower the presentation space and cater to an audience of children.

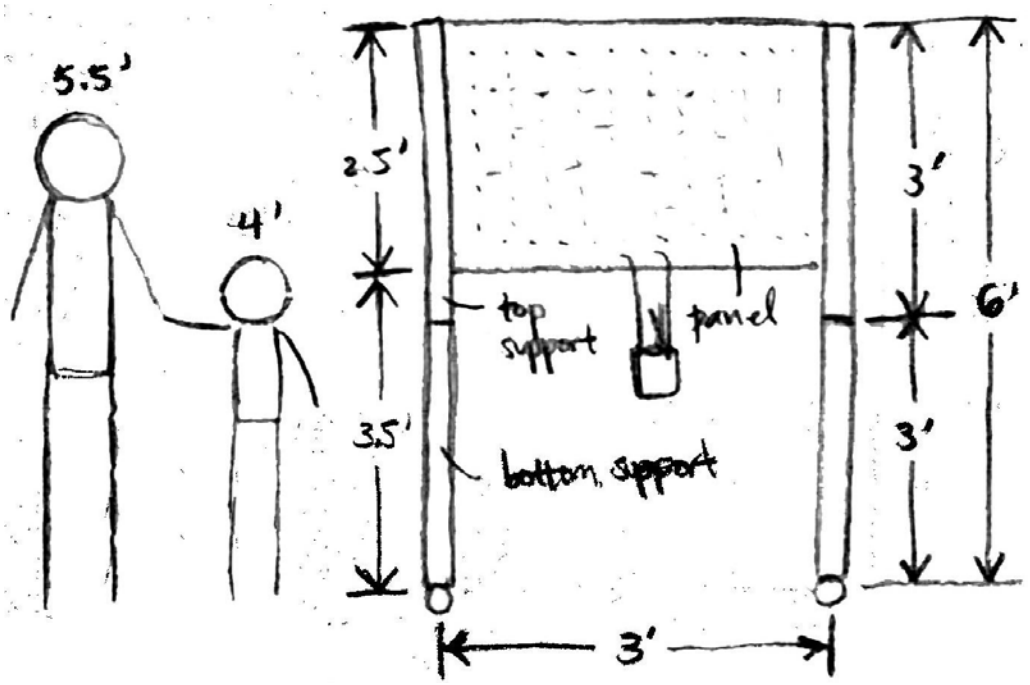

Figure 3: Height comparison of kiosk and audience.

The top and bottom supports will be attached via threaded inserts and bolts. The bolts will be attached to the top supports and the threaded inserts to the bottoms. A threaded insert is a fastener that acts as a nut and holds the bottom and top supports together.

To be rendered weather-proof, the supports will be treated with a waterproofing clear enamel.

Figure 4: Left - Sketch of how top and bottom supports will connect via threaded insert and bolt. Right - photo of threaded insert and bolt.

MOUNTING THE PANELS TO THE SUPPORTS

There were two factors in determining the method to mount the pegboard to the top support: sturdiness and presentability. Solid assembly ensures the kiosk components do not come apart, and clean, polished fabrication focuses audience attention on the content rather than sloppy construction.

To join the panels to the supports, a dado will be cut into the top support. "Dado" is another term for slot. There are two ways of affixing the panels to the supports. The panels can be attached using wood glue; however, wood glue is not waterproof and will dissolve if it remains in contact with water for extended periods of time. A more permanent method is to bolt the panels to the supports.

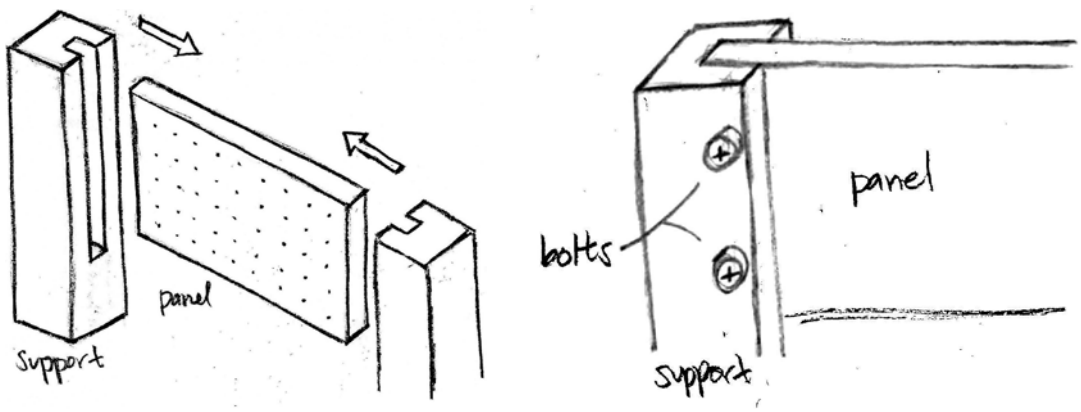

Figure 5: Left - Panel sliding into support dados. Right - Panel and support affixed with nuts and bolts.

This method of connecting the supports and the panels is symmetrical and frees up the greatest amount of useable board space.

MOBILITY

http://www.bottomsup.com/wp-content/uploads/2013/06/caster-wheels-type.jpg

Figure 6: A braking caster wheel.

Mobility ensures the kiosk can be easily transported and set up by a single person. An unwieldy kiosk is less likely to be used than an easy to prepare one. To make the kiosk mobile, a caster will be mounted to the bottom of each support. Casters are distinct for their locking and unlocking capabilities. When locked, the wheels are unable to spin, immobilizing the kiosk. When unlocked, the wheels can spin freely, allowing the kiosk to be easily transported within a venue.

To make the kiosk easily transportable, supports will be attached via cabinet hinges. Inspiration for this design was drawn from collapsible room dividers. The kiosk's collapsed state will be similar to that of a collapsed room divider. This, combined with the detachable bottom supports, makes the kiosk quite simple to transport in the back of a five-seater car.

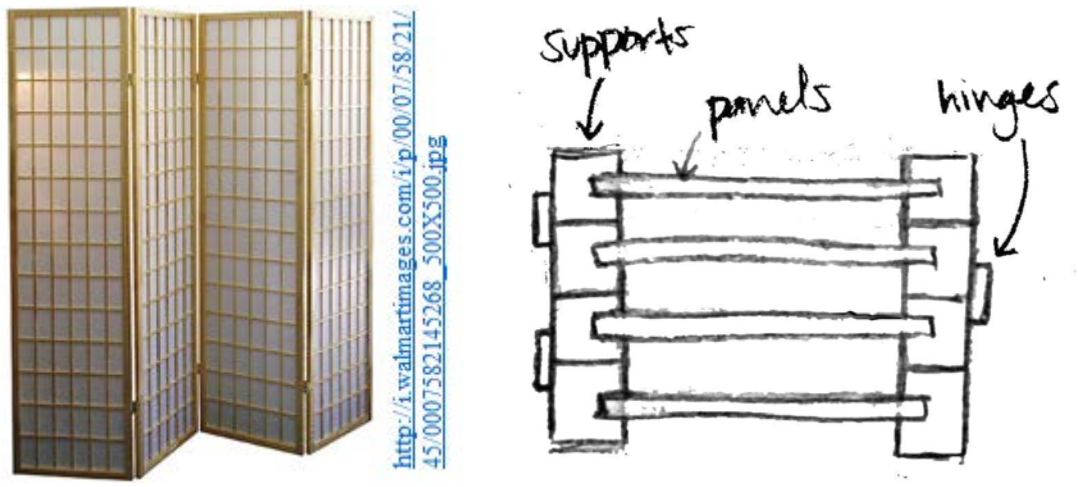

Figure 7: Left - collapsible room divider. Right - top view of collapsed kiosk.

MULTI-CONFIGURATION CAPABILITY

Cabinet hinges have 270^{o} or three-quarters of a circle's range of motion. This allows the kiosk to have multiple configurations, giving it flexibility in presentation. For simplicity, configurations will be described based on top-view shape. An example to illustrate the value of multiple configurations: Due to space constraints, a square configuration is better suited for display at TFP's greenhouse than a straight configuration. However, a zig-zag configuration may be better in a church or school setting where the open folds are inviting to passers-by.

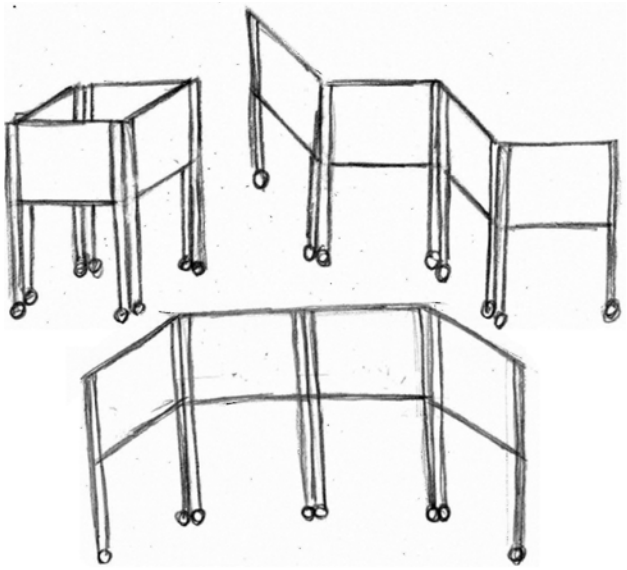

Figure 8: Configurations. Left - square. Right - zig-zag. Bottom: tri-fold.

INFORMATION DISSEMINATION

Distributed content will be hung from real-estate-type boxes to protect destruction from the elements. Such boxes are a one-time cost and are long-lasting. However, purchasing several real-estate boxes may prove expensive; an alternative method should be explored. Non-distributed materials will be laminated for protection against the elements.

Figure 9: Real estate box.

LIMITATIONS

The kiosk prototype design is unable to withstand heavy snow or torrential downpours, but will remain upright in light wind, mist, and rain. The kiosk also does not have anti-theft features.

FUTURE DIRECTIONS

Moving forward, TFP faces several major decisions before it can construct and evaluate the kiosk features. First, the primary function of the kiosk needs to be established. Our team took outreach as the primary usage context; keeping the kiosk in the greenhouse would only provide information to people who are already aware of and involved with TFP. The current design is meant to provide as much flexibility as possible, but can and should be adjusted to fit the organization's needs should they deviate from the ones assumed in this project. The choice to have multiple configurations, for example, reflects the value of adaptability to changing space limitations and presentation styles. If TFP adjusts their usage of the kiosk to one that sits permanently in its greenhouse, they may prefer to replace hinges with fixed slots and remove the wheeled caster brakes to provide more stability. Other decisions that TFP must make are what content and media they want displayed and the degree to which they want to share kiosk space with other organizations. These decisions will inform other decisions they make regarding details of the kiosk, such as the desired pegboard material.

Once the kiosk is built, TFP should experiment with various configurations of both the kiosk and its content and evaluate which features it, the organization, prioritizes most in a kiosk. Specifically, they should consider the trade-offs between mobility, stability, functionality, and durability. From these decisions, TFP will have a solid foundation upon which to build a second kiosk that takes into account unforeseen practical needs, beyond the theoretical needs that this project addresses, and adapt to changes TFP may make regarding its kiosk usage.