

## **Amplifying Unheard Voices: Energy Literacy as a Path to Equitable Stakeholder Participation**

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## Objective

This research aims to increase the ability of marginalized communities to engage with stakeholders in the energy transition. Researchers employed an energy justice framework to develop a six-week summer program designed to enhance energy literacy. The study gathers information on methods for bridging knowledge gaps within marginalized communities regarding the energy transition. By incorporating social science and engineering education methodologies, the research created a program capable of addressing community-identified needs while simultaneously answering research questions on energy literacy, thereby producing information necessary for an equitable energy transition. Notably, this research showcases the use of community partners to improve research design and increase community participation by lowering trust and communication barriers, ultimately magnifying the reach of energy literacy efforts.

## Study Roadmap

- Utilizing an exploratory sequential design to build a tool based on the specific community assets and needs. [1]

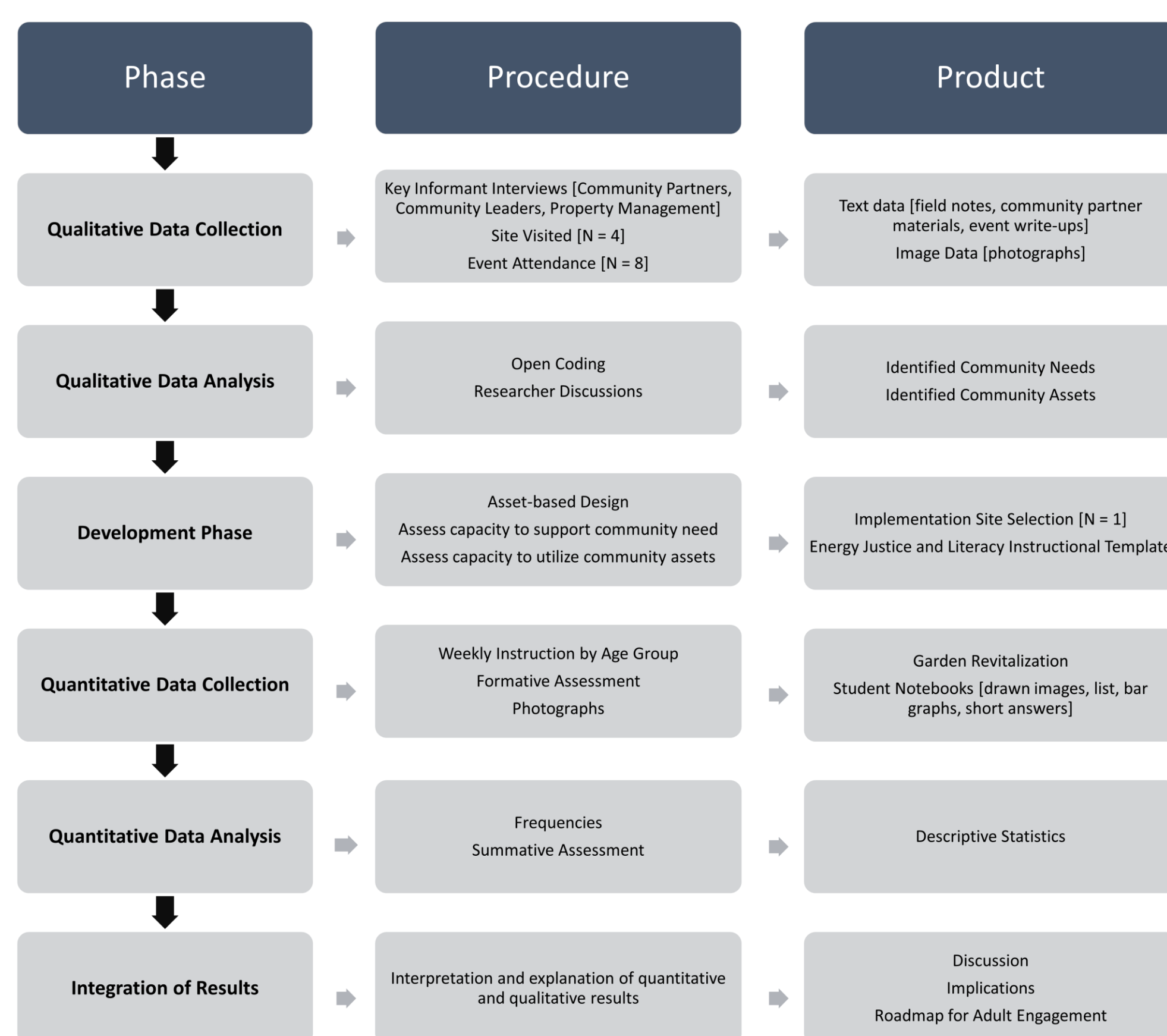


Figure 1: Study diagram showcasing planned QUAL-> QUAN analysis.

## Acknowledgements

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## Site Overview

- Highland Dwellings, a DC Public Housing Complex, is situated in a census tract that the U.S. Department of Energy (DOE) has identified as disadvantaged. [2]
- The tract is below the DOE threshold for energy disadvantage while having high energy cost and low household income.

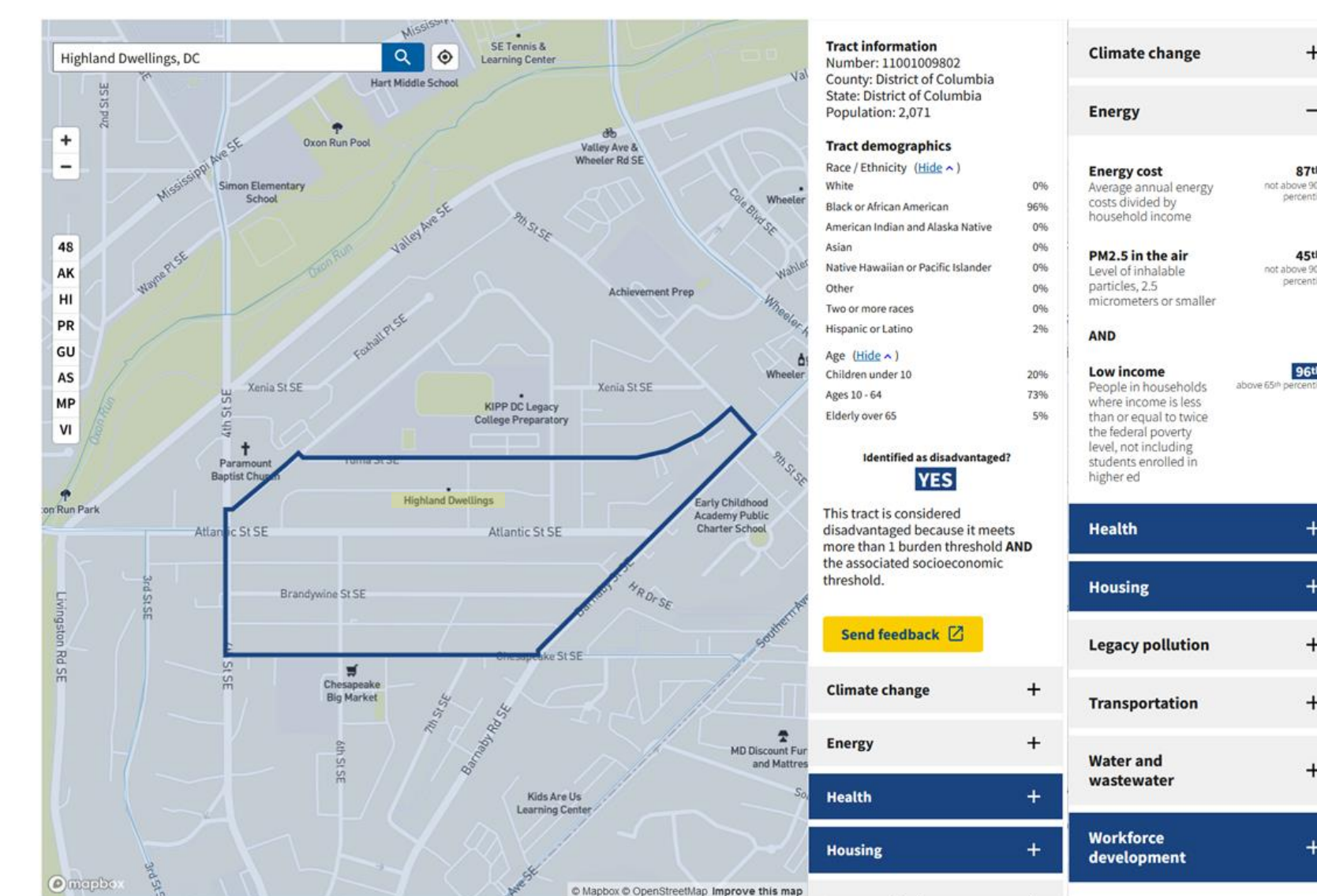


Figure 1: DOE Justice40 map of Highland Dwellings showing demographics, inequality categories and energy inequality percentiles.

## Community Based Participatory Research (CBPR)

- CBPR prioritize human-centered design through iterate engagement with and feedback from the community. [3] [4]
- Researchers are engaging as participant observers to allow for introducing, teaching and recording data.
- Through key informant discussions learned of desire to revitalize community garden.
- Attendance at on-site events allows for evaluation of community needs and assets.

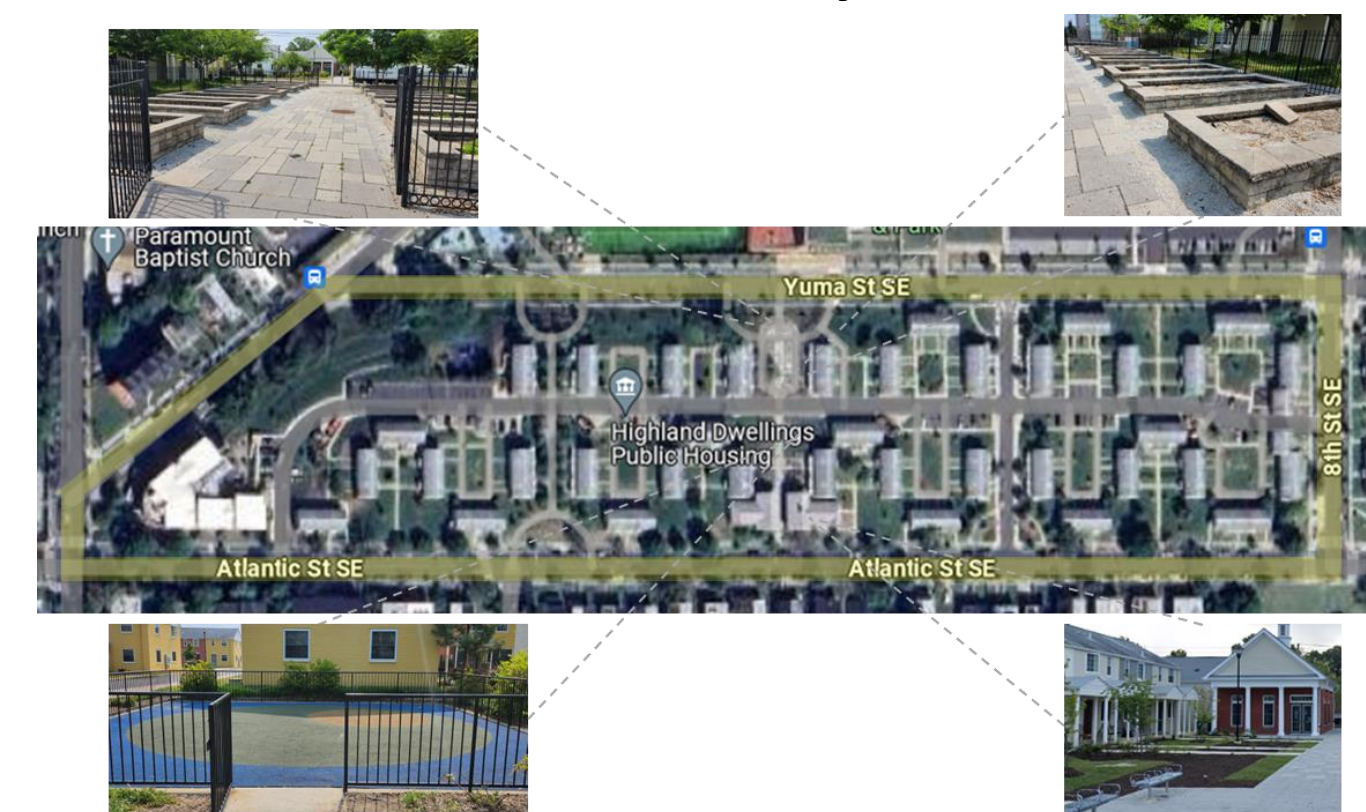


Figure 2: Photos of Highland Dwellings, community garden, exterior of community center and play/activity area

## Energy Literacy as a Path to Energy Justice

- To fully realize the potential of all pillars of energy justice for marginalized communities requires a shared language between communities and decision-making stakeholders. [5] [6]



Figure 3: Equity take home materials for students describing and visualizing areas of consideration necessary for energy justice

- The pillars supporting energy literacy – economic, political, environmental and social – social factors are the least understood due to the complexity in conducting in vivo analysis. [7]

## Instruction Design

- Weekly lesson plans guides are crafted based on the DOE Energy Literacy objectives and Next Generation Science Standards (NGSS). [7] [8]

Figure 4: Lesson Plan Guide samples by age group outlining topic review, mini-lecture and experiential learning activity

- Learning reinforcement can be achieved through weekly take-home activities.

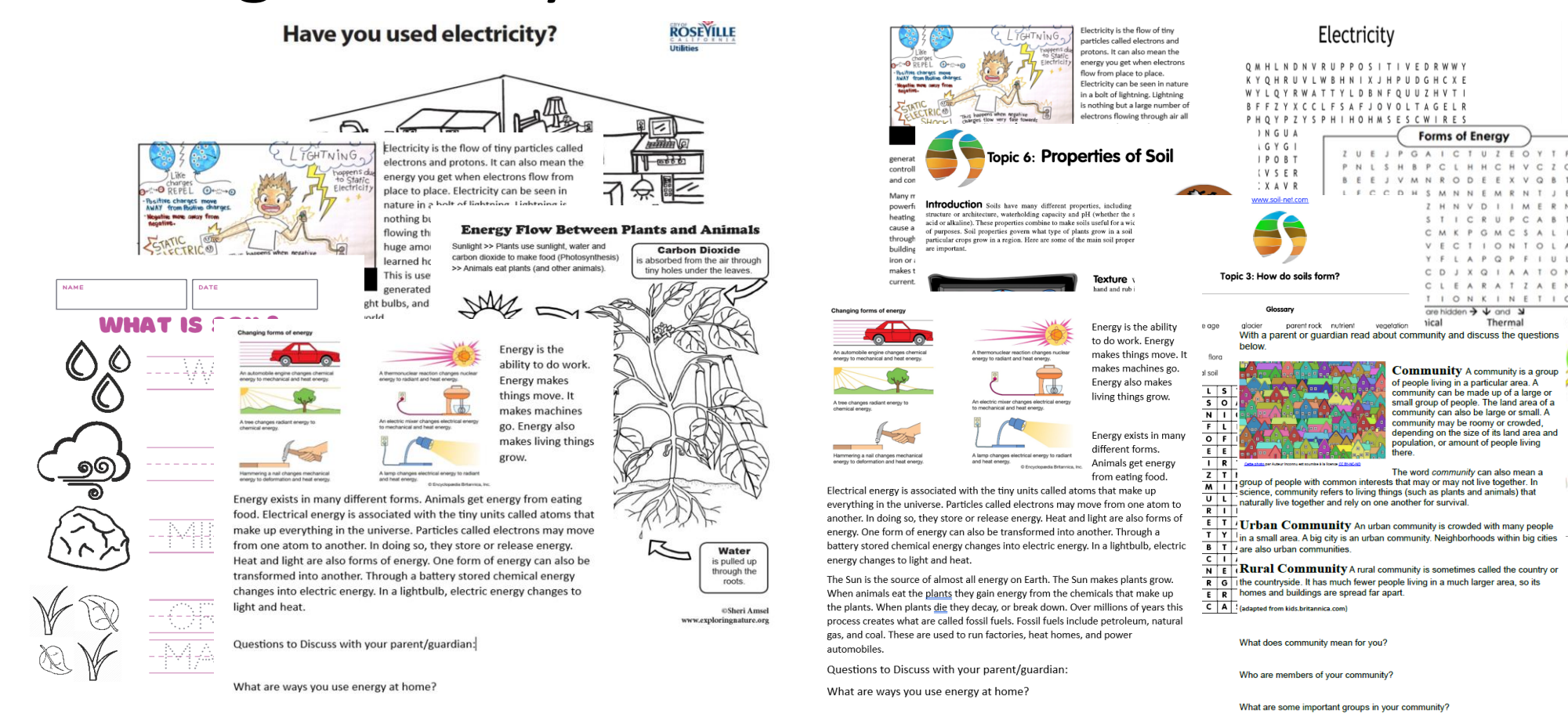


Figure 5: Weekly take home activities by age group designed to encourage at home discussion

## Data Collection

- The evolving nature of the analysis requires detailed field notes from all participant observers. [3]
- To support the recall of researchers, photos are taken at various stages of garden revitalization.
- Each student was provided with a notebook maintained by researcher between weekly meetings.

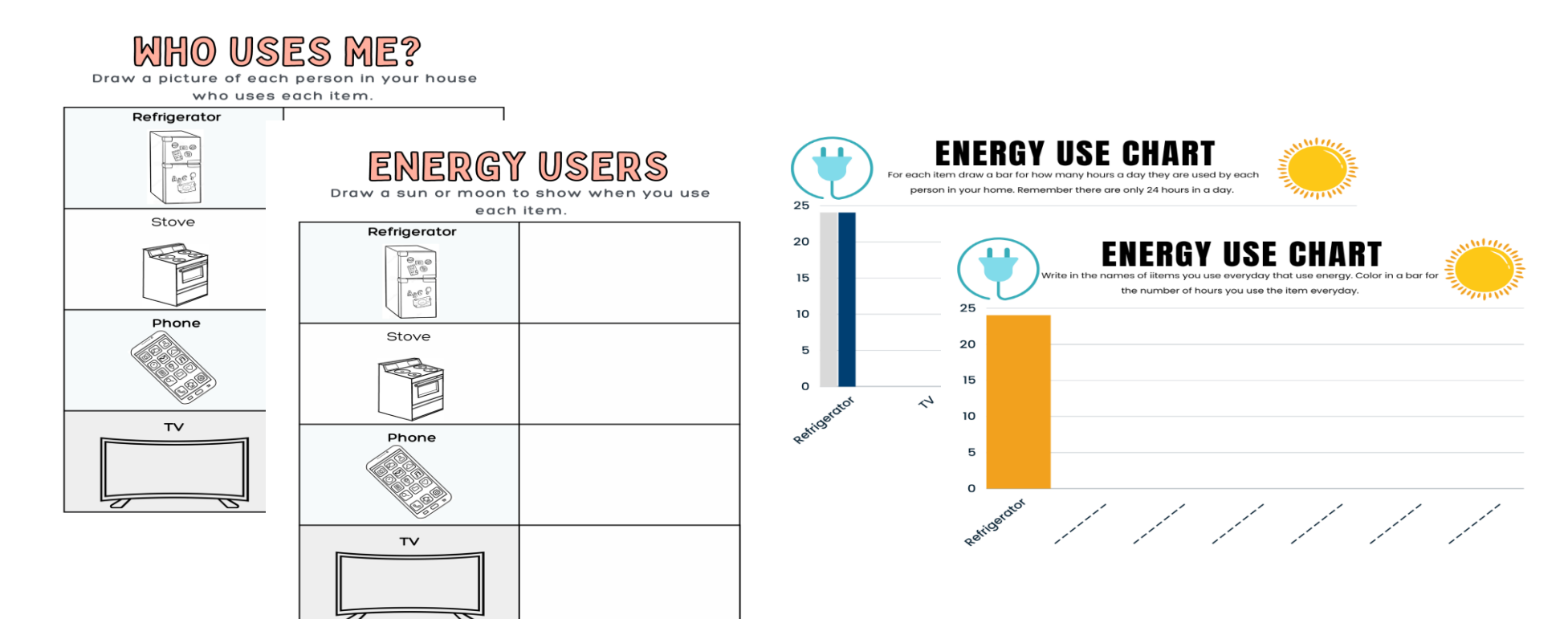


Figure 6: Student in-session activity sheets collecting information on energy usage in their homes by age group

## Conclusion

- A mixed method approach strengthens the ability of researchers to conduct in vivo analysis: include community members, understand community assets and creation of a unique tool.
- This project strengthens trust by supporting community identified needs increasing the support for future activities.
- In future studies researchers will have stronger theory formation through exposures to hard to acquire information.

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