USING THE CO-DESIGN PROCESS TO BUILD NON-DESIGNER ABILITY
IN MAKING VISUAL THINKING TOOLS

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Introduction

This thesis is a case study of using co-design as a way of assisting the capacity building process for a community organizer. The community organizer wants to develop a visual mental model tool for a community workshop in order to enhance and catalyze workshop participants—especially marginalized community members[1] involved in this case study research— in their understanding of workshop content.

Community organizers face a wide array of complicated challenges, addressing these kinds of challenges and social issues calls for innovative and inclusive approaches to community problem solving. In this case study, the community organizer wants to leverage visual thinking into her community works because visual thinking abilities and utilization can provide tremendous help for understanding, communicating, and strategy development.

Visual thinking has been adapted to corporate training activities, and many other strategic works in the recent years. Visual thinking provides a thinking framework for consolidating information. For viewers, it helps to absorb complex information in a holistic view. Visual elements also stimulate creative thinking, enhances the ability to comprehend, and brings aesthetic pleasure to the brain.

However, not everyone has the ability to develop visual thinking tools. A lot of times, people might even have a fear of drawing. Instead of emphasizing the beauty of the images, when incorporating visuals in communication, the purpose should be focused on the idea, function, or the explanation more than the delicacy of the pictures. Within this case study, the researcher utilizes co-design as a capacity building approach to enhance the community organizer (the non-designer/lay person) and her ability to make visual thinking tools—a visual solution that meets her needs for workshop facilitation.

Co-design is the collaborative process of enabling stakeholders to contribute their perspectives and creativity into the solution making process. Through the guidance of facilitation and collaborating with others, stakeholders are more likely to adopt the thinking process and focus on the core work at each development phase. Utilizing the thinking flow of convergence and divergence interactively, the design researcher and the community organizer are able to systematically generalize the insights for the solution collaboratively during the co-design process.

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* This thesis is submitted in partial fulfillment of the M.F.A. program in visual communication design at the Herron School of Art and Design. The author is referred to as the "**design researcher**" throughout this thesis.

[1] Virginia l. Sauvé, Chapter 1, *A Personal Journey Into Participatory Education, Participatory Practices in Adult Education* (Pat Campbell ed., 2001).

Research Question

The main question presented in this research is as follows:

- How might co-design enable a non-designer to develop visual thinking tools?

This main question has four relevant sub-questions, which are presented as follows:

- What are the benefits of visual thinking tools in this case study?
- What are the needs of the community organizer for making a visual thinking tool?
- What can we suggest as a co-design module for a non-designer to develop visual thinking tools?
- How might the co-design process empower a community organizer to develop visual thinking tools to meet the needs of her work?

Key Terminology:

Co-design: "Co-design refers to a range of approaches to design that engage the collective creativity of designers and people who are not formally trained in design. As with other participatory practices, degrees and forms of participation in design can vary."[2]

Non-designer: People without formal training in design

Visual Thinking Tools: A tool with visual cues to reflect or empower the corresponding inference processes such as an act of problem synthesis, strategy selection, and the ability to refine problem formulation [3]

[2] Busayawan Lam, Andy Dearden, Katherine William-Powlett and Ellie Brodie (2012). *Exploring co-design in the voluntary sector*. In: VSSN / NCVO Annual Conference, University of Birmingham, 10/09/2012 - 11/09/2012. (Unpublished).

[3] Pearl Pu & Denis Lalanne (2002), *Design Visual Thinking Tools for Mixed Initiative Systems.* IUI '02: Proceedings of the 7th international conference on Intelligent user interfaces, January 2002, pages 119–126.

Research Motivation

When making visual tools, it usually requires a graphic designer's expertise. However, in some organizations with fewer resources, like nonprofit organizations, they might not always have the funding to have professionals help in visual design. In addition, community organizers may have insufficient visual skills. "Scholars (Lee Yih-Jiunn, 2008) also point out that not only are human resources of professional community organizers insufficient, but also the ability of professionals, and even the educational content, may not have been adequately discussed. In recent years, researchers have begun to explore the core professional capabilities of community organizers (Zheng Zu-ya, 2011)."[4]

The design researcher also thinks that if every community organizer can interact with the people, and the community organizer has appropriate communication skills and information integration skills, this can help the community organizer get more done with less. The design researcher wants to use this case study to assist non-designers (i.e., community organizers in this research) to assist non-designers through the proposed design thinking process (especially co-design and prototype testing), master the needs of their own visual thinking tools, and further cultivate the ability to build their own visual thinking tools.

[4] Ya-Huei Hsu, *Community Capacity and the Key Competencies of Community Workers: Adult Learning Perspectives*, 1.1 J. OF COMM. WORK AND COMM. STUDIES 91-136 (2011) (author's translation), *citing* Yih-Jiunn Lee, *Instructional Design of Community Social Work: Reflections and analysis from an action research*, 1-26, Providence Studies on Humanities and Social Sciences January 2008, Volume 2, No. 1; and Zu-ya Zheng, *The Core Competences of Professional Community Workers: An Explorative Research of Taiwan*.

Justification

Necessary Competencies for Engaging in Community Work

Definition of Community Organizer

According to Bandura, "the role of a community organizer is not to solve people's problems for them but to help develop their capacities to operate as a continuing potent force for bettering their lives and upholding their sense of self-worth and dignity."[5] Bandura goes on to note that the community organizer "serves as the community enabler rather than as the implementer of action plans."[6] Therefore, one can say that rather than being a fighter at the front line, the community organizer's role is more like a process supporter, enabling or catalyzing community residents—the accountability owners of the community events—to make change happen in the community. In 2006, the UK's Ministry of Housing, Communities and Local Government (formerly the Department for Communities and Local Government) determined that there are four key roles for community development workers, detailed in the table below. Each key role has its main focus and tasks in the process of change. But underlying these four roles is their shared goal of supporting community members to achieve their community goals and to have less barriers in the process.

Figure 1:

Four Key Roles of Community Development Workers (CDWs)				
Key role	**Capacity Builder:**	**Change Agent:**	**Assess Facilitator**	**Service Developer**
Tasks	• Develop socially inclusive communities • Engage in establishment of community leadership • Assist in development of community organisations	• Identify community concerns and gaps in services • Seek out capabilities to develop innovative practice • Increase channels of communication between community and statutory authorities	• Help people find effective pathways across services • Direct people to community resources • Address language and other barriers to services	• Advise on training and education of staff • Highlight the importance of culture in service systems and practice • Develop joint working between statutory and community service

[7]

[5] Albert Bandura, *Self Efficacy: The Exercise of Control* 501 (W H Freeman/Times Books/Henry Holt & Co., 1997).
[6] *Id*.
[7] Department for Communities and Local Government's Community Empowerment Division, The Community Development Challenge 15, Panel 4 (2006), *citing* Department of Health, Community Development Workers for Black and Minority Ethnic Communities: Interim Guidance (UK, 2004) (layout restyled).

Community Organizer Capacity

In order to effectively support community members so that they may make the biggest impact, higher skilled community organizers are necessary to ensure a better quality and higher level of community change. This begs the question, what kind of expertise does a community organizer need? According to Professor Ya-Huei Hsu, community capacity building is not totally separate from adult education. She notes that "[t]he terms community capacity and adult learning have been in use for several decades and refer to different areas within the field of community development and adult education."[8] "The professional development and the improvement of the quality of adult learning staff have been recognized as a priority at European level for the successful practices in lifelong learning and community development."[9] The community organizer's expertise level, therefore, is a key factor for executing further capacity building.

Capacity Building: A more detailed discussion of community "cultivation"

Hsu highlights the European Union's experience in adult education. She notes that "the European Union's discussion of community and core abilities has been developed in the context of adult education theory and the concept of lifelong learning education."[10] Hsu notes that there is a return to adult education and adult learning theory. In particular, there is an "emphasis on the new trend of community empowerment, which is based on individual empowerment."[11] Therefore, Hsu notes, "it is appropriate to re-understand community capabilities with adult learning as the starting point."[12]

Professional Competence of Community Organizers in Adult Education

In *Community Capacity and the Key Competencies of Community Workers: Adult Learning Perspectives*,[13] Hsu points out that "one of the qualitative descriptions of the key abilities and self-assessment of adult learning professionals"[14] includes "[t]he ability to apply diverse learning methods and technology, explore and understand the possible applications of multimedia, maintain critical thinking to each learning method, and be proficient in various learning methods and styles, using different technology media, working with adult learners."[15] Hsu further breaks this down into three specific domains of competence: knowledge, skills, and attitude. Hsu describes these domains as follows:

> Knowledge: 1. Have sufficient knowledge of learning methods related to adult learning processes; 2. Have a clear understanding of adult learning processes and learning styles; 3. Have knowledge of applied technology related to adult learning processes; 4. Maintain new technology sensitivities and be able to master the possible impacts and changes of new technologies on adult learning processes.

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[8] Hsu, *supra* note 4, at 91-136.
[9] *Id*.
[10] *Id*. (author's translation).
[11] *Id*. (author's translation), *citing* Hardina, Donna, *Linking Citizen Participation to Empowerment Practice: A Historical Overview*, 11(4) J. of Comm. Practice 11-38 (2003)
[12] Hsu, *supra* note 4, at 91-136 (author's translation).
[13] *Id*.
[14] *Id*. (author's translation).
[15] *Id*. (author's translation).

> Skills: 1. Ability to support the adult learning process with suitable learning methods (such as dialog teaching); 2. Ability to support the adult learning process with suitable learning styles (orientation); 3. Ability to use new technology media to support the adult learning process; 4. Ability to adapt teaching guidance methods to meet the needs of individual and small groups of adult learners.
>
> Attitude: 1. Show confidence in using different learning methods, styles, and new technologies; 2. A critical and positive attitude towards learning methods, styles, and new technologies; 3. Being open to changes brought about by new technology; 4. Willing to use new learning methods, styles, and new technologies to show creativity[16]

This highlights the domains of competence of adult learners, and it clearly points out the ideal abilities of adult learning professionals.

Forming Learning Experiences: The Challenges for Community Organizers in Acquiring Social Innovation Methods

With the increasing complexity of social issues today, issues faced by community organizers are becoming more difficult. "Social workers face ever-changing social environments where the nature of complexity of clients' problems and challenges . . . continuously evolves and grows."[17] This requires community organizers to acquire new skills themselves in order to address these new social environments. Among these new skills includes acquiring social innovation methods. However, those who really need innovative methods often have no real access to innovation. "Though social innovation initiatives work toward social sustainability, the individuals who most need access to innovative products and services often remain 'hard to reach' . . . or 'invisible.'"[18] Importantly, "the communities that need them most often do not have the capacity to develop or identify and adapt, and implement, these products or services . . . [and w]ith each passing innovation cycle these individuals and communities are bypassed, reproducing social and economic inequities. "[19] The challenge of acquiring necessary skills persists. This research hopes that the results of this case study can provide more innovative methods or tools for those in need.

In Känkänen & Bardy's article, the authors note that social workers use art as an innovative solution to current problems. This also deepens the design researcher's subsequent hope for visual

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[16] *Id*. (author's translation).

[17] Deborah Espiner & Frances Hartnett, *Innovation and Graphic Facilitation*, 28 Aotearoa New Zealand Social Work 4 (2016), *quoting* Monica Nandan, et al., *Social Workers as Social Change Agents: Social Innovation, Social Intrapreneurship, and Social Entrepreneurship*, Human Service Organizations: Management, Leadership & Governance, Volume 39(1) (2015).

[18] Espiner & Hartnett, *supra* note 17, at 4.

[19] Amanda A. Geppert, *Co-design for Community Capacity Building*, In International Reports on Socio-Informatics (IRSI), Proceedings of the PDC (2014), Infrastructuring, Collaboration and Evolving Socio-Material Practices of Changing Our World (Vol. 11, Iss. 2, pp. 9-18), *citing* Cook, M.R. *The Emergence and Practice of Co-Design as a Method for Social Sustainability Under New Labour* (Doctoral dissertation, University of East London, 2011), and *citing* Jonathan Tritter & Alison McCallum, *The snakes and ladders of user involvement: Moving beyond Arnstein*, 76 Health Policy156-168 (2006).

thinking tools as the subject of the current case study. "Social workers have been encouraged to use the arts in practice to add to their repertoire, bring new insights and enrich communication."[20] It is this hope that is the foundation for the design researcher's case study.

What is Co-design? Why use co-design? What is the goal?

Using co-design is a means of capacity-building in what some refer to as "lay people," who the design researcher will refer to as "non-designers." Geppart examined "the use of codesign—a 'democratic approach that is focused on the processes and procedures of design . . . [that] collaboratively engages, consults and develops solutions to problems' (Cook, 2011, p. 50)—as a mechanism to build the capacity of lay people and communities to develop or influence socially sustainable solutions responsive to their needs and aspirations. "[21] Thus, the design researcher has focused on co-design as the main approach to capacity building in non-designers. Accordingly, the question is now, How to design the co-design process in the current research? and What are the means and methods?

The Community Organizer in the Present Research

The community organizer and research subject, Ms. Clare Pope, is considered a capacity builder. Ms. Pope is the founder of Family Concept Services, an organization offering life skill programs in the Indianapolis community.[22] Ms. Pope is a non-designer who is not familiar with drawing. She has heard about visual thinking but has not received professional training or guidance. She is only aware of this tool—she is not a professional. The research subject may even need a trained professional designer to assist in the co-design implementation process, provide guidance, and reduce fear. In this regard, Sanders noted that "people who are on the 'doing' level may need trained designers to lead them through the design process."[23] So in the process of module 1: "Parallel Prototyping" of this co-design research methodology (see Figure 3 below), the design researcher jumps in as a professional designer to co-create with Ms. Pope, the community organizer. What the design researcher is doing is trying to train the trainers, the front-line workers. It is important to support their work. This is another reason why the design researcher chose community organizers.

[20] Espiner & Hartnett, *supra* note 17, *citing* Päivi Känkänen & Marjatta Bardy, *Life stories and arts in child welfare: Enriching communication*, 4(1) Nordic Social Work Research 37-51 (2014).

[21] Geppert, *supra* note 19.

[22] https://www.linkedin.com/in/learnllive/ (Ms. Pope's services relate "to basic life skills that enhance, edify, and encourage individuals and the family unit as a whole. The on-site family life programs are designed to engage disadvantage families through various neighborhood outreach initiatives. Clare seeks to assist families in defining ways to strengthen the home environment using key principles that build personal development, better relationships, and the means for making a positive impact within ones community. She is committed to equipping individuals with basic life concepts that assist the family unit to thrive beyond the obstacles experienced with daily living.").

[23] Lam et al., *supra* note 2; *see also* Figure 2 (contrasting "those who are on the 'creating' level [who] may prefer to be offered a 'clean slate' to work on").

Figure 2:

Four Levels of Creativity				
Level	**Types**	**Motivated by**	**Purpose**	**Example**
4	Creating	Inspiration	'express my creativity'	Dreaming up a new dish
3	Making	Asserting my ability or skills	'make with my own hands'	Cooking with a recipe
2	Adapting	Appropriation	'make things my own'	Embellishing a ready-made meal
1	Doing	Productivity	'getting something done'	Organising my herbs and spices

[24]

Figure 3:

Goal	**Co-Design as a Capacity Building Process**			
Module	Module 01: Parallel Prototyping		Module 02: Iterative Evaluation	
The Double-D Phase	Discover	Define	Develop	Deliver
The Innovation Process	Generating	Conceptualizing	Implementation	Reflection
Design Method/ Research Activities	Idea collecting	Voting	Prototype Testing	Reflective Interview
	Forcing Connection	Integrating	Observation	Survey

[25]

Visual Thinking/Visual Mental Model

What is visual thinking? When a user uses a visual tool, how does it help her work? Visual mental models help in a number of ways. We can better understand ourselves, the people around us, and

[24] Elizabeth Sanders & Pieter Jan Stappers, *Co-creation and the new landscapes of design*, 4(1) CO-DESIGN 5-18 (2008).

[25] Source: Author's design.

our organization systems. The following are a number of explanations why the design researcher is in favor of the visual mental model. Sibbet articulates it as follows:

> Cognitive Visualization: This includes personal visions, metaphors, mental models, and other frames of reference that guide and shape our behavior. It is the connection of these to their outer manifestations on charts and in media that makes visual material meaningful. It is an essential domain to include! Peter Senge, in his popular book *The Fifth Discipline: The Art and Practice of the Learning Organization,*[26] identifies visioning, mental models, and systems thinking as three of the five disciplines (along with teamwork and personal accountability). These are all visually based and refer to the structured ways in which we filter and interpret information. With visioning we imagine opportunities and future states. We elevate metaphors to become mental models that filter our information. We understand our organization systems and the way they work through these internal lenses.[27]

Next, this thesis will discuss the definition and usefulness of metaphor and models, and why Ms. Pope is an ideal fit for using visual mental models. Imagery and mental models can keep organizations focused. Sibbet reveals how organizations "connected their visions with compelling imagery and mental models that leaders can use to keep their organizations focused on the big picture while working on the details."[28] Mental models help communicate direction and purpose.[29] And finally,

> [i]f metaphors link your communications to the experiences of the people to whom you are communicating, mental models can be appreciated as a lens that help you focus in the right places. Some of these are worth using as a standard visual language for thinking about organizations as whole systems, . . . [and m]any mental models that have stood the test of time have a visual graphic or diagram illustrating the central ideas.[30]

Tools for Visual Leaders

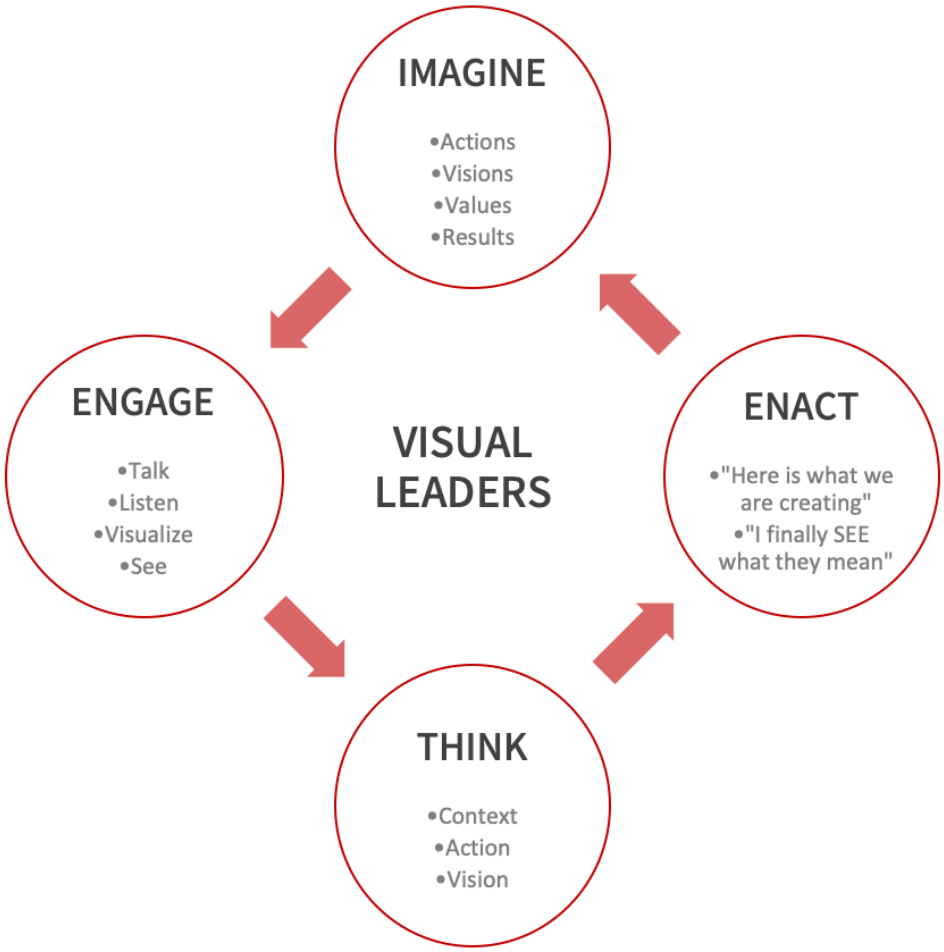
What are visual meeting tools? How are Visual Meeting Engaging? There is a power in the visual meeting. As Sibbet notes, there are four powers of visual meetings: Sparking Imagination,[31]

[26] Peter M. Senge, *The Fifth Discipline* (Doubleday/Currency, 1990).
[27] David Sibbet, *Visual Leaders: New Tools for Visioning, Management, & Organization Change* xvii (Wiley, 2012).
[28] *Id*. at 90.
[29] *Id*. at 91. ("The first set of essential tools for visual leaders includes the visual metaphors and mental models that help you communicate your stories of direction and purpose.").
[30] *Id*. at 98.
[31] *Id*. at 39 ("Visuals of what success looks like, compelling metaphors, and visible mental models all stimulate you and your organization's imagination.").

Supporting Enactment & Group Memory,[32] Thinking Big Picture,[33] and Engaging People Actively.[34] Sibbet's graphic illustrates these for powers, seen in Figure 4 below.[35]

[32] *Id*. ("Meeting notes, action steps, action plans, roadmaps, milestone charts, and large process maps that explain big changes are all most effective when they are visual, and big enough to be posted and referred continually. These tools are critical to effective implementation and enactment of plans.").
[33] *Id*. ("Display making is the language of systems thinking. Doing it in groups vastly increases group intelligence and everyone's ability to see connections, find solutions, and understand how the big picture relates to specific elements of work.").
[34] *Id*. ("Nothing is as engaging as acknowledging what people are saying by writing it down and drawing out the metaphors and models that shape their ideas. Sticky notes, group drawing, games, and other forms of interactive visualization all have this dividend.").
[35] *Id*.

Figure 4:



[36]

Using David Sibbet's Four Flows of Process, we saw the benefits of using visual tools in Ms. Pope's community sessions, which greatly helped the process of the community sessions and the overall involvement of participants. "The process flows are common to visual facilitation,

[36] Figure 4: author's restyling, based on David Sibbet, *Visual Leaders: New Tools for Visioning, Management, & Organization Change* 39 (Wiley, 2013).

dialogue, and change. Understanding them is a place to start building capacity."[37] The Four Flows of Process include Attention,[38] Energy,[39] Information,[40] and Operations.[41]

[37] David Sibbet & Gisela Wendling, *Visual Consulting* 34, side story 3.1 (WILEY).
[38] *Id*. ("This is the quality of inner awareness that guides what you and groups are paying attention to at any given time. It can also include what the system as a whole is paying aspirational attention to-top line.").
[39] *Id*. ("This is the emotional field you and the group are immersed in and includes movement, pacing, feelings, and expressive communications. You sense group feelings by paying attention to your own.").
[40] *Id*. ("This is the flow of symbolic communication, in text, graphics, members, and all the forms of information, and include knowledge at even higher levels of understanding.").
[41] *Id*. ("This is the bottom line flow of decisions that use infrastructure and other mechanisms to control the material plane of our lives. Operations pays attention to all the tangible resources needed in this work - tools, supplies, food, equipment, and support staff.").

Limitations:

This is an individual case study solely working with Ms. Clare Pope, an Indianapolis-based grassroots community organizer, in her community session "My Life is My Business" with a local ministry supporting homeless and re-entry participants in July of 2018. Because of the limitation of time scope, this research did not further discuss the various visualization tools, the content of the community sessions, and further evaluation of engagement from the community session participants' perspective. We recommend more future research that can further discuss more about these aspects.

This particular community session is not representative of the variety of groups and clients. Ms. Pope's community sessions are often involved with church activities. In addition, this particular session included females in their 40s and 50s, with a specific minority demographic, which focused on educational and social issues.

Research Methodology

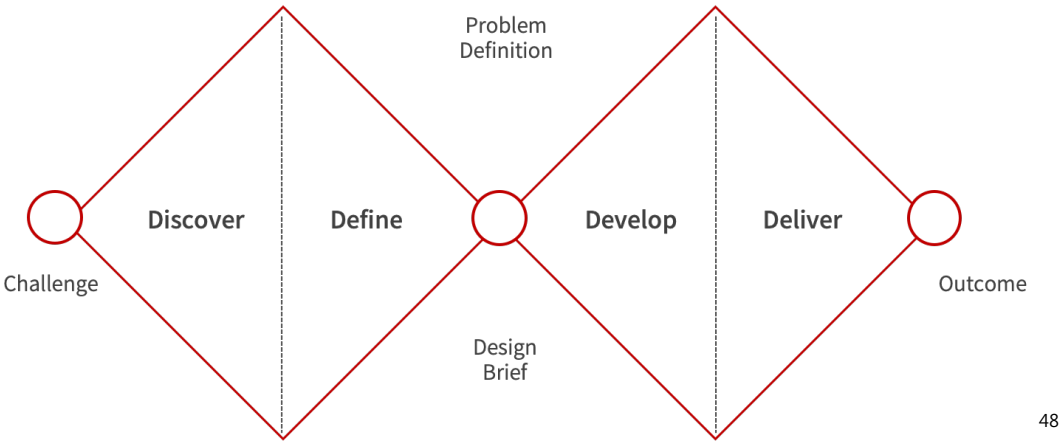
With so many discourse models for design thinking, each discourse model probably has a different emphasis on discourse. There have been several design thinking methodologies developed by different organizations during the last decade.[42] Each methodology has minor differences in design process and alternative labeling on their visual model representations compared to each other. The differences also can be impacted by each organization's interest and attention to the type of expected targets of outcome, such as engineering solutions, mobile application solutions, service solutions, or business solutions, etc.

The design researcher uses the Double Diamond (Double-D) model as the framework for research work. The main co-design process is embedded in the Develop phase as part of the Double-D research methodology.

The significance of the four Ds in this study

"[The] Design Council's Double Diamond clearly conveys a design process to designers and non-designers alike. The two diamonds represent a process of exploring an issue more widely or deeply (divergent thinking) and then taking focused action (convergent thinking)."[43] The four Ds are Discover,[44] Define,[45] Develop,[46] and Deliver.[47] The figure below further illustrates the four D process.

Figure: 5



[48]

[42] Iman Pirzadeh, *Mitigate Patient Falls within the Acuity Adaptable Units* 20 (M.F.A. Thesis, 2018).

[43] *See* What is the framework for innovation? Design Council's evolved Double Diamond, Design Council, at https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond.

[44] *Id.* ("The first diamond helps people understand, rather than simply assume, what the problem is. It involves speaking to and spending time with people who are affected by the issues.").

[45] *Id.* ("The insight gathered from the discovery phase can help you to define the challenge in a different way.").

[46] *Id.* ("The second diamond encourages people to give different answers to the clearly defined problem, seeking inspiration from elsewhere and co-designing with a range of different people.").

[47] *Id.* ("Delivery involves testing out different solutions at small-scale, rejecting those that will not work and improving the ones that will.").

[48] Source: author's restyling, based on Design Council's Double Diamond, available at https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond

Research Purpose

The design researcher has defined the Double-D framework in the current research as follows:

- Discover: Understand the meaning of visual meeting tools; Understand the needs of community organizers; Understand the content of the workshop session and expected content for visual meeting tools.
- Define: Confirm the goal/purpose/success factors of the development of the visual meeting tools.
- Develop: Implement the co-design process (included prototyping, testing, and evaluation) as a capacity building process
- Deliver: The community organizer is able to develop her own visual meeting tools after learning from the co-design and iterative prototype evaluation

Holistic (Overall) Research Plan

The following figure explains the overall research journey, including objectives and the specific research activities.

Figure 6:

Methodology Phase	Discover	Define	Develop	Deliver
Objective	Understand the community organizer's expectation of visual meeting tools	Define the criteria for an expected visual meeting tool for the community organizer	Facilitate the iterative prototyping workshop with the community organizer, conduct testing and feedback	The community organizer re-designs a final visual thinking tool for herself
Research Activities/ Design Methods	Interview	Affinity Diagramming	Co-Design (see Figure 7)	Evidence-Based Design
	Observation	Synthesis		
	Survey	Define a design brief		
	Reflective Interview			

Co-Design Key Tasks
The co-design key tasks are organized in the figure below.

Figure 7:

Goal	**Co-Design as a Capacity Building Process**			
Module	Module 01: Parallel Prototyping		Module 02: Iterative Evaluation	
The Double-D Phase	Discover	Define	Develop	Deliver
The Innovation Process	Generating	Conceptualizing	Implementation	Reflection
Design Method/ Research Activities	Idea collecting	Voting	Prototype Testing	Reflective Interview
	Forcing Connection	Integrating	Observation	Survey

[49]

The following research journey figure explains the research work breakdown and output descriptions; it gives an overall mission plan.

[49] Source: Author's design.

Figure 8:

Research Phase	Discover		Define	Development				Deliver
Key Tasks	Interview	Observation	Affinity Diagramming	Co-Design	Prototype 1 Test	Prototype 2 Test	Prototype 3 Test	Evidence-Based Design
		Survey	Sythesis		Evaluation	Evaluation	Evaluation	
		Reflective Interview						
Format	1-on-1 meeting	Community Session 1	Researcher's individual work	1-on-1 Workshop	Community Session 2	Community Session 3	Community Session 4	Research subject's individual work
Expected Outcomes	Data	Data	Synthesized results	Prototypes - visual meeting tool	Feedback and evaluation	Feedback and evaluation	Feedback and evaluation	Re-designed visual meeting tool

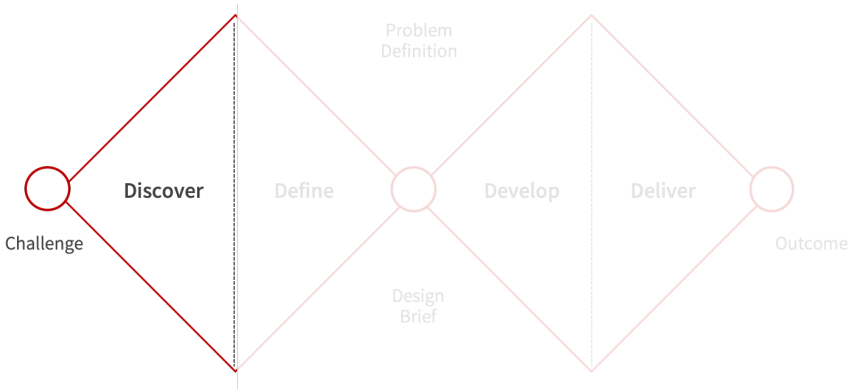
[50]

*Community Sessions:
At the same time, the design researcher organized a series of community meetings with the community organizer as prototype testing. This series included four sessions at different dates. Research activities of this community series is the capacity building sessions that the user exactly wants to design the visual meeting tool for. Thus, the testing results should be relevant.

[50] Source: Author's design.

Research Method

Discover Phase



The Discover Phase included an initial interview,[51] observations,[52] a survey,[53] and a reflective interview.

The purpose of this extensive **initial interview** was to understand the community organizer's ideals, expectations, and needs for workshop engagement. The design researcher also tried to understand the content and structure of the community organizer's workshop. This helps understand the need for visual tools. The design researcher also wanted to understand the awareness, understanding, and needs of visual tools. The method of discovery used in the initial interview was one-on-one questioning (one question, one answer) in sixty minutes. The interview method was an extensive exploratory question[54] and answer session, which was classified into three themes:

- What is your definition of engagement?
- What is your expectation for using visual mental models? What is the purpose of the visual mental model? What are the elements to fulfill these expectations?
- What was your past experience to support this expectation?

The key records and findings of the interviews can be seen in the Appendix A.

The objective of the **observation** was to understand the specific content and form of the community session, understand the facilitation style of the community organizer, the form and technology of using visual tools, and understand the behavior, participation, and interaction of the community organizer (as facilitator) and participants in the community sessions(see Figure 9). The designer researcher used AEIOU as the main observation structure. AEIOU is divided into Activities (Session Activities), Environments (Session Environment), Interactions (Facilitator and participants' session interaction), Objects (Props used by the facilitator), and Users (Facilitator and participant background).[55]

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[51] Bella Martin & Bruce Hanington, *Universal Methods of Design* 102 (Rockport Publishers, 2012).
[52] *Id*. at 57.
[53] *Id*. at 83.
[54] JoAnn Hackos &Janice C. Redish. *User and Task Analysis for Interface Design* (Wiley, 1998.).
[55] Martin & Hanington, *supra* note 51, at 10.

The key records and findings can be seen in Appendix B.

The purpose of the **survey** was to understand the acceptance and understanding of the participants. The method used depended on the situation of the participants on the site, but, in general, the design researcher orally asked one-on-one questions, or directly asked the participants to fill out a paper questionnaire (see Figure 10).

The content of the questions was as follows:

- Were the instructions of the first visual tool easy to understand?
- Did the first visual tool provide you a new way of thinking about your situation?
- Do you think this workshop provided relevant information according to your current needs?
- Do you think this workshop was engaging?

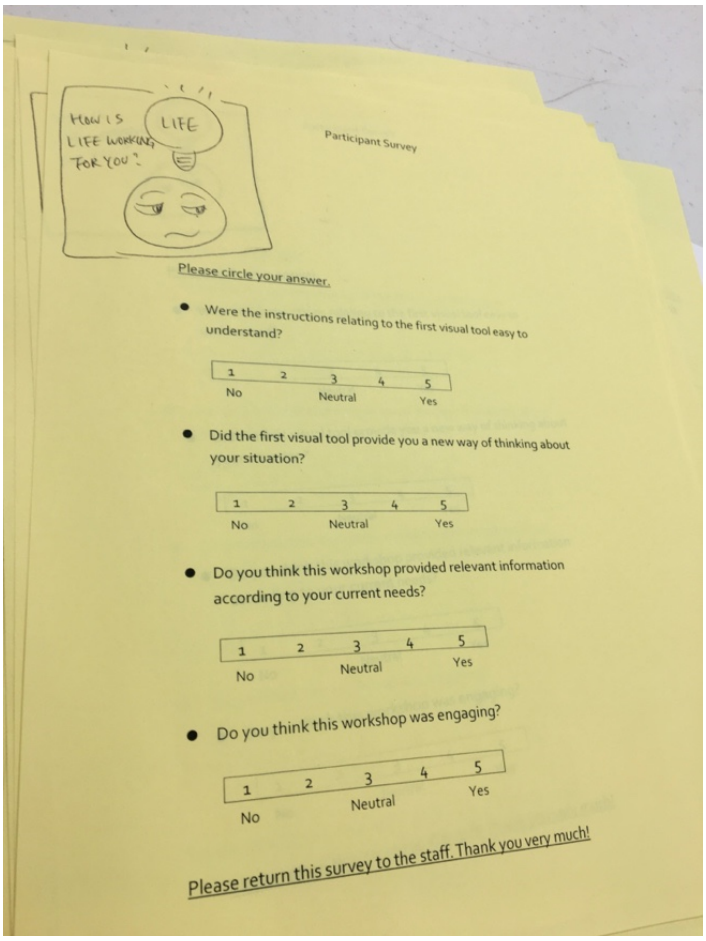
Figure 9:

[56]

The community session hosted at a local ministry

[56] Source: Author.

Figure 10:



[57]

Paper questionnaire highlighted with visual mental model used at each session. The participants were asked to answer by scaling from 0 (No/Disagree) to 5 (Yes/Agree).

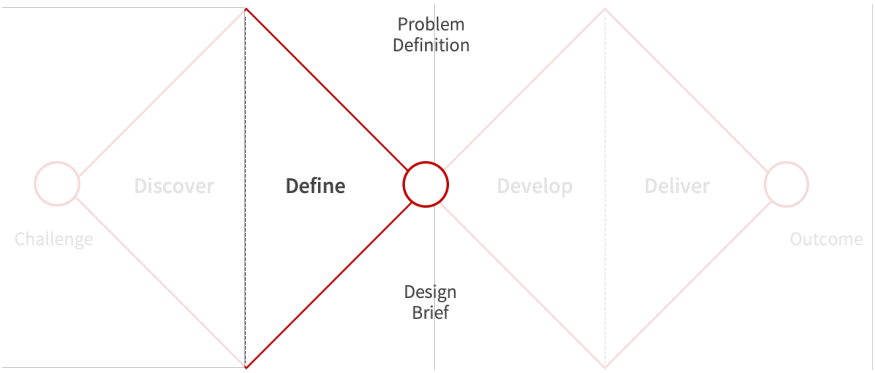
The key records and findings of the questionnaire can be seen in the Appendix A.

The purpose of the **reflective interview** was to find out if the community organizer has different ideas or supplements to the conference progress and visual conference tools after the first conference implementation. The method used was a 90-minute, one-to-one extensive, exploratory interview.

The key records and findings of the reflective interview can be seen in the Appendix A.

[57] Source: Author.

Define Phase



The Define Phase included an affinity diagramming and a synthesis

In the design phase, the design researcher used **affinity diagramming**[58] for preliminary analysis and data collection. The method uses the key points that were written on paper cards, which were classified according to the same type of content and elements. The design researcher had written the content of the initial interview, synthesized it, removed it, and identified several key labels through spatial affinity. See the figure as follows.

Figure 11:

Goal of interaction	Outcomes		Quality			
	Template guidance (visual design)	Trying to know the motivation during the workshop	Frame of thinking	Perspetive Paradigm	Unique, curiocity, different way of engage	Participatory
my works has to affirm: what people already knew confirm: to sense participant's awareness of understanding (validation) inform: provide new information to participants	the challenge of the current tool: people have uncertainty about what was asked by the facilitator when interacting with the visual tool (house of value)	Do you usually have opportunities to know about your participants before workshops? A outside insights from the organization, but she doesn't rely on that too much. She cares about the desires and thoughts much more than the demographic information. She has two groups she are getting in touch with more often. Broad understanding about the target group. Millennial 21 to 32 years old. Women and youth, because she is a woman and was a mother of teenagers. Help the women and youth groups understood that life is demanding.	using visual works, can 2)provide a framework to think about their life	using visual works, can 1) exam their life	Rising people' s interest by showing a picture of empty house first. Participants will have questions and curiosity about what to do with the house. Then she explains by using her own family situation as an example to fill up the house template. In the end, she found out most people fill out the house with "values of live" , instead of "values of life"	using visual works, can 4) they are contributing to the program, they are co-designing the workshop because that reflect to their information attached to the visuals.
What's the definition of engagement? Engagement is the exchange of information and resource regarding their interest and needs	[Tool Development] The current tool: she choose a simplist design to help people to understand a complexed content. Instead of speaking "at" them, she wants to speak to participants for better understanding.		Using "life assignment" to ask them, care about how they wanna live.	Not so many people talk about "life" .		they define in the class through the visual
			When talking about visual tools: Brain and mind. Brain is the computer, mind os the program. How to store and understand the information. Visuals helps anchor the information in the brain.	...her visual helps people to know the reality of their life through those three (affirm, confirm, inform)	What's the challenges of engagement? The roadblock of the session is understanding what students want to learn.	My visuals help them to complete based on the lessons
				Using visual interaction is a materials, according to response, further establish place.		Diagrams is completed with information, visual tools is incomplete and for participants to complete
						Components of engagement: Individual, group, participation
						using visual works, can 3) personal documentation. Why personal documentation is important? Unlikely a general information sheet provided by someone else, it's a fact about who they are. It's more relative. Give value of personal importance; its legal aspect, validated by individual;

[59]

[58] Martin & Hanington, *supra* note 51, at 12.
[59] Source: Author's design

Synthesis

The purpose of **synthesis** was to make classified labels according to the classification narratives. The method used was to convert the labeling into classifications to summarize the needs of the community organizer for the visual mental model. The output could be summarized in the three major needs classified as the design brief as follows:

Thought positioning: to be able to define the hierarchy of the content, and highlight the centerpiece for the content.

- How might we level up "life is working for you (the theme of the community session)" to the paradigm/mindset of practice of life?
- Instruction: How to guide people to go through the journey of thinking (and visualizing) whether "life is working for you."
- The visual should be the backbone of the content.
- The more people identify with and connect with the visuals, the more they dialogue.

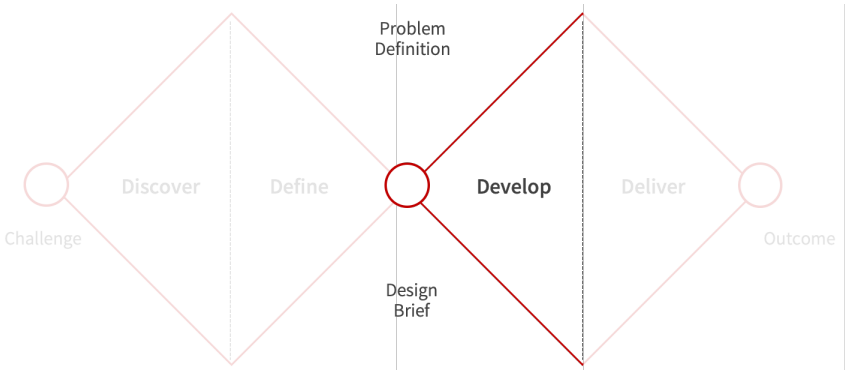
Meaningful visuals: to use relevant visual components to represent the connotation or metaphor properly for viewers to understand and relate.

- Consider energy, illuminating, enhancement, and clarity to the visual representation.
- A symbol for way of thinking. Character of thinking, don't want it to be "fleeting" thinking.
- The more people identify and connect with the visuals, the more they dialogue.

Facilitation functioning: the selection and arrangement of the visual components represent the context or mechanism of the information; therefore the facilitator is able to leverage the visual to show the relationship (or connection) among each session of content.

- To incorporate with all workshop content.
- The facilitator would like the primary visual tool to keep on evolving by incorporating with the main diagram of all workshop content.
  - Creates thinking about how to adopt the primary visual tool to become part of the whole visual system.
- Visual should be the backbone of the content.
- The more people identify with and connect with the visuals, the more they dialogue

Develop Phase



The purpose of the **co-design** process was to enable the community organizer to learn thinking strategies in the learning process which consists of design cooperation. This also helped improve ability through multiple exercises and feedback. The method used was designed and verified along with the community organizer and was considered a kind of learning path for the community organizer. The design researcher first designed the co-design as a capacity building process to collaborate with the community organizer. It was also hoped that the community organizer goes through a Double Diamond (Double-D) process.

The teaching structure of co-designing as capacity building process was based on the Double-D methodology as follows:

Figure 12:

Goal	**Co-Design as a Capacity Building Process**			
Module	Module 01: Parallel Prototyping		Module 02: Iterative Evaluation	
The Double-D Phase	Discover	Define	Develop	Deliver
The Innovation Process	Generating	Conceptualizing	Implementation	Reflection
Design Method/ Research Activities	Idea collecting	Voting	Prototype Testing	Reflective Interview
	Forcing Connection	Integrating	Observation	Survey

[60]

[60] Source: Author

There are two main modules in the co-design process. Each module represents each diamond of the Double-D model as follows:

The first module ("Module 01"), **Parallel Prototyping**,[61] arranged a three-hour brainstorming session between the design researcher and the community organizer before Community Session 2 starts. The Module 01 (Parallel Prototyping) was also divided into two D phases: the Discover phase and the Define phase.

The Discover phase of Module 01 includes idea collecting and forcing connection[62] between these two main design research activities.

At the start of Module 01, the design researcher briefed the synthesis results, the defined design needs for the visual tools, from the Discover phase of this research. The synthesis results were the backbone of the co-design workshop agenda. The design researcher also introduced the working principles as following figure for the goal-reaching and efficiency of working together in the co-design workshop.

Figure 13:

Working Principles during the Co-Design Session
• Diverge & Converge[63]：Introducing the thinking paradigm at each thinking process • Quantity than quality[64]：Let go of quality, paying more attention to produce more numbers of ideas in the limited time • Differ your judgements[65]：differ your critics, making is more important than the quality at this moment

[66]

To help all the stakeholders in the workshop to perform the core tasks at each development phase. They are also critical rules during any brainstorming practices.[67]

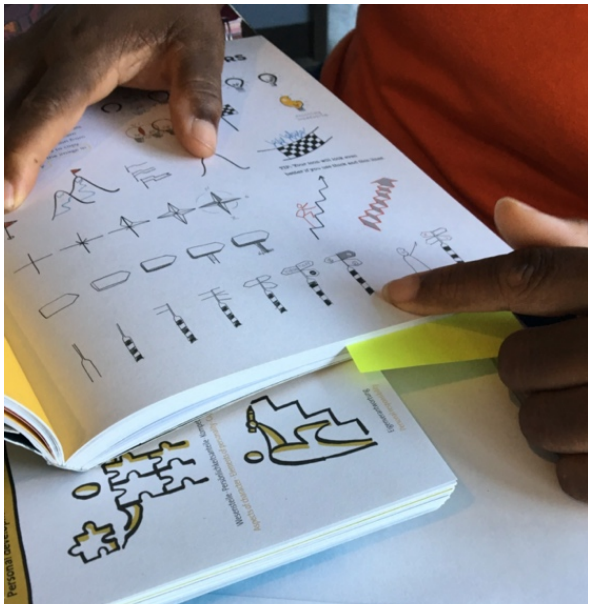
In the process, the community organizer wa s inevitably unable to let go of the concepts they already have. It took a little time to introduce the community organizer to the creative activities at an early stage, instead of continually immersing in persuading the design researcher to introduce her original ideas. It took a while to convince the community organizer to trust the

[61] Martin & Hanington, *supra* note 51, at 122.
[62] Min Basadur B, *Simplex: A Flight to Creativity*. Creative Education Foundation 147 (1998).
[63] *Id*. at 197.
[64] *Id*. at 145.
[65] *Id*. at 199.
[66] Source: Author.
[67] Basadur, *supra* note 62.

process, to let go of her default way of thinking. Psychological design takes time to let the community organizer understand the goals of this design stage.

Because the community organizer does not have any drawing foundation and training in the past. we took out four reference books of visual elements gallery directory as a reference (see Figure 14) during the **idea collecting** phase. At this stage, the community organizer picked up whatever visual elements she found interesting and intriguing, and what might be helpful to be applied in the future development. The community organizer didn't know how to choose the visual elements at the beginning, because she didn't know how it would be used. At this time, the design researcher must help guide the community organizer to trust the process, not to be constrained by existing ideas or expectations. When the community organizer said, "I really just follow the process," the design researcher could see that the community organizer was more willing to let go her doubt and be focus on the given task.

Figure 14:



[68]

Community organizer was picking up favored imagery components among the icon directories for the following design of visual mental model

[68] Source: Author.

Figure 15:

[69]

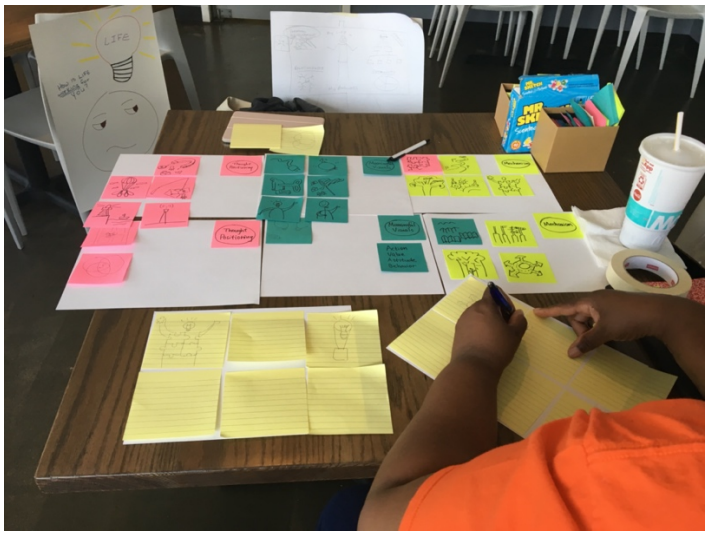
The collections of the first phase of icon selection from the community organizer and the design researcher

Here one really can see how to successfully guide participants to believe in the process and put away with guesswork. We design researchers can go a step further and explore what non-designer participants need to do. Because these explorations increase research time.

In **forcing connections**,[70] the community organizer was advised to combine selected visual elements for drawing. The design researcher demonstrated several combinations of elements before the user began to practice how to operate. See Figure 16 and Figure 17.

[69] Source: Author.
[70] Basadur,, *supra* note 62.

Figure 16:



[71]

Forcing Connection: The action of integrating 2 or 3 selected visual components into one image.

Figure 17:

[72]

The bottom 12 yellow sticky notes are results of the combination of the selected visual components above.

[71] Source: Author.
[72] Source: Author.

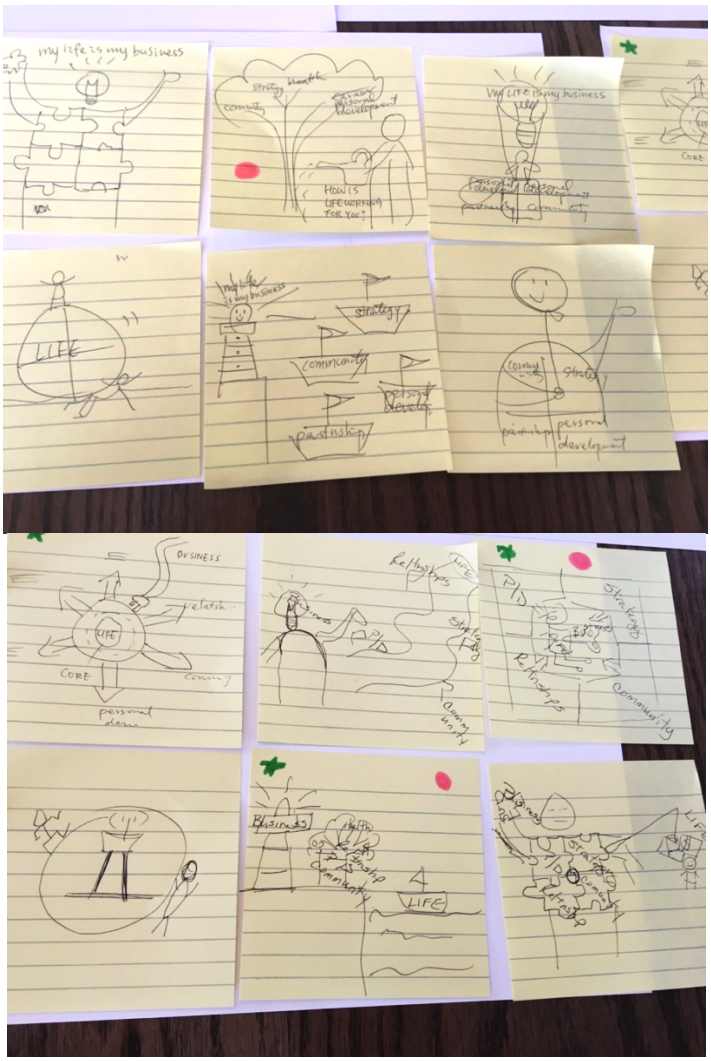
The Define Process of Module 01 includes voting and integrating.

Voting: in the design of the last 12 Forcing connections, each person can have three votes, choosing the three they think are most likely to develop into the final solution, and explain to each other why they were selected (see Figure 18). **Integrating**: the designs that won the vote were drawn by the design researcher and discussed with the community organizer to select the visual elements that may be suitable to develop three integrated prototypes and further testd them in the upcoming community sessions for evaluation (see Figure 19). By this point, the Module 01 (Parallel Prototyping) was done.

A user experience designer pointed out that: "A prototype is a model built to test a concept with end users in order to learn from. Prototyping helps understand real, working conditions rather than a theoretical conditions."[73] Therefore the following prototype testing would reveal more practical feedback to the community organizer in order to build an appropriate visual mental model for the community session.

[73] Matthew Weprin, *UXDICT.IO: Complete User Experience & Design Thinking Resource,* at https://uxdict.io/design-thinking-glossary-g-p-e8eb4c0e960d.

Figure 18:

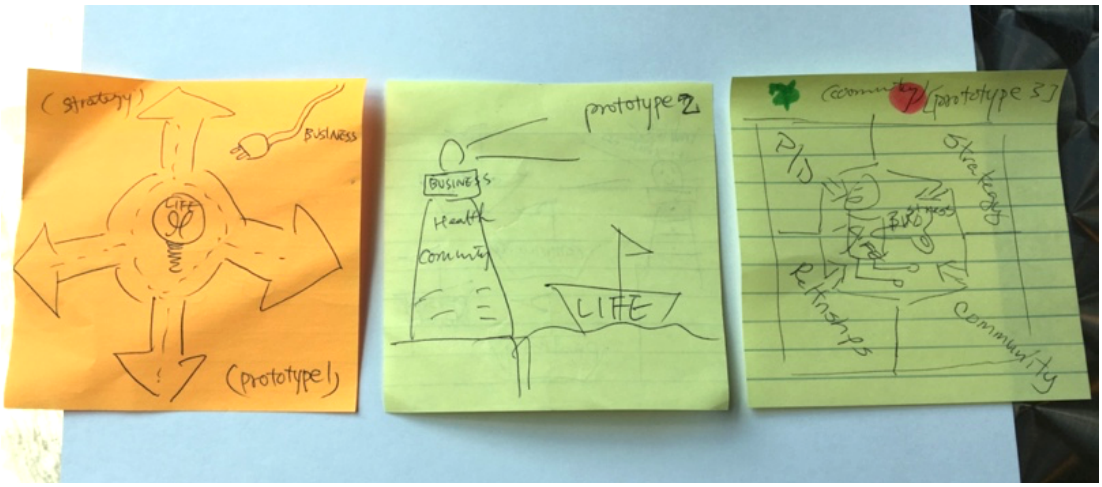


[74]

Using dots to vote the top 3 images among 12.

[74] Source: Author.

Figure 19:



[75]

Three integrated prototypes of visual mental model

The key points and further refined visual presentation of each prototype can be seen in Appendix C.

The second module ("Module 02") , **Iterative Evaluation**,[76] will be arranged in the middle and after class of community sessions 2, 3, and 4.

During the Community Session 2, 3, and 4: The community organizer conducted **prototype testing** by implementing three different prototypes at each community session delivery. And at the same time, the design researcher performed **observation**, and the observation content was structured by AEIOU (explained above) framework.

[75] Source: Author.

[76] Thomas Hewett, *The Role of Iterative Evaluation in Designing Systems for Usability*, HCI '86 Conference on People and Computers: Designing for Usability, York, England, Sept. 22-26, 1986. (1986).

Figure 20:

[77]

Prototype testing by adopting visual mental tools in the community session delivery.

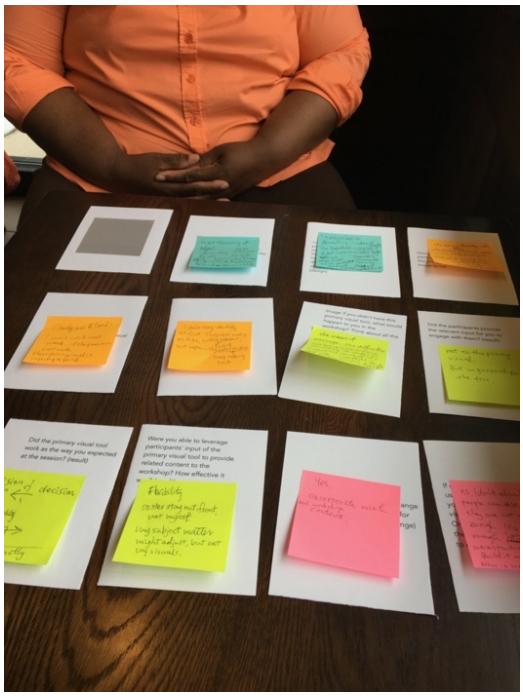
These three community sessions were slightly different sub-topics under one main theme. However, the prototypes created during the co-design phase were targeting to meet the main theme, so all three prototypes should be able to meet the facilitation/engage purpose through all three community sessions.

Post Community Session 2, 3, and 4: After each session ends, the design researcher conducted a survey with community session participants either by verbal inquiry or self-complete paper questionnaire. Immediately after leaving each Session, the design researcher conducted a 90-minute reflective interview with the community organizer.

After the community session and survey, the community organizer and the design researcher went to another quiet site. Prepared questions were asked by the design researchers to guide the community organizer to answer and reflect on the session process and interactive feedback with the prototyped visual mental tool (see Figure 21).

[77] Source: Author.

Figure 21:



[78]

Reflective Interview: questions and notes on each card.

The foundation of reflective interview to the community organizer was conducted as follows:[79]

Participant's experience

- How would you rate your participant's acceptance level about this design of primary visual tool in the workshop according to your observation?
- Do you agree that this design of primary visual tools provide more engaging experience to the participants than your first workshop on 7/5?

Tool design

- How successful did this design of primary visual tool present the meaning of your workshop content?
- How successful did this design of primary visual tool fit your curriculum design?
- How successful did this design of primary visual tool achieve the learning goal at the workshop today?

[78] Source: Author.
[79] See key points and highlights of interviews in the Appendix A.

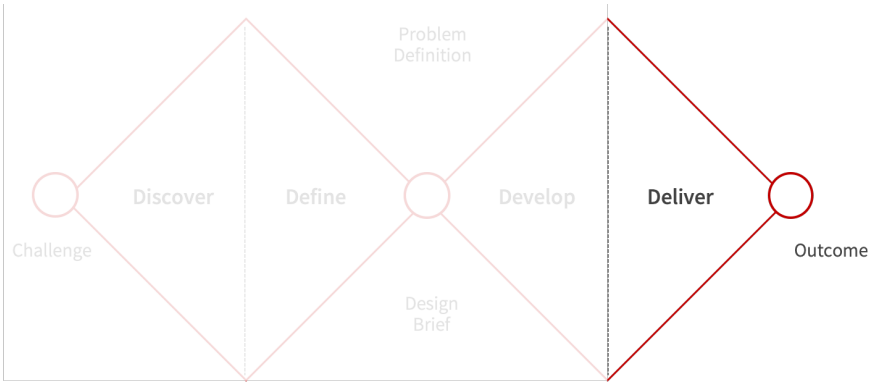
Facilitator's experience

- How successful would you rate this visual tool regarding its affectivity to help you to deliver your workshop content today?
- Do you agree this design visual tool provided you more approaches of engagement to your participants?
- Do you agree this design of visual tools provided you more ways to understand your participants?

In each community session, the community organizer tested different prototypes of visual mental models to test whether the community organizer believes that the content of each prototype met her needs: frames (thought positioning), effective pictures (meaningful visuals), and guides (facilitation functioning).

But by the end of the test, we also found that the psychological settings of the tester (the community organizer) and the test product (the three prototypes of visual mental models) also had a great impact on the community organizer's ability to use the prototyped visual mental tool in the community session.

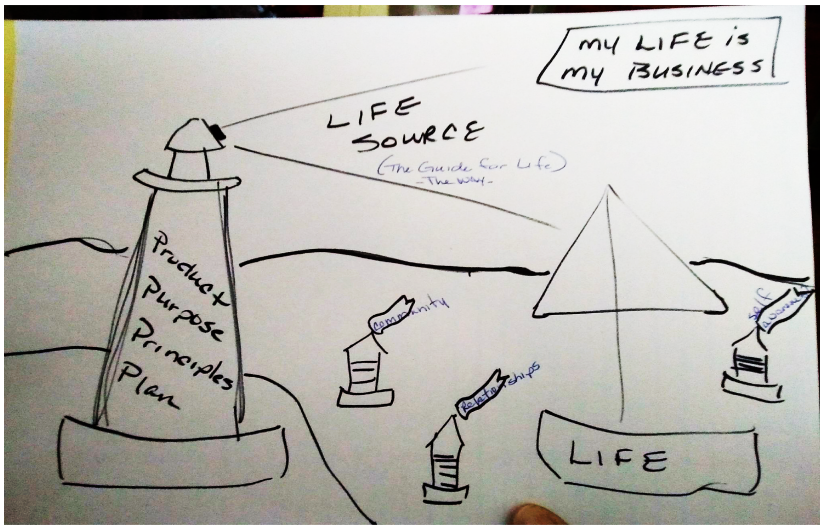
Develop Phase



After going through the Module 01: parallel prototyping and the Module 02: iterative evaluation practices, the community organizer re-designed another visual mental model by herself that verified her learning results from the co-design process. With evidence-based design[80] approach, the community organizer was able to filter her experience and expectation, and to crystalize the core visual elements and consolidation that meet her specific needs for the community sessions. The picture below is the output of the community organizer by herself without any guidance.

[80] Martin & Hanington, *supra* note 51, at 76.

Figure 22:



[81]

Re-designed visual mental model by the community organizer herself after going through the full co-design process (parallel prototyping and iterative evaluations).

[81] Source: Ms. Clare Pope

Conclusion and Discussion:

Conclusion

The community organizer's learning from this whole research:

> "I was able to blend my visuals with information to enhance participant engagement (so they can engage with me, the facilitator, or to the content subject)."
>
> "My session is not giving them something they didn't know, it is helping them to expand beyond what they already have."

Answers to the main research and sub-research questions

Main Question:

How might co-design enable a non-designer to develop visual thinking tools?

Main Answer:

The value of the research is as follows:

- The co-design process from a non-designer's "default thinking" to "have an alternative approach" to create new visual thinking tools.
- Through the design thinking approach, the research process was able to identify the actual needs of new visual tools and actually built the tools.
- The ability to clarify and identify what the function of the application of visual tool are in the curriculum (iteration process between whether it is curriculum based or visual based).

Sub-research Question One:

What are the benefits of visual thinking tools in this case study?

Sub-research Answer One:

*see Justification section above.

Sub-research Question Two:

What are the needs of a community organizer for making a visual thinking tool?

Sub-research Answer Two:

- **Thought positioning**: to be able to define the hierarchy of the content, and highlight the centerpiece for the content.
- **Meaningful visuals**: to use relevant visual components to represent the connotation or metaphor properly for viewers to understand and relate.
- **Facilitation functioning**: the selection and arrangement of the visual components representing the context or mechanism of the information; therefore the facilitator is able to leverage the visuals to show the relationship (or connection) among each session of content.

Sub-research Question Three:

How might we suggest a co-design module for a non-designer to develop visual thinking tools?

Sub-research Answer Three:
*see the Development phase of Design Method section

Sub-research Question Four:
How might co-design process empower a community organizer to develop visual thinking tools to meet the needs of her work?

Sub-research Answer Four:
According to the Head, Heart and Hands Model for Transformative Learning,[82] the community organizer's learning through the co-design process is as follows:

Heart:
This includes gaining belief and changed attitude by 1) thinking outside of the box by learning to use different thinking approaches to create more visuals; 2) expand creative thinking with flexibility; 3) confidence boosting by going through the needs defining, brainstorming, prototype-testing, and re-designing the final visual mental model by the community organizer's own learnings; and 4) more passion in trying different visual tools to support the community organizer's engagement for community works.

Hands:
The community organizer learned to search out other aspects or other avenues of visual elements and tools. The community organizer learned the ability and process to create a variety of visuals to help to enrich the development of visual mental models without losing the relevance of the curriculum.

Head:
The community organizer experienced the whole co-design process, she was able to: 1) rethink about what other messages the community organizer was trying to communicate; and 2) rethink about what visuals bring more to the purpose of engagement. The community organizer was able to expand the function and build the curriculum to increase the engagement with participants. Ms. Pope's feedback of how she sees visual meeting tools for her community session: Before she feels like the people engage with the visual, then to the facilitator. Now she feels like she has more power in affecting how the visual tools will shape participants' engagement with the facilitator.

Discussion
Non-designers' difficulties in the co-design process were remedied by better engagement during the co-design process. Through this research, the design researcher discovered that non-designers can benefit from co-design as a capacity-building process. The question of how to release the pressure and discomfort during the process which they are not familiar with and thoroughly evaluate the non-designer's learning result of capacity building needs further research. In this study case, the design researcher noticed that brainstorming and iterative prototyping are not a common innovation process the community organizer is familiar with.

[82] *See* Julia Singleton, *Head, Heart and Hands Model for Transformative Learning: Place as Context for Sustainability Values*, (March 16th, 2015) http://www.susted.com/wordpress/content/head-heart-and-hands-model-for-transformative-learning-place-as-context-for-changing-sustainability-values_2015_03/.

Scholars Sanders and Westerlund pointed out, "Preparation for the co-designing event(s): Recruiting participants, providing activities to ensure that they are "warmed up" for creative thinking, preparing special props or materials to evoke idea generation, etc."[83] If all these touch points are more carefully crafted beforehand through the whole journey of working with non-designers, that might reduce non-designer's confusion especially during the brainstorming and testing phases of the innovation process.

In the future practices of co-design as capacity-building process, there are some hypothesized approaches raised from this research results:

- Design some warm-up practices that relate to the innovation practices at the beginning of the co-design agenda, that might help to introduce and build the mindset for non-designers about the approach in the following activities.
- Give non-designers an example of how to adapt design thinking in the innovation process, it could be a successful story, etc.
- Develop a co-design toolkit or guidance to better facilitate the non-designer's expectation through the whole process.
- Create visual thinking training tools for community organizing professionals to support their continual expertise enhancement.

The user experience designer Matthew Weprin pointed out that "designers should provide ways for people to engage with each other as well as instruments to communicate, be creative, share insights and envision their own ideas. The co-design activities can support different levels of participation, from situation in which the external figures are involved just in specific moments to situations in which they take part to the entire process, building up the service together with the designers."[84]

Versatile Functions of Visual Tools to be Explored for the Community Works

Further application for visual thinking tools had been discussed several times during the research, the outcome of visual tools is not only for the meeting engagement, but it is also a practical hands-on tool for using as marketing materials, takeaway materials for workshop/meeting, and cross-department communications for whoever was not attending the meeting/workshop. This research suggests that further visual thinking training and visual tool making can be introduced to community organizing professionals to support their groundwork in the communities and neighborhoods which might bring significant impact to attract all stakeholders' attention and involvement.

[83] Elizabeth Sanders & Bo Westerlund, *Experience, exploring and experimenting in and with co-design spaces*, (Nordic Design Research Conference, 2011).

[84] Matthew Weprin, *Design Thinking Glossary: A — F*, UXDICT.IO: Complete User Experience & Design Thinking Resource, at https://uxdict.io/design-thinking-glossary-a-f-4838feec2f82.

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Glossary:

*Affinity diagram: "*A tool used to organize a large number of ideas, sorting them into groups based on their natural relationships, for review and analysis."[85]

*Brainstorming: "*Brainstorming is a group or individual creativity approach where design solutions are generated by members of the team in a collaborative session."[86]

*Convergence: "*Process of Narrowing down ideas through synthesis."[87]

Design Thinking: "Design thinking is generally defined as an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign." [88]

*Divergence: "*Expansive idea generation and exploration of ideas."[89]

*Evidence-based design: "*Evidence-based design is the approach of basing design decisions on credible research to achieve the best possible outcomes. Evidence-based design emphasizes the importance of basing decisions on the best possible data for the best possible outcomes. The design is not based just on the designer's opinion."[90]

*How might we? (HMW): "*A positive, actionable question that frames the challenge but does not point to any one solution."[91]

Insights: "Ideas or notions expressed as succinct statements that interpret patterns in your research and can provide new understanding or perspective on the issue."[92]

Iterate: " The act of repeating a process with the aim of approaching a desired goal, target or result. Each repetition of the process is also called an iteration. In design thinking it refers to the cycles of prototyping, testing and revision."[93]

Prototype: "A simulation or sample version of a final product, which is used for testing prior to launch." The goal of a prototype is to test products (and product ideas) before spending lots of time and money into creating the final version of the sellable product."[94]

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[85] Matthew Weprin, *Design Thinking Glossary: A — F*, UXDICT.IO: Complete User Experience & Design Thinking Resource, https://uxdict.io/design-thinking-glossary-a-f-4838feec2f82.
[86] *Id*.
[87] *Id*.
[88] Rim Razzouk &Valerie Shute, What Is Design Thinking and Why Is It Important? Review of Educational Research September 2012, Vol. 82, No. 3, pp. 330–348.
[89] Weprin, *supra* note 85.
[90] *Id*.
[91] *Id*.
[92] *Id*.
[93] *Id*.
[94] *The Power of Prototype in Design Thinking*, CustomerLabs, at https://www.customerlabs.co/blog/the-power-of-

Questionnaires: "A research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents."[95]

*Stakeholders: "*A person, group, or organization directly or indirectly involved or affected by a product. service or experience."[96]

prototype-in-design-thinking/

95 Matthew Weprin, *Design Thinking Glossary: Q — Z,* UXDICT.IO: Complete User Experience & Design Thinking Resource https://uxdict.io/design-thinking-glossary-q-z-bd41435770db.

[96] *Id*.

Appendix A:

Below are summaries of each interview record.

01 June 2018 - Initial Interview Outcome

When talking about visual tools: Brain and mind. The brain is the computer, the mind is the program. How does one store and understand the information? Visuals help anchor the information in the brain.

What's the definition of engagement?

- Engagement is the exchange of information and resource regarding their interest and needs.
- Components of engagement: Individual, group, participation
- What are the challenges of engagement? The roadblock of the session is understanding what students want to learn.
- Not so many people talk about "life".
- Using visual interaction is a tool, according to responses, it further establishes place.

Do you usually have opportunities to know about your participants before workshops?

- There are outside insights from the organization, but Ms. Pope does not rely on that too much. Ms. Pope cares about the desires and thoughts much more than the demographic information. Ms. Pope has two groups she is getting in touch with more often. Broad understanding about the target group. Millennials 21 to 32 years old. Women and youth, because Ms. Pope is a woman and was a mother of teenagers. Help women and youth groups understood that life is demanding.

Using "life assignment" to ask participants, care about how they want to live.

- Visuals help participants to complete tasks based on the lessons
- They define in the class through the visuals

Using visual works, can 1) exam their life; 2) provide a framework to think about their life; 3) personal documentation; 4) they are contributing to the program, they are co-designing the workshop because that reflect to their information attached to the visuals.

Why is personal documentation important?

- Unlikely a general information sheet provided by someone else, it's a fact about who they are. It's more relative. It gives value of personal importance; its legal aspect, validated by individual.

Tool Development

The current tool: Ms. Pope chose a simplest design to help people to understand a complexed content. Instead of speaking "at" them, she wants to speak to participants for better understanding.

Ms. Pope's work has to

- affirm: what people already know
- confirm: to sense participant's awareness of understanding (validation)
- inform: provide new information to participants

Ms. Pope's visual helps people to know the reality of their life through those three (affirm, confirm, inform)

Challenges of the current tool:

- People have uncertainty about what was asked by the facilitator when interacting with the visual tool (house of value)
- Diagrams are completed with information; visual tools are incomplete and need participants to complete

Now show an unfinished house to invite everyone's curiosity and questions, and use your own home as an example to fill a house as a demonstration. Finally, the value of finding home is in the "life" field, not the "live" field.

Hope to participate in this research to explore the possibilities that visual tools can bring.

05 July 2018 - Interview Outcome after Workshop 1

Tool Design
What was the goal of the primary visual tool? Did the primary visual tool achieve the goal? How so?
To get the meaning of subject which is life is working for you.

There was a lot of information in the first workshop.

For the first workshop
- 45% achieved
- 55% for the other 3 workshops

The visual itself
- 25% of curiosity to bring them back
- 75% left to contemplate and utilize in life

Tool Design
Could you share your thought process when you design the primary visual tool? What was the thought behind it? What happened exactly and differently in the workshop comparing your expectation?
- Emojis are in! This is something that is relevant.
- The lightbulb is energy. It means illuminating, enhancement, and clarity. I didn't want it to be a "thought". Because a thought can be fleeting. The light bulb stands out, I want people to look at it twice. Lightbulb is supposed to work.

Expected Results for Speaker Needs
Did the primary visual tool work as the way you expected at the session?
- Not exactly.
- Ms. Pope wasn't expecting that nobody would give input when she showed the primary visual tool and asked about "how life is working for them."
- Until Ms. Pope constantly referred back to the primary visual, people started to see how facilitator built the relationship between the primary visual tool and the other content.
- The primary visual tool should be the mindset, instead of the goal.

Expected Results for Speaker Needs
Did the participants provide the relevant input for you to engage with them?
- Not to the primary visual tool. But more to other questions asked through the class.

Expected Results for Speaker Needs

Were you able to leverage participants' input of the primary visual tool to provide related content to the workshop? How effective was it?
- Flexibility was a key when Ms. Pope facilitated. Ms. Pope would like the visuals at the front of the wall

instead by herself. Because Ms. Pope didn't want herself to become the centerpiece. The content on the visuals should be the center. However the subject matter might adjust, but not her visuals.

Participant Experience
What were the participant's response to the primary visual tool you noticed at the workshop?

- Ms. Pope won't know until next week. Ms. Pope will ask them to share their practice of using what they learned in the last week. Ms. Pope will be listening carefully if they mention about "the picture" from the last workshop. To understand if the primary visual tool is impactful to their life.
- Candy was the tool.

Participant Experience
How positive do you think the participants felt engaged with the primary visual tool?

- In the workshop, the more they identified with the primary visual tool, the more they dialogued. They were still practicing connecting the content, once the info made more sense, they engaged more.

Participant Experience
Do you think your participants like the primary visual tool? What are your reasons to support that?

- Ms. Pope doesn't think the participants identified the primary visual tool at first, because there was nothing to like, nothing initial is relevant. The relationship was not explained until Ms. Pope kept referring the content back to the primary visual tool.
- One participant took the photo of the visuals in the end.

Expected Results for Speaker Needs
Image if you didn't have this primary visual tool, what would happen to you in the workshop? Think about all the strength, weakness, opportunity, and thereat.

- The primary visual tool is a means of message. The difficulty will be not being able to have something to refer to to support the clarity of the message. The primary visual tool is the centerpiece for 4 workshops.
- Lightbulb is thinking. Lightbulb is info, relevant to life.

Tool Evolution
What would you like to change to the primary visual tool for your next workshop?

- Yes, my tool would be changed to add another segment of each workshop content.

Tool Evolution
If other facilitator would like to use your primary visual tool, do you think the design of primary visual tool itself is transferable? Or what else you will do with the design before you pass it to another facilitator?

- No, Ms. Pope doesn't think other people can use it. Because they are not structured enough. It's not transferrable enough. Ms. Pope would like to make the curriculum more structured. Build it up. Speak for itself. Now it's more of improvisation.

12 July 2018 - Interview Outcome after Workshop 2

- Ms. Pope was looking for the smily face when she wanted to refer back to the mindset "My life is my business"
- Ms. Pope created another chart table to invite the everyone to come up and examine their last week. And it probably made people think that's the dominating visual in the workshop today since Ms. Pope didn't refer to any other visual at all.
- The prototype 1 was not mentioned at all

- Ms. Pope looked at the prototype 1, Ms. Pope didn't know what to do with it. Ms. Pope thought that was just the result of "trusting the process in the co-design session". Ms. Pope didn't design her curriculum around the prototype 1, because she wasn't aware of that. After the co-design session, Ms. Pope just kept on going off her curriculum design, and what I brought the prototype 1 to the session, Ms. Pope said she didn't know what to do with it. What can do different next time is: after our co-design session, we should have another time to come back to talk about the strategy of how to use these prototypes. Even further discussion about the advantage or features of every prototype, and strengthen our next step of action.
- Ms. Pope considered the prototype 1 is more about "mechanism"; prototype 2 is "meaningful visuals"; l prototype 3 is more about the mind set
- We re-addressed with the prototype 2 and prototype 3 to confirm the elements of visual and the usage of prototypes. Ms. Pope agreed that she doesn't really want to have that much mechanism in the primary visuals. Mechanism became a fake priority when we were working during the co-design.
- Ms. Pope thinks the prototype 2 is meaningful, we only kept the man with the key at the back from the prototype 3, and make it became walking on the path; the prototype 3 has the emphasis of thought positioning.

Ms. Pope reflected that really needs to work on the process of visual tool development, instead of too much focus on what I want for my research. The whole research was a learning process for her. I agree my client should focus on what she needs eventually. Follow others, or stand her ground. That would be easier for me to work with Ms. Pope too.

Ms. Pope asked about if my process can be transferred to other future client too. Ms. Pope made me think what the value of my research is. "Creating a process of helping other facilitator to develop their visual tools."

19 July 2018 - Interview Outcome after Workshop 3

Participant's experience

- How would you rate your **participant's acceptance level** about this design of primary visual tool in the workshop according to your observation?

1	2	3	4	5
Low		Neutral		High

Note: She noticed the participants are more into the information of strategy part. (Strategy was the sub-topic of the workshop that day)

- Do you agree this design of primary visual tool **provide more engaging experience to the participants than your first workshop on 7/5**?

1	2	3	4	5
No		Neutral		Yes

Note: It reinforced the content.

Tool design

- How successful did this design of primary visual tool **present the meaning of your workshop content**?

1	2	3	4	5

0% 50% 100%

Note: It reinforced the content.

- How successful did this design of primary visual tool **fit your curriculum design**?

1	2	3	4	5

0% 50% 100%

Note: It reinforced the content.

- How successful did this design of primary visual tool **achieve the learning goal at the workshop today**?

1	2	3	4	5

0% 50% 100%

Note: By seeing them took note. They didn't have to do that. That means they must got something.

Facilitator's experience

- How successful would you rate this visual tool regarding to its **affectivity to help you to deliver your workshop content today?**

1	2	3	4	5

0% 50% 100%

- Do you agree this design visual tool **provided you more approaches of engagement to your participants?**

1	2	3	4	5

No Neutral Yes

Note: Was reflect the content – include in the lesson

- Do you agree this design of visual tool **provided you more ways to understand your participants**?

1	2	3	4	5

No Neutral Yes

26 July 2018 - Interview Outcome after Workshop 4

Adopting 3 prototypes was tiring for Ms. Pope as she had to reshape her delivery around the new prototypes each week.

- Ms. Pope felt lost, the purpose of outcome became muddy to the partnered facilitator
- Ms. Pope feelt lost.

Understanding the goals

- We talked a lot about the research project
- Including the change and evolvement of the research scope

Because the commitment and Ms. Pope's ideas about the curriculum structure, we changed from evaluating the participants to facilitator: How does the facilitator like the visual tool to help engage/understand her participants/participant's interest?

- I provided the problem-solving process with many visual applications
- Used the example of <The Theory of U> to explain the primary visual tool and the details

Participation

- Seeing role as part of community, help to sign in and explain the session to others
- People talked more
- People are more willing to sit closer when got invited at the first place

Participant Feedback

- Ms. Pope introduced herself to Chef Tyrry in a nonprofit event at his facility and volunteered herself to deliver a session related to family and life. Chef Tyrry went ahead to assign her Thursdays instead of one, and Ms. Pope didn't want to turn Chef Tyrry down.
- Tisha liked prototype 3, Quinton liked the prototype 2 because the motion of the boat presented life.

The Value of the Research

- Co-creation process from "the default thinking" to "have an alternative approach" to create a new visual tool
- Identified the actual needs in new visual tool
- What's the function of the application of visual tool in the curriculum (iteration process between whether it's curriculum based or visual based)?

Ms. Pope's Learnings from this Research

- Blend with my visual with information so that enhances participant engagement (so they can engage me, facilitator, or to the content subject)
- Ms. Pope's learning through the co-design process:
    1. think outside of the box
    2. expand Ms. Pope's creativity
    3. learned to search out other aspect or other avenues of visual tools
    4. the ability to create variety of visuals helped to challenge the development (the relevancy of curriculum)
    5. what other message was Ms. Pope trying to do and to adjust.
    6. The visuals bring more purpose and engagement
    7. expand the function and building the curriculum to increase the engagement with participants
- Session are not giving them something they didn't know, it is helping them to expand beyond what they already have

The prototype 2 with the boat: Ms. Pope felt like she was more instantly willing to build with this visual prototype more because her existing knowledge of the previous shore-to-shore. Ms. Pope actually likes prototype 3, with path more but she felt she had to work to try to blend it.

Appendix B

The highlights of observations at each community session.

05 July 2018 - Observation of Workshop 1

13 people total attended

Ms. Pope wasn't expecting that nobody will have input when she asked "how life is working for you?" at the beginning.

Quotes

- Ms. Pope: "how to make it (life) work for you?" "cause you don't want to be worked by life!"
- Ms. Pope: "strive to be better, even people around me are not that encouraging"
- Ms. Pope: "this is your big picture!"

Style

- Used storytelling skills to illustrate examples of Ms. Pope's family and friends
- Icebreaking with questions and providing candies as rewards
- Constantly referring back to the primary image
- Retention
- Slow pace/casual/no stress at all

Finally, used example of time / energy / attention to ask everyone where these three resources are used today.

Engagement

- 2 females made eye contact and answered, 2 males were remotely engaged, 4 males slept but finally woke up engaged, 2 males used mobile phones, and 3 joined
- One of the participants said that everything got together in the end!

12 July 2018 - Observation of Workshop 2

Content

Ms. Pope was focus on teaching the content of "Purpose"

- Ms. Pope didn't use the prototype 1 at all
- There was a part when Ms. Pope invited participants to come up to assess their life last week with the chart table.
- That took up quite some time.

Participants

- There were 4 adults at the beginning, only 2 were engaging. The meeting ended up with another 2-3 adults attending.

Ms. Pope had one participant's input to teach us about the existing content of "purpose". Trying to understand participant's understanding.

Ms. Pope put up all the visuals on the wall

1. asked what is personal development?
2. invite everyone to examine their last week
3. asking everyone questions about what's the purpose of human beings?
4. personal experience sharing about living purpose
5. what's our functions as human beings?
6. dominion; authority; piece of place
7. let the participants teach us
8. knowing your uniqueness, no copy

Overall Observations

- There were less participants because it wasn't rainy like last Thursday. The weather is better, people tend to be outside and moving.
- Most engaged participants are the staff of the organization there. But since they are on duty, they might leave during the session.
- There were no repeated participants from the last week. Only one who attended twice and slept during the most sessions.
- People come and go. No one actually sat through the whole session this time. One participant was there almost the whole time.
- People tend to sit far and feel more engaged at the end.
- No stress environment.
- Ms. Pope didn't allocate time for sharing, but just the content she planned to deliver. So we went over time this time, left another big part of content (strategy)
- People are friendly and easy to talk to
- One participant mentioned the drawing is kind of ugly when asked him about the visuals on the wall.
- One participant was never in the class but greets us when we arrived

19 July 2018 - Observation of Workshop 3

Overall Observations

- Recap what Ms. Pope taught last weeks through the visuals on the wall (she asked questions and showed pictures)
- "What can I do? (asked to write down 3 things on the notecard)" reflect to life boat in the visual tool. Ms. Pope also gave an example of herself (reading books).
- Handwriting on the poster to create the strategy (Ms. Pope intentionally kept the primary visual tool and sub-topic content in different poster, she didn't want to separate the visuals. Kept the primary visual tool as the overarching piece of the whole curriculum)
- Two people she engaged were to get a job
- "Being human" was reminded several times. Also "being human" refer back to the chart of "my life is my business"
- Kept the "being human" universal, instead of personal or identified with the subject. Not about "you", not about "me". Less related to anybody. Things one is doing , one should decide to do is for being "human"! "building life".
- Adding "vision", "mission", "goal", "do" etc. label in the primary visual tool because when life ship in the ocean, you will run into these topics in your life
- Using participant's input to fill up the chart
- Take Ms. Pope's family stories as examples for storytelling
- Respect the content that participant wanted to put in the chart (Job, Home, Family, Love)
- One participant put on her glasses on wrote on the notecard to take a note and taking pic of the posters

Appendix C

The Highlights of the Co-design Session

09 July 2018 - Record of the Co-designing Session

11:30-14:30 (3 hours)

- Agenda explanation
- Ground rules
    - trusting the process
    - working with non-designers
    - they have their default process of thinking
    - the thought behind it to help me to get what I want in my research
    - explained the design the process
    - In this research, I am using design thinking process to design a way to help the facilitator
- Insight sharing and reading
- Tool books introduction
- Idea collecting for mindset
    - Relating to the final pictures, how to stay in the stage of divergence
    - Anatomy of the thinking process, building ideas
- The scope for the visual representation
- Idea collecting for meaningful visuals
- Idea collecting mechanism
    - showing the visuals she likes but don't know what to do with it yet
- Voting, and we have three prototypes
- Refining the finals

General Direction

- Ms. Pope wants the whole picture to look like a cover of book, she doesn't want to involve to many descriptive details in it.
- Ms. Pope tried to avoid using human figure in the picture, and avoid using "I, You, We." She thought to make the "life" more neutral, without any person's expectation or perspective.
- The result is more structured, the visuals are saying more than what the original primary visual tool. The original visual tools are more like "displaying" the visuals.
- During the idea collecting, Ms. Pope couldn't decide to collect any ideas because she was stuck on the fact that she didn't know how to incorporate the ideas she might like.
- We didn't particularly put more thought about the order of trying the prototypes for the rest of the 3 workshops, it was more coming from the order of decision of selection and agreement of design.
- In the end, we thought we are more designing for the mechanism.

General Observations

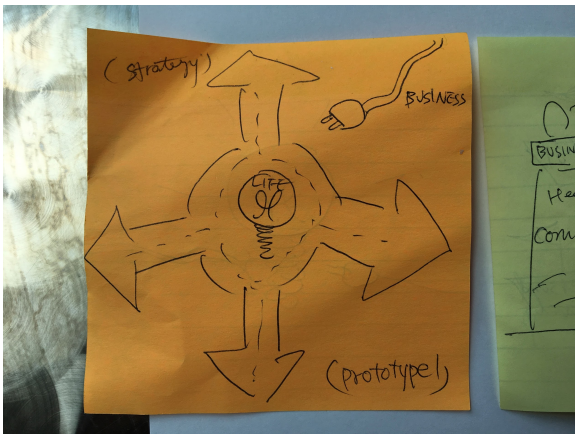
- Ms. Pope wants to draw the mechanism she has at the beginning, she has been building this for 10 years, how does she do it?
- I restated/reminded her about my research scope and goal.

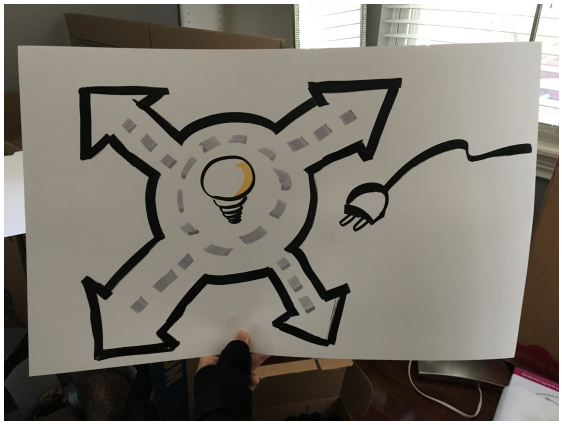
Reflections

- Using keywords for prompting the thinking, definition of the concept
- Working mindset building
- Working scope building
- Design the communication of co-design process and methodology
- Preparing for working with non-designers, challenge the default thinking and building the trust for the process

- Very clear instruction for each phase, what's the way of thinking of each. Sometimes Ms. Pope was staying in the previous step while I was already envisioning the new possibility

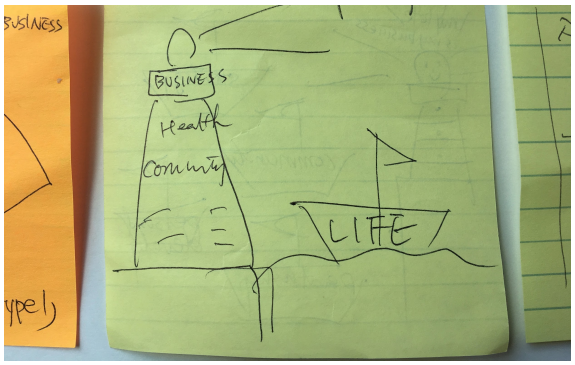
Prototype 1:

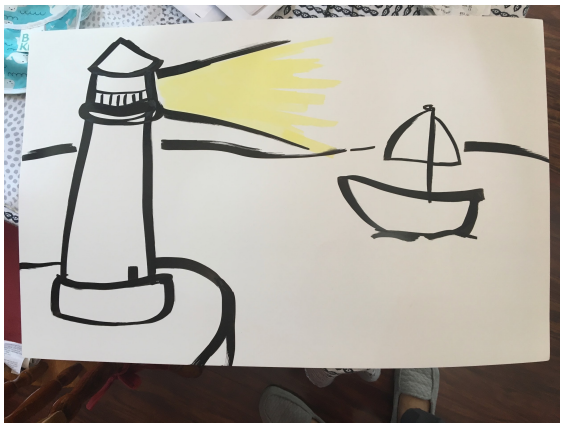




- The lightbulb in the center means life, there are roads around the round-about and doing to four different direction
- The plug is the mindset of "life is my business". Ask participants if their "Life is my business" mindset is pluged in?
- For applying the student-centered approach, Ms. Pope thought students can add more arrows in the round-about if they have any other important areas they want to work on or set as priority.
- I personally appreciate the concept that round-about with different arrows means continuity for working on the 4 areas of life business

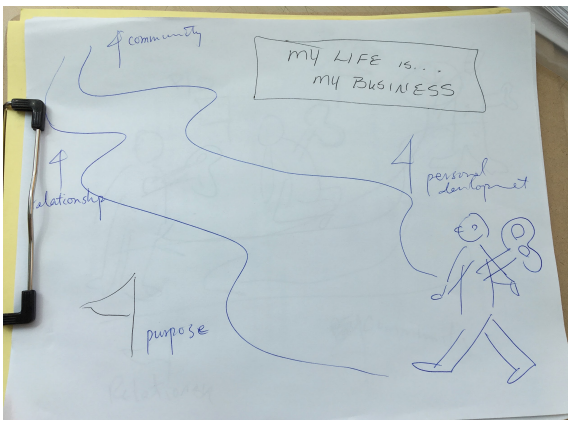
Prototype 2:

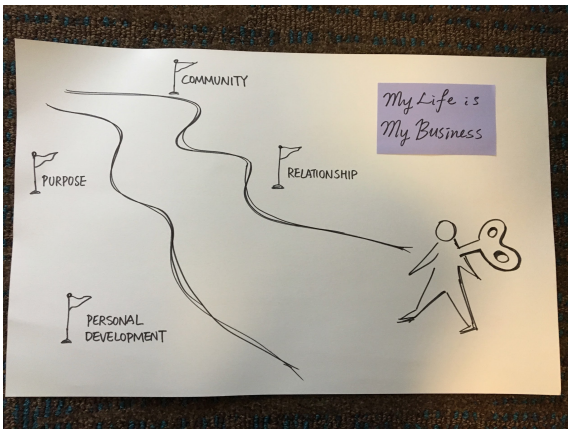




- The lighthouse means light up the concept of "life is my business"
- The lighthouse represents a direction and lasting
- The boat in the ocean means life is in motion
- Instead of structuring the 4 areas of life business into the body of life house, we just scatter the labels around the body of the light house
- this is the design that Ms. Pope and I both have similar design

Prototype 3:





- We like the key to the person in the center, we need to turn on the key
- The key is the mindset of " life is my business"
- The person in the center means "life"
- We use the mindset to turn on our life
- This is the only prototype that has a person figure in the center. We will try that to see the reaction from the participants
- There is a possibility to cut the shape of four different containers and fit in the whole picture