Image by Jyoti

Designing *Socio-Technical Systems* to Illuminate Possibilities for a Vulnerable Population

Doctoral Defense
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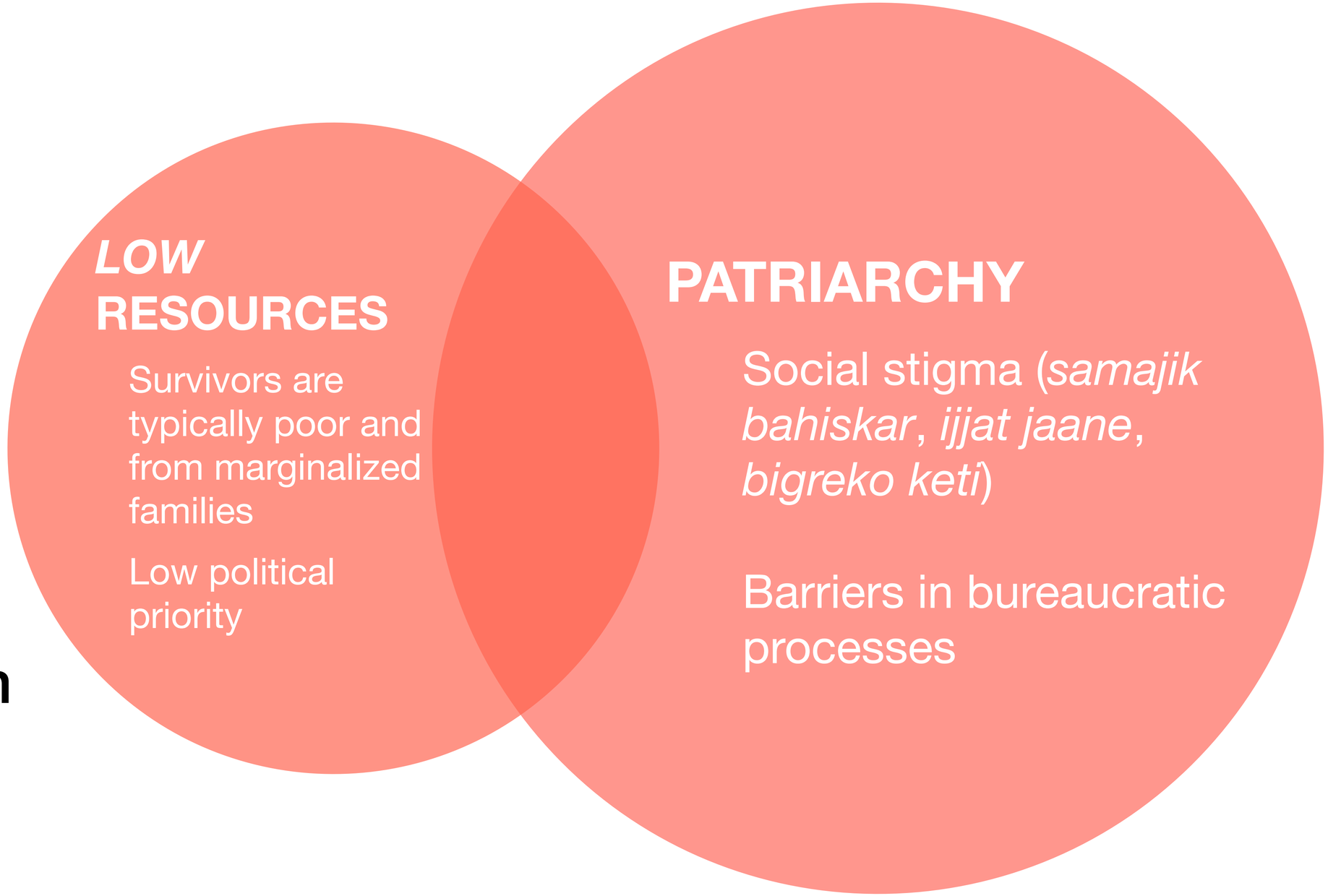
July 15th, 2021

THIRD.lab | I + I = 3

VT | COMPUTER SCIENCE VIRGINIA TECH.

The Problem:

Bleak Prospects for Women Rescued from Sex-Trafficking in Nepal



[1] Kshetri, K. T., Banjade, Y., & Subedi, G. (2018). Trafficking in Persons National Report.
[2] Mahendra, V. S., Bhattarai, P., Dahal, D., & Crowley, S. (2001). Community perceptions of trafficking and its determinants in Nepal
[3] Poudel, M. (2009). Dealing with hidden issues: Social rejection experienced by trafficked women in Nepal
[4] Richardson, D., Poudel, M., & Laurie, N. (2009). Sexual trafficking in Nepal: constructing citizenship and livelihoods. Gender, Place & Culture.

Goal is to achieve *dignified reintegration*

How can *socio-technical interventions* assist a *vulnerable group* move towards their own goals?

In our case: *How can we design socio-technical systems to assist the sister-survivors in moving towards their vision of dignified reintegration?*

Research Questions

1. What are the conditions that influence the situation of survivors in the shelter homes in Nepal?

2. What conditions influence the possibilities for our interventions with the sisters?

3. How should we position ourselves in a sensitive setting to ensure that the voices of the vulnerable are heard?

Outline

Present existing HCI work with vulnerable communities 1

Introduce our assets-based approaches 2

Highlight four key contributions of the work 3

Reflect on the designing socio-technical systems with vulnerable communities 4

Existing HCI work

Working with vulnerable population, moving towards assets-based approach

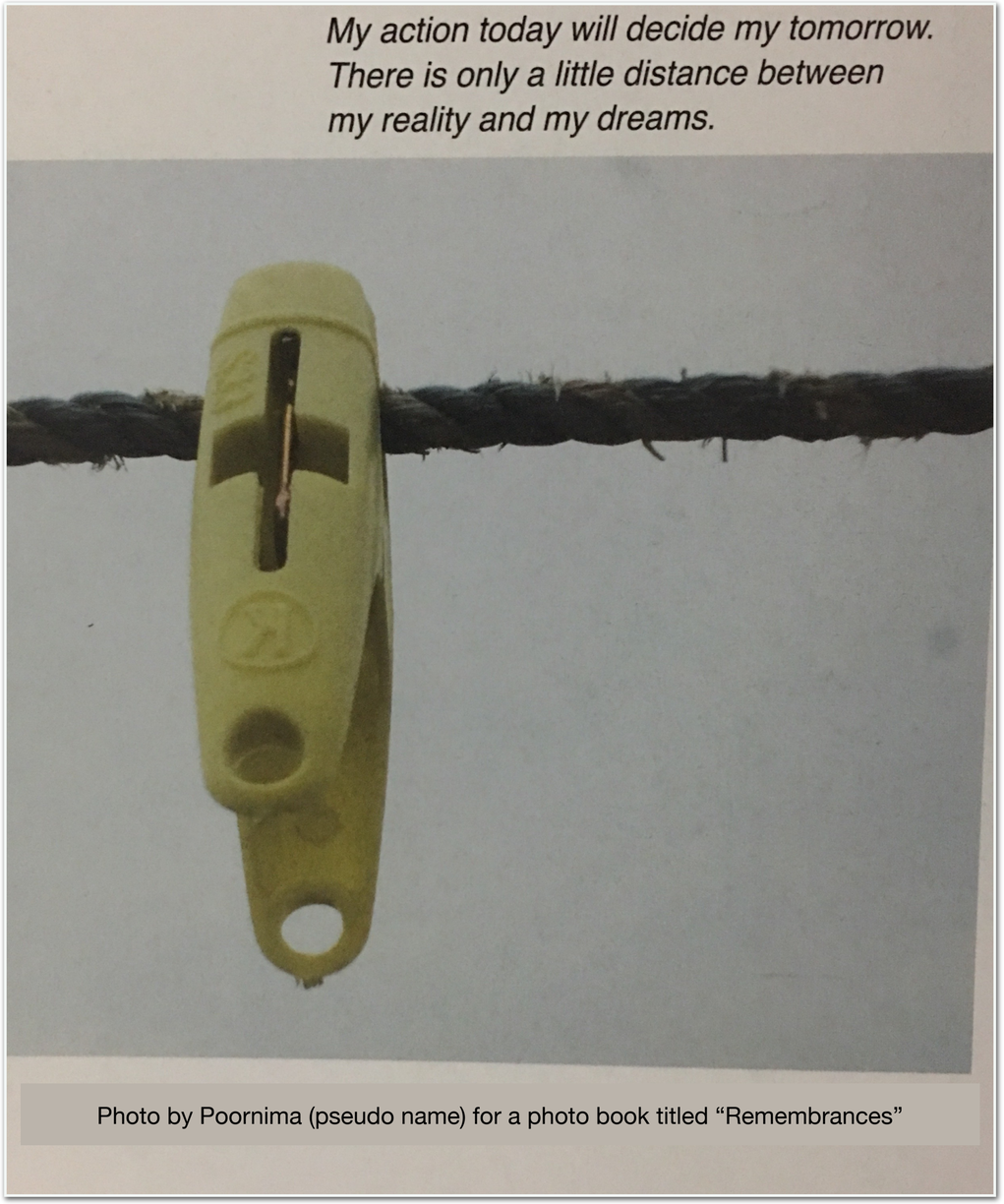


Photo by Poornima (pseudo name) for a photo book titled “Remembrances”

HCI and Vulnerable Communities

- From “life disruptions” towards a “new normal”[4]
  - Pay attention to changing social relationships
  - Consider the vulnerability of the existing infrastructure
  - Uphold dignity, privacy, and safety
- Highlight issues of social isolation and several intersecting constraints[1-3,6]
- Designing for and ***with*** the community[5]

[1] Capel, T., Vyas, D., & Brereton, M. (2017). Women in crisis situations: Empowering and supporting women through ICTs. In IFIP Conference on Human-Computer Interaction
[2] Dillahunt, T. R. (2014). Fostering social capital in economically distressed communities. In CHI 2014.
[3] Hope, A., Schwaba, T., & Piper, A. M. (2014). Understanding digital and material social communications for older adults. In CHI 2014.
[4] Massimi, M., Dimond, J. P., & Le Dantec, C. A. (2012). Finding a new normal: the role of technology in life disruptions. In CSCW 2012.
[5] Vines, J., McNaney, R., Clarke, R., Lindsay, S., McCarthy, J., Howard, S., ... & Wallace, J. (2013). Designing for-and with-vulnerable people. In CHI'13 Extended Abstracts.
[6] Wong-Villacres, M., Kumar, A., Vishwanath, A., Karusala, N., DiSalvo, B., & Kumar, N. (2018). Designing for intersections. In *DIS 2018*.

How do we work *with* communities?

- Attention to: engagement, articulation, and translation[4]
- Two distinct approaches:
  - Deficit-focused, need-based approach
  - Asset-based approaches

[1] Irani, L., Vertesi, J., Dourish, P., Philip, K., & Grinter, R. E. (2010). Postcolonial computing: a lens on design and development. In CHI 2010.

Need-Focused Approaches

- Deficit-focused, need-based approaches are common
  - Steps are taken based on population's needs or the deficits
  - Common approach in global development and human-centered design
  - Perpetuate dependency, robs agency

Assets-Based Approaches

- Focus on what the community already has: their assets
  - Steps are based on the assets available to individuals and the community
  - Encourages “power ‘within’, power ‘to’, and power ‘with’ ”[5]
  - Growing number of work within HCI(4D)[1-4,6-7]
- We took an assets-based approach

[1] Ahumada-Newhart, V., Maya Hernandez, J., & Badillo-Urquiola, K. (2021). A Call for Action: Conceptualizing Assets-Based Inclusive Design as a Social Movement to Address Systemic Inequities: An Assets-Based Inclusive Design Framework. In Extended Abstracts of CHI 2021.
[2] Cho, A., Herrera, R. G., Chaidez, L., & Uriostegui, A. (2019). The “Comadre" Project: An Asset-Based Design Approach to Connecting Low-Income Latinx Families to Out-of-School Learning Opportunities.
[3] Ismail, A., & Kumar, N. (2018). Engaging Solidarity in Data Collection Practices for Community Health.
[4] Karusala, N., Vishwanath, A., Kumar, A., Mangal, A., & Kumar, N. (2017). Care as a resource in underserved learning environments.
[5] Mathie, A., & Cunningham, G. (2005). Who is driving development? Reflections on the transformative potential of asset-based community development.
[6] Pei, L., & Nardi, B. (2019). We did it right, but it was still wrong: Toward assets-based design. In Extended Abstracts of the CHI 2019 CHI.
[7] Wong-Villacres, M., DiSalvo, C., Kumar, N., & DiSalvo, B. (2020). Culture in Action: Unpacking Capacities to Inform Assets-Based Design. In CHI 2020.

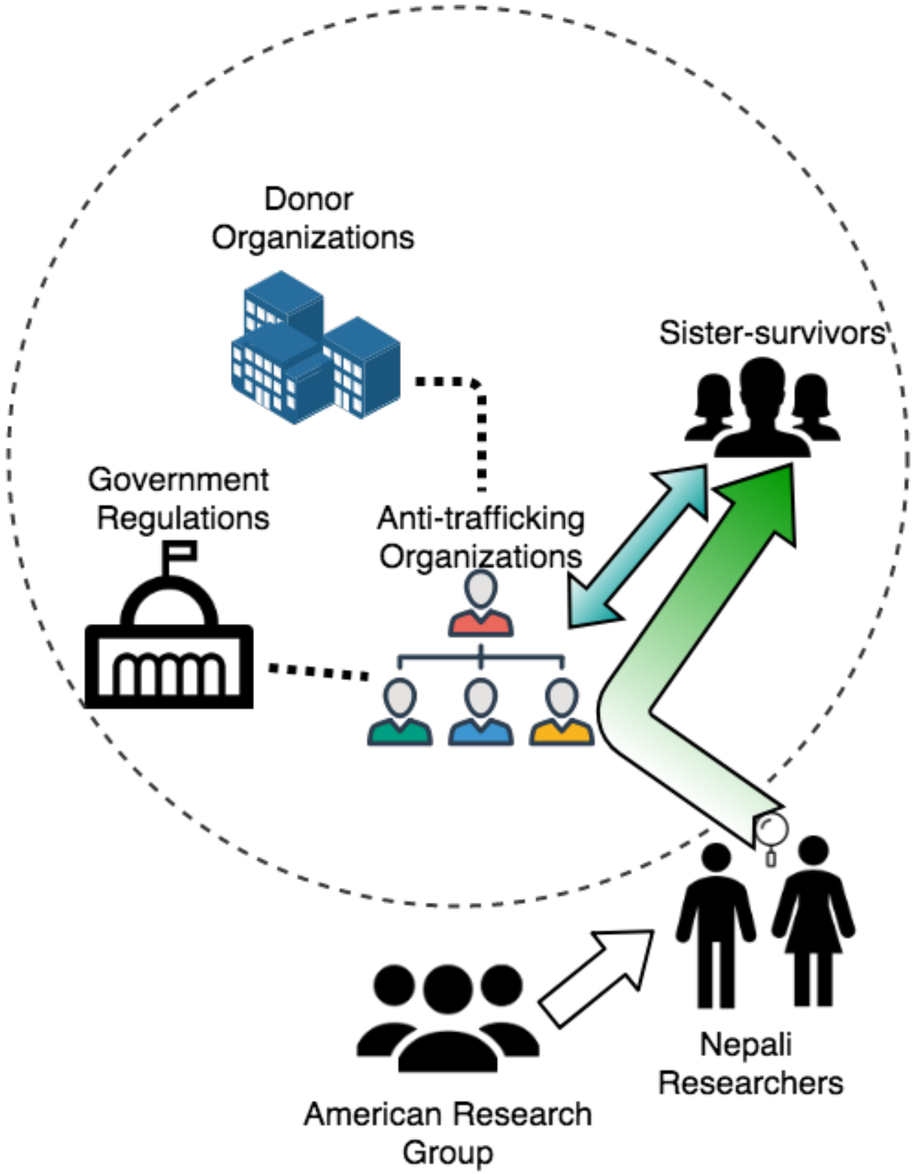
Developing an Assets-Based Approach For Our Context

Overview of the research work, adapting assets-based approach

Photo by Shakuntala (pseudo name) for a photo book titled “Remembrances”

Understanding the Context

- Two partner organizations:
  - Professional Organization (PO)
  - Survivor-led Organization (SO)



Findings From the Initial Inquiry

Organization

- Donors influenced their programs
  - Highlighting deficiencies
- Ambiguity on successful reintegration

dependent on

Sister-Survivors

- Limited future prospect
- Pain in recalling their trafficked past
- Fearful of the social stigma

Implications on Our Approach

Ambiguity in successful reintegration	Position of power to engage with societal actors and institutions
Moving away from deficiency perspective	Assets-based design approach
Pain in recalling the past	Focus on the sisters' present and their future
Interdependence	Care in goal balancing

Challenge in Defining Assets

- Tangible and intangible
  - Community-level **technology** for entrepreneurs[1]
  - **Care** in an under-resourced after-school learning center[2]
- Ways people use their cultural toolkit: the strategic actions they take to solve their problems[3]
  - Challenges in recalling the past
  - Sisters are moving to a drastically different future

[1] Hui, J., Barber, N. R., ... & Dillahunt, T. R. (2020). Community Collectives: Low-tech Social Support for Digitally-Engaged Entrepreneurship. CHI 2020
[2] Karusala, N., Vishwanath, A., Kumar, A., Mangal, A., & Kumar, N. (2017). Care as a resource in underserved learning environments. CSCW 2017.
[3] Wong-Villacres, M., DiSalvo, C., Kumar, N., & DiSalvo, B. (2020). Culture in Action: Unpacking Capacities to Inform Assets-Based Design. CHI 2020

Our Definition of Assets

Assets as those strengths, attributes, and resources that can be brought into relevance to satisfice[1] the inherent tensions between a member of a population's needs, their aspirations, and the structural limitations of the system.

[1] Simon, H. A. (1997). Models of bounded rationality: Empirically grounded economic reason (Vol. 3). MIT press.

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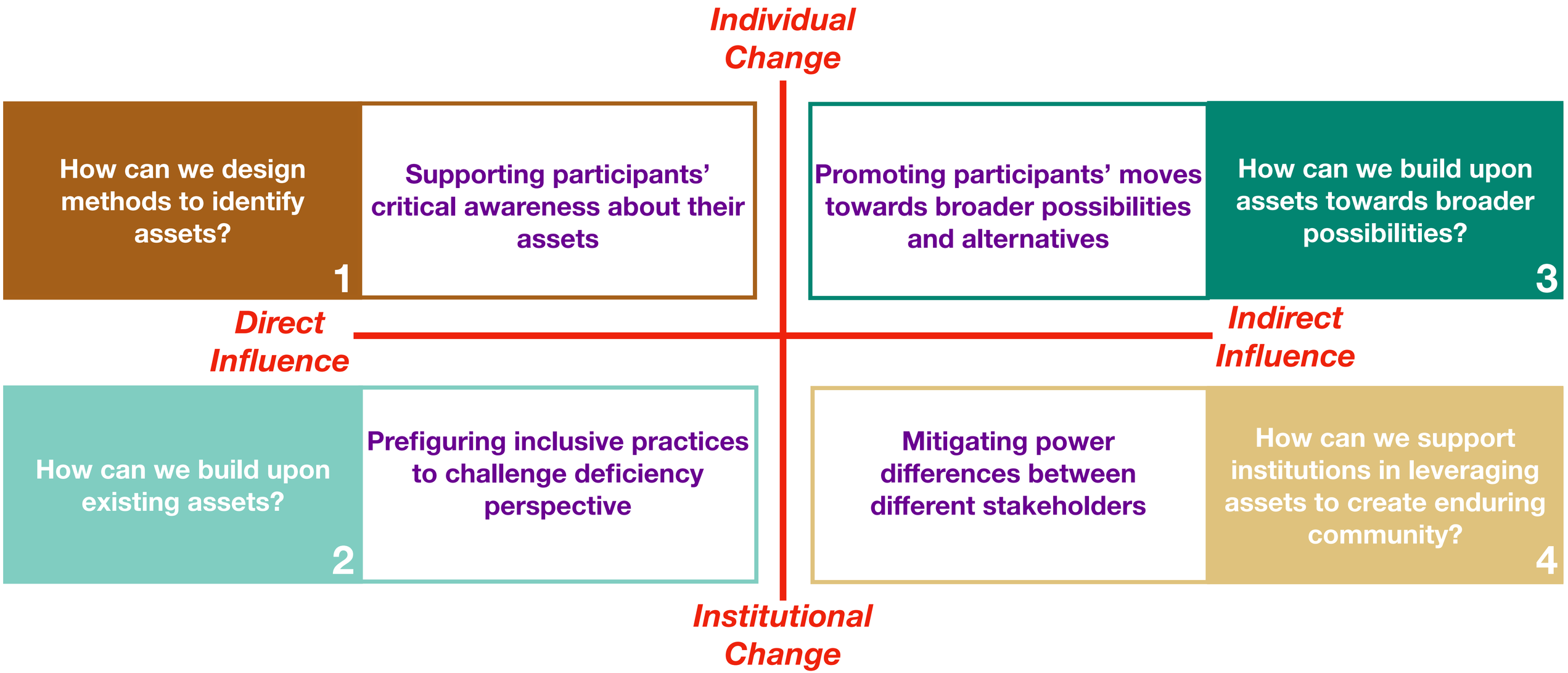
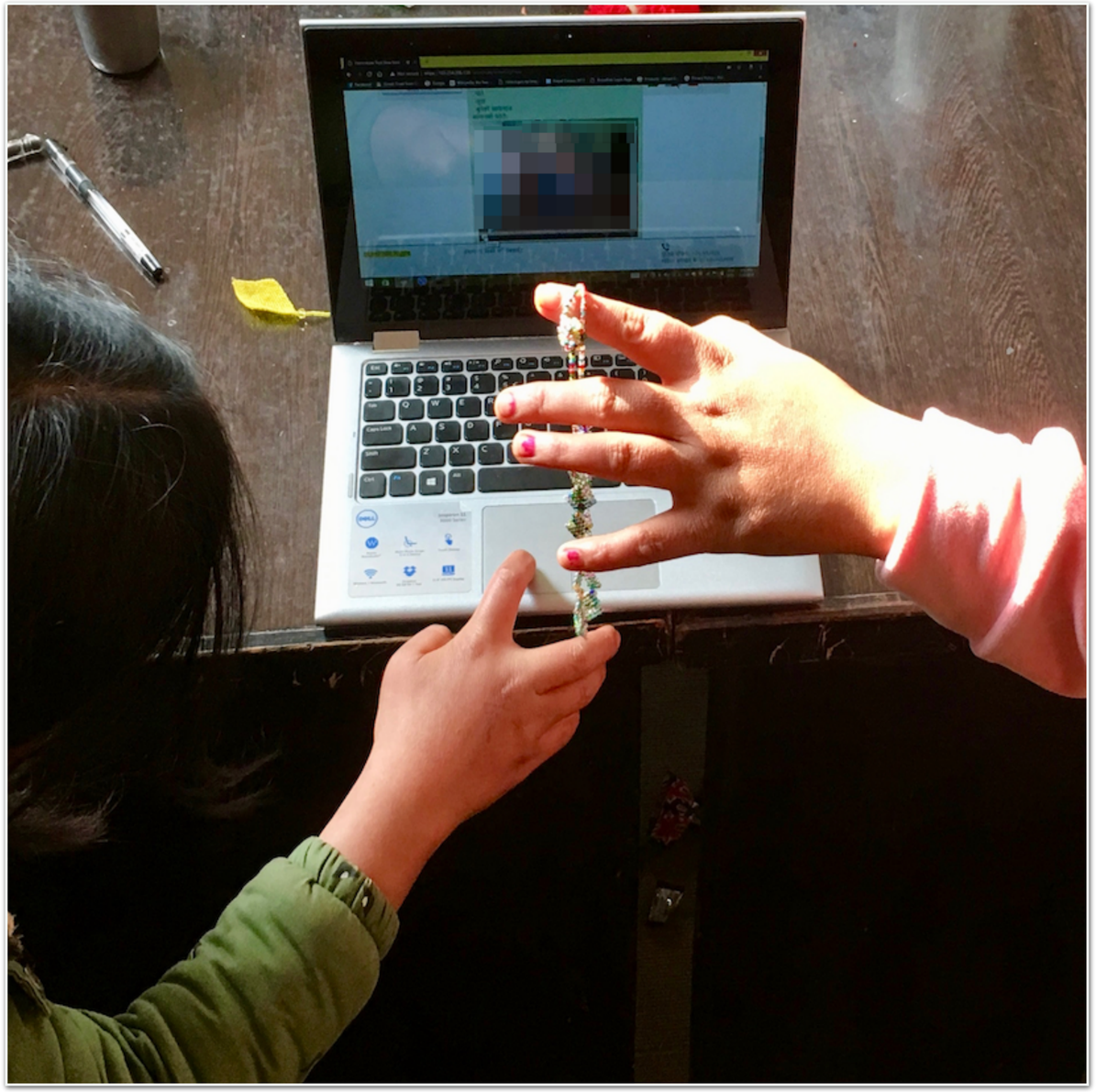
Asset-Based Framework of Action



Adapted from: Cornwall, A. (2016). Women's empowerment: What works?. *Journal of International Development*, *28*(3), 342-359.

Four Key Contributions

The four methodological questions



Assets-Based Inquiries

How can we design methods to identify assets?

1

How can we build upon existing assets?

2

How can we build upon assets towards broader possibilities?

3

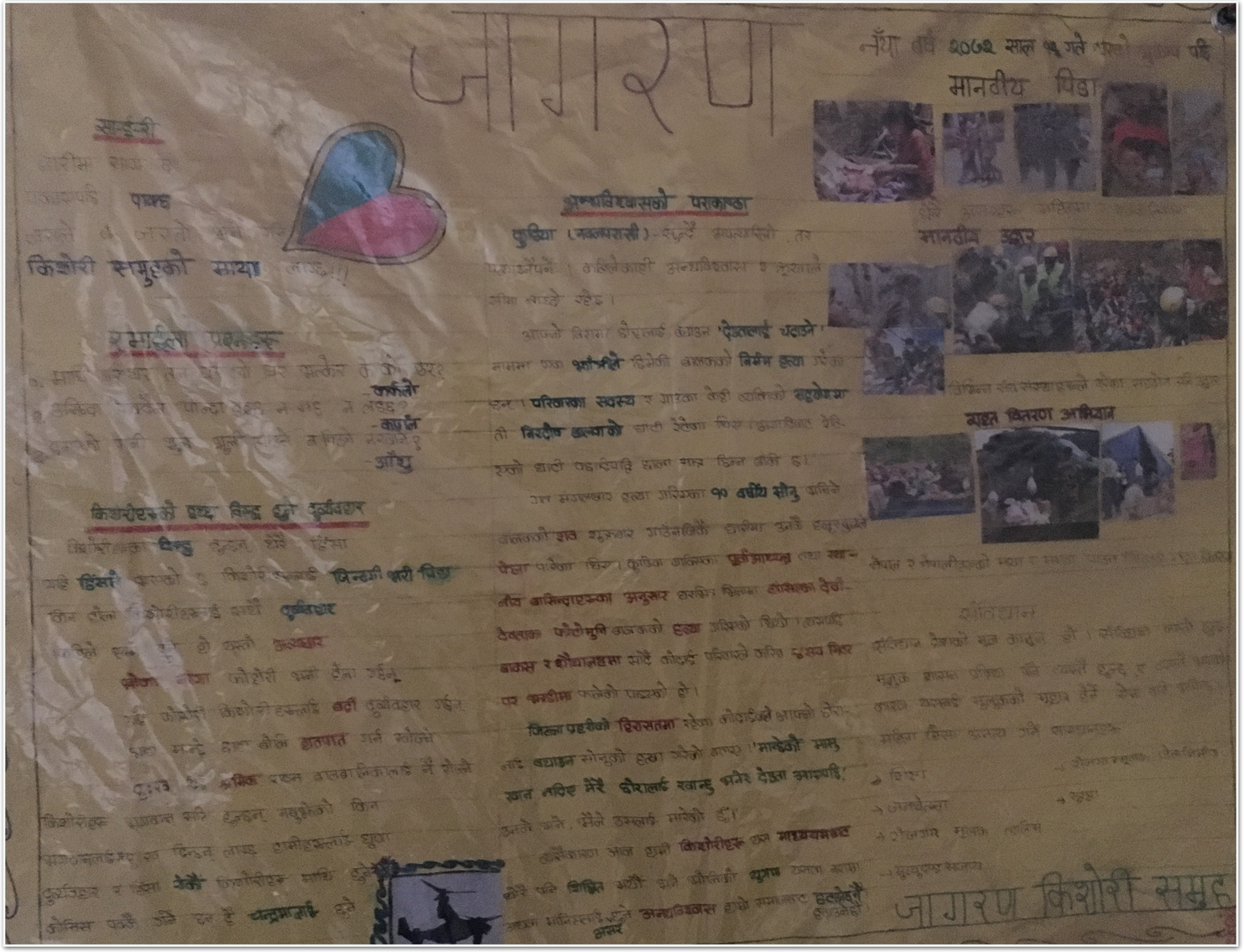
How can we support institutions in leveraging assets to create enduring community?

4

Attending to the Distance

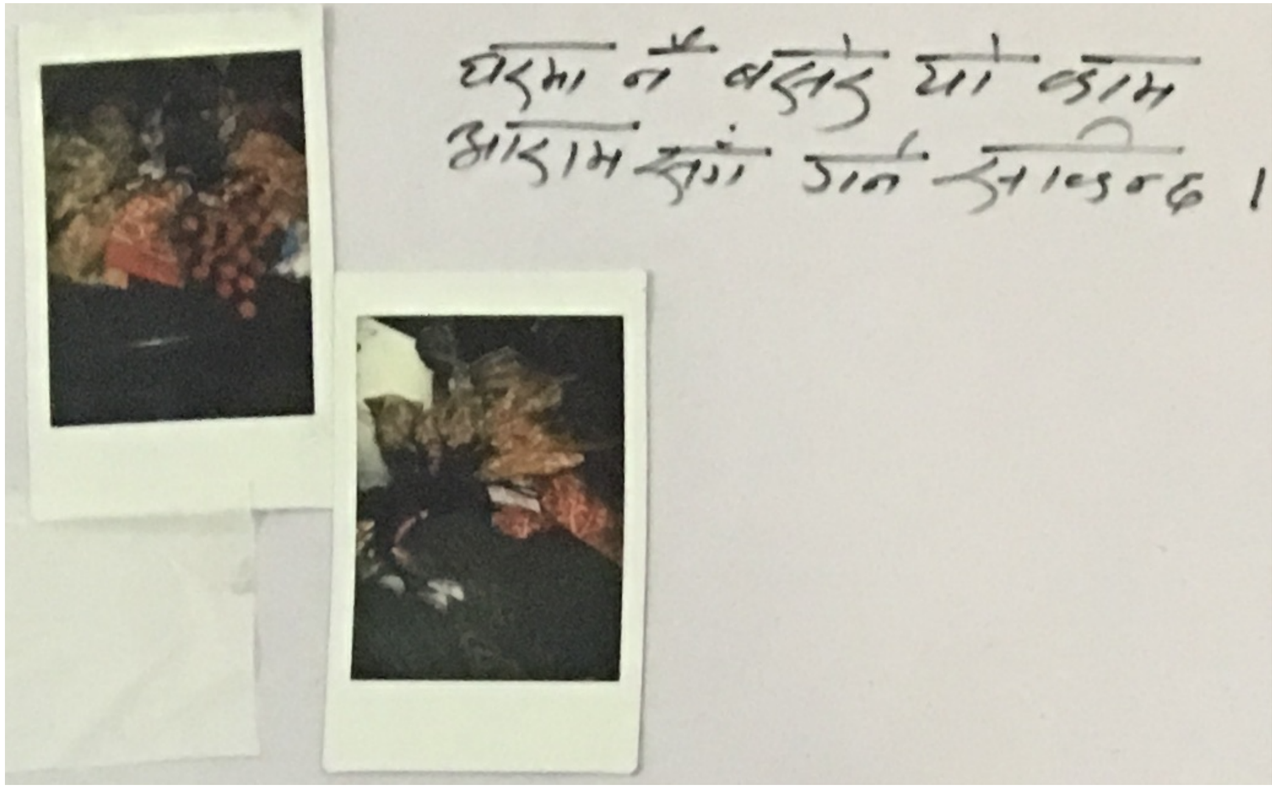
- Distance between me and the sisters
- Staff member(s) mediated the interviews
- Used of words like “project” and “research” added to the distance

Hearing Nuanced Voices



Hearing Nuanced Voices

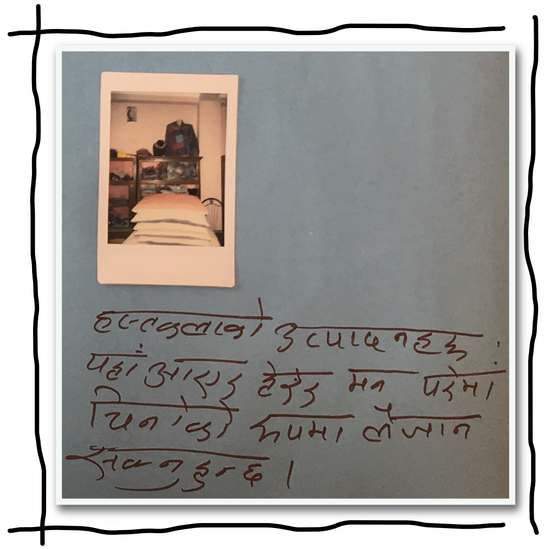
- Adapted photo-elicitation approach with a Polaroid camera
  - Request to take photos for two days
- Photos were presented as collectively owned
  - Communally agreed statement



Identifying Assets

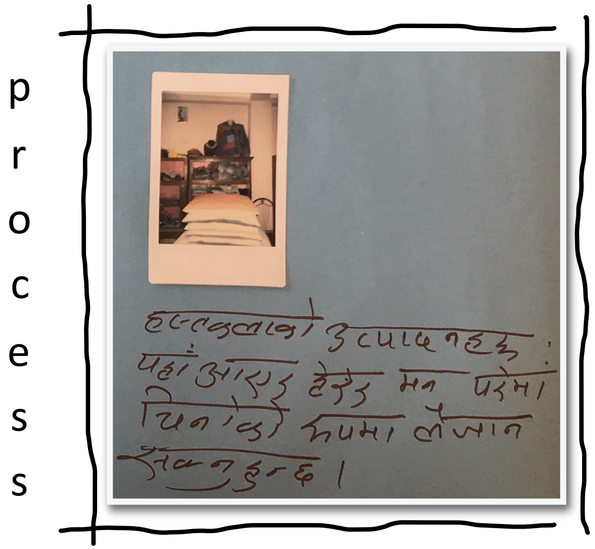
Photo elicitation

process



Identifying Assets

Photo elicitation



Crafting skills

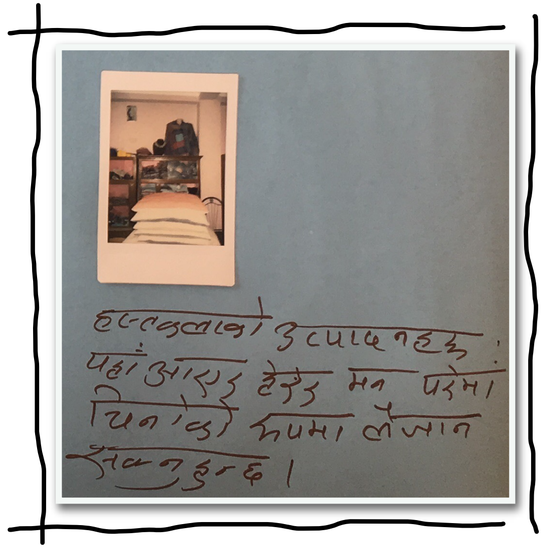
Identifying Assets

Crafting skills

strength

Photo elicitation

process



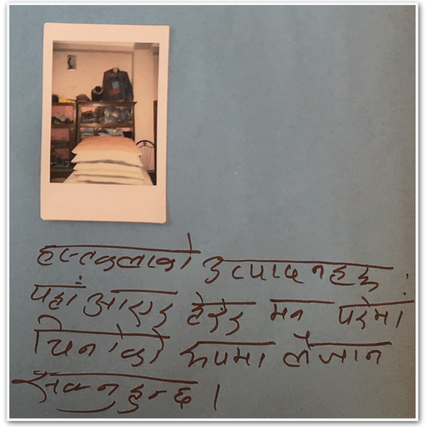
Mutual bonds

strength

Lessons on Identifying Assets

Noticing familiar practices

Adapting familiar materials and narratives



Collective reflection

Control over their participation

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Building on Assets: Crafting

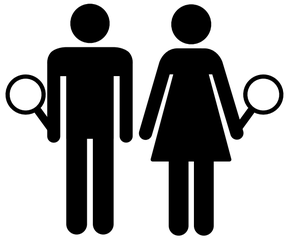
Sister-Survivors

- Accessible and acceptable skill
- Therapeutic values
- As a future possibility

Organization

- Prior investment in setting up
- Hired trainers to teach crafting
- Limited resources to try new things

Research Team



- Can rely on it being present even when groups change
- Holds potential to lead to more enduring strengths

Charting Next Step

- We shared findings with three staff members
- Suggestions focused on technological components
    - Photography lessons to market the crafts
    - Lessons on photo editing for the sisters to create stories
    - A mobile app for sisters to learn new skills
    - An incident reporting technology for the sisters

On Introducing Technology

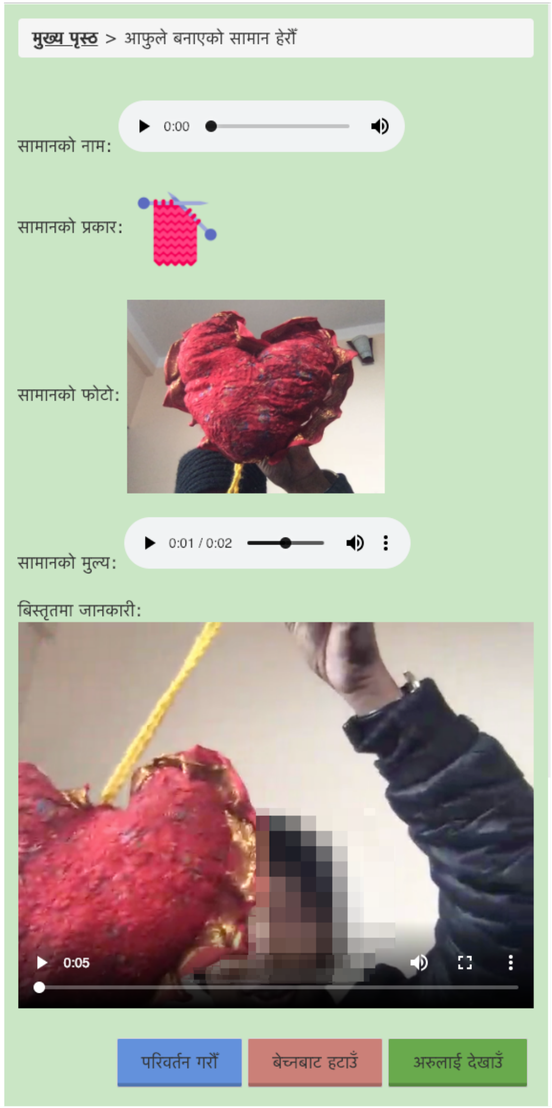
- Sister-survivors have no access to computers or phones
- Limited text and digital literacy
  - Overwhelmed in prior introduction to computers

> *"… when we were learning to edit, we had never touched a laptop before to know anything …"* (S3)

- Expressed interest in learning computers to communicate with others

Engaging With Crafting Using Technology

- Developed a tailored web application
- Contextualized around crafting
- Technology to support reflections on assets



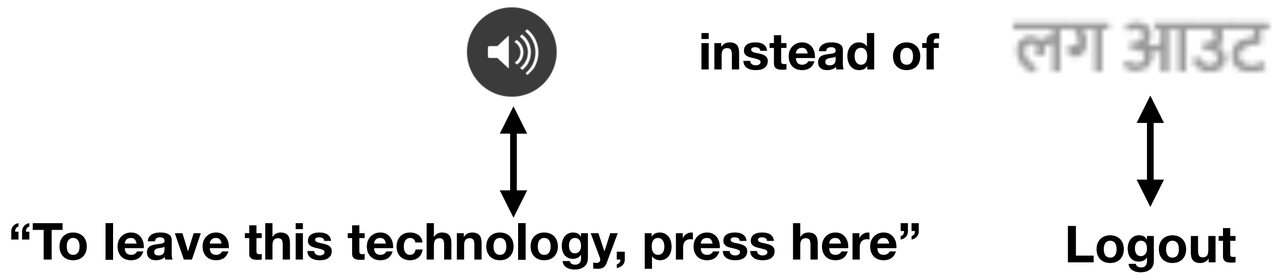
Building on Mutual Bond Using Technology

Share posted crafts and drawings with the community

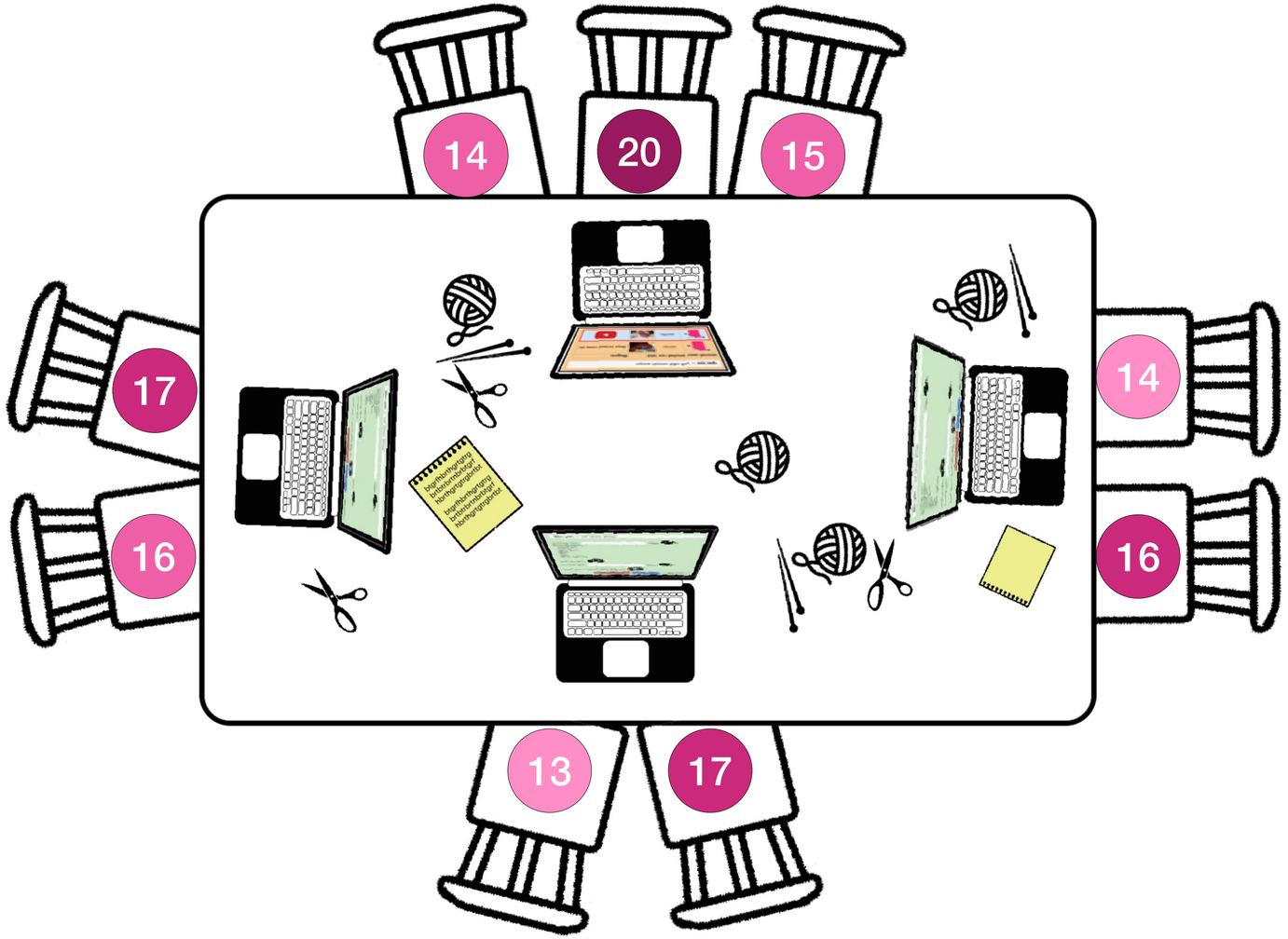
Leave audio comments on the shared artifacts

Overcoming Digital and Text Illiteracy

- Voice annotation in a female voice with familiar intonation

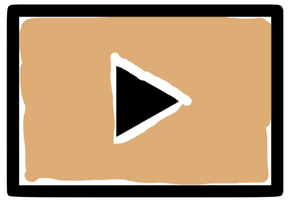


Hamrokala Workshop



Overall Use

- Despite prior bad experiences with technology, the sister-survivors could use Hamrokala



47 videos clips

45 audio comments

38 drawings

- Sisters appeared to like using Hamrokala

> *“I am very happy. I felt we know how to do it and that's wonderful. I was also happy to see others' work. This was fun”* (S9)

- Staff members expressed astonishment at what the sisters were able to do

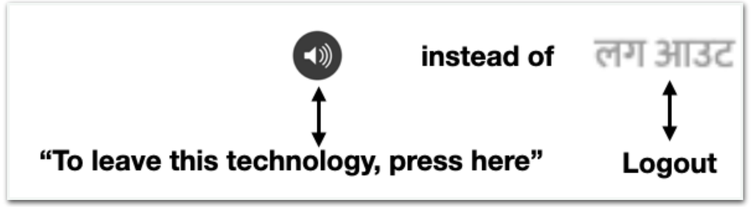
Supporting Reflection on Assets

- Building knowledge about crafting
  - Reflected on effort required to create handicrafts
  - Discussed the economics behind crafting at SO
- Limited control over crafting practices
  - Later group negotiated with trainers to gain more control

Challenging Deficiency Perspective

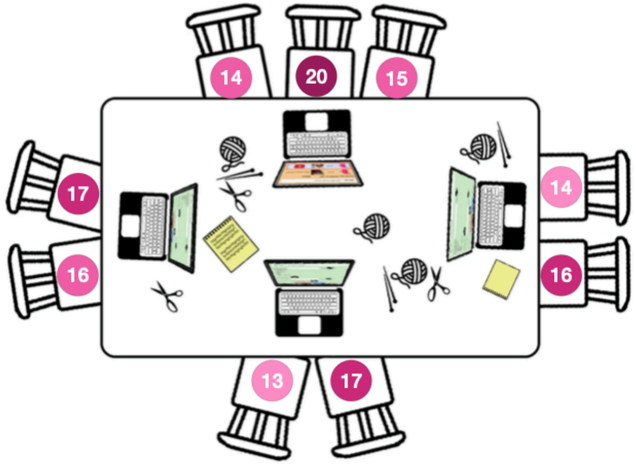
- Showcasing their computing skills
- Initiated discussion on training-the-trainer model
- “Office job” was seen as a possibility with more training
- Knowledge of computing could be an asset

Lessons on Building Upon Assets



Supporting in overcoming challenges, fears, and doubts

Promoting a room for multiple ways to experiment



Encouraging collective exploration and reflection

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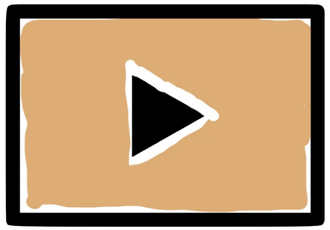
Incrementally Extending Hamrokala

- Began by replicating Hamrokala workshop
- Worked with a different group
  - Higher level of literacy
- Three kinds of extension building on the cohort's higher literacy
  1. Expand their technical skills towards general systems
  2. Expand their world knowledge and ability to find our more about the world
  3. Envisioning engagement with societal actors and institutions

Replicating Hamrokala

- Similar outcome as before:



88 videos clips

88 audio comments

86 drawings

- Negotiated practices in the space around the technology
- Technology was acceptable, welcomed, and attainable.

Searching for Information

- Began with 7 questions to search on Google
  - Introduced Google Translate to translate keywords
  - E.g. “Who is the author of Cinderella?”

Identified keywords

Translated keywords to English

Searched using the keywords

Translated results to find answer

- They came up with 10 additional questions

Wikipedia Reading and Editing

- Expanded the exercise to contribute to Nepali Wikipedia

Translated part of the English article

Interpreted the translated content article

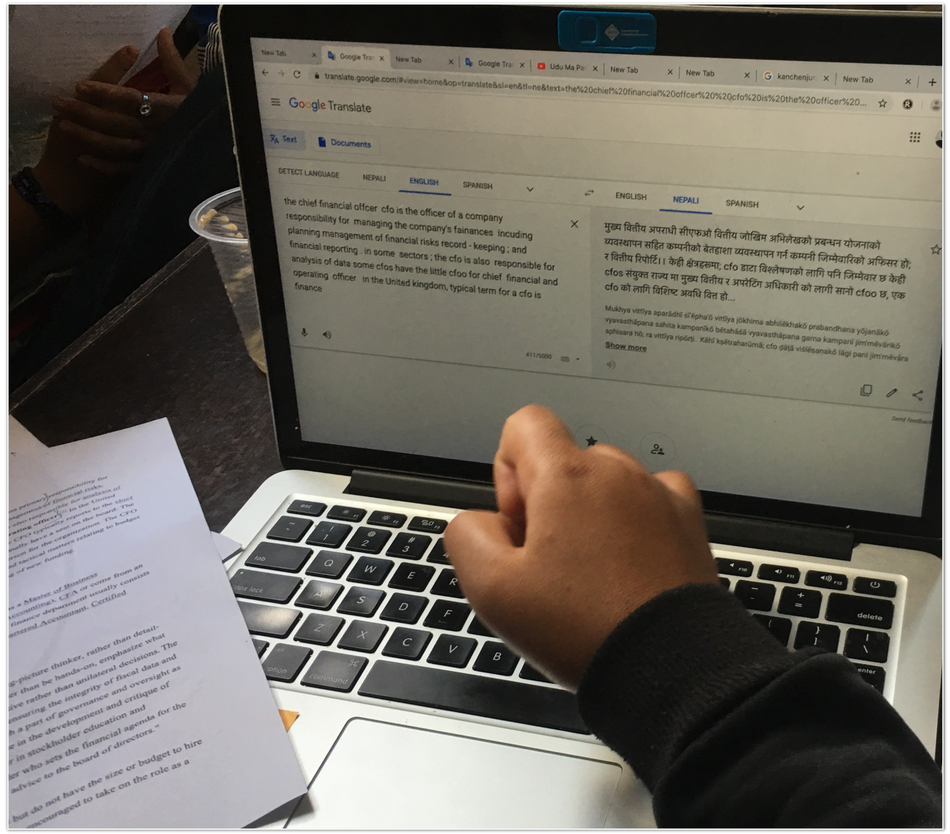
Compared it with the Nepali Wiki article

Typed new information in Nepali Wiki

- Created and edited 4 Nepali Wikipedia pages
  - Veterinarian (S8), Lawyer (S3), Annapurna Circuit (S4 and S9), Dhunche (S7)

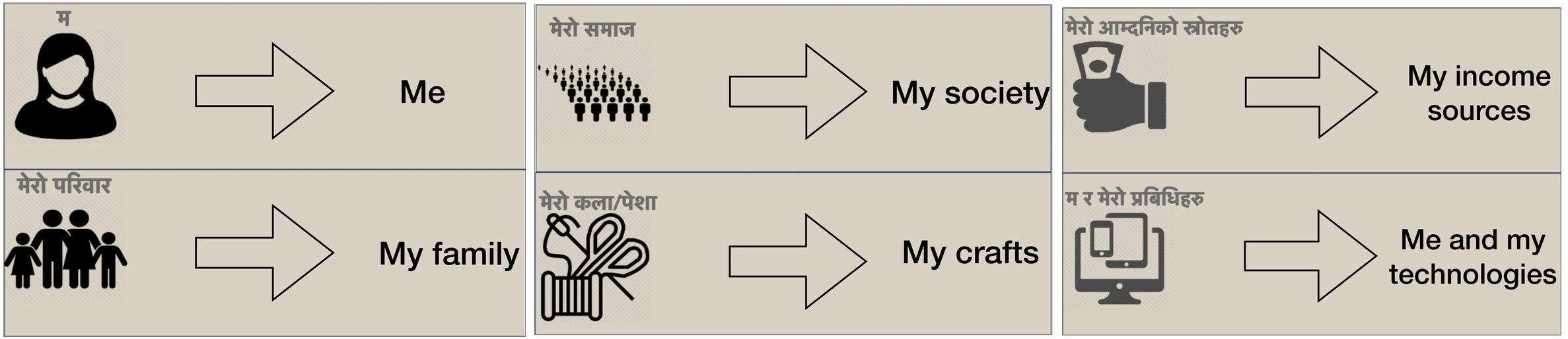
Developing World Knowledge

- Discussion on alternatives and broader possibilities
- Ensued discussion on academic trajectory and effort required
  - S2 (in grade 7) wanted to become an accountant
  - She worked on translating the Chief Financial Officer (CFO) Wikipedia page

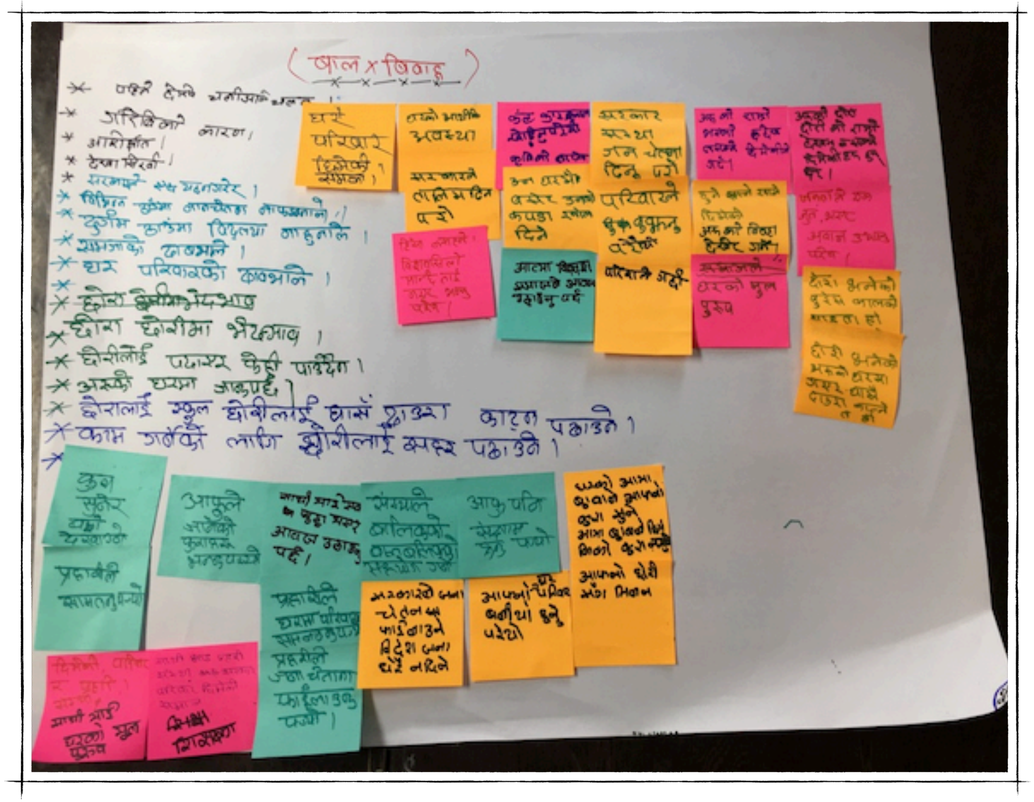


Future Envisioning

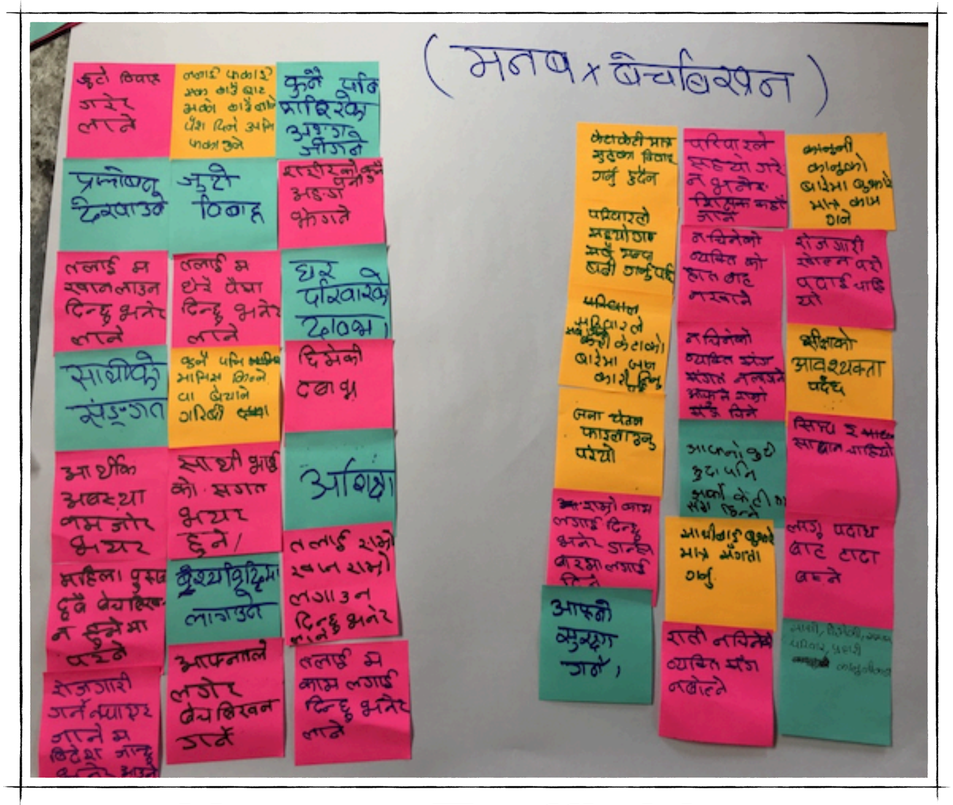
- How they see themselves and their circumstances in the future?



Discussing Societal Problems

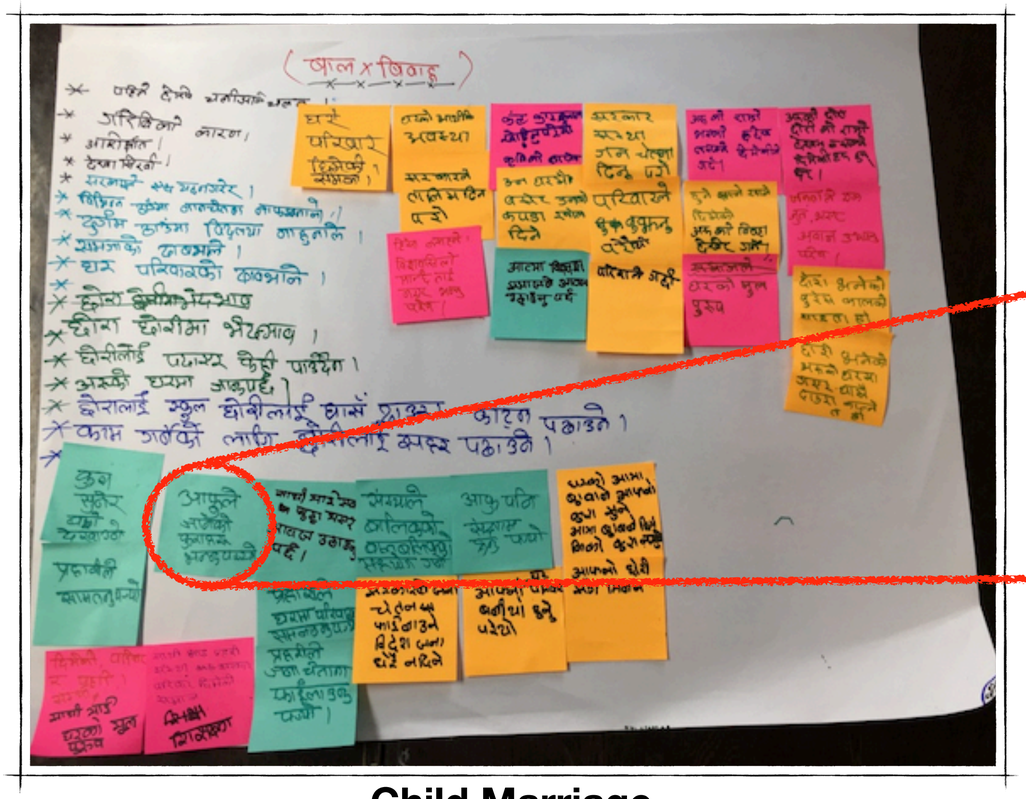


Child Marriage



Human Trafficking

Collective Action



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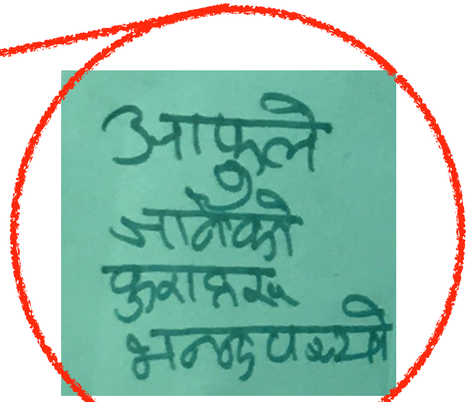
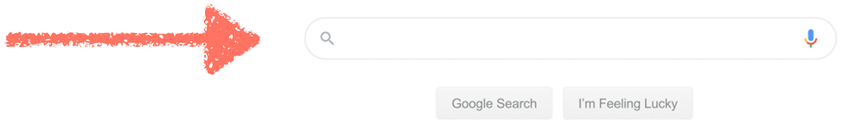


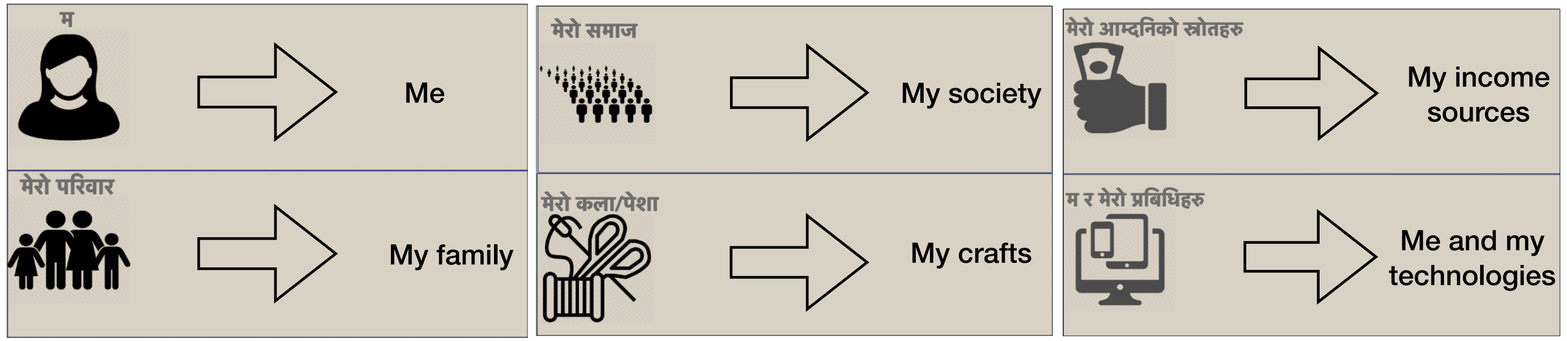
We have to share what we know [with other members in the community]

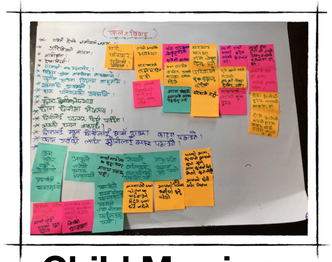
Lesson on Building Towards Broader Possibilities

- Taking incremental steps

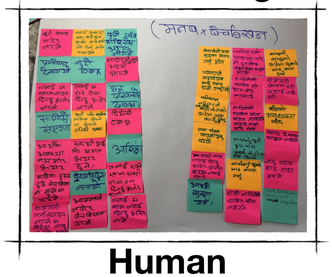


- Situating assets in the broader context





Child Marriage



Human Trafficking

Assets-Based Inquiries

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Remote Interviews with Staff Members

- Pivoted during COVID-19 outbreak
- Interviewed 8 staff members at SO

Conflicting Organizational Values

- Biggest asset: survivor-run organization
- Interest in supporting survivors to become staff

> *"We see less capacity in resource mobilization … we have not been able to support survivors to become technical staff members."* (Nabina)

- Categorization of "Member Staff" and "Technical Staff"

> *" We all technical staff members who are at at bit of a senior level, those who supervise projects, we are the ones who lead and design the project proposal."* (Nima)

From Survivors to Staff: *Individual Barriers*

- Lack of formal education

- Lack of awareness

> *"If you ask the sisters they will say 'we don't know anything' ... it is our weakness that we haven't been able to make them say that they know" (Nima)*

- Inability to generalize

> *"…what they know is only [their] problems" (Nabina)*

From Survivors to Staff: *Organizational Barriers*

- Member staff are consulted while writing proposals

> *“ They feel the same problem [as the sister-survivors] so we get what is needed when we talk to them.” (Nabina)*

- Inability to bring everyone in the process

> *“ All people at all levels to come to a single table to discuss is not possible. People understand according to their levels and they talk according to their level” (Nabina)*

- Risk associated with the change

> *“Our work still is led by donor interest. SO is not completely independent, we do not have core funds” (Nima)*

Building Institutional Asset: Bringing Staff and Sisters Together

Share one habit of someone here that you like. Ask for their help in developing it.

If they agree, you do not slide.

Assets-Based Inquiries

How can we design methods to identify assets?

1

How can we build upon existing assets?

2

How can we build upon assets towards broader possibilities?

3

How can we support institutions in leveraging assets to create enduring community?

4

Reflections

Addressing the research questions and care while undertaking assets-based engagement with vulnerable population

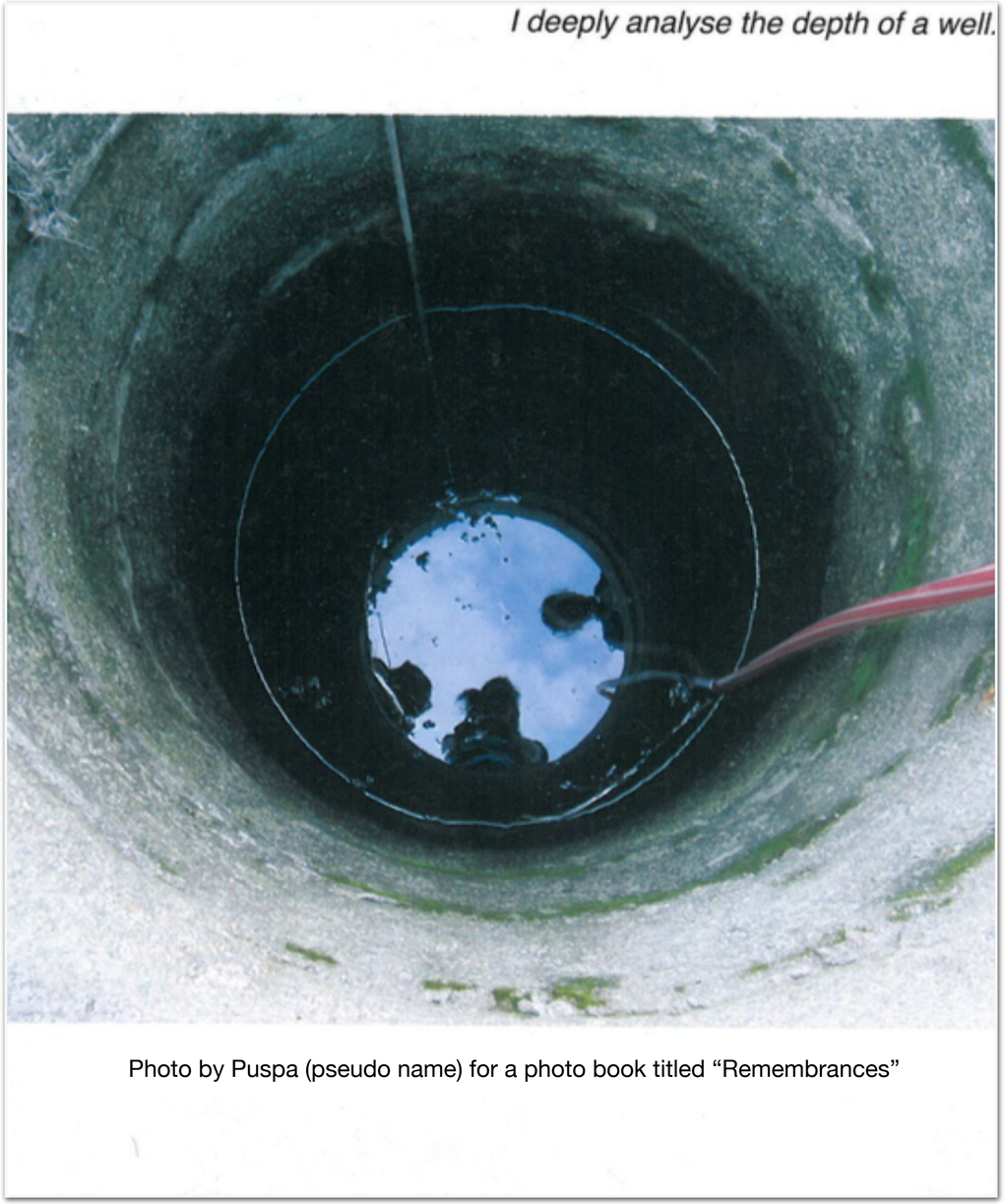


Photo by Puspa (pseudo name) for a photo book titled “Remembrances”

RQ1: Conditions Influencing the Sisters' Lives

- Variety of factors
  - NGOs' programs
  - Donors agency's priorities
  - Patriarchal values and stigma

} Deficit-based focus

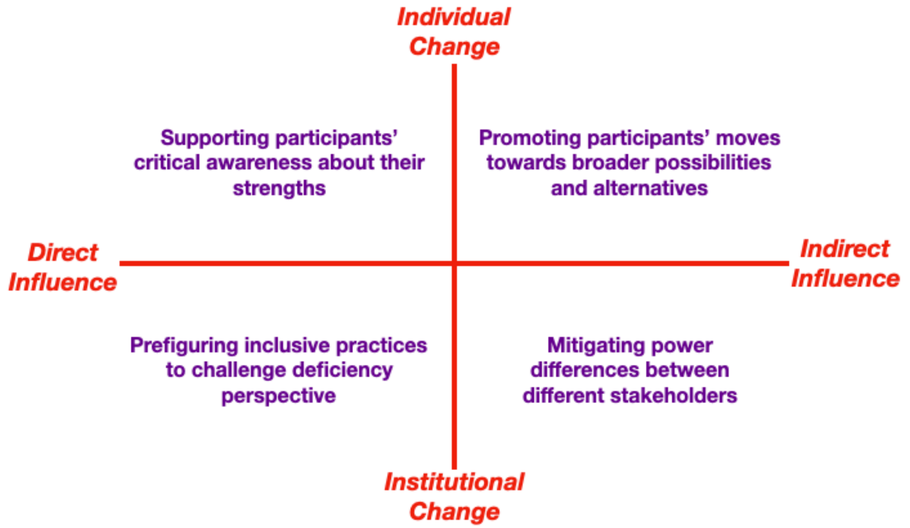
- We located some assets that became our starting point

RQ2: Conditions Influencing Our Engagement

Our Definition of Assets

Assets as those strengths, attributes, and resources that can be brought into relevance to satisfice[1] the inherent tensions between a member of a population's needs, their aspirations, and the structural limitations of the system.

Asset-Based Framework of Action



RQ2: Conditions Influencing Our Engagement

- Satisficing needs, limitations, and aspirations

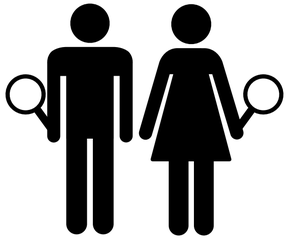
Sister-Survivors

- Illiteracy and lack of enduring community
- Envisioning a better future, aspirations for technology, curiosity to learn, pride in craft making

Organization

- Limited resources to try new approaches
- Flexibility to engage in the process and belief in the possibilities for the sisters

Research Team



- Limited knowledge and time
- Ability to bring in some resources to promote reflection and action with assets

RQ3: How should we position ourselves?

Build into the ***methods*** the ***values*** we want to achieve[1]	• Comfort and control in their participation • Agency by adapting participatory approach • Appreciative value embedded in assets-based design
Provide a ***space*** to envision, enact, and experiment with assets	• Supporting for multiple perspectives • Collective exploration • Building activities on and off the screen

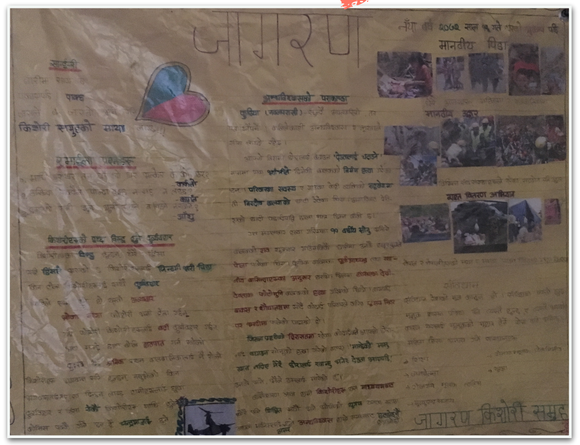
[1] Asad, M. (2019). Prefigurative design as a method for research justice. *Proceedings of the ACM on Human-Computer Interaction*, *3*(CSCW), 1-18.

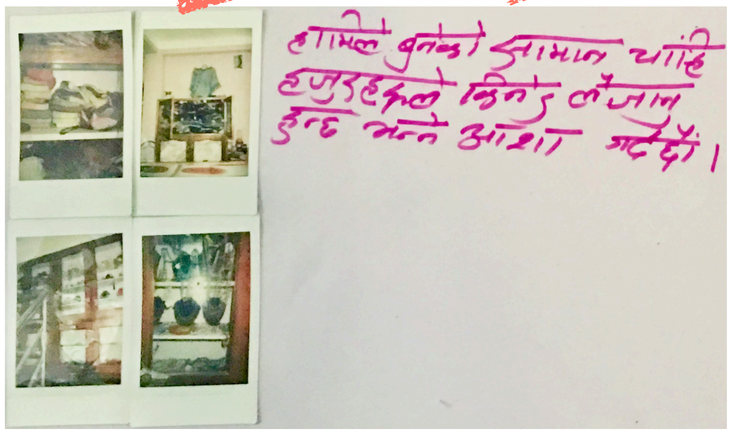
Key Takeaway

- Assets-based design can be valuable when engaging with vulnerable communities
- Requires ***care***

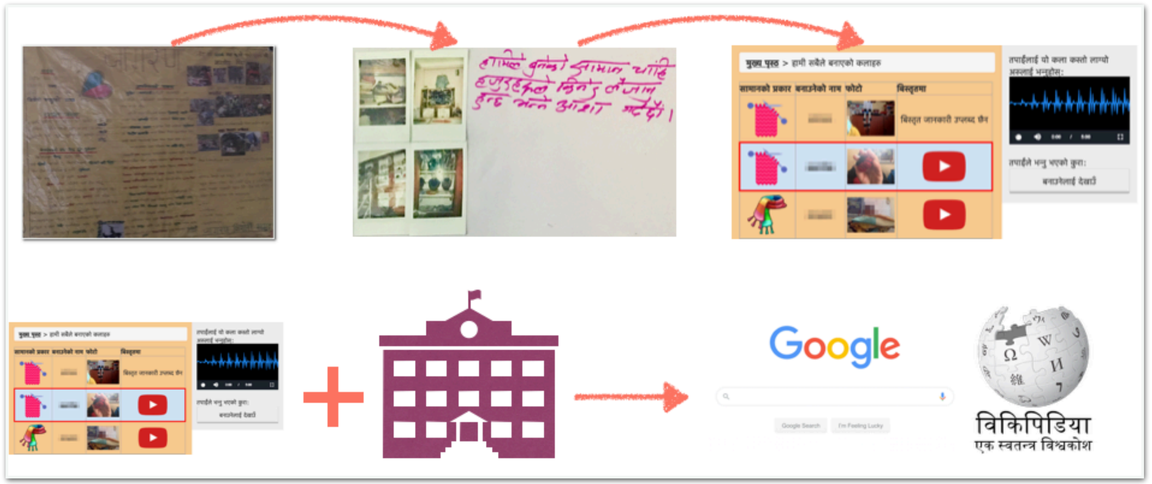
Technology as a Means to Engage With Assets

Incremental Steps





Requires long-term commitment



- Slow process of transformation
- Support community to trust the process
  - Difficult to assess impact
  - Immediate technological outcome cannot be realized

Scholarly Output

In Submission:

- CSCW 2021: Commitments on conducting assets-based design (co-authored with Marisol)

Accepted Papers:

- PDC 2018: Need for careful goal balancing in sensitive settings
- CSCW 2018: Social photo elicitation and adapting methods to local condition
- DIS 2019: Design of Hamrokala and reflection on its initial use
- CHI 2020: Introducing Hamrokala and building on existing strengths
- PDC 2020: Focusing on building agency before promoting participation

Thank you!

Questions?