Needs assessment mosaic for community-based learning

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Abstract

This report documents the development of a needs assessment protocol for a community-based learning system established within a community garden site in San Francisco's Tenderloin neighborhood, October 2009 – January 2014. In service to it's surrounding Tenderloin neighborhood, the goal of the project was to engage community members as active partners in designing the program: how and what would be taught. Needs assessment techniques afford structure, transparency, extensibility and replicability needed for authentic public participation over time. Sample cases (Summer 2012 – Jan 2014) are offered as the beginning of a library or a pattern index to support that effort. It was sponsored by the Friends of Shih Yu-Lang Central YMCA to guide the Central Y community in building a new facility and maintaining cohesion during the transition.

"Participation will save the human race." *- Pete Seeger, 2013*

Overview: Background & Context

The Demonstration Gardens community learning system is in development as a conduit for community activity during a transitional period in the life of an historic community center. The learning environment of physical garden and virtual resources aims to be accessible to people of all ages and abilities. It has grown organically in practice of helping to answer the question: "What facility should be built to continue serving the Tenderloin and Central San Francisco community for the next 150 years?" but also "What do we have to do right now?" Constructive engagement was projected by Friends of SYL Central YMCA as an *esprit de corps* measure for survival of the organization in transition. The hypothesis was offered that by finding diverse ways of learning directly from community-members what they need and want we would all stay engaged. Therefore Needs Assessment is an implicit objective of all the activities and tools provided in the Demonstration Gardens service architecture. Through explicit application of needs assessment techniques even when the solutions offered haven't worked as planned they have still informed the framework.

Physical site history and learning profile

The Shih Yu-Lang Central YMCA was built in 1907 at the corner of Leavenworth and Golden Gate Ave. Dedicated by Teddy Roosevelt it was one of the first grand buildings erected in the aftermath of the Great Earthquake. Near Civic Center, the Federal and State office buildings and Hastings College of Law it was a fashionable neighborhood. The League of Nations met there prior to forming the United Nations. Flagship of the YMCA system, the educational aim of the organization was to promote fitness in body, mind and spirit. Over generations this holistic approach, hallmark of California-style health, evolved to include all ethnicities, women, lesbian, gay and transgender and people of different economic backgrounds. Volunteerism fueled by

personal growth and participation was deliberately cultivated and functioned as the backbone of its infrastructure.

During Central Y's 100 years at 220 Golden Gate the Tenderloin community around it changed drastically, the wealthy and powerful still came to their offices during the day but increasingly those who lived nearby were immigrant families, poor and disabled people. While not far away in Silicon Valley the Internet was elaborated to change the world the Tenderloin community was changed more by ubiquity of cell phones: sending drug-dealing into overdrive. The densest populations of vulnerable San Franciscans, children, seniors and people speaking other languages than English did not move out because it remained affordable.

Public formal education in San Francisco as elsewhere still embedded in the Industrial Revolution continues to prepare students to work in a world that has vanished. Paradoxically in Northern California, home of so much internet-based innovation, the Digital Divide in education and in work has widened along with economic disparity in neighborhoods like the Tenderloin. In the new marketplace created by life increasingly lived online interaction flows generate detailed social graphs from intertwined users' behaviors. This social graph is a commodity that is traded, bought and sold. Investment in providing more occasions to generate and exploit this explicit, detailed knowledge is a dynamo driving the environment in which learners of all ages prepare themselves for work today. Meanwhile the social graph of Tenderloin residents is mostly invisible, to companies mining such data, but most importantly to its owners. While formal education turns its big ship around informal, community-based education could meet learners' needs more nimbly and help reveal a rich network of intelligence and resourcefulness. Community organizations like the Central Y could play a significant role by leveraging the proliferation of tools designed to support community interactions for learning. Volunteerism, which is a shared legacy of both Internet development and the Y tradition can be another important agent. Potential is high for community-based education to support the lifelong learning required for people of all backgrounds to thrive in the Tenderloin and elsewhere. But what is truly needed? Progress towards realization is confounded by tensions in several important dimensions.

First, there's the balance struck in decision-making between external experts and community members. Community members and system participants have implicit

knowledge of what they need most but may lack skill to make needs explicit and negotiate them with each other or the technical experience to translate into a functional system. Experts may have solutions looking for problems, that is, be too invested in what they believe to be effective without sensitivity to what actually works in a specific community. For all concerned, learning experiences may be defined too narrowly; ranging from a prejudice towards computer-mediated learning at the expense of other experiences to investment in training in skills in immediate demand but that lead to jobs with low horizons. Development projects supported by public funding require community participation but too often this is structurally reduced to rubber-stamping decisions made by experts with sacrifices made to fit and sustainability. If participants will be relied upon to manage ongoing development such passive conditioning has to be replaced with authentic agency. (Gardner, 2007)

Needs Assessment techniques can practically address these concerns to improve the offering of a community-based education system. (Gupta,) Emphasis upon transparency and responsive iteration can help convert all participants into partners to interpret goals, balance tradeoffs and assess outcomes of performance at different scales and dimensions. The objective of this study was to deploy needs assessment strategies within activities in the Demonstration Gardens and outline a framework to guide the inception of new education projects informed by meaningful community oversight. This structured approach provides for ongoing iteration of the service architecture through formative evaluation techniques such as usability and accessibility testing.

Methods

A community learning system at its foundation functions as an ecology; a generative environment dependent upon timely flow of information between participants, the physical setting and the technology that connects everything. This project visualized service architecture of evaluation and assessment for a specific community-based education system which bridges physical and virtual learning space, the Demonstration Gardens at Shih Yu-Lang Central YMCA. As proposed by Resmini & Rosati (2010) for experience architecture in general this project tailors pervasive information architecture to produce learning *experience service architecture* to maximize resources, inform iterative development of the learning system with meaningful

transparency, interaction and guidance by participants. (Dalwiche, 2012) Needs assessment is at the heart of the approach. A range of needs assessment techniques has been applied to the experience of the system to optimize learning. Especially because the system is community-based, no evaluation should be used which detracts from the quality of the overall learning experience. The framework is presented as a mosaic of cases inspired by the pattern language for built space proposed by Alexander et al (1977) an approach which may yield secondary benefit to function as patterns for re-use and sharing.

Each of the cases in this study has common elements but evaluated needs for the learning system on different scales. Components were selected for testing (hotspots) based on potential contribution to knowledge of the whole in an open set meant to expand within a system regulated by its participants. Emphasis is placed on evaluation experiences that support acquisition of a common vocabulary, are embedded in direct use and give clear, timely feedback. Generation of hotspots and reliance upon checklists was inspired by the Checklist Manifesto (Gawande, 2011). The surgeon Atul Gawande modified surgical practices through shared checklists employed at hotspots selected for impacts upon patient mortality with dramatic results. Checklists don't replace expertise but systemize it's application. In the Demonstration Gardens learning system this strategy provided a model for determining hotspots (selecting cases) and developing checklists (Appendix C) for each case. Shared heuristics serve as a low-overhead means to help teachers structure materials and learners become teachers all with a common baseline and a means to move it in concert, as called for by results. Experts and volunteers can clearly see where they can add value and understand what the terms of their commitment are. Participation in crafting their development boosted the primary metric of the system, engagement. Engagement is measured in raw numbers of participants, frequency and duration of participation. Quality of engagement is gauged by levels of contribution, generation of new connections or channels and exchange with others. (Thomas, 2012).

This mosaic of cases offers the following general attributes for assessment:

- o Case 1: Touchpoints Connect Virtual and Physical Garden: interaction design fitness and appropriate technology

- Case 2: Environmental Justice Internships: role definition and self-assessment
- Case 3: Garden Film Series: responses to neighborhood change
- Case 4: "Build Central Y!": prioritization of program components
- Case 5: Green Tenderloin Coalition: consensus decision-making

The interaction design of the Demonstration Gardens seeks to afford cross-channel engagement between physical and virtual environments. (Resmini, 2012) The connective tissue of locative media, taxonomy (linked to vocabulary) and social media was assessed within learning modules and physical space using interactive maps, QR codes and smart phones. Environmental Justice Interns used guided discussion, puppetry (collaborative storytelling), personal reflection and development of questionnaires for future participants to normalize tools for ongoing role development and personnel self-evaluation. They also helped plan the Garden Film series (see Figure 1: Festival Fishbone diagram) to evaluate changing patterns of use and neighborhood perceptions through films submitted, curated, presented and attended. In the "Build Central Y" program evaluation, intercept surveys were deployed in neighboring residential buildings to learn what needs people have for programs at the community center. At inception of the Green Tenderloin Coalition a participatory strategic assessment provided the framework that set the project on course driven by data derived from community intelligence. (see Figure 2: Green TLC in the Demonstration Gardens, 2012)

Results & Analysis

In all cases the immediacy, consistency and transparency of the needs assessment methods had the most impact upon participant engagement, whether positive or negative.

In **Case 1: Touchpoints**, mediated by smart phones, younger people were excited and motivated to persevere when even highly-motivated older adults expressed frustration and in some cases couldn't perform the basic tasks. An exception to this was presented in people of all ages who were excited by

technical novelty or puzzle-solving to work with others to find a way to access and interact with the information despite the unfamiliar feel of it.

Those without smart phones didn't have access to the experience at all which is a distinct limitation of that approach.

At the other end of the technology-dependency spectrum, **Case 5: Green Tenderloin Coalition** modeled a highly-interactive strategic assessment in formation of a self-help organization of urban gardeners. Analysis was conducted in two modes affording comparison of approaches within this group. When analysis happened live and in real time with follow-up documents shared on paper in English (though Chinese, Tagalog, Spanish and Arabic were primary languages of some members) the work products were richer and more satisfactory to participants than when the process was conducted asynchronously, online. When transactional distance increased the process became more contentious without the amelioration of face-to-face courtesies provoking some formerly committed participants to leave the group.

The **Case 2: Environmental Justice Internships** role definition required a balance between asynchronous and face-to-face social interaction to facilitate the busy lives of older teens and young adults. For this group texting on cell phones was the most immediate channel but this also worked to fragment communication and make documentation less transparent, contributing to difficulties experienced in Case 3.

The **Garden Film Series, Case 3**, showed clear negative impact from lack of immediacy and transparency in the sense that engagement objectives for the project were not met due to poorly executed, though well-made plans. Environmental Justice Interns' dependence upon individual messages and lack of an organic center of gravity was source of miscommunication that seemed to some team members to reflect a lack of accountability, a form of disrespect. This provoked over-achieving in some members and withdrawal in others, an imbalance that caused the project to suffer in nearly every step.

The **Case 4:"Build Central Y!"** campaign was dual-mode like Case 5, outlined above. An intercept survey executed by interns and volunteers yielded clear directives but was limited by the small population surveyed over short duration. The multilingual team was able to cross most language barriers however the result is verbal. Thoughts and impressions, what people really believe and want may not be adequately understood and captured by a questionnaire. Collaborative storytelling using the mobile shadow puppet theatre offered a less verbally-centered assessment strategy. Participants were highly engaged spending a series of focused Saturday afternoons on the effort but results, performances, are less available to verbal analysis. The efficacy of both approaches is still yet to be proven in that the facility that people expressed needs for has not yet been built. Meanwhile programs that can test these directives gleaned from both channels are operating and will provide ongoing opportunities for the community to continue to learn from each other about what is needed.

Conclusion

This mosaic of cases documents the application of needs assessment strategies that are commonly expert-driven and delivered to a community-based education program. The aim of this learning system service architecture was to use a framework of established evaluation best practices to allow community participants to ask in small, immediate ways the big questions of what world we want to educate ourselves for and how to best accomplish this. In keeping with the spirit of the Demonstration Gardens emphasis was placed upon transparency over perfect outcomes and available-technology versus high-technology. Are the proposed components and the working system suitable for its community? In the shifting landscape of the Tenderloin it remains an open question. Asking the question and enabling the formation of the question by the people designed to benefit from it is a fundamental educational act.

Appendix A: Needs Assessment Case Studies from the Demonstration Gardens

Table of Contents

Needs Assessment Case: **TouchPoints** connect virtual and physical garden

Component of Demonstration Gardens @ Shih Yu-Lang Central YMCA
Service architecture for physical & virtual garden resources
demonstration-gardens.org/touchpoints.html
387 Golden Gate Ave 94102

Description: **Touchpoint** is the affordance for the learner to connect with virtual resources while working in the physical Garden. The learner encounters and can interact with virtual resources associated with that location.

Assessment objective: *Do QR bar codes and interactive maps allow potential learners to access virtual resources for the Demonstration Gardens?*

Learner profile: Individuals and groups of youth, teens, adults and seniors who work in the Demonstration Gardens, take courses or prepare to teach them.

Process: *Observation Tester and Learner stand in garden.*
Tester has a paper checklist. Learner uses a smart phone.

Script

Tester asks Learner to
1. *find a QR code*
2. *scan it*
3. *open URL*
4. *find point on map*
5. *fill form (Join)*
6. *submit form (Join)*

Tester recorded whether Learner made a suggestion or thought they'd return to use the site again.
Raw data:
https://docs.google.com/spreadsheet/pub?key=0Am-fw4OxzuEXdC1Zc1VadXBQXzMzdEtoNERnYTRlQXc&output=html

Table 1: Summary of completed actions via smart phone in the field Fall 2012

		Youth 5	Teens 5	Adults 5	Seniors 5
Evaluators	20 Totals (%)				
Completed all tasks	40 = 8 / 20	2	3	2	1
Step 1: scanned QR code	100% = 20 / 20	5	5	5	5
Step 2: opened URL	75% = 15 / 20	4	5	3	3

Step 3: found point on map	65% = 13 / 20	4	5	3	1
Step 4: access form	55% = 11 / 20	3	3	2	3
Step 5: submit form	50% = 10 / 20	2	3	2	3
made a verbal suggestion	90%	4	5	4	5
stated that they'd visit again	70%	3	4	4	3

Analysis: *Less than half the participants were able to complete all the tasks but 18 of the 20 contributed suggestions indicating motivation and interest despite difficulties. Scanning the QR code was not a barrier to entering the virtual channel since everyone did it. Most participants could open the URL, find a point on the map and access the form. Seniors' most extreme drop off was at the map but the form access and submission had higher completion. Teens were the only group with greater than 50% completion and they all made verbal suggestions indicating a correlation between motivation and perseverence. Adults could use the map but didn't succeed with either finding or completing the form. Most Youth could access the form but fewer submitted it , taking this with their inclination to return may indicate a fall off in interest after the map in the test workflow.*

Conclusion: *Provided a learner has a smart phone or tablet, QR codes provide reasonable access to Demonstration Gardens' virtual resources. Information design should require careful attention to structure so that levels of detail can be controlled by the learner to minimize distractions while interfacing with small screen outdoors. Reading dense or complex text is not appealing but investment in making contributions easy and immediately visible such as sharing pictures & video and making notes ought to be worthwhile. Further testing should be done to assure adequate access for people with disabilities.*

[/lab/DG/touchpoints/touchpoints.html
asset.png
data/
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Case 2: Environmental Justice Internships Training Cycle
Component *of Demonstration Gardens @ Shih Yu-Lang Central YMCA*
Service architecture for physical & virtual garden resources, programs and participants.

Description: *Create a team of young workers skilled in applying principles of Environmental Justice within their own neighborhood using the Demonstration Gardens as their primary lab. Within the broad domain of environmental literacy provide occasions and tools for individual experimentation, contribution, exchange and reflection. Promote dynamic balance between growing skills and increased challenge that creates the experience of flow.*

Assessment objective: Assessment of desired competency and training needs for teenaged researchers through occasions and tools for reflection, experimentation, contribution and exchange. Promote dynamic balance between growing skills and increased challenge that creates experience of flow.

Process: Conduct peer & self-assessment in the context of hands-on activities including gardening, teaching, planning lessons, facilitating community meetings, staging and documentation of cultural events with interactive elements.

Data Artifacts

Training Cycle for Environmental Justice Interns
o	**Orientation**
https://docs.google.com/document/d/1008YCBqM16CtMGPASKl5Ba-KJXSzUgmKLmRWjG3eSKI/pub
o	**Are we doing it?** *(Repeat as needed)*
https://docs.google.com/document/d/1KOMktkwtxuBansIgfO3GeiXE6hWHfzqa
o	**Mission Accomplished?** */ Role Development*
https://docs.google.com/document/d/1QczchTqaNym7XijBLaGjabB6UhhMh0y2ac9vNqqzfHo/pub
o	**Individual Internship Plan** */ form*
https://docs.google.com/forms/d/17Pk8UaG4DMHtpG7X4G3JC5QfVREGSlik3AkE7fXLlro/viewform

Analysis: *what the data says*

Conclusion: *what was learned, how it can be applied, further questions*

[directory structure (path) CaseName//report.html/asset.png/data

Needs Assessment in Community-Based Learning

References

Alexander, C., S. Ishikawa, M. Silverstein, M. Jacobson, I. Fiksdahl-King, S. Angel (1977) A Pattern Language. Oxford University Press: New York, NY

Csikszentmihalyi, M. and H. Gardner (2003) Good Business. Penguin Press: New York, NY.

Delwiche, A. and J. Henderson (2012) The Participatory Cultures Handbook. Routledge: New York, N.Y.

Gawande, A. (2010) The Checklist Manifesto. Metropolitan Books: New York, NY.

Gardner, H. (2007) Five Minds for the Future. Harvard Business School Press: Boston, MA.

Gupta,K. (2007) A Practical Guide to Needs Assessment. Pfeiffer: New York, NY.

Powazek, D. (2002) Design for Community. Pearson, New Riders: Indianapolis, IN.

Resmini, A. and L. Rosati (2011) Pervasive Information Architecture. Elsevier: Burlington, MA. ISBN: 978-0-12-382094-5

Thomas, D., J.S. Brown (2011) A New Culture of Learning: Cultivating the imagination for a world of constant change. Douglas Thomas and John Seely Brown. ISBN: 13-978-1456458881

The Demonstration Gardens Needs Assessment Case Library is available from:
http://humanorigins.org/_jameel/lab/library/dg/needs-dg.html