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Farm-Based Education for Food System Transformation

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Abstract

Food systems education is being studied as a “vital strategy” in transforming the current food system paradigm away from globalization and industrialization and towards a system which enables *community-level food sovereignty*, or the abilities and rights of communities to define and create their own food systems. A literature review conducted for this master’s thesis found a significant research gap surrounding *farm-based education* as a potential form of transformative food systems education. This master’s thesis asks two research questions which seek to bridge current research gaps:

RQ1: How are farm-based education organizations balancing farming production with pedagogical activities?

RQ2: How are farm-based education organizations connecting to broader sustainable and ethical food system transformations in their respective regions?

This thesis has used a variety of qualitative research techniques, including a literature review, semi-structured interviews, and participatory research, and the two frameworks of “critical food systems theory” (CFSE, Meek and Tarlau, 2016), and “transformative agroecological learning” (TAL, Anderson et al, 2016), to address RQ2.

Main findings include: 1) Many organizations, particularly those producing food at relatively larger scales of production, were found to have a symbiotic balance between farm production and education. 2) Having sufficient staff, space, and time allotted for both farming and education was found to help organizations in having a symbiotic balance between farm production and education. 3) Long-term, service-based learning opportunities were found to be helpful in creating meaningful education opportunities that also provide real farming production help. 4) Farm-based education tends to have a focus on practical, hands-on learning, forging local partnerships with other food system actors, and is usually located outside of traditional top-down structured school systems. These characteristics make farm-based education readily able to support regional sustainable and ethical food system transformations, based on the frameworks of CFSE and TAL. 5) Many farm-based education organizations are already taking laudable actions connecting their programming to food systems transformations in their respective regions. 6) An effort from farm-based education organizations, aided by support networks such as the Farm-Based Education Network (FBEN), to clarify what farm-based education is using concepts such as food justice and sovereignty, which are already present within the discourse of many farm-based education organizations, could help strengthen farm-based education's relationship to food system transformations.

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List of Abbreviations, Tables, and Figures

Abbreviations:

CFSE: Critical Food Systems Education

FBEN: Farm-Based Education Network

TAL: Transformative Agroecological Learning

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Ch. 1: Introduction

“Food systems education needs to promote a radical critique of the current state of global food production, and link that critique to the movements that are struggling to transform this system.”

-Meek and Tarlau, 2016, p. 255

Food systems, from how we collect seeds to how we educate children about nutrition, have been severely altered by the neo-liberal systems of globalization and industrialization. Our current food systems have become systems which no longer function sustainably or ethically for humans or the ecosystems we are inextricably a part of. Food systems education is being studied as a “vital strategy” in transforming the current food system paradigm away from globalization and industrialization and towards a system which enables *community-level food sovereignty*, or the abilities and rights of communities to define and create their own food systems (Meek and Tarlau, 2016). Understanding how education can effectively empower young people to be actors working towards food sovereignty within their communities is a principal goal of this thesis.

Food systems education is diverse, ranging from elementary school gardens to apprenticeships at working farms, and differs across a number of factors, including location, geopolitical context, farming landscape, and pedagogical approach. Certain categories of food systems education have been well-studied within academia yet substantial research gaps remain. A literature review conducted for this master’s thesis (see Appendix A) found a significant research gap surrounding educational programs which are hosted by farms themselves as well as programs teaching youth and young adults. This thesis will therefore focus its scope on a relatively understudied yet important category of food systems education programs: *farm-based education programs for youth and young adults*.

Mindel (2014) calls farm-based education any education in which children or adults are “partaking in hands-on learning... in any kind of farming system.”¹ This thesis will define garden or farm-based education as broadly as Mindel’s (2014) definition above to leave room for the diversity of programs crafting experiential education within farming and gardening spaces, from productive urban market-gardens to large-scale rural ranches. Dilafruz (2018) agrees that farm-based education relates closely to the parallel movements of “outdoor education, place-based education, experiential education, nature-based education, environmental education, and sustainability education” and adds a further connection to grassroots projects like the slow-food movement and community supported agriculture². The efficacy of farm-based education as a pedagogical approach is relatively understudied, however, the few studies focusing on the topic show promising results. Parr and Trexler (2011) found that learning within

¹ Whether the “place” or setting of farm-based education is truly a garden or farm remained difficult to define during the entirety of this thesis. Finally, I chose to use Mindel (2014)’s rather broad definition of farm-based education as it leaves room for garden-spaces to be included as well as a productive working garden can certainly be argued to be a “farming system,” regardless of its connection to capitalistic commerce.

² Community supported agriculture describes farms which have a direct relationship with the people who eat their food, often share-holders or members of the farm (Cone and Myhre 2007).

a farming environment enhanced university-level students' appreciation for and understanding of farming practices. Smeds et al (2015) looked directly at the value of place-based learning within a farm education program for youth and found that students demonstrated a deeper and longer-lasting understanding of the subject when learning took place in an “authentic learning environment,” such as a farm or garden. While some studies have shown that farm-based education may be a successful pedagogical approach in terms of student experience and learning outcomes, no studies were found which explicitly look at how farm-based education may connect to sustainable and ethical food systems transformations.

In order to fully leverage the transformative capabilities of farm-based education, it is important to understand the “where, why, how, and what” of these understudied programs. It remains relatively unknown how farm-based education programs are operating in terms of their farming and food system-level practices, pedagogical approaches, types of educational programming offered, and how they are linking towards broader food systems transformations. It is also unknown how farmers and educators themselves view the education programs they host and the farming systems they manage, including the challenges they face and the ways they overcome these challenges. Knowledge is needed regarding what farm-based education programs look like across organizations of various sizes, locations, goals, and values and how programs are connecting to broader sustainable and ethical food system transformations in their respective regions.

The purpose of this master's thesis research project is therefore to *explore farm-based education as a form of transformative agroecological or food systems education*. This thesis uses a diverse methodology, including three phases of data collection and analysis (see Ch. 2, Methodology, for details). Phase one, an exploratory phase of research, included 47 short semi-structured interviews conducted at six different farmers' markets in the Bay Area of California, USA, focusing on farmers' perceptions on hosting education programs at their farms. The first research question was developed from these short semi-structured interviews, which sparked discussions with farmers regarding the difficulties of balancing being a full-time farmer with offering pedagogical activities:

RQ1: How are farm-based education organizations balancing farming production with pedagogical activities?

The exploratory phase of research (phase one) also included a literature review exploring the state of agroecological educational programs for youth and young adults and investigating program relationships with food systems movements such as agroecology, food justice, and food sovereignty (see Appendix A for the literature review in full). From this literature review, two helpful theories emerged which have guided the analytical framework for his thesis: 1) Critical Food Systems Education (CFSE), by Meek and Tarlau (2016) and 2) Transformative Agroecological Learning theory (TAL), by Anderson et al (2019).

Meek and Tarlau (2016) created the framework of *critical food systems education* (CFSE; seen in Figure 1 below) to synergistically “leverage education and innovative pedagogical techniques so that students and educators can transform the food system” (Meek and

Tarlau 2016, p. 241). CFSE brings together the four themes of: 1) food sovereignty; 2) food justice; 3) agroecology; and 4) popular education.

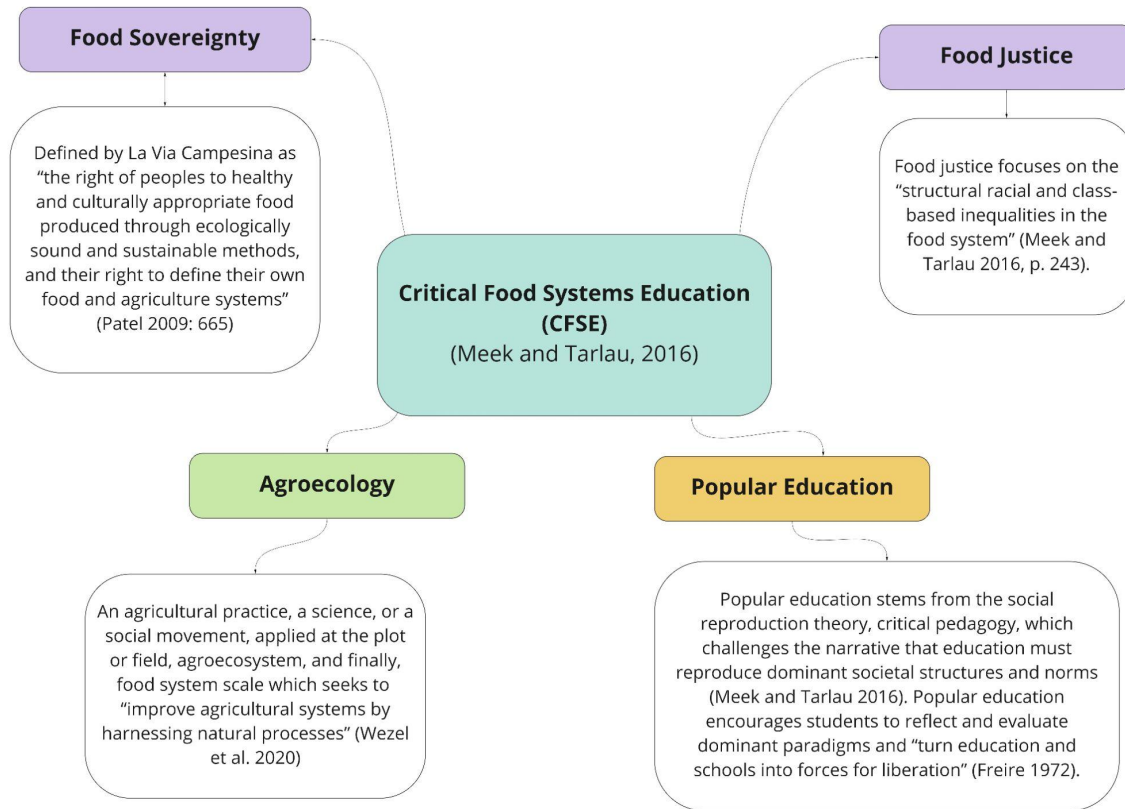


Figure 1: Flow diagram explaining “CFSE”

Food sovereignty is a concept that has emerged from activist movements and is defined by La Via Campesina as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (Patel 2009: 665).³ *Food justice* emerged in the USA in the 1960s and 1970s as a grassroots-offshoot of the civil rights and environmental justice movements (Mares and Alkon 2011). Food justice focuses on the “structural racial and class-based inequalities in the food system” (Meek and Tarlau 2016, p. 243). Wezel et al (2009) defined *agroecology* as an agricultural practice, a science, or a social movement, applied at the plot, agroecosystem, and food system scale, which “seeks to redesign agriculture around ecological principles” (Meek and Tarlau, 2016, p. 245). Now, thirteen years after Wezel et al’s (2009) definition of agroecology, there is an increasing effort within the academic agroecological community to politicize agroecology by embracing its origins as a local grassroots movement (Molina et al, 2019). This thesis will utilize Meek and Tarlau (2016)’s political definition of agroecology as a “political project.” *Popular education* evolved from Latin American peasant movements of the 1960s and 1970s (Gruenewald 2003). Popular education stems from the social reproduction theory, critical pedagogy, which challenges the narrative that education must

³ See La Via Campesina’s website (<https://viacampesina.org/en/food-sovereignty/>) for more information.

reproduce dominant societal structures and norms (Meek and Tarlau 2016). Popular education encourages students to reflect and evaluate dominant paradigms and “turn education and schools into forces for liberation” (Freire 1972).

Through a review of research focusing on the European Agroecology Knowledge Network (EAKEN), an offshoot project of La Via Campesina (LVC), Anderson et al (2019) crafted “*transformative agroecological learning*” (TAL). TAL offers four critical characteristics that agroecological education can utilize to connect to food system transformation movements (see Figure 2 below):

a. *Horizontalism*, stemming from popular education, is referring to democratic communications within education systems which seek to be non-hierarchical and anti-authoritarian (Anderson et al 2019).

b. *Wisdom dialogues*, or dialogos de sabres, refers to intergenerational and inter-place dialogues between food producers, food system actors, students, and formal and informal education and research institutions (Anderson et al 2019).

c. *Combining the practical and the political* aims to empower and educate farmers in articulating and acting on their political demands. This starts from youth education, where “linking localised learning activities to global discourses of food sovereignty and agroecology” helps productively politicize education programs (Anderson et al, 2019 p. 541) .

d. *Building social movement networks*. “All major success stories in grassroots agroecological education depend on nested local organizations to facilitate and coordinate collective action at different scales' ' (Anderson et al 2019, p. 542). In order to participate in transforming food systems, agroecological education programs must connect to social movements.

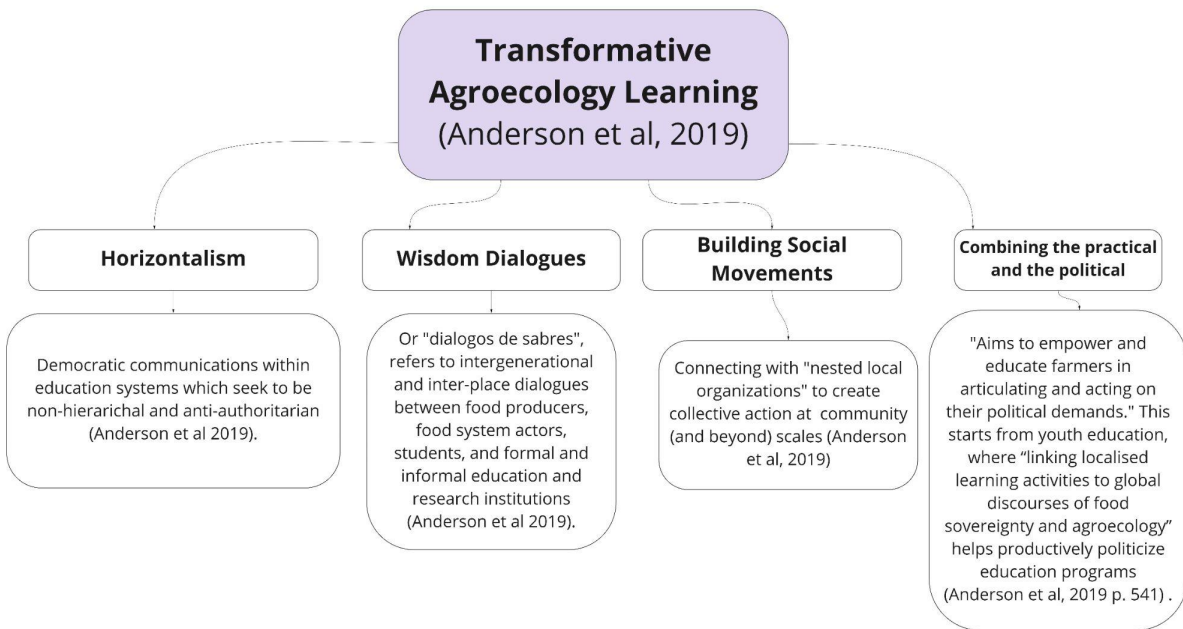


Figure 2: Transformative Agroecology Learning

CFSE has provided a conceptual framework for food system education to aspire to, crafting a vision for transformative education, while TAL has provided concrete transformative characteristics education programs can implement. This thesis seeks to apply the vision of CFSE and the how-to of TAL to understand how farm-based education, a relatively understudied subset of agroecological and food systems education, is connecting to broader food system transformation.

The literature review seen in Appendix A, which includes more background on the two aforementioned theories of CFSE and TAL, led to the development of the second research question:

RQ2: How are farm-based education organizations connecting to broader sustainable and ethical food system transformations in their respective regions?

Firstly, this thesis seeks to further our understanding of farm-based education by exploring how farmer-educators are balancing their farm production with hosting pedagogical activities. Secondly, this thesis will discuss how farm-based education programs are linking towards sustainable food systems transformations using the theories of CFSE and TAL. Finally, this thesis will discuss how farm-based education can deepen its connections to food system transformations. Chapter 2 presents the methodology, Chapter 3, the results and discussion of the results, and Chapter 4, the conclusions, reflections, and applications for the thesis.

Ch. 2: Methodology

This thesis has used a variety of qualitative research techniques, including a literature review, semi-structured interviews, and participatory research, that are captured through three phases. An overview of the three phases is visualized below in Figure 3.

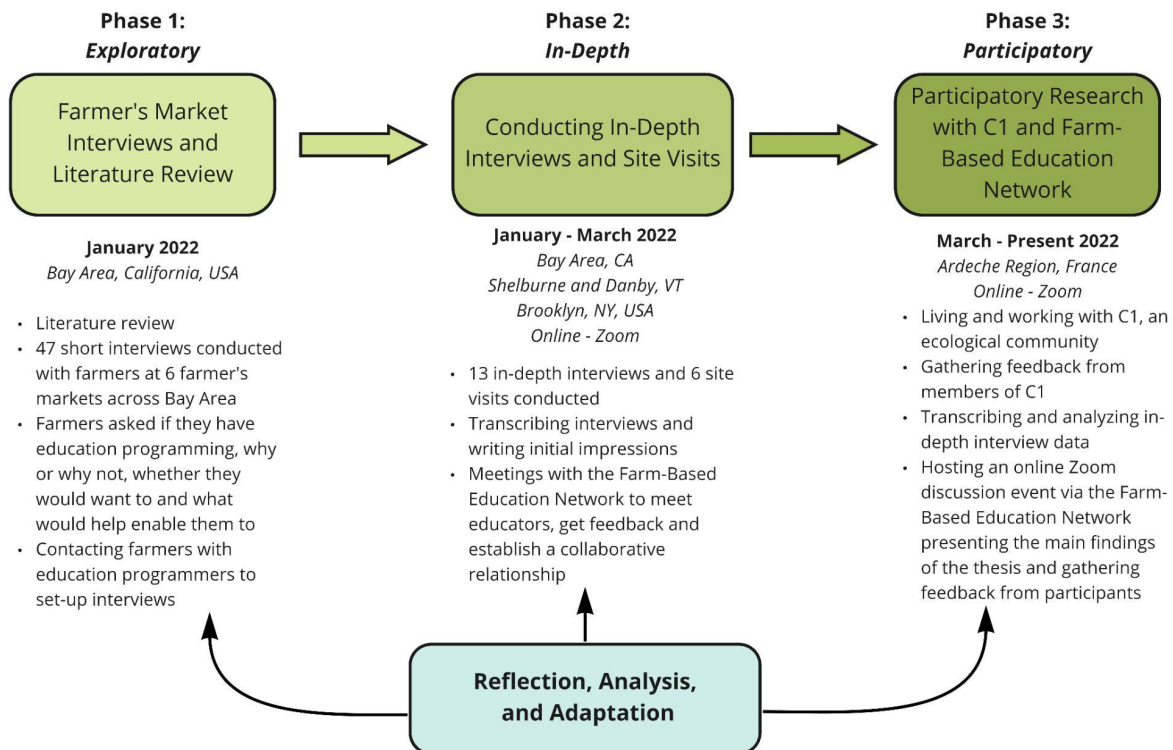


Figure 3: Overview of Methodology

Theoretical Framework

The frameworks of Critical Food Systems Education (CFSE; Meek and Tarlau, 2016) and transformative agroecological education theory (TAL; Anderson et al. 2019), both presented in the literature review of Chapter 2, were used to analyze *how* farm-based education programs are linking towards sustainable food systems transformations. The two frameworks helped to shape the research questions, semi-structured interview questions, and the analysis methodology.

Methodology Overview and Data Collection

Phase One - Exploratory (Fall 2021 - January 2022):

This phase consisted of a literature review, conducted in the fall of 2021, and short semi-structured interviews conducted with randomly selected farmers at six farmers' markets across the Bay Area, California, USA. This phase also included selecting participants for

in-depth interviews, crafting semi-structured in-depth interview questions, and formulating research questions.

For the literature review, peer-reviewed articles were found using keyword searches such as “agroecology education youth and young adult” and “farm-based education.” Relevant articles were then compiled and organized by pedagogical approach.

47 short (5-10 minute) interviews were conducted with farmers at random at six different Bay Area, California, USA farmer’s markets in January 2022 (Figure 4 below). In these interviews, farmers were asked if they hosted education programs at their farms. If yes, their contact information was noted to request an in-depth interview to be conducted at a later date. If they did not have education programming at their farm, we discussed why not, whether they would want to in the future, and what would be needed in order to host programs. Hand-written notes in a notebook were taken for each interview and interviews were *not* recorded.



Figure 4: Farmer’s market in Berkeley, CA, USA, where interviews were conducted; photo taken by author

Selecting participants for in-depth interviews and site-visits began during this phase. Firstly, participants were found through Google searches such as “bay area farm education programs for teens”, “bay area farm education programs for kids” etc. Secondly, participants were found through word of mouth, through friends’ recommendations and talking with farmers at farmers’ markets. Lastly, participants were found through attending an online FBEN community meeting,

where I briefly discussed the thesis I was working on and requested people send me their information if they were interested in participating in an in-depth interview. A Microsoft Excel table was crafted with 40 different participant candidates, noting contact information, location, size of farm, production styles, and education programming. In selecting participants, I attempted to contact programs which varied in location (urban vs rural), production scale and practices, and education programs offered to ensure a diversity across as many parameters as possible. This being said, I was limited to the programs which responded to my request. Regionally, I focused on contacting mostly farm-based educators from the Bay Area, California, USA, and New England (Vermont, New Hampshire, and upstate New York, USA) as these were the two regions of the USA I was able to conduct in-person interviews in. Farmers from other states, however, were contacted for online interviews.

Phase Two - In-Depth (*January - March 2022*):

Phase two included conducting 13 semi-structured in-depth interviews and 6 site-visits with farm-based educators. A collaboration with the Farm-Based Education Network (FBEN), a USA-based network of nearly 4,000 members, also began during this phase, where monthly meetings were conducted with the coordinator of FBEN, to discuss the thesis, shape interview questions, and plan an open dialogue session with FBEN community members. The collaboration aided in shaping research questions and results to be useful and accessible to people actively working within farm-based education. The process of transcribing interview recordings and hand-written notes began in this phase.

Figure 5 below shows a map of where in-depth interview participants are located. Table 1 in Appendix B gives an overview of the various case studies selected for in-depth interviews and site-visits, including their location, population density, size of land, organization structure, and mission statement keywords. Table 1 demonstrates the diversity of population densities, organizational structures, farming production scales, and types of education programming offered across the 14 case-study organizations.

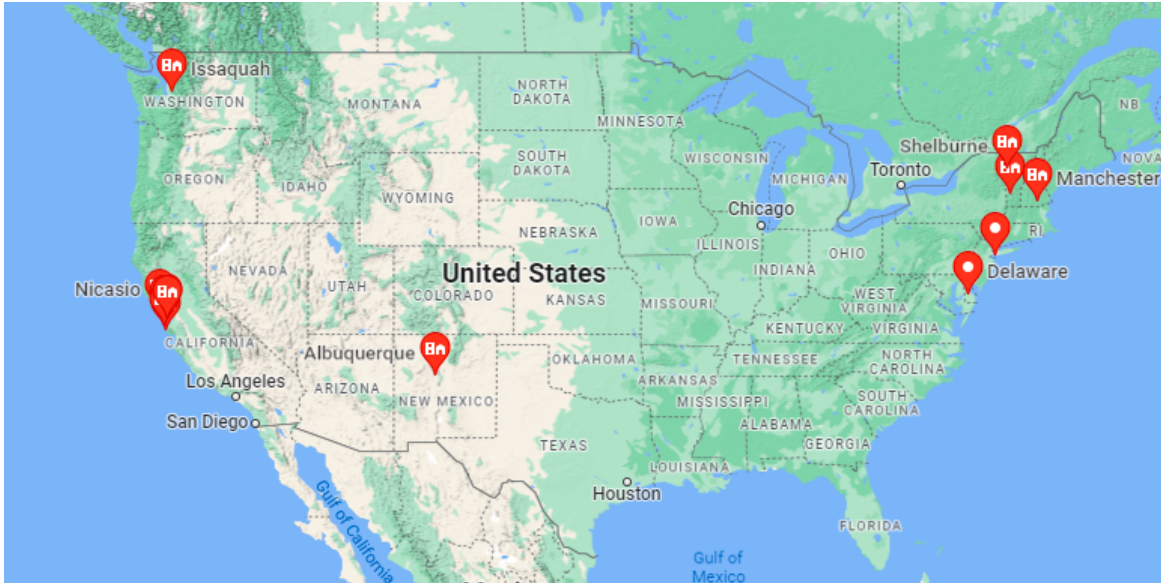


Figure 5, Map of Participant Locations

Interview questions were crafted to cover four themes: a) farming systems overview (production, practices, distribution, sales, relationship to land, etc); b) education overview (programs offered, pedagogical approaches, etc); c) relationship to community; and d) organizational resilience. The interview questions were continuously updated and reworded throughout the process, though the general themes and outline remained the same for all 13 in-depth interviews. The fourth theme of organizational resilience was added based on discussions with FBEN. The last iteration of the interview question guide can be seen in Appendix B.

Phase Three - Participatory (March 2022 - Present):

Participatory research occurred in-person at Organization #14, an ecovillage in the Ardeche region of France which hosts education programming for youth and young adults. and online with the Farm-Based Education Network.

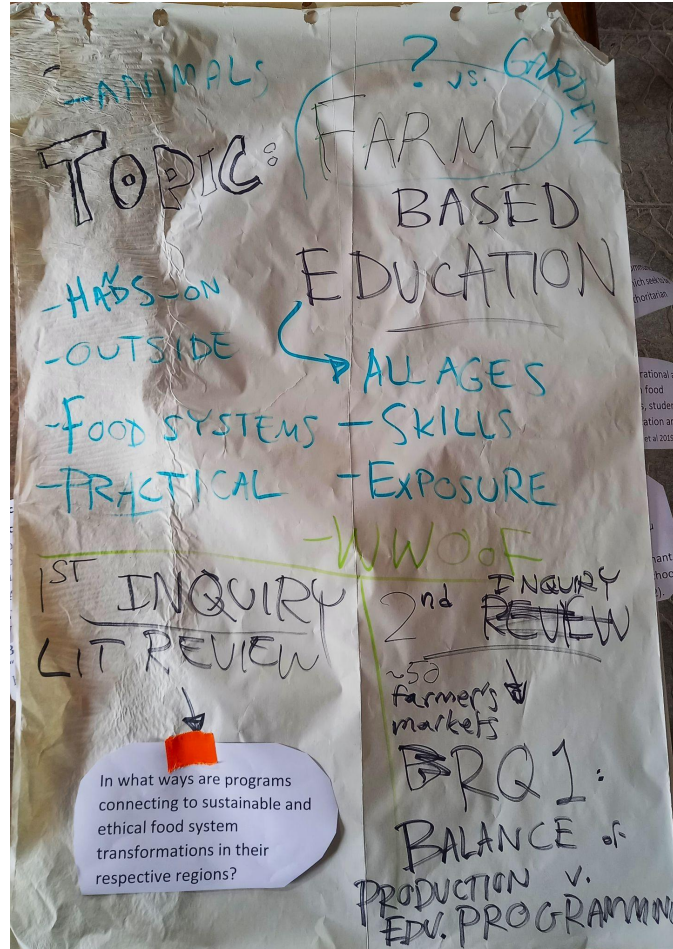


Figure 6: What is farm-based education? Photo taken by author.

Participatory Research with Organization #14

I began living and working at C1 from March 2022 through present. Throughout this time, ecovillage members took part in informal discussions surrounding the thesis topic. I wrote notes and took photographs, gathering information covering the same broad themes as the in-depth interviews. On May 23rd, I hosted a two-hour formal workshop with collective members. The workshop was recorded and consisted of a mix of presenting information gathered from the thesis and discussing materials with collective members.

The workshop consisted of three parts. First, we had a discussion on “what is farm-based education?” I asked members what they felt “farm-based education” meant and I wrote down their responses on a poster board (see Figure 6 above). I then presented the research questions of the thesis, beginning with RQ1, “how do farms balance food production and pedagogical activities?” I printed out quotes from a selection of in-depth interviews I had conducted in Phase Two. I selected quotes in which participants had discussed how they balance producing food with hosting pedagogical activities. I created an imaginary spectrum with “Food Production” on one end, and “Educational Activities” on the other end and had members help me place the different printed-out quotes along the spectrum. I then had C1 members discuss where they felt

they should be placed on the spectrum and took notes of the main points they said, making sure they agreed with what I was writing down (see Figures 7 and 8 below).

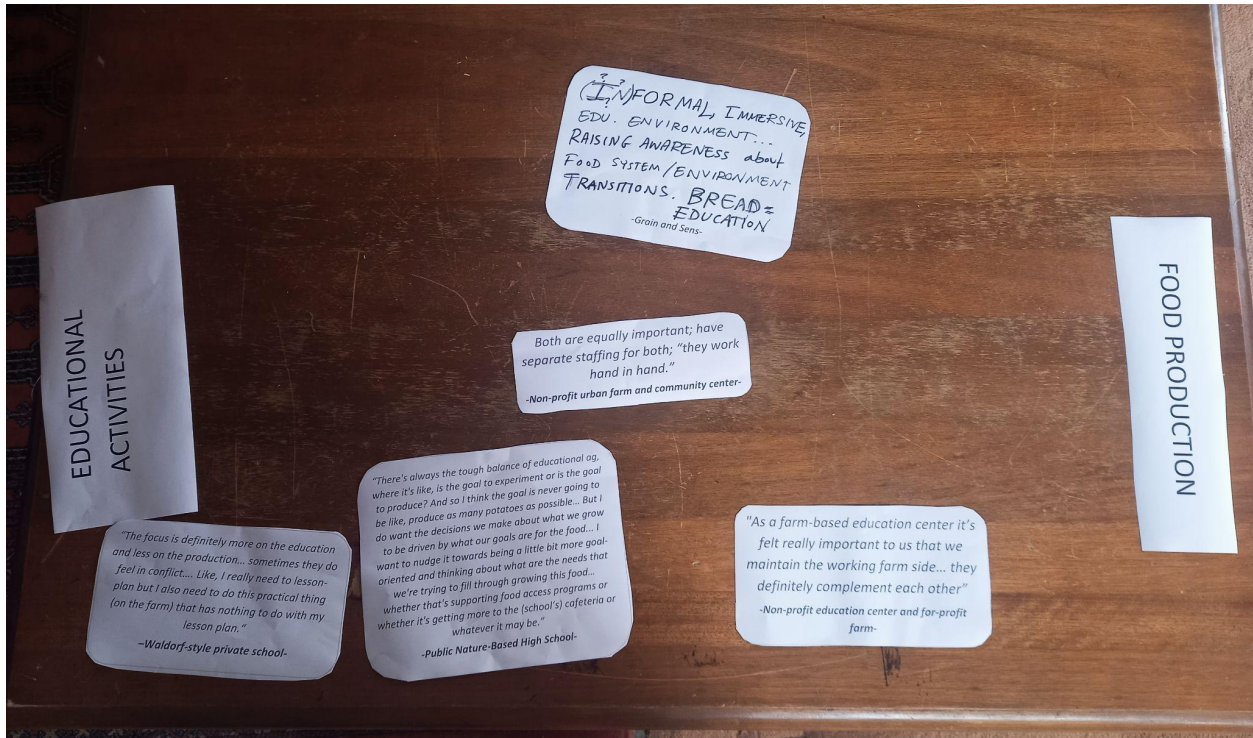


Figure 7: Ranking educational activities versus food production; photo taken by author

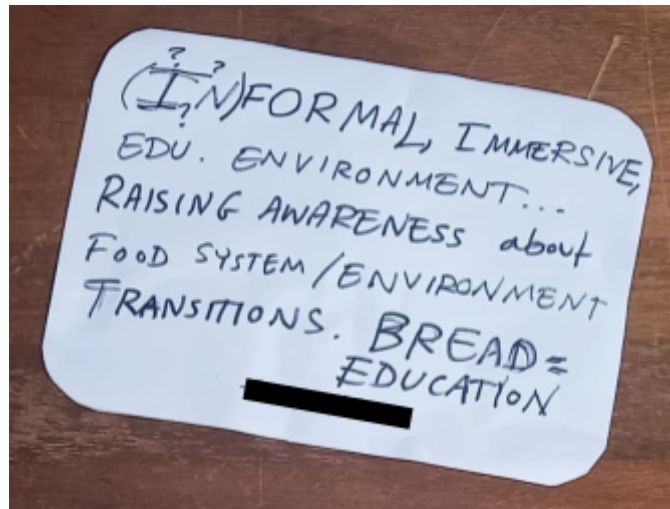


Figure 8: C1's balance between food production and education; photo taken by author

The last part of the discussion focused on RQ2, “how are programs connecting to ethical and sustainable food system transformations?” I presented a handwritten version of my analysis system (Figure 9 below for the handwritten version of analysis presented during the workshop; Figure 10 shows the digital version). I presented key concepts from CFSE and TAL and discussed what each concept meant with members. I then asked each member of the collective to pick one of the “bubbles” (agroecology, popular education, food justice and sovereignty, or

organizational resilience) to reflect on. Members were asked to reflect on what they felt they were doing *now* regarding their collective work for their chosen bubble and what they would like to do *in the future*. I created a “homework” document for them to fill-out their responses in writing to these reflection questions and handed them out to each collective member. Members were then given time to fill-out their responses. The homework document can be found in Appendix D.

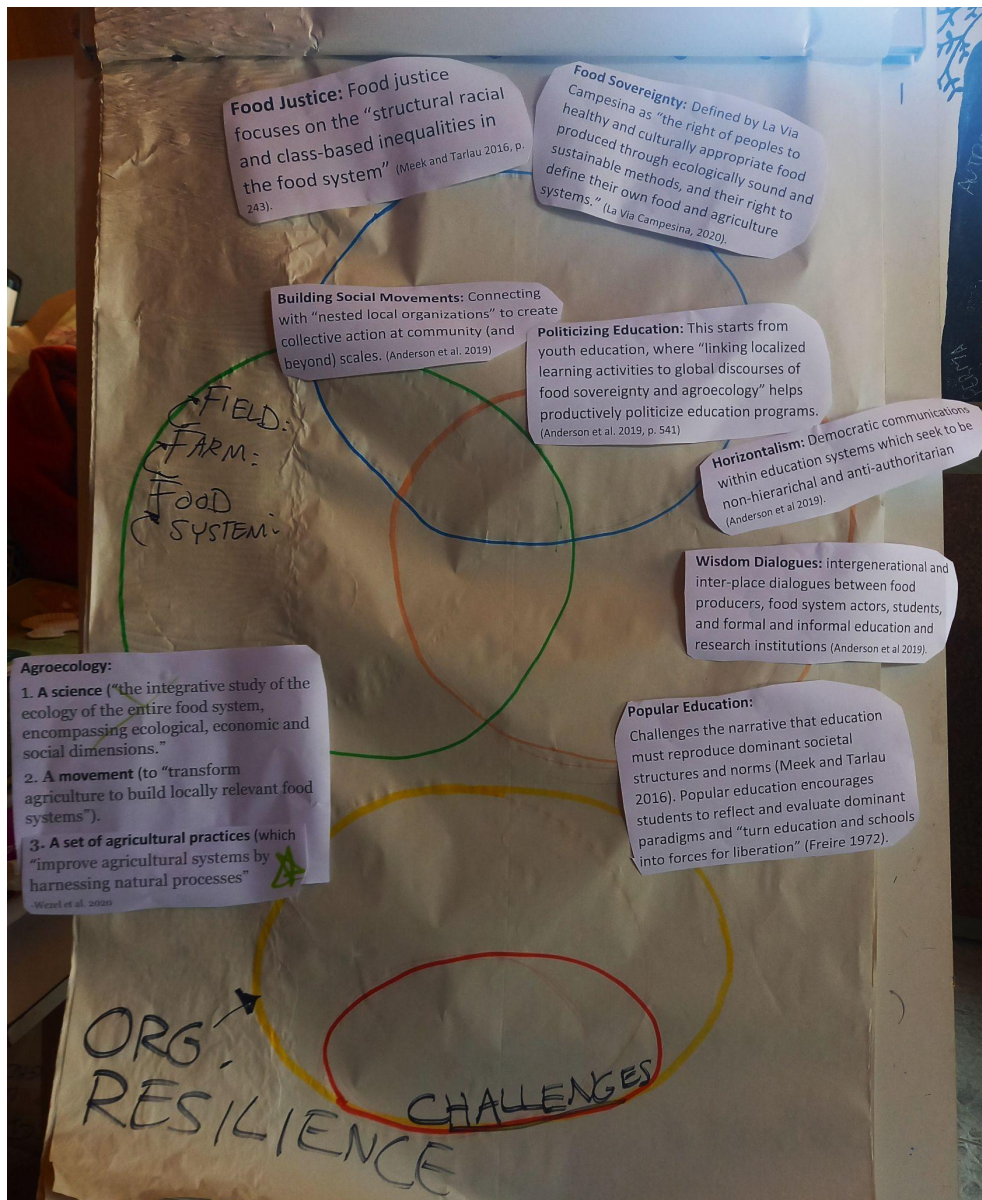


Figure 9: Handwritten analysis framework as presented in workshop with C1; photo taken by author

Participatory Research with FBEN

This phase also included participatory research with FBEN through an online discussion event hosted through the network. The event was publicized through FBEN’s website and was

open to anyone who signed-up. I also publicized the event to all Phase Two participants, as well as colleagues working within farm-based education. Participants were largely people currently working within farm-based education. The discussion mainly focused on RQ2, or “how programs are connecting to broader sustainable and ethical food system transformations?” Thesis themes and key concepts were presented to members of FBEN and breakout room discussions were held. Each breakout room selected one of the key themes from CFSE (agroecology, food justice and sovereignty, and popular education) and participants were asked to discuss what they felt the programs they worked for were doing within their selected theme. Breakout rooms were then called back to the plenary and we discussed key points from each breakout room. The meeting was recorded, edited, and shared through FBEN’s website. A summary document (see Appendix E) synthesizing results was also shared through FBEN’s website and monthly newsletter.

Data Analysis

A mixed-methods approach of content analysis and thematic analysis was taken to analyze all interview data. For all interviews, verbal consent was acquired before conducting the interview. For the in-depth interviews, Participant Information and Informed Consent forms (see Appendix F) were sent out prior to the interview, which included details about the thesis project, participant confidentiality, and how data would be kept secure and stored. Interviews were recorded using a handheld recorder. Audio was uploaded to my personal computer and kept password-encrypted. Interviews were then either transcribed manually or through the transcription application, Otter. Transcriptions created through Otter were then manually checked and edited. The audio software Audacity was used to slow down recordings and remove background noise.

Phase One - Exploratory:

From the 47 short semi-structured interviews completed during Phase One, handwritten notes were taken during the interview. The handwritten notes were then transcribed into a table in Microsoft Excel. The qualitative analysis software, Dedoose, was used in conducting **content analysis** (Walliman, 2011). First, themes were found across participants’ responses to each question. Next, a code tree was crafted in Dedoose, organizing responses into various units and subunits. Dedoose was then used to count words or phrases within each unit. Finally, Microsoft Excel was used to create graphs visualizing the responses. The online whiteboard software, Miro, was used to visualize the results.

Phase Two - In-Depth:

For the in-depth semi-structured interviews, thematic analysis was used. I followed Walliman’s (2011) three-step approach to thematic analysis in which data is *reduced (1)* and *displayed (2)*, and from there, *conclusions are drawn and reconfirmed (3)*. In the reduction phase, while manually transcribing and re-checking Otter transcriptions of interview data, I created systems maps (Moutinho, 2004) using the software, Miro. I utilized both *deductive*

coding, where themes and categories were created inspired by the two framework theories, CFSE and TAL, and *inductive* coding, where new themes and categories emerged from the data. Finally, after mapping around 2/3 of the interview data, I settled on a final visual coding system (see Figure 10 below), which included five main themes (three coming from CFSE and two emergent), and a number of sub-themes (four of which were the four pillars of transformative education from TAL).

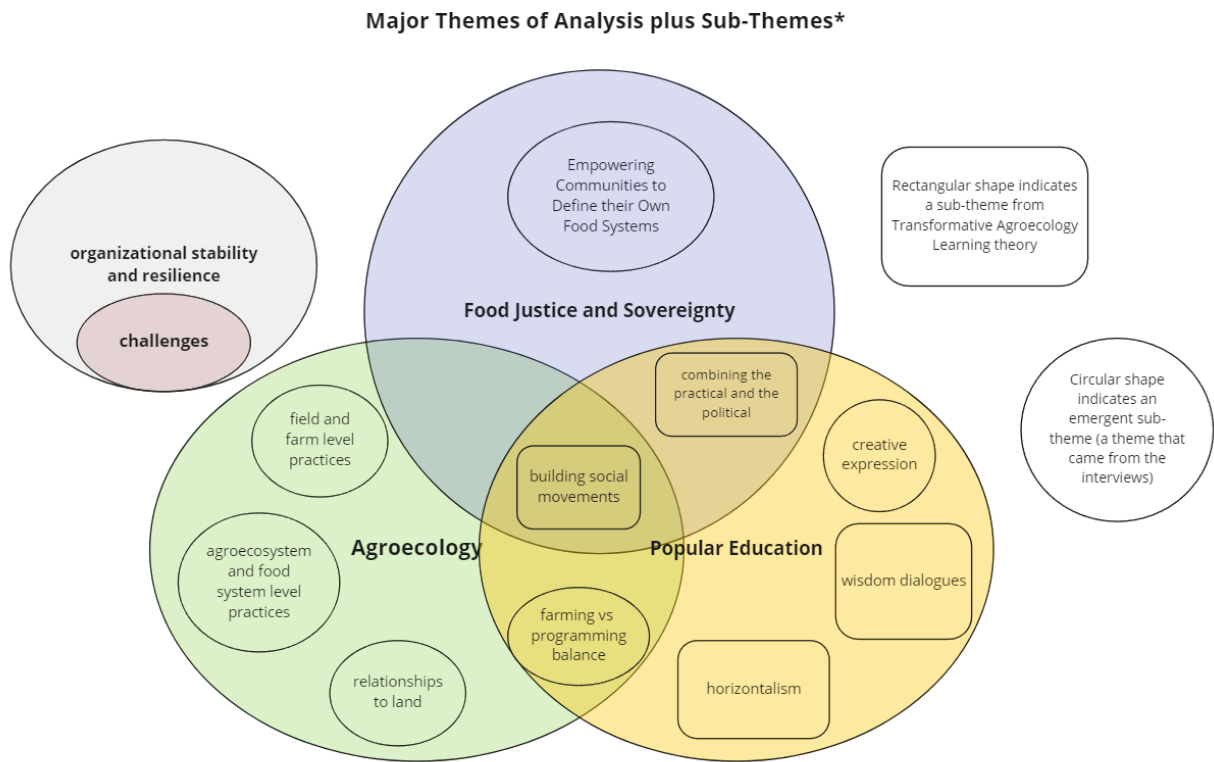


Figure 10: Major Themes of Analysis

Each interview was then re-analyzed, sorting interview data into the final visual coding system as seen above in Figure 10. The visualization phase of the analysis⁴, both included the final code maps (as shown above) as well as a series of tables which synthesize conclusions across all interviews.⁵ To synthesize data across case studies, actions and/or viewpoints seen or mentioned by one or more case study organizations were listed, language was homogenized, and sorted into sub-categories. These sub-categories were then further sorted into emergent categories, which were chosen based on how effectively they could hold a variety of groupings. Each category was then placed into a sub-theme. Besides the four characteristics of Anderson et al. (2019)’s transformative agroecological education theory (TAL), all sub-themes were emergent from the

⁴ The visualization phase is Walliman (2011)’s second step in thematic analysis.

⁵ The process of creating tables synthesizing information across all case studies is in line with Walliman (2011)’s third step of thematic analysis, where “conclusions are drawn and reconfirmed.”

data and chosen based on how well they could describe various categories. Finally, each sub-theme was placed within the major theme it most closely fit into.

Phase Three - Participatory:

Participatory Research with C1

Handwritten notes and photos from both the informal discussions throughout my time living and working at C1 as well as workshop notes and members' written reflections were compiled and mapped on Miro. I then used all collected materials from C1 to do the same analysis methodology as was used in analyzing the Phase Two in-depth interviews. I asked members specific questions when I felt there were gaps in how well I was able to conduct the bubble analysis based on participatory materials alone.

Participatory Research with FBEN

Data from the online discussion with FBEN was not analyzed for the thesis. Rather, impressions that came from the discussion were noted and are presented in Chapter 4.

Ch. 3: Results and Discussion

Results and discussion are presented in this chapter for the exploratory phase of research as well as for the two research questions. First, the exploratory phase of research, which synthesizes the data gathered from short semi-structured interviews with farmers at random at farmer's markets, is presented and discussed. The results, analysis, and discussion are then explored for the two main research questions using data from Phase 2, the in-depth interview phase, and Phase 3, the participatory research phase. The decision to combine results, analysis, and discussion into one section was done so that each research question, as well as the exploratory phase of research, could be coherently explored in one location. Specific case study organizations and various actions they are taking are spotlighted throughout this chapter in brown text boxes in an effort to present information that can be useful to people working within or interested in farm-based education.

Exploratory Phase

Do you offer education programs at your farm?

85% of farmers did not report to offer any education programming. Many farmers weren't sure what counted as "education programming." From discussing with farmers what "education programming" may be, "formal" and "informal" categories emerged, where I counted formal educational programming as programming that the farm was specifically hosting with education as a primary goal. Examples I gave of this included class field trips at the farm, hosting classes, workshops, or courses at the farm, having internship or apprenticeship programs, and hosting camps, etc. Informal programming was defined as programming which the farm put on that may have educational value, but where education was not necessarily a main goal. Examples of informal programming included farm tours and community events. Most people hosting education programs put themselves in the "informal" category. Discussions about what counts as education programming were helpful in shaping a working definition of "farm-based education" for the duration of the thesis.

Why Not?

Figure 11 below shows the number of mentions tallied for various factors influencing farmers' decisions to *not* host education programs. Farmers gave a variety of reasons for not hosting education programs, but by far, the most common factor was **time**. Statements such as "there's no time" or "I'm too busy" were heard quite frequently. The **staffing** category received the next amount of mentions, with farmers citing understaffing or overworking as being a primary reason that they were not able to host education programs. Some farmers, particularly those working with animals and bees, brought up **liability concerns** as a major factor influencing their decision to offer education programs. While not explicitly stated outright often, a **focus on production** came up a few times as a factor influencing farmers' decisions to not have education programs. A few farmers said outright that they were "too focused on production" to have time for "other

things” like education. Figure 12 on the next page is a flow chart summarizing the results from the interviews for all questions.

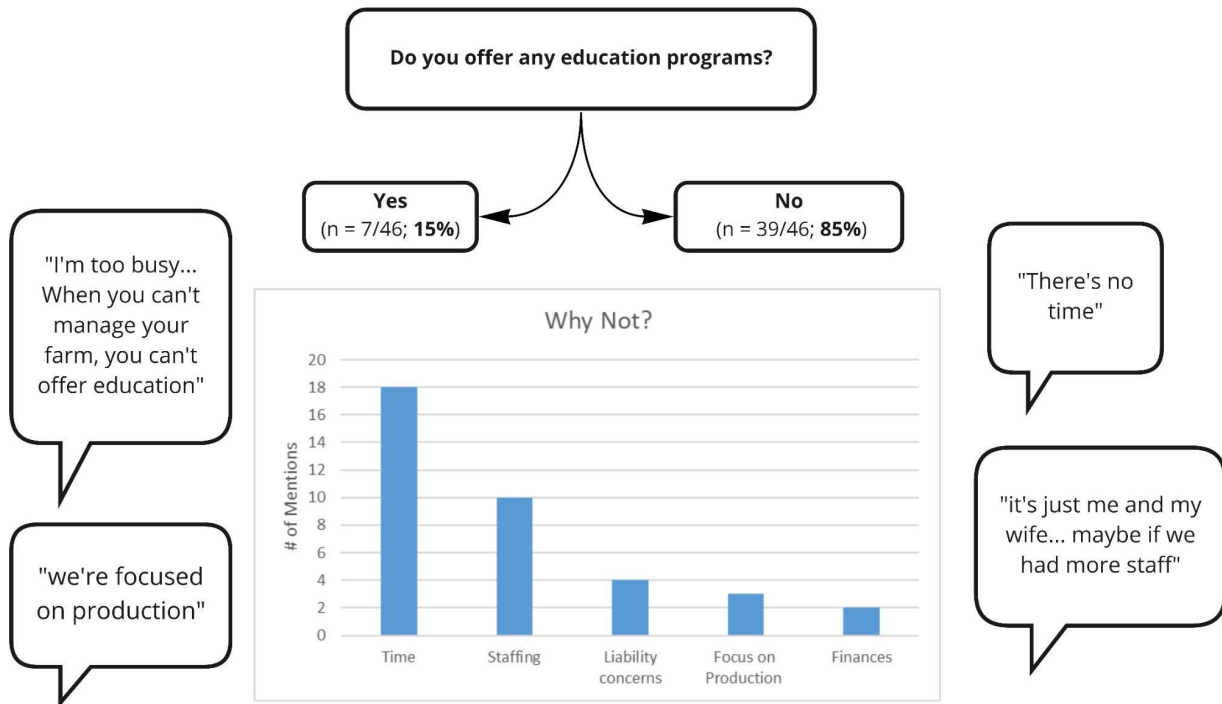


Figure 11: Responses to short semi-structured interviews with farmers at farmers' markets

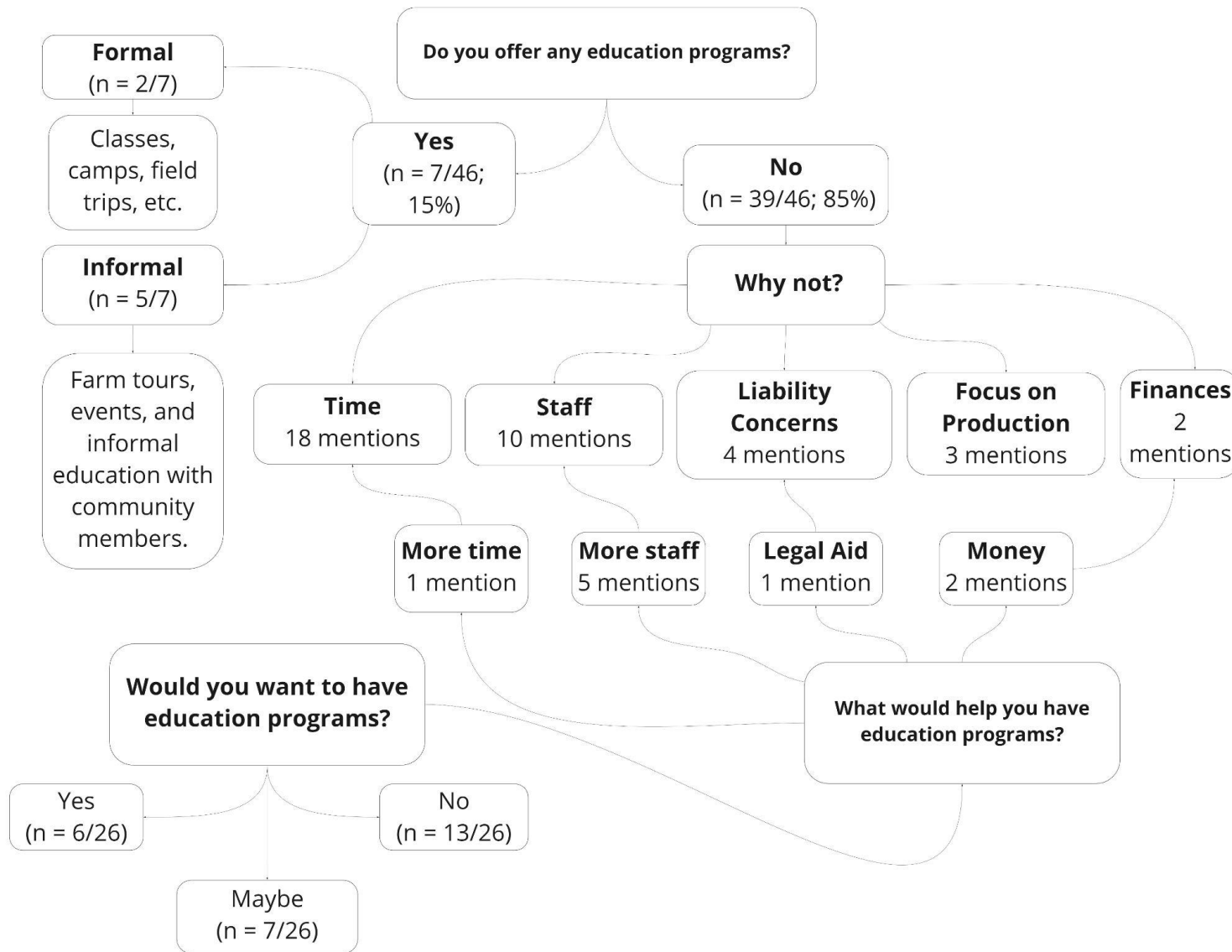


Figure 12: Flow chart for responses to short semi-structured interviews with farmers at farmers' markets

Would you want to have education programming?

Farmers who were not already hosting education programming were asked if they *would* have education programming. 50% said “no,” 27% said “maybe” and 23% said “yes.”

What would help you have education programming?

When farmers were asked what would help them have education programming, **more staff** was mentioned the most times. When staff was mentioned, it was often discussed that having an entire separate staff dedicated to education would allow the farmer to host programming. Money, time, and legal aid were also mentioned as being helpful for farmers in starting education programming.

Discussion of Exploratory Results

The discussions with farmers at farmers’ markets were helpful in establishing a preliminary understanding of how relatively common it is to have some form of farm-based education and how farmers view hosting education programming. Overall, the results showed that it is *not* very common for farms who sell at farmers markets to also offer educational activities. The results also demonstrated that most farmers think that having educational activities while producing at current levels would be difficult and they would need more staff, money, and/or time in order to offer educational activities. Around half of farmers were not interested in hosting educational activities in the future, while 23% definitely wanted to and 27% maybe wanted to. This demonstrates that there is at least a relatively large amount of farmers potentially interested in involving themselves more in farm-based education. The farmers’ market discussions also highlighted that what “farm-based education” means is rather unclear for most farmers. Particularly the gray area between formal and informal education programming was confusing for many farmers. I reflected on the fact that if I had a clearer explanation for what farm-based education meant at the time, perhaps more farmers would have answered “yes,” not realizing that they are potentially hosting informal farm-based education activities already, such as hosting WWOOFers, workshops, trainings, internships and apprenticeship programs. Overall, the discussions with farmers at farmers’ markets gave me the impression that many farmers held the belief that one had to *choose* between having a focus on production *or* on education. Since I was already in contact with many farm-based education programs who had large-scale farm productions while hosting an array of education programming, I knew that it was certainly possible to do both activities. This led me to develop RQ1, asking “*how* are organizations balancing producing food with having education programs?”

RQ1: How are organizations balancing producing food with having education activities?

Participants were asked during interviews to discuss how they balance producing food with having education activities. Table 2 in Appendix A gives an overview of the farming production and pedagogical activities for each case study as well as key quotes and paraphrased responses regarding how each case study balances producing food and having education activities.

Figure 13 below ranks each case study on a scale of how much they value food production (right-side) versus having educational activities (left-side). Those case studies which valued both equally were placed in the middle. Organizations are also sorted by their “farm production size”, which can be large (circular shape), medium (rectangular shape) or small (parallelogram shape). The relative farm production size was determined for each case study based on: 1) size of food or crop produced/year; 2) # of full-time farm production staff; 3) revenue derived from farm production sales. Perceptions from organizations regarding how easy or difficult balancing production and programming are color-coded. Those organizations which found both producing food and having educational programming to be helpful for each other are colored green; those which found the balance challenging are colored red; neutral is indicated by yellow.

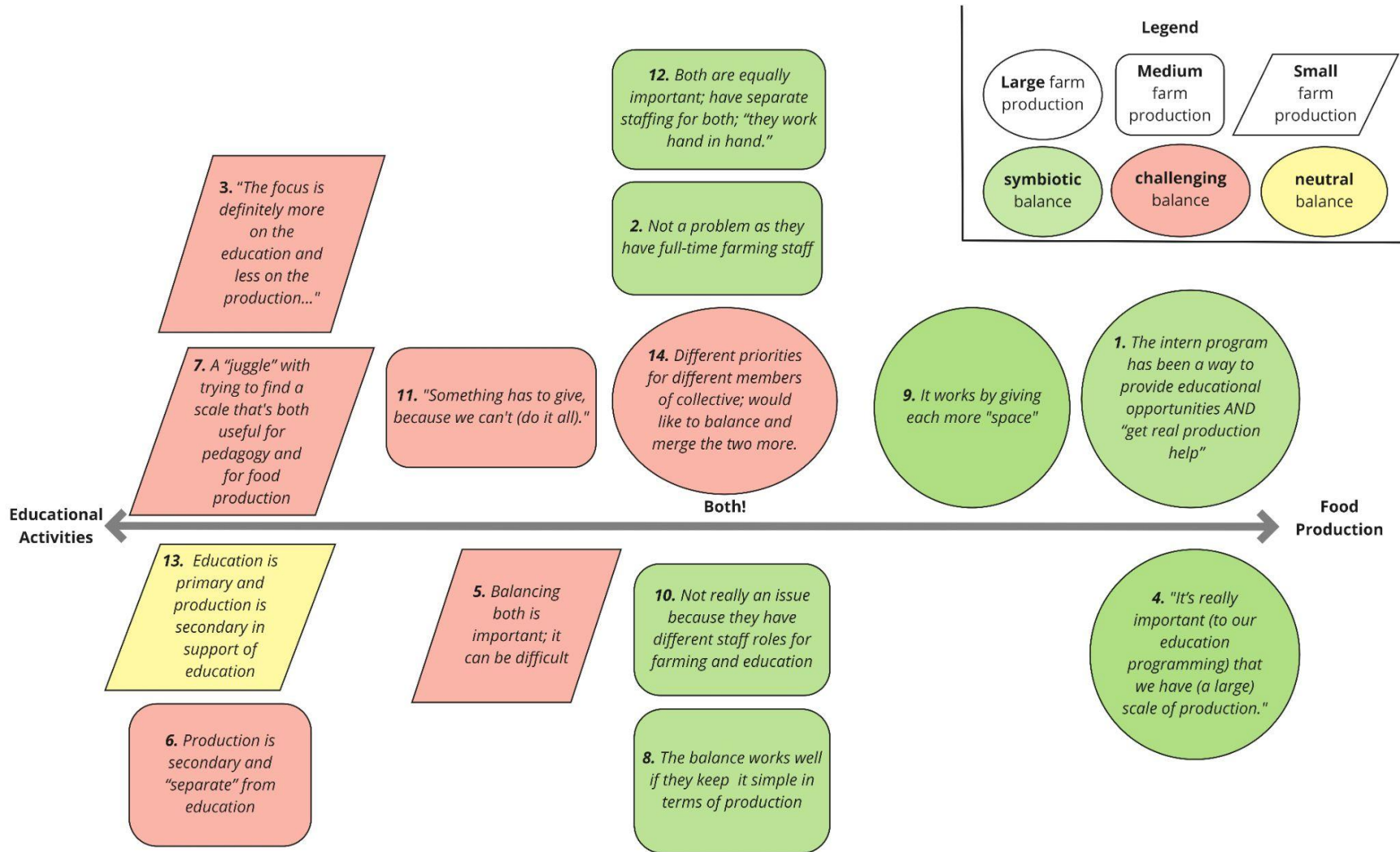


Figure 13: Ranking the balance between educational activities (left) and food production (right)

RQ #1 Discussion

Valuing Food Production versus Education Activities

All case studies found both producing food and having educational programming to be important, but the degree to which they valued each varied. For example, organizations' 3, 6, 7, and 13 all valued having educational activities more than producing food. Most organizations found both equally important and valued both highly.

A Balancing Act?

Results were mixed in terms of how organizations viewed “balancing” producing food and having education activities. Half (7/14) of the organizations described a *symbiotic* relationship between producing food and having education activities (indicated in Figure 13 by the color green). For these organizations, they described a situation where balancing the two activities was mutually beneficial; producing food helped with their educational programming and their educational programming helped with their food production. 6 of the 14 case studies found balancing producing food and having education activities *challenging* and/or were not satisfied with their current balance between both activities (indicated in Figure 13 by the color red). These organizations described a situation in which at least some of the time, one activity reduced their ability to realize the other activity to satisfaction. For example, organizations 2, 5, 6, and 11 each described scenarios in which they had to account for having a loss in produce at final harvest due to student error (for example, students mistakenly weeding a desired crop).

Does Scale of Production Matter?

Of the 4 organizations producing food at a relatively **large** scale, 3 found the balance between producing food and having educational activities to be positive and symbiotic. Of the **medium** production size case studies, 4/6 also described a symbiotic balance between the two activities. 3 of the 4 organizations producing at a **small** scale found balancing both activities challenging. These results imply a trend where farms producing food at a relatively larger scale find balancing production and pedagogy easier than those producing at relatively smaller scales⁶.

Why this trend is occurring will be explored more below in the discussion of *how* organizations are balancing producing food and having education activities. The finding that organizations producing at larger scales of production found balancing production and pedagogy relatively easier than organizations producing at a smaller scale of production is particularly interesting given the results of the farmer's market interviews conducted during the exploratory phase of research of this thesis. Based on the farmer's market interviews, I hypothesized that it was

⁶ There is not a large enough sample size to generalize conclusions regarding the correlation between scale of farming production and how organizations are able to balance production and pedagogy.

difficult to balance farm production with education activities, particularly as a farm's scale of production increased. That is, the more food a farm produces, the more difficult it would be to host educational activities. The results contradicted this hypothesis and in fact, supported the opposite: a larger scale of farming production is correlated with less difficulty in hosting educational activities.

How are organizations balancing the two activities?

Separate but Cohesive Staff

Having full-time farm staff and full-time education staff was reported to be helpful by all six of the organizations which had a symbiotic relationship between producing food and having educational activities. All 6 of these organizations described a situation in which their education and farming staff communicated closely and frequently. For example, organization #9 described a "partnership" between their farming and educational staff where each department "*work(s) together instead of it being individualized*" or one "*working for the other.*" Organization #8 described a similar symbiotic relationship between their farm and education staff, which is highlighted in detail in the Spotlight box below. Those organizations producing at large and medium production scales tended to have more and separate staff for farming production and education activities. This could at least partially explain the trend found in which organizations producing at a larger scale tended to have a more symbiotic balance between production and pedagogy than organizations producing at a smaller scale.

Organization Spotlight: Production and Pedagogy Working Together

Organization #8 discussed how their farm production team and education team will check-in frequently and ask how they are able to help one another. The farm production team will communicate to the education team what crops are available when and where and what farm tasks could be completed in a pedagogical manner. The education team will let the farm production team know how many students and what ages will be available and for how long for service-based learning opportunities. The farm production team and education team will also work together each winter and spring to craft crop plans that work for both teams. The education team, for example, may make requests for certain herbs and vegetables that they will use in their culinary classes.

4 of the 6 organizations which found balancing producing food and having educational activities *challenging* did not have separate staff for education and farming. For these organizations, one or two full-time staff members were responsible for all farming production and educational activities themselves. These organizations described a "juggle" between producing food and having educational activities. For example, organization #3, which has two full-time farm staff who are also both responsible for all farm-based education activities said, "*sometimes (producing food and having educational activities) do feel in conflict, though. Like, I*

really need to lesson-plan but I also need to do this practical thing that has nothing to do with my lesson plan.” Organization #11, which has one full-time staff member responsible for all farming production and educational activities said, *“something has to give, because we can't do it all”* referring to not being able to produce the quantity or quality of vegetables she would like to be producing each season because she is working mostly alone. Both of the organizations which found balancing producing food and having educational activities *challenging* but do have full-time staff for both activities described a situation in which their farming staff worked rather “separately” from their education staff. For organization #6, they have one full-time farm manager who largely completes farm tasks by herself. She will sometimes work with the organizations’ educators to engage kids visiting the farm for field trips or summer camps in service-based learning farm tasks, but most of the time is working “very separately” from the education staff.

Time allotted to both

A few organizations mentioned that spacing out *when* they have education activities and when they farm is helpful to them in maintaining a balance between the two activities. For example, organization #9 only offers educational activities on weekends and reserves weekdays for farming. Organization #2, which offers 2-month residential fellowships for young adults, has sustainable agriculture lessons in the mornings followed by hands-on work on the farm in the afternoons. These hands-on work opportunities are also a form of service-based education, but the focus is on farm work.

Space allotted to both

Some organizations stated that having separate and unique pedagogical farming and/or gardening spaces away from their market farming and/or gardening spaces was helpful in maintaining a symbiotic balance between production and pedagogy. For example, organizations #4 and #10 both have a pedagogical garden that is only used for educational activities. In this way, they can prioritize planting a diversity of crops that are integrated into their farm-based education activities without worrying about student errors or meeting production goal pressures.

Long-term, service-based learning opportunities

9 of the 14 case study organizations are offering internship or apprenticeship programs where teens and/or young adults are learning through working in a supported learning environment and given responsibility over a variety of farm tasks for an extended period of time. All of the organizations offering these long-term service-based learning opportunities described getting “real production help” while being able to offer a meaningful education opportunity.

Adjusting the Balance

A number of case study organizations discussed shifting the balance between production and pedagogy in different directions for a variety of reasons. The covid-19 pandemic in particular was discussed as a trigger for nearly all case study organizations to adjust their balance to favor farming production, since most education activities were not permitted for long periods of time during the pandemic. A few organizations described this unexpected disturbance as being helpful for them in finding a better long-term balance between pedagogy and production. 7 of 14 of the case study organizations expanded their farming production during the pandemic specifically to donate to food access organizations or organize free or sliding-scale food distributions themselves. 6 of these 7 organizations wished to continue the increased levels of production in order to continue, at least to some degree, the food aid they began because of the pandemic. In this way, the pandemic created a long-term shift in how organizations wished to value production and pedagogy.

Organization Spotlight: An Unexpected, Helpful Shift Towards Production

“Before (the pandemic) we were so set on this path of field trips every day, lots of school buses, how many kids can we get in here, and it was like, you know, this crazy train. And then when COVID came, it... stop(ped) everything. And then we actually got to farm... And to not have to be like, well, the field trip's here until 1pm, then we can farm. Now we can farm all day, every day.”

Organization #9 was founded based on education. "They were given this land and asked, 'okay how do we educate using this land?'" says M, the education coordinator and culinary program manager of the organization. "Education drove everything that the farm did," says M, "farming was really just there to serve education goals... (education) was out in the forefront and the farm just kind of followed like, what do you need? Like a little puppy." M described the organization getting pigs without having appropriate outdoor spaces for the pigs because the education department had decided to start a "Farm Babies Program." Now, largely due to the pandemic shutting down education programming, the organization has shifted how it balances its farming production and education programming, with both informing each other instead of the farming being solely informed by the goals of the education team. They cut back on the number of school field trips they do, increased levels of farming production, introduced more "real farming tasks" into their education curriculums, and are working on updating their educator training to include more farm production training. "I think (now) it's a partnership... I don't think that either one is dominant... we work together to make it successful;" "(It) makes me a lot happier," says M.

RQ2: How are programs connecting to sustainable and ethical food system transformations in their respective regions?

A blend of themes from Meek and Tarlau’s (2016) Critical Food Systems Education (CFSE) theory and Anderson et al. (2019)’s transformative agroecology learning theory (TAL) were used to analyze how programs are connecting to sustainable and ethical food system transformations. Actions or sets of actions from each case study organization were categorized into the major themes of CFSE: “agroecology,” “food justice and sovereignty,” and “popular education.” Sub-themes within each major theme were also explored and actions were further sorted into said sub-themes⁷. Some sub-themes, such as “horizontalism,” “wisdom dialogues,” “building social movements,” and “combining practical and political knowledge” came from Anderson et al. (2019)’s TAL theory, while some sub-themes, such as “relationship to land” and “empowering communities to define their own food systems” were emergent from the data (see Ch. 3 for methodology details).

Tables 3-5 were made for each major theme synthesizing the various actions seen across all 14 case study organizations. Each action or set of actions is categorized by sub-theme and organized by color. Spotlight actions or organizations are offered throughout in brown text boxes. After the three major themes are all discussed, a synthesizing discussion session for all of RQ2 is presented.

⁷ Due to the holistic nature of each of the major themes, many sub-themes could have fit into two or even three of the major themes. For example, the sub-themes of “food distribution” and “food transformation” were placed within the major theme of “food justice and sovereignty” but could have fit within the major theme of “agroecology” as well, particularly at the food-systems level of agroecology. Ultimately, however, sub-themes were placed under the major theme they *most* aligned with according to definitions of major themes as presented in Chapter 3.

Major Theme: Agroecology



Figure 14: Organization #6's garden demonstrating various agroecological farming practices; photo taken by author.

Following the blended inductive and deductive methodology approach described in Chapter 3, case study organizations were encouraged to describe their own farming systems and relationships to land with minimal prompting in order to understand their relationship with agroecology. The sub-themes that emerged from the major theme of agroecology were: 1) Field and Farm Level Farming Practices; 2) Agroecosystem Level Land Management; and 3) Relationships to Land. Each sub-theme and its related categories and sub-categories of actions found are listed in Table 3 below. Figure 14 above shows an example of Organization #6's farming system which demonstrated a number of agroecological farming techniques, including tarping, drip irrigation, and nitrogen-fixing cover crops.

Table 3: Actions organizations are taking within the theme of “agroecology”

<i>Sub-theme</i>	What actions are organizations taking that demonstrate this sub-theme?
<i>Field and Farm Level Farming Practices</i>	<ul style="list-style-type: none"> ● Building Soil <ul style="list-style-type: none"> ○ Cover cropping ○ Crop rotations ○ Fallow periods ○ Natural mulching and tarping ○ Relatively shallow, infrequent, or no tilling ● Efficient On-site Nutrient Cycling <ul style="list-style-type: none"> ○ Composting (biodynamics, compost-tea, vermiculture, etc) ○ Efficient irrigation methods (drip, water catchments, etc) ○ Integrated animal-crop systems
<i>Agroecosystem and Food System Practices</i>	<ul style="list-style-type: none"> ● Supporting biodiversity <ul style="list-style-type: none"> ○ Diverse crop production ○ Growing pollinator-supporting species ○ Seed-saving ● Supporting nature access opportunities ● Managing non-cultivated areas as wetlands, natural margins, and conservation areas ● Food transformation <ul style="list-style-type: none"> ○ Culinary programming ● Food distribution <ul style="list-style-type: none"> ○ Sales avenues ○ Donating (free fridge, school lunches, box/bag drop-offs, to partner orgs) ○ Re-distributing (farmer’s markets/food hubs, box/bag drop-offs) ○ Gleaning
<i>Relationships to Land</i>	<ul style="list-style-type: none"> ● Reciprocity - “give back what you take” ● Farming ● Learning ● Stewardship ● Historical relationships, with special focus on Native and colonial histories

Field and Farm Level Farming Practices

Every case-study organization was completing at least one action within the sub-theme of “Field and Farm Level Farming Practices” and many were completing multiple. Nearly all 14 case-studies mentioned or demonstrated that they were *building soil* through cover cropping and crop rotations and working on *efficient on-site nutrient cycling* through composting. Most organizations included composting activities within their educational curriculum. Fewer organizations had integrated animal-crop systems, but those that did all highlighted animal care, rotational grazing, and soil and water health as highly important to their animal-crop systems. Overall, this was the sub-theme with the largest amount of actions seen across all case-study organizations.

Action Spotlight: A Successful Switch to Regenerative Farming

Organization #9's land had been used to conventionally cultivate soybeans and corn for many years. They found their soil to be extremely compacted and difficult to farm. About five years ago, they decided to embrace regenerative farming practices and stopped using heavy machinery. "No tractors!" says M, the education coordinator, "And it's more labor intensive, but it's much better for the environment, the soil..." They view themselves now as "soil farmers," trying to build up healthy soil microbiota. On top of moving away from tilling and heavy machinery, they are leaving fields fallow, carefully rotating crops, rotationally grazing their animals, and growing both warm and cold weather cover crops. They've noticed a huge difference in their soil quality. "Now because we've been working the soil, you can put your arm in... like down to your forearm!" says M. They're also finding they're able to provide better animal care by keeping their animals outside grazing for longer. They used to start moving their cows inside by November, "But this year, just because of the attention we've been putting into the soil... and the intentional plant planning that we've been doing, we didn't have to start really haying our cows until January."

Agroecosystem and Food Systems Level Practices



Figure 15: Organization #4's lakeside land; photo taken by author.

At the agroecosystem-level of land management, every case study organization mentioned *diversity* within their production as an important component of their farming systems. All organizations had a diverse crop production, and at least half mentioned purposefully cultivating pollinator-supporting species regardless of their value as a crop. A few organizations mentioned *seed-saving* as an important part of their farming practices and all of these organizations incorporated seed-saving into their educational curriculum. Many organizations, both urban and rural, highlighted *supporting nature access opportunities* by opening their land, both cultivated and non-cultivated areas, to the public at varying hours of the day. Around half of the organizations were *managing non-cultivated areas* of their land as wetlands, natural margins,

and conservation areas. These organizations tended to be those located rurally with small population densities. Two organizations (#'s 8 and 9) are part of land trusts which manage large hectares of nature preserves and three organizations (#'s 1, 4 and 14), while not explicitly being land-trust or conservation organizations, highlighted the importance of keeping a portion of their acreage in conservation with limited human impact. The way that organizations took care of their land at the agroecosystem-level often took the form of an action which reflected a philosophical relationship to land, which will be discussed in the *Relationship to Land* category below.



Figure 16: Sun-dried tomatoes made by students at Organization #14's summer ecological camp; photo taken by author

At the food-systems level, many organizations were transforming their foods through preserving or cooking farm products both on and off-site. Since case-study organizations all have some kind of educational programming, many incorporate food transformation into their curriculums. Organization #3, for example, has an outdoor kitchen onsite at their farm which students use to make themselves lunch every day using farm ingredients. Organization #8 has a similar harvest-style lunch component to their school field trips (see how they incorporate food justice and food sovereignty issues into their culinary curriculum in the following section). Organization #8 also works on food transformation off-site by partnering with local school cafeterias to help cafeteria chefs create their own “from-scratch” recipes for school lunches using their farms’ ingredients. Organization #14 incorporates food transformation into their summer

camp curriculum, having students harvest and cook from their gardens and present the meal, including where each ingredient has come from, to the rest of the students. Figure 16 above shows sun-dried tomatoes harvested and prepared by students during Organization #14's summer camps. Organization #5, a care farm for young adults with developmental challenges, transforms farm products into herbal balms, teas, and aromatherapy products, which members both use themselves and sell to the community. Food transformation is an important component of food-systems level agroecological practices and was a popular practice to incorporate into education curriculums by case study organizations. There is opportunity for food transformation and food transformation education to intersect with the major theme of "Food Justice and Sovereignty" and this will be explored in the next section.

The manner in which food exits the "farm gate" is a central component to food-systems level agroecology. Organizations were distributing their food in a number of ways, including selling, donating, hosting or collaborating with re-distribution networks, and offering produce to gleaning⁸ groups. 8 of the 14 case study organizations were *selling* their food. Most were selling direct-to-consumers through their own farm stands, farmers' markets, online, or CSAs but some sold through restaurants, grocery stores, or other distribution networks. Five of 14 case study organizations made enough revenues from selling farm products to support at least one full-time employee. Nearly all case study organizations were *donating* their food in some form or another and 5 of the 14 case study organizations are donating *all* of the food they produce. Most organizations which were donating their farm products were donating to local established food aid organizations. Some organizations were operating their own food aid distribution networks (see spotlight box below). Organizations #2 and 10 both fill and maintain free food fridges at their farms. They fill the fridges daily with produce from the farm and leave it available for the public to take as they wish. Organization #10 supplements their own produce in their free fridge with donated second-tier produce from local grocery stores, saying "*we're basically intercepting food waste.*" Organization 9 is donating all of their produce through partnerships with their local public school district and food aid organizations. They provide produce for a summer school lunch program for the district as well as provide free "opt-out style"⁹ bags of weekly produce to families with students attending the public elementary school. Organizations 4 and 7 partner with local gleaning organizations to reduce their food waste. They offer their fields for the gleaning organizations to harvest from after they have completed their own harvests.

⁸ Gleaning is the act of gathering leftover foods directly from fields after primary harvesting is complete.

⁹ "Opt-out style" refers to a program where all families with children enrolled in the public elementary school receive a free weekly bag of produce through the summer season but can opt-out if they don't wish to receive produce or would like to donate their bag to someone else.

ACTION SPOTLIGHT: CREATING A FOOD HUB

Like many farm-based education programs, the pandemic shut-down nearly all of Organization #8's educational programming. They had to "pivot" and "had to rethink about what's needed at the moment," says M, the culinary and education programs manager. "We developed a food hub," says M. They collaborated with another local organization which focuses on food provisioning, security and distribution in the Bay Area of California (the nearest metropolitan area to Organization #8) to secure a USDA grant to pay for their food hub project. They became an aggregate for other local farmers to sell produce to and thanks to the grant money, were able to pay farmers full-price for their produce. They packed and delivered produce boxes "to folks that were challenged with food insecurity in the Bay Area. So at the height of that program in 2020, it was up to 800 boxes that we were delivering (per week)," says M of the program. The program is still in existence now but the grant funding ran out and they were not able to renew it. "We still continue the program and it's philanthropically funded now... it's downsized to 60 to 200 boxes now (per week), but it's still in existence," says M. "We pulled on our community and they really came through," says M of the community volunteers and donations that have made the project possible. M, who coordinated the volunteers for the food hub, says that the project has given more exposure to Organization #8 as a whole. "People were really seeing, 'Oh, here's an organization that's doing this, I really want to take part and I want to help.' And so that actually really did boost our connection to our community in the Bay Area."

Relationships to Land

Organizations were asked during the in-depth interviews to "describe their relationship to the land they farm in general," so it is logical that *relationship to land* became a sub-theme of agroecology¹⁰. Responses reflected a variety of values and philosophies, but all case-study organizations discussed ways that humans have interacted with their land, both presently and historically.

Many organizations discussed some form of *reciprocity*, or a relationship of "give and take" between humans and land or environment. Organization #9 described this reciprocal relationship as, "if we take care of the land, the land will take care of us." Organization #10 echoed this sentiment, saying they "see land as a living entity that we interact with and give gratitude towards... giving back some of the energy that... we're receiving from it all the time."

Many organizations discussed how their relationship to the land comes from the act of farming itself. Organizations #1, 4, and 9 all discussed the land, in terms of climate, topography, soil, water, etc, as shaping their farming practices, particularly how they raise and graze their animals and deal with water and soil management. Organization #1, for example, limits the number of animals they have based on the topography and climatic limitations of their land.

¹⁰ Many responses, particularly those which demonstrated an understanding of the effects of power, privilege, and history on relationships to land, could have also been categorized within the major theme of "food justice and sovereignty." Ultimately, the sub-theme of relationships to land was placed within agroecology, but it could have equally been placed within "Food Justice and Sovereignty."

Their sheep are seen grazing in their vineyards in Figure 17 below. Organizations #7 and 8 described how they connected to the land largely through their own farming and gardening practices, which enable them to interact daily with their land.



Figure 17: Sheep grazing inside the vineyards at Organization #1; photo taken by author

Many organizations also mentioned a *learning* component to their relationship to land. For example, Organization #6 sees the “entire landscape” as an experiential learning platform which informs all of the programming they do. Organization #4 talked about the “land itself as educating” them constantly.

Organizations, especially those which are managing non-cultivated areas, described a *stewardship* relationship, where they were taking care of the land. For some of these organizations, stewardship was enacted through holding conservation or preservation areas. For some organizations without access to large amounts of land, such as #10 and #12 who are both urban farms, the act of farming itself was seen as a form of land stewardship.

Historical relationships between humans and land informed many organizations’ relationships to land. Many organizations described a special focus on respecting and honoring Native relationships to land, both past and present. Organizations #4, 8, and 13, all of whom have close partnerships with present-day Native associations and tribes, highlighted these partnerships as informing how they relate to their land currently. Many organizations also discussed the importance of regional agricultural history as being important in how they view their land. For example, organizations 4, 7 and 11, who are all located relatively near to each other in New England, USA, discussed the rich agricultural history in their area as informing their present-day relationship to land. Finally, a few organizations mentioned the importance of regional colonial history and power as informing their present-day relationship to land. As the backgrounds of land ownership, power, and privilege were diverse across the case study organizations, how organizations related to colonial history varied. For example, some organizations have benefited from colonial history by inheriting or being endowed land with ties to money earned through slave-trades or other exploitative measures. A few of these

organizations actively discussed this aspect of their relationship to land, describing a need to discuss the nuanced history of land ownership, power, and justice, in their programming. For example, organization #4 said that they were actively *“wrestling with the... history of being in colonial railroad money and sugar cane money which was based in slave training... The symbolism of that wealth and power is so visible on campus... It’s something we really need to talk about more.”* Other organizations which have not had the privilege of inherited or endowed land ownership, discussed how colonial history affects them and how they attempt to relate to land now in a way that de-centers, yet still teaches colonialism and racism. For example, organization #13 is using land-based learning as a pedagogical style to teach anti-racism and anti-colonialism; they then aim to decenter racism and colonialism through building a new relationship to land through farming. While around half of the organizations interviewed actively discussed these historical relationships to land as informing their present-day relationships to land, historical relationships with land undoubtedly shape all present-day relationships to land, from land ownership to size and location of landholdings.

SPOTLIGHT BOX: SPIRITUALITY AS A WAY TO CONNECT TO LAND

Organization #2 is an urban educational farm and community center offering three-month long residential sustainable agriculture fellowships for young adults. The pillars of their organization are “Jewish tradition, mindfulness, sustainable agriculture, and social action.” For F, the fellowship director, connections to land are built and strengthened through exploring fellows’ relationships with their own Jewish identity, spirituality, and culture. *“Before being in diaspora, we (Jewish peoples) were agrarian societies and everything we did was really based on the cycles of the earth and of nature and the moon and rain... (Now) we’ve just become so disconnected from... our connection to land... so that feels like one of the most central and important things that I am trying to instill in the folks who go through this (fellowship)... that there’s a real, authentic connection built between Jewish identity and relationship to land where we don’t have to appropriate or take Indigenous traditions because we have our own...”* says F. Integrating students’ own cultural and spiritual identity has both the effect of deepening relationships to land, but also strengthening students’ relationships with their own identities and backgrounds. *“So, I think that what that lends itself to doing is enabling folks to become more spiritually grounded and develop a deeper sense of relationship to their religion or culture or spirituality – whatever you want to call Judaism,”* says F.

The sub-themes that emerged from the major theme of agroecology were: 1) Field and Farm Level Farming Practices; 2) Agroecosystem Level Land Management; and 3) Relationships to Land. Overall, organizations were taking actions across the theme of agroecology rather consistently, particularly within the sub-theme of field and farm level farming practices.

Major Theme: Food Justice and Sovereignty

In order to understand the relationships case study organizations have to food justice and sovereignty, organizations were asked to describe their farming systems, including how they

transform, distribute, and/or sell their food, and how they engage and interact with their communities. The terms “food justice” and “food sovereignty” were purposefully avoided by me, the interviewer, in interviews in order to not potentially influence organizations to discuss these concepts more than they usually would. This was done in an effort to gather an understanding of what actions and viewpoints organizations are taking and how these may or may not be related to food justice and sovereignty, regardless of an organization’s explicit relationship to food justice and sovereignty. Data was analyzed and organized and is presented in the same manner as for the “Agroecology” major theme. The sub-themes for the major theme of “food justice and sovereignty” were: 1) Empowering Communities to Define Their Own Food Systems; 2) Building Social Movements; and 3) Combining the Practical and Political. The latter two sub-themes come from TAL (Anderson et al. 2019), while the first sub-theme was emergent from the data. Table 4 below summarizes actions taken by organizations as organized by sub-theme.

Table 4: Actions organizations are taking within the theme of “food justice and sovereignty”

<i>Sub-theme</i>	What actions are organizations taking that demonstrate this sub-theme?
<i>Empowering Communities to Define Their Own Food Systems</i>	<ul style="list-style-type: none"> ● Increasing community involvement and influence <ul style="list-style-type: none"> ○ Involving community and youth in decision-making ○ Hosting open events, gatherings, and workshops desired by community ○ Creating open, public, and inviting spaces ○ Removing barriers to access
<i>Building Social Movements</i>	<ul style="list-style-type: none"> ● Partnering with “nested local organizations” ● Connecting to broader social justice movements <ul style="list-style-type: none"> ○ Educating (students, public, and staff) on social justice issues ○ Collaborating with social justice movement networks
<i>Combining the Practical and Political</i>	<ul style="list-style-type: none"> ● Political training and skill-building <ul style="list-style-type: none"> ○ Community organizing ○ Leadership and conflict-resolution ● Politicizing programming <ul style="list-style-type: none"> ○ Applying critical thinking and discussion skills to real-life social justice issues ○ Explicitly incorporating political food systems issues into curriculum

Empowering Communities to Define Their Own Food Systems

Food justice and food sovereignty focus on the rights of peoples to define their own food systems, from how and what they eat to food systems education. Case study organizations were taking a variety of actions which were empowering communities to define their own food systems, an essential aspect of food justice and food sovereignty. Many case study organizations were working to *increase community involvement and influence* in different aspects of their organization, from farming to education to land-use.

Some organizations were increasing community involvement and influence by involving community members and the youth they educate in *decision-making processes*, giving them opportunities to define their own food systems by shaping their farming spaces. For example, Organization #12 gets input from community members each year on what crops to plant and which seeds to save. They also host seed-sharing exchanges which give community members the opportunity to directly decide what seeds they would like to plant or spread through the community. This often leads to Organization #12 growing a diversity of “culturally relevant” crops for and with their community. A, the organics coordinator for Organization #12, listed over 20 crops or crop families to me when we discussed what is grown at their farm. Many of these crops are staples in African, Caribbean, and LatinX cuisines but difficult to find in American markets and are highly valued by the community. Organization #11 is currently shifting executive directors and adjusting their mission as an organization. They are seeking community member input in this process through surveys, informal discussions with community members, and open town-hall style forums. After experiencing disruptions to their education programming from the pandemic, Organization #4 is taking the opportunity to redefine what kind of education programming they offer. They are in the process now of seeking feedback directly from the youth they work with “*to try to bring their voice into the conversation more about what they want to see. At the end of the day, they’re the ones we’re serving.*” This direct involvement of community members and youth in decision-making processes can give people choice and power in shaping at least a small part of their food systems at the local-level.

Another way organizations are increasing community involvement and influence is through *hosting open events, gatherings, and workshops* that are desired by and relevant for their communities. Organization #2 hosts Shabbat gatherings¹¹ every Friday night which are open to all community members regardless of spiritual or cultural background, but are relevant and in demand in particular to the Jewish community they serve. All New England organizations hosted free and public fall harvest festivals, celebrating regional crops and dishes with their communities. Organization #10 hosts frequent potlucks and community dinners, as well as community cooking classes. They also partner with local community organizations to co-host events and allow other community organizations to use their farming space to host their own events. Hosting open events, gatherings, and workshops can be a powerful way to increase community involvement and influence in a farming system, particularly when community input is gathered regarding what kinds of events, gatherings, and workshops are desired.

Both urban and rural organizations were working to *create open, public, and inviting spaces* for their communities. Organization #11, being part of a land trust, holds a significant amount of non-cultivated land which they make available to the public for recreational use. They are working to increase their “passive community engagement” by building more trails, interpretive signs, and “story walks” throughout their land. Urban farming organizations 10 and 12 stressed the importance of ensuring neighbors and community members feel welcome on their land (see the spotlight box below for more on Organization #12). Organization #10 keeps their gates open every day from 11am-5pm for the public to enjoy their urban green space freely, which includes the community garden, a picnic area, and children’s playground. “A lot of folks come through who are in the neighborhood... people who are working across the street will have lunch here in the shade at the picnic tables,” says G, the organizations’ assistant programs

¹¹ Shabbat is the Jewish day of rest occurring weekly from Friday sunset to Saturday sunset. It is typical to gather with family members and guests at the home or in community worship or gathering spaces and celebrate by eating, singing, dancing, and reflecting.

coordinator. Organization #5 is a care farm serving young adults with developmental challenges. As such, creating open and inviting spaces is extremely important to them. They work hard to build farming spaces which are “open and inviting” to peoples living with various physical and mental needs. For example, they are in the process of creating ADA accessible beds for people using wheelchairs. H, the farm and garden manager for the organization, goes beyond simply making spaces more physically accessible and tailors each garden activity she does to meet the specific and individual needs of her members. What an “open, public, and inviting space” looks like is subjective and contextual to each organizations’ location and the unique population they seek to serve.

Overall, organizations were increasing community involvement in a number of successful ways, but some also faced challenges attempting to increase community involvement, which will be discussed in the Chapter 5: Conclusions, Reflections, and Applications.

ORGANIZATION SPOTLIGHT: “THIS IS THEIR SPACE”

Organization #12 is an urban farm in the middle of one of the most densely populated areas of the United States. It is extremely important to them that everyone in their neighborhood feels welcome in their space. Though they have fences around their farm, they keep the gates open during working hours every day, host weekly open volunteer days and farmers’ markets, and make it a point to chat with neighbors as they pass by. They welcome people inside the farm, asking their name and offering them free veggies. “We want the community around here to know that this is for them, that this is their space,” says A, the volunteer and organics coordinator, “we try to make as little barriers as possible to accessing (the farm).” A, the volunteer and organics coordinator, brought-up vandalism and theft as a challenging issue for the organization. They had recently experienced a break-in where all of their tools and materials from their garden shed were taken. “That’s the most disappointing part... that people are put in positions to want to do things like that.” While some organizations may respond to vandalism and theft by putting up walls and tightening security around their property, Organization #12 is committed to keeping their space open and visible to the community. *“Yeah, that's just part of (it),” says A, “But everything else that has to do with... the farming and education, it all just feels... not that it's easy, but it's just really fulfilling work.”*



Figure 18: The garden space at Organization #12; photo taken by author

Organizations were also working to *remove and reduce barriers* to access their food, programming, and land, particularly for marginalized groups who have faced race and class-based structural barriers to defining their own food systems. Many programs offer financial aid and scholarships on a need-basis for their education programming. Removing and reducing barriers to access alone, however, doesn't necessarily give groups rights or influence to define their own access. The differences between empowering communities to define their own food systems and aiding communities in accessing food systems will be further discussed in Ch. 5, Applications and Conclusions.

Building Social Movements

The sub-theme of “Building Social Movements” comes from Anderson et al (2019)’s TAL theory. Many case study organizations were taking actions that fit well into this sub-theme, mainly through partnering with “*nested local organizations*” and by *connecting to broader social justice movements*.

Anderson et al (2019) describe “nested local organizations” as those which are “decentralized and distributed” in their power structures and “interlinked” with each other, forming “collective networks.” Partnering with other local organizations, particularly those also working within food systems, was being done by every single case study organization. Some case study organizations, like organization #10, are extremely intentional about which community organizations they partner with, screening for “mission matches” to ensure the partner organization is also working within the food justice and food sovereignty movements before they agree to further collaborate. Organization #12, like 10, does their best to collaborate

with partner organizations working on food justice issues in their community. Organization #12 is working now with a partner community organization to set up an electric bike compost hauling project. They will have food and garden waste collection sites at all of their community backyard gardens. Organization #12 will collect the green waste from each backyard garden, process it into compost at their farm, and at the end of the season, create finished compost that the community backyard gardens can use again. The partner organization will be providing the electric bikes and assisting in creating and disseminating education and marketing materials through the community. Organizations #4 and #8 both have strong partnerships with Native groups and tribes in their region. These partnerships are founded on principles of reciprocity, where both organizations gain positively for the collaboration, but also on reparations,¹² in which the organizations are attempting to compensate Native groups for historical wrongdoings and mistreatments occurring in their regions. For Organization #4, this partnership involves the Native organization hosting educational Native programming on organization #4's land and assisting Organization #4 in researching and educating the public about land history, land acknowledgements, and reparations. Organization #8 helps coordinate volunteer labor and has their own youth interns and youth corps members work a portion of their weekly hours for the local Native organization they partner with. These kinds of collaborations with “nested local organizations” have a few key benefits which can help strengthen and transform food systems at the local-level: 1) assisting organizations in starting or completing projects which would be difficult to actualize alone; 2) creating connections and networks of “mission-match” organizations who are all working towards common goals within food systems.

Case study organizations were also *connecting to broader social justice movements* through educating themselves, their students, and the general public on social justice issues and collaborating with larger social justice movement networks. Organization #3 supports its staff in participating in anti-racist and social justice trainings and workshops by paying costs and giving time off to staff specifically for continued education in social justice. Organization #13 has “equity ambassadors” across their organization who hold anti-racism and anti-colonialism trainings and reflections for both staff and their corps members. Organization #8 is connecting to broader social justice movements through their cooking curriculum. They have students cook themselves lunch every day using farm ingredients and while cooking, discuss the history and social and environmental justice issues surrounding each ingredient. Organization #1 is collaborating with a Haitian young farmers group for their international internship program. The Haitian young farmers group helps them find interested Haitian young adult beginning farmers who would like to travel to the United States, earn money, and learn farming skills. Organization #1 pays for visa fees, travel, and wages while students complete the 6-month to 1-year long internship. Overall, case study organizations seemed to be connecting to broader social justice movements primarily through educating themselves on social justice issues and incorporating social justice education pieces into their programming.

Combining the Practical and Political

Anderson et al (2019) added “Combining the Practical and Political” as one of their four characteristics of TAL because educators working within agroecology noted there was a lack in “politicizing” farming education and a need for a “political training” component of food systems

¹² Reparations are an attempt to right a historical wrongdoing and mistreatment of a population through compensation in money, material, land, or labor, being given to individuals or groups of individuals of the historically mistreated population.

education. Some case study organizations were "combining the political and practical" by adding political training and skill-building elements to their farm-based curricula, and politicizing their programming.

Case study organizations added *political training and skill-building* components to their programming through having youth practice community organization, leadership, and conflict-resolution skills. For example, Organizations 8 and 12 have their youth interns put-on large scale community events, organizing, marketing, collaborating with other organizations, and running the events. Some organizations are also making a point to teach leadership and conflict-resolution skills, both of which are helpful in equipping young people with the tools needed to participate in political dialogues. Organization #12 uses a conflict resolution strategy called "Straight Talk" in which they chat one-on-one with youth interns regularly throughout their employment to know "what's going on and just to have open communication." They use a three-strike policy for conflict management and talk with youth at each strike "about their capacity and what's going on for them." Many farm-based education organizations have leadership elements in their programming, but few were connecting these leadership skills to political skill-building. See the spotlight box below for an example of an organization politicizing their leadership training and organization as a whole.

ACTOR SPOTLIGHT: POLITICIZING AN ORGANIZATION

As an Americorps program, Organization #13's entire pedagogical approach rests on leadership training. They are a national non-profit working on sustainable food education in schools. They place young-adult Americorps members with a partner school for a 1-2 year service project to build or improve school gardens and improve sustainable food education at their selected partner school. While the organization's mission of "creating healthy school food environments" is not an inherently political mission, A, the organization's associate program's director for the state of New Mexico, is working to change that. A discussed how her own positionality and background is shaping how she is training the Americorps service members she now mentors.

"Myself and my coworker," A says, "we're both women of color... our mentors are people that are fully vested in and are trainers in anti-racism and anti-oppression... And so we come from that, we were mentored in that way... Then we were both in (Americorps) service, we both understand (Americorps) service... and the trajectory that a lot of times (Americorps) service members have of being catapulted into leadership positions... I am honored that we plant the right seeds that will be cultivated throughout their whole professional career. So that they are going to be those leaders that are pushing back against racism and oppression"

A explained how she and her colleague have implemented full anti-racism and anti-oppression trainings into the education they do with their Americorps service members. A brings in local speakers for her Americorps members who understand the unique context of New Mexico.

“We talk about Indigenous land, we talk about the Casta system, we talk about traditional food ways... even different farming methods. And so yeah, we try and talk... not just about New Mexico, but anti-racism and oppression (in general)... Like we're reading Paulo Freire, and that's what's going on over there, but how does that relate back to what's happening in New Mexico?”

Along with her colleague, A has also worked hard to support and push Organization #13's efforts across state-lines to “teach and learn antiracism.” The organization as a whole now mandates anti-racism training and has created "equity ambassadors" (A is one) who are in charge of projects which introduce more equity into the organization. On top of her work bringing anti-racism and anti-oppression into the spotlight, another part of A's role is engaging with “systemic change” of food systems. She does this by working with different farmers' coalitions to shape state policy to better advocate for farmers' needs and support statewide sustainable food education. Through her anti-racism and anti-oppression work, as well as her efforts in connecting her work to greater policy and social structures, A is an example of an actor effectively politicizing the programming and organization she works for.

Politicizing programming can be an effective method of connecting the political with practical farm-based programming to create farm-based education that pushes students to become actors of change within their food systems. Case-study organizations were politicizing programming mainly through applying critical thinking and discussion skills to real-life social justice issues and by explicitly incorporating political food systems issues into their curriculum. Organization #7 is having students build their critical thinking and discussion skills to real-life local problems by having students interview local farmers about the current issues they are facing and having students learn about these problems in the field and come up with solutions. See the spotlight box above to read more on how Organization #13 is politicizing many aspects of their programming, including by connecting local social justice issues to larger national and international political food systems issues. Organization #6 incorporates political food systems issues directly into their curriculum through taking students on hikes in order to see the entire farming landscape of their region. On these hikes they compare different farming methods and discuss conventional versus agroecological farming practices and the systemic structures that have shaped the land.

The major theme of “Food Justice and Sovereignty” included the sub-themes of: 1) Empowering Communities to Define Their Own Food Systems; 2) Building Social Movements; and 3) Combining the Practical and Political. Some organizations were taking many actions fitting into all of these sub-themes, while some organizations were not. Trends will be elaborated in the final discussion section of this chapter.

Major Theme: Popular Education

In order to understand organizations’ relationships to popular education, organizations were asked a number of questions regarding education at their organization (see Appendix C for the interview guide). Since popular education emphasizes connections to real-life experiences, community, and movements, the themes of food justice and sovereignty and agroecology overlapped significantly. The sub-themes of “horizontalism” and “wisdom dialogues” both came from TAL theory. The sub–theme of “creative expression” was emergent. Table 5 below synthesizes the actions organizations are taking within the theme of popular education.

Table 5: Actions organizations are taking within the theme of “popular education”

<i>Sub-theme</i>	What actions are organizations taking that demonstrate this sub-theme?
<i>Horizontalism</i>	<ul style="list-style-type: none"> ● Challenging hierarchies <ul style="list-style-type: none"> ○ Giving youth responsibility and ownership^{35,36} ○ Educators act as mentors, facilitators, and guides³⁷ ● Capacity-building <ul style="list-style-type: none"> ○ Hands-on, practical learning and skill-building ○ Intra and interpersonal skill-building (critical consciousness and reflection, conflict management, leadership, organizing, relationship-building, self-care) ● Learner-centered <ul style="list-style-type: none"> ○ Co-creating curriculums with youth
<i>Wisdom Dialogues</i>	<ul style="list-style-type: none"> ● Intergenerational <ul style="list-style-type: none"> ○ Youth work alongside community members³⁸ ○ Mentorship opportunities⁴⁰ ● Inter-occupational <ul style="list-style-type: none"> ○ Youth visit and work with other community food system organizations³⁹ ○ Inter-occupational teams⁴¹
<i>Creative Expression</i>	<ul style="list-style-type: none"> ● Creative expression, storytelling and arts as a way to discuss complex political topics

Horizontalism

Anderson et al (2019) write that “horizontalism” includes three main aspects: 1) strengthening learning experiences; 2) building confidence and capacity; and 3) challenging hierarchy. From the data, the three categories “challenging hierarchies,” “capacity-building” and “learner-centered” emerged, which were in-line with Anderson et al (2019)’s main aspects.

Organizations were *challenging hierarchies* through *giving youth responsibility and ownership*. Organization #12 has their youth interns “run the show” at their weekly farmer’s markets. The interns are in charge of harvesting, washing, setting up the stands, selling, and

running the market operations; Organization #13 gives their Americorps service members “full autonomy” in designing and implementing the sustainable food curriculum they bring to their partner schools. This autonomy and responsibility is paired with mentor support like check-ins and facilitated professional development training. Organization #7 spoke of involving their students in management decisions regarding curriculum and farming choices “*to feel the empowerment and responsibility of owning land.*” At Organization #2, the fellows are asked to build and manage their own intentional living community rules and culture for the duration of their fellowships. Organization #8 has their youth interns create and lead their own education programming. Overall, many programs were adding opportunities for youth to take responsibility and ownership, but programs which worked with adolescents or young adults and whose programming was residential and/or long-term were connecting more frequently with this sub-category. Programs working with younger children and/or offering short-term education activities such as school field trips or one-time workshops or activities created less opportunity for giving youth responsibility and ownership. A few programs noticed this trend themselves. For example, Organizations #6, 8, 9, and 11, who offer school field trips, all discussed how when they can work with the same students across many years, they are able to incorporate much more student responsibility and ownership into their programming. Organization #9 discussed that by seeing the same students each year for school field trips, their students “have stake and some ownership” over the land and they are able to offer more “autonomy, challenge, and support.”

Organizations were also *challenging hierarchies* by *shifting the role of educators* away from traditional authority figures and lecturers to those of mentors, facilitators, and guides. Case study organizations used terminology like “guiding,” “mentoring,” “offering support,” “finding joy together,” “curating curiosity and care,” and “facilitating wonder and exploration” to describe how they viewed the role of an educator within their organization. All of these attitudes reflect a horizontal pedagogical approach, where educators are placing themselves on an even power-level with their students. Interview participants often spoke of discovering and learning along with their students, an attitude which challenges the typical hierarchy within education that knowledge transfers unidirectionally from teacher down to student. For example, V from Organization #4 described “finding their inner child” alongside their students as being essential to their pedagogical style. A from Organization #11 spoke of consistently being impressed with the maturity level of the high school interns he works with: “sometimes I forget that they're in high school and I talk to them like they're my peers.” Organization #8 sees the role of an educator as facilitating what students want to learn about and empowering them to rise to their fullest capacities through “listening”, “adapting to students’ needs and desires”, and “trusting in (their) abilities.” The role of educators within nearly all of the farm-based education case studies interviewed seemed to reflect a non-hierarchical attitude which challenges hierarchies seen in typical classroom and school education environments.

Capacity and confidence building is another aspect of “horizontalism” discussed by Anderson et al. (2019) and seen as a sub-category within the case studies. Organizations were taking actions in their educational strategies which focused on *building practical, hands-on skills*. By nature, farm-based education emphasizes hands-on and praxis-based learning and the importance of this pedagogical approach was echoed by all case-study organizations. Many organizations utilize a service-based learning approach where students are learning through “real and meaningful farm work.” For example, in Organization #9’s farmer’s apprentice summer camp program, students are given meaningful work that they can see the results of. M, the education and culinary programs manager, gave the examples of students making bouquets to be

sold at the farmers' market or preparing turkey beds and then caring for the turkeys for the season. *"If students are asked to do tasks, it's because the farm needs those tasks done!"* says M. Many organizations were actively trying to build skills in their students through hands-on work in tasks needed not just at the farming-level, but at the food-systems level, from seed to table. For example, Organization #2, 8, and 12 all have their adolescent and young adult students practice skills of food transformation, including preserving and cooking, and distribution, including selling at farmers' markets and donating to food aid organizations. These organizations all are having their students work alongside partner food systems organizations to understand *and practice* the skills needed beyond the farm's gates.

Many organizations placed emphasis on *building intra and interpersonal "soft" skills* in their students alongside the more practical "hard" skills of farming and agriculture. Conflict management, leadership, organizational, relationship-building, community-building, and self-care were all "soft" skills noted by various case study organizations as important to build in their students. Organization #2's fellowship program combines "hard farming skill development" through sustainable agriculture classes and everyday farming practice with "softer components of community building and being vulnerable." They incorporate daily mindfulness practice, introspection on identity, power, and privilege, and intentional community-building skills into their residential fellowship program. A, the associate programs directors for Organization #13, includes "taking care of ourselves and our community" as key skills needed to dismantle racist and inequitable food systems and create new systems which are "outside of racism and colonization." While many programs did emphasize these "softer" skills, "hard" farming and agricultural skills were more ubiquitously practiced across case-study organizations.

The last sub-category to emerge within the category of horizontalism is the idea of a learner-centered approach. Anderson et al. (2019) described a similar concept of "strengthening learner experiences." Several case-study organizations were taking a learner-centered approach by emphasizing and embracing students' "inquiry," desires, capabilities, and interests in designing their programming. Organization #1 lets students choose special focuses during their summer camps. Organization #10 asks their high school interns what they are most interested in learning about and does their best to accommodate their individual interests. Overall, while case study organizations offered ways to adapt their programming to students' interests, desires, and capabilities, organizations can incorporate student voices more by expanding co-designing elements of programming with students.

Wisdom Dialogues

Wisdom dialogues is an important sub-theme coming from TAL (Anderson et al. 2019) and was found quite commonly within the case study farm-based education programs. Anderson et al. (2019) describe "wisdom dialogues" simply as "bringing together actors of different backgrounds." Within the case studies, wisdom dialogues opportunities emerged largely within two sub-categories: intergenerational and inter-occupational.

Intergenerational wisdom dialogues occurred in a number of case studies when youth were given opportunities to work alongside adult staff and community members and when youth and young adults were able to have mentorship relationships with each other. Some programs,

particularly those working with adolescents and young adults doing longer-term programs such as internships or fellowships, used community organization partnerships to give their students or interns opportunities to work with and learn from older community members. For example, Organization #12 has their student interns spend a portion of their weekly hours helping community backyard garden program members garden and farm at their backyard gardens. In this way, student interns are given opportunities to get to know older community members in their own neighborhood. Organization #8 has their high school interns work a portion of their weekly hours for a partner Native organization, giving students the opportunity to help and learn from Native elders in their community. A few organizations had mentorship or buddy systems in place where older students could help mentor younger students. For example, Organization #3 has a “garden buddy system” where each older student mentors a younger student in the garden. “Garden buddies” stay the same for the duration of the school year, giving students a chance to build a meaningful relationship with each other. Organization #14 gives alumni of their summer camps the opportunity to come back for a work-exchange as junior educators, giving alumni the chance to practice their teaching and mentoring skills. Organization #13’s pedagogical approach is built on mentorship, as their service members work with younger students on sustainable food education for 1-2 years. Most programs were offering some form of intergenerational dialogues between students and adult staff or community members, but far fewer were taking advantage of creating intergenerational dialogue moments between students of different ages. These kinds of mentorship relationships between children and adolescents and young adults can be a powerful way to create intergenerational relationships which challenge hierarchy by lacking the power dynamics of a typical intergenerational adult/teacher to child/student relationship.

Inter-occupational wisdom dialogues were also seen occurring in many case-study organizations. Many programs are offering their students opportunities to visit and work alongside partner community organizations which participate in different food system roles than the host organization. For example, Organization #2 has fellows volunteer once a week for local food pantry and food distribution organizations so they can understand what happens with food after it leaves the farm. Organization #12 has their student interns visit other food system organizations as well, sometimes for work exchanges but also simply for “field trips.” J, a student intern I had the opportunity to talk with during my site-visit to Organization #12, very quickly mentioned these “field trips” and site visits to other organizations when we talked. J reflected on visiting a mushroom farm and getting to bring back mushroom substrate which he and the other interns used to test out mushroom farming themselves. Organization #7 has students interview school staff, parents, local farmers, and community members about food systems related issues to understand how different actors within food systems perceive food systems issues differently (see the spotlight box below for more on Organization #7’s pedagogical approach). A significant subset of Organization #4’s education work is offering teachers and educators themselves farm-based education learning opportunities. Organization #4 takes a “team-based approach” to the multi-day hands-on learning workshops they offer to educators. Educators will come as inter-occupational “teams” from their schools, including

administration and support staff. Through this approach, Organization #4 feels they are "facilitating team building and collaboration skills that we feel lead to systems change in a school." While a few programs were making use of inter-occupational wisdom dialogues, organizations could expand on how often they offer these rich opportunities for students to understand different roles within food systems.

ACTOR SPOTLIGHT: NOT JUST YOUR REGULAR BIOLOGY CLASS

N is a high school teacher at Organization #7, teaching biology, ecology, and food systems classes out of a refurbished barn. N's barn classroom rests on a farm a few kilometers from the high school campus. The farm is managed by a partner non-profit farming organization. N has her own pedagogical garden space within the farm. N's pedagogical approach was in line with many sub-themes from popular education. She puts focus on "trying to get (students) to feel both... the empowerment and the responsibility of managing land." She lets students steer discussion circles, "stewing" in topics they find interesting. N said her biology students often comment that their class "feels like philosophy class." She then tries to connect these philosophical inquiries directly to local issues, "giving students the space to engage with what they're learning and how it's linked to the place where they live." N is having her students interview local farmers, as well as school staff and community members, to gather information on local agriculture systems and issues. She plans on next year having students develop projects to try to address local issues with partner food system actors. N spoke of wanting to have a reciprocal relationship with these partner food system actors:

"Getting students to look around them... trying to get them to think about (the) food system context... in the broader community and think about how what we're doing here can be a resource for the community and trying to think about some reciprocity. It's so great that we're in this farm community where we can visit farms and learn from them, but (I'm) trying to think too, about how can we be a resource for working farmers?"

N is implementing elements of popular education, such as horizontalism and wisdom dialogues, into her pedagogical approach.

Creative Expression



Figure 19: Organization #6's "upcycle garden;" photo taken by author

Creative expression as a means to discuss complex political topics and real-life social justice issues was an emergent sub-category of popular education seen among case-study organizations. Singing, storytelling, theater, writing, dance, and a number of forms of creative expression have been used within popular education to assist in connecting education to real-life political issues. Creative expression can help make complex social justice and food systems-related issues more understandable and digestible, as noted by case-study organization #3. Organization #3, inspired by Waldorf education principles, uses storytelling and visual and creative arts to help discuss complex topics like social and environmental justice, colonialism, power and privilege. Educators will pair hands-on and farm-based learning activities with stories to frame the activity within a historical or theoretical context. Organization #10, inspired by their own interns' artistic inclinations, has their interns create zines¹³ linking their farming work to greater social justice issues. While quite a few case-study organizations were using some form of creative expression to enhance the pedagogical experience of their students, there were not many examples of using creative expression directly as a way to discuss issues of social justice and food systems. Farm-based organizations could expand on this potential outlet to connect their

¹³ Zines are small self-published and self-circulated magazines or graphic novels, usually including a mix of visuals and text.

education to larger food-systems issues while enhancing and individualizing the learning experience of their students.

Organizations were taking actions across all three sub-themes of popular education: horizontalism, wisdom dialogues, and creative expression. Some sub-categories, such as “capacity-building” and “learner-centered,” seemed to be occurring quite naturally at all case-study organizations. The notion that farm-based education itself may be an adept platform for some components of popular education and transformative education will be discussed in Ch. 5: Conclusions.

Overall Discussion: RQ2

Who's Doing What?

The above results make clear that farm-based education organizations are connecting to food system transformations in a variety of ways across the major themes from CFSE (Meek and Tarlau, 2016) of agroecology, food justice and sovereignty, and popular education. Agroecology was the most consistently present major-theme across *all* case-study organizations, regardless of location, farm production scale, or type of education programming offered. Within agroecology, case-study organizations were taking actions at the field, farm, agroecosystem, and food systems levels and held philosophical relationships to land which were in-line with agroecological principles.

Organizations were taking actions which fit into the themes of food justice and sovereignty and popular education, but overall organizations were taking action in these two themes less consistently than the agroecology theme. Urban or case-study organizations working within high-population densities and organizations with an explicit focus on food justice and sovereignty within their mission statements were taking the most actions which fit into the themes of food justice and sovereignty and popular education. These organizations were all following a non-profit organizational structure and were funded by a mix of grants, donations, and revenues-based income such as program fees and tuition. Only in the case of one organization explicitly working towards food justice and sovereignty was income being made through the sale of farm goods. All of these food-justice oriented organizations donated all or a significant portion of the food they produce through farming. It is logical that organizations which have a mission statement relating to food justice and sovereignty are taking more actions fitting into these themes than those not explicitly working towards those goals. Of the four organizations which had goals of food justice or food sovereignty in their mission statements, three are located in urban or high population-density regions. This could partially explain why urban actors were more likely to be taking actions within food justice and sovereignty.

In many ways, popular education can be thought of as a pedagogical approach to building the skills needed to strengthen the movements of food justice and sovereignty. Due to this inherent connection between popular education and food justice and sovereignty, it follows that there was a high overlap between organizations taking many actions in food justice and sovereignty and popular education. This being said, *all* case-study organizations, regardless of

mission statement, location, population density, or other parameters, were taking some actions fitting into the theme of popular education. Particularly within the category of “horizontalism,” case-study organizations were taking action by challenging hierarchies, crafting capacity and confidence-building opportunities for their students, and creating learner-centered programming. The reasons for the strong presence of popular education among all case-study organizations will be expanded upon further in Ch. 5, Applications and Conclusions.

What We Do and What We Say

Studying real-life phenomena through a social science lens often means using academic jargon to describe the everyday actions and viewpoints of people. The terminology case-study organizations used to describe what they were doing differed from what academic language would call the phenomena. Language used by case-study organizations also differed largely across organizations, even when actions they were taking were similar. This was the case in particular for the terms “agroecology” and “popular education.” “Farm-based education” itself as a term also sparked discussion and confusion among farmers’ market interviewees and case-study organizations for what exactly it means and whether or not they were “doing farm-based education.”

Only one case-study organization¹⁴ used the word “agroecology” when discussing their farming philosophies or the interviews in general. “Organic”, “no-spray”, “natural farming”, “regenerative farming”, “restorative farming”, and “permaculture” were all used multiple times by different case-study organizations to describe their farming philosophies or practices. This being said, all case-study organizations were *taking actions* which were in-line with the principles of agroecology. Around half of case-study organizations used the terms “food justice” and “food sovereignty” during interviews with most taking at least one action that fit within this theme. No case-study organization used the term, “popular education” in interviews, though two interviewees spoke of Paulo Friere, a founding figure of popular education. All case-study organizations were taking multiple actions which fit within the theme of popular education. The discrepancy between taking actions within a theme and using the jargon and terminology of that theme is notable and suggests the importance of looking at both what people are doing and what people are saying they are doing when conducting research which attempts to describe “real-life.”

Actions themselves and the way people frame their actions are important in movement-building (Holt-Gimenez, 2011; Goris et al 2019). Particularly within the themes of “agroecology” and “popular education,” organizations were taking many actions fitting within these themes but *not* using consistent language to describe what they were doing. Further examination of the “framing strategies” (Benford and Snow, 2000; van Dijk, 2016) being used within farm-based education could be helpful in connecting farm-based education as a whole to other existing food system transformation movements. Analyzing the framing processes of

¹⁴ Case-study organization #14 uses the word “agroecology” in some of the educational workshops and trainings they host with third-party organizations.

farm-based education is outside of the scope of this thesis, however, based on the findings of this thesis, there is ample room for farm-based education to “bridge frames,” the first of four key strategies Benford and Snow (2000) put forth for how social movements can effectively change social frames¹⁵. Frame bridging means linking overlapping concepts and practices which reflect similar ideologies to a specific concept or idea. In the case of farm-based education, for example, this could look like farm-based education organizations using terminology such as “agroecology” to describe their farming practices or “popular education” to describe their education approaches. While these frame bridges are possible, they are unlikely based on the findings of this thesis that show that “agroecology” and “popular education” are terms largely non-existent within the vernacular of farm-based education organizations. A more effective and practical form of “frame-bridging” for farm-based education could be linking more concretely to the concepts of “food justice” and “food sovereignty,” which were both found to be already present within farm-based education discourses. How farm-based education can utilize framing and resignification strategies to connect better to food system transformation movements like food justice and food sovereignty will be discussed in Ch. 5.

Empowerment vs Aid

Through the process of analyzing data and attempting to sort actions and viewpoints into the different CFSE themes of “agroecology,” “food justice and sovereignty,” and “popular education,” a helpful distinction between food system *empowerment* and food system *aid* was made. During the initial rounds of analysis, I put actions which “increased access to a farms’ food, programming, or space” into the major theme of food justice and food sovereignty. I assumed that actions such as food donations, program scholarships, and covering transportation costs to access farms, were surely within the concepts of food justice and sovereignty. While writing the analysis section for food justice and food sovereignty, however, I came across an Instagram post from Sylvanaqua Farms, a Virginia farm which advocates for mutual aid and restorative food systems, which stated “throwing fresh vegetables at poor people doesn’t cure poverty... but it gets turnips in the landfill where they belong” (Sylvanaqua Farms, 2022). The post made me reflect on the idea of “increasing access” as inherently belonging to the major theme of food justice and sovereignty. As I re-examined the concepts of food justice and sovereignty, it was quite clear that both focus on the rights of peoples, particularly groups who have been marginalized, to define their own food systems, from “producing, provisioning, and consuming foods” to the “education about these systems” (Meek and Tarlau, 2016). The right to *define* one’s own food system is connected to but very different from merely *accessing* one’s own food system. There is a difference, for example, between Organization #2’s robust food donation program, in which they donate all of the food they produce through a variety of community food distribution groups, to Organization #12’s weekly community farmer’s markets,

¹⁵ “Social frames,” or how people understand and reflect their realities, can be harnessed to amplify the strength of social movements, which can strategically shape how social frames evolve (Benford and Snow, 2000).

which give their backyard community gardeners' a free space to sell their own produce. Organization #2's food donation programming increases access to foods but does not in of itself empower the folks who are in need of fresh produce to define for themselves how they produce, provision, or educate themselves on these foods. Organizations #12's weekly community farmer's market and backyard gardeners' program, however, gives folks who would likely be receiving food aid opportunity to define themselves how they are growing, provisioning, selling, and educating others on food. This is not to say that increasing access to food systems through actions like making food donations is not important, however, increasing access alone does not solve the structural political, economical, and racial-based *roots* of food systems issues highlighted by the concepts of food justice and food sovereignty.

From these reflections, I changed the sub-theme of "increasing access to food, programming, and spaces." I created a new sub-theme of "empowering communities to define their own food systems" within the food justice and sovereignty major theme for actions such as the backyard community farmers' market described above. Actions which merely increased access to food systems without elements which empowered people to define their own food systems went into the sub-theme of "agroecosystem and food system level practices" within the major theme of agroecology. This distinction between increasing access and empowering to define may be helpful for farm-based education organizations to reflect on how their actions are connecting to the concepts of food justice and food sovereignty.

Ch. 4: Conclusions, Reflections and Applications

This final chapter will discuss conclusions regarding common challenges seen across case-study organizations, how organizations are building resilience to face these challenges, and how farm-based education as a whole is well-suited as a form of transformative agroecological education but can improve its transformative capabilities. The chapter will conclude by reflecting on the methodology and thesis-creation process and suggesting a few practical applications of the thesis materials for those working within or interested in farm-based education.

Common Challenges

Case-study organizations were asked to describe the hardest parts of their work. Since these challenges did not fit well into answering either of the two research questions, but are still pertinent to the state of farm-based education, they are included here briefly in the conclusion section. The challenges organizations described fit into six themes: getting people to the farm, balancing acts, staffing, communicating, funding, and systemic or large-scale disturbances. Figure 20 below provides a diagram overviewing these challenges.

Getting People to the Farm

Many case-study organizations located rurally or in areas with low population density discussed physically “getting people to the farm” as a significant challenge they faced. Many of these organizations were located in areas without convenient public transportation access, had roads which were difficult to drive on, or had issues regarding parking, particularly for events or education programming bringing many people to the farm. The challenge of getting people to the farm was particularly frustrating for organizations who wished to make their programming accessible to nearby urban populations who do not have access to personal vehicles. Advocating for municipalities to improve public transportation options and farms themselves providing shuttles, buses, or assisting in creating carpooling networks to and from their farms are options for addressing this challenge. Some rural programs addressed the transportation issue by focusing on overnight education programming in which they provide transportation to and from the farm. For example, Organization #1 plans on doing weeklong overnight summer camps instead of day summer camps when they reopen their summer camp programs so that they can provide one bus pick-up and drop-off at the beginning and end of their program instead of doing daily shuttles to and from town. Supporting and channeling resources into urban farm-based education programming could also address the need for farm-based education among urban populations.

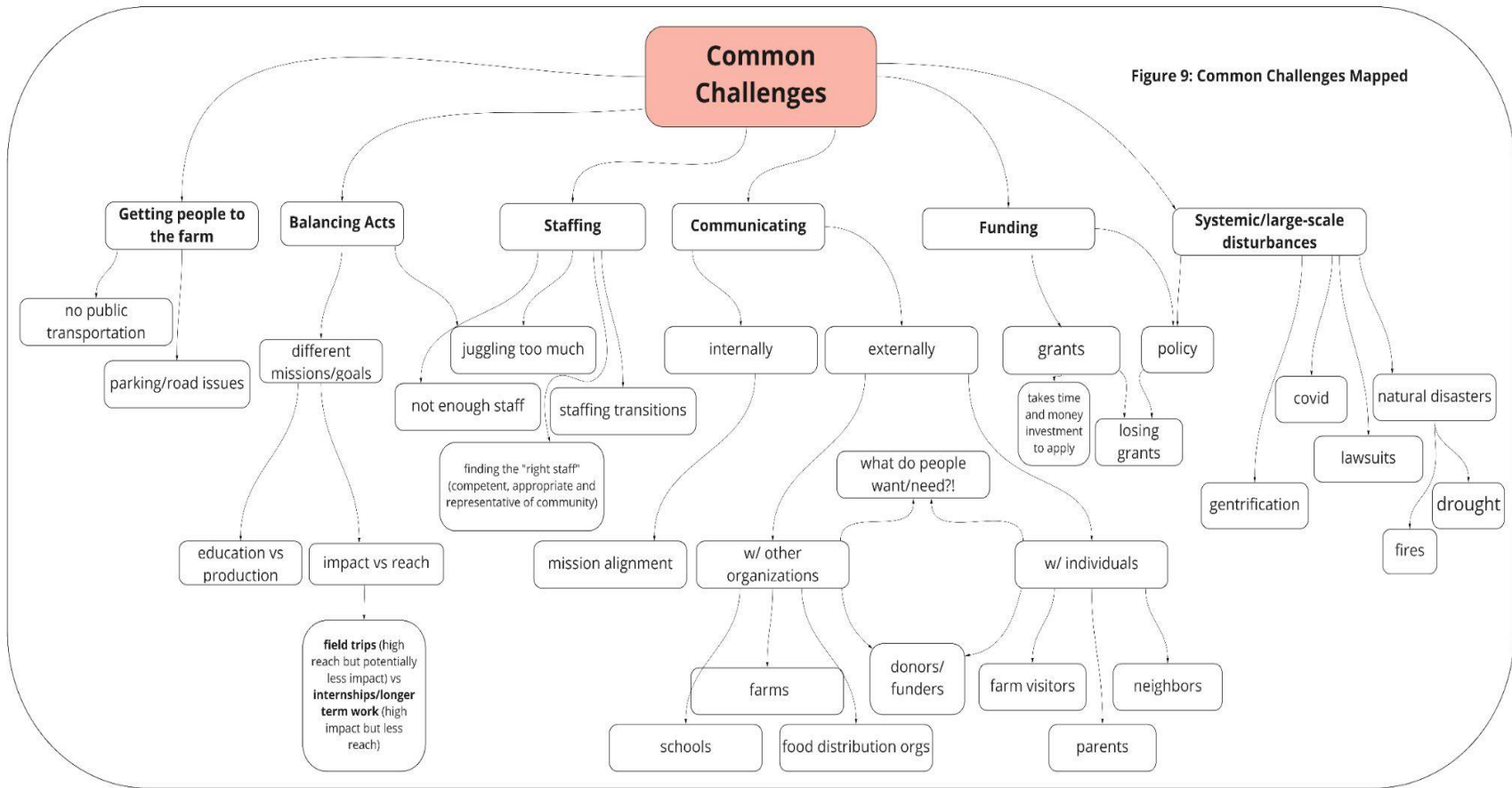


Figure 9: Common Challenges Mapped

Figure 20: Flow chart of common challenges seen across case study organizations

Balancing Acts

The various “balancing acts” farm-based education organizations are facing became a common challenge discussed in interviews. Interviewees, particularly those working both as farmers *and* educators for organizations which did not have separate full-time farming and education staff, described the general “juggling act” of their job as challenging and tiring. Other balancing acts mentioned were balancing different missions and goals internally as an organization. For example, Organization #14, a collective consisting of five different associations all with different missions, described finding coherence and fluidity with their overarching mission as a collective as a major challenge they faced. Two challenging “balancing acts” mentioned frequently by organizations were: 1) production versus education, which is discussed thoroughly in Ch. 4, and 2) impact vs reach. A few organizations described it as challenging to try to balance the pedagogical *impact* of their programming, with the *reach*, or number of students they are able to serve. Organization #4 discussed this balancing act between impact and reach, particularly regarding school field trips. They said,

"I think one question that we always are asking, and maybe now more than ever is around the impact of, you know, one four-hour visit that a child at a school might take, and then we might never see that child again... versus spending our time more relationally with schools where we get to see the same kids, maybe three times a year.... We have more of a commitment with them"

Organization #9’s story in the spotlight box in Ch. 4 highlights how these balancing acts can be interconnected. Because they had a mismatch of missions and goals between the education and farming departments, there was an overfocus on education. Before the pandemic, they were running so many school field trips that their farming production and the *impact* of their education programming suffered. The pandemic forced their education programming to shut down and provided a helpful opportunity to find a better balance between both education and farming production and the impact and reach of their education programming. As farm-based education organizations are inherently balancing the two complex systems of education and farming, organizations will inevitably face juggling many balancing acts. While there is no way to remove these balancing acts, “critical introspection” at the organizational level (as described further in the next section) was offered by many case-study organizations as helpful in building resilience in the face of this challenge.

Staffing

Not having enough staff, finding the “right” staff, overworking staff, and keeping staff were all brought up as common challenges. As discussed in Ch. 4 pertaining to how organizations are able to balance education and farming production successfully, having full-time farming and education staff was consistently helpful to organizations in finding a symbiotic balance. Finding the “right” staff, in particular, finding staff who were local or appropriate and representative of their communities was challenging for quite a few organizations. Organization #6 struggles in

finding Spanish-speaking staff and listed this as their biggest challenge at the moment, as most of their community is primarily Spanish-speaking. A few interviewees mentioned being overworked themselves as a large challenge they face. Some interviewees were volunteering hours because they had so much work to do but had a limit to the number of paid weekly hours provided. Keeping staff long-term and staff transitions were also mentioned as challenging. Organization #8 discussed having to downsize their scale of farming production because their farming manager recently left and so much of their production was dependent on this single person.

Communicating

Internal communications, particularly regarding mission alignment, and external communications, related to communicating effectively with other organizations and with individuals were reported as a common challenge. Internal communication regarding mission alignment between different departments or associations of the larger parent organization was described above in *Balancing Acts* and is further addressed in the Organizational Resilience section. Communicating with other organizations such as donors and funders, other partner food system organizations, and partner schools were described as time-consuming and sometimes challenging. Communicating with individuals, such as farm visitors, neighbors, and parents, were also described as challenging. Some case-study organizations wished to increase their community involvement, but were halted by communication challenges. For example, Organization #1 struggled to communicate with their neighbors regarding issues of road-usage and parking which led to them having to significantly downsize their education programming. Organization #6, related to their struggle in finding Spanish-speaking staff described in the above *Staffing* section, found it challenging to effectively communicate with the Spanish-speaking community in their region due to language and cultural barriers. Organization #6 seemed to be in a “catch-22” situation as they described not being able to communicate effectively with their Spanish-speaking community *because* they had no Spanish-speaking staff and not being able to find Spanish-speaking staff *because* they could not effectively communicate with their Spanish-speaking community.

Funding

Organizations spoke of winning and holding grant-funding as a challenge. Grants were described as taking a significant amount of time and money investment to apply for. For organizations who had the means to apply for grants, grants not being renewed due to policy or political shifts, was described as a frustrating challenge.

Systemic/Large-Scale Challenges

Systemic or large-scale disturbances such as policy or political shifts, the covid-19 pandemic, natural disasters such as droughts and fires, systemic racism, and gentrification were mentioned by varying case-study organizations as challenges. These challenges all occur due to large-scale

structures or natural forces largely outside of an organizations' direct control and as such, were categorized together. Organization #13 described their biggest challenge as "working within a racist system." A from Organization #13 spoke of a three-pronged strategy to deal with this that involves first learning about anti-racism, anti-colonialism, and equity. Then learning and practicing self-care and community-care because "when we are actively anti-racist, we are pushing a rock up a steep hill." Finally, A spoke of needing to "create a whole other system that is outside of racism and colonization" which starts by "reconnecting to the land... to natural cycles, understanding how deeply related we are to the natural world." There is of course no easy fix to any of these challenges. Connecting deeper to food system transformation movements which address root causes to many of the systemic issues listed as challenges above can perhaps be seen as a "solution" to some of these challenges. Increasing the internal resilience and sustainability of an organization through some of the methods offered in the next section may also be an aid in facing these immense systemic challenges.

Organizational Resilience

After input from FBEN, who wished to know how organizations were able to build organizational resilience, I added an interview question asking "how has your organization built resilience over time?" This question usually followed directly after discussing the "hardest parts" with each interviewee. Similar to the challenges section above, since this question was not directly answering either of the research questions but is still pertinent to the state of farm-based education and likely provides useful information to people working within or interested in farm-based education, I am including a discussion here in this conclusions chapter. Five themes emerged regarding how organizations were building organizational resilience: critical introspection, diverse and long-term funding sources, community ties and support, supported learning opportunities for staff, and cross-departmental communications and support. Figure 21 below provides a visual overview of responses from interviewees.

Critical Introspection

Some form of periodically critically reflecting on and re-evaluating an organizations' missions and values was the most often mentioned form of building organizational resilience across case-study organizations. Many organizations accompanied this intra-organizational reflecting and adjusting of values and missions with externally reflecting and re-evaluating the needs of their community and their organizations' role in fulfilling those needs. Having mechanisms for ensuring the consistent occurrence of this dual internal and external reflection process seemed helpful to organizations. A number of organizations have monthly all-staff meetings in which they discuss their organizational mission and goals. For nearly all case-study organizations, the covid-19 pandemic was brought-up as forcing them to re-evaluate their organizations' goals and mission due to most education programming shutting-down. Most of these case-study organizations spoke of this forced introspection period in a positive manner, describing the reflection period as "helpful" and "necessary."

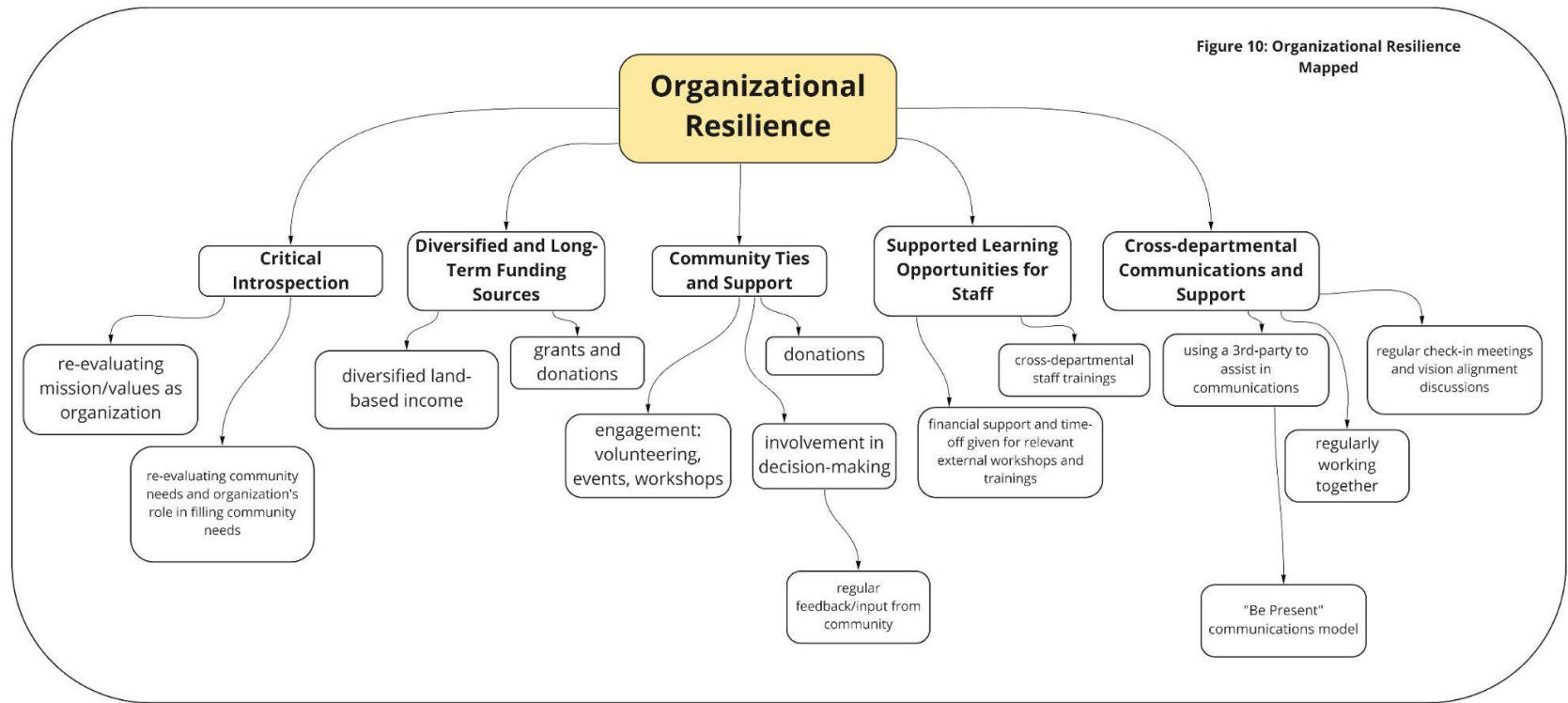


Figure 21: Flow chart of mechanisms which bring organizational resilience to case study organizations

Diverse and Long-term Funding Sources

Organizations spoke of diverse and long-term funding sources as helpful in building organizational resilience. Organizations using a mix of land-based income, such as farm sales, education program tuitions or fees, eco-tourism fees, and grant and donation-based income, described this diversity of income sources as helpful. Organizations were using a variety of legal structures to help achieve financial diversity. Over half of the case-study organizations interviewed are non-profit organizations. A few had both nonprofit and for-profit organizations. Organization #4, for example, runs all of their farming production out of a for-profit organization which is nested under a non-profit organization, which hosts their education and community outreach programming. In this way, the for-profit farming association is able to earn money for the non-profit organization. Currently, the for-profit association earns around 66% of the annual operational budget of the non-profit.

Community Ties and Support

Community ties and support through donations, volunteering, attending workshops and events, and involvement in democratic decision-making processes, were all discussed as helpful in building organizational resilience. Organization #8, in particular, emphasized the role their community played in helping them through a series of challenges. After the pandemic shut-down their education programming in the spring of 2020, wildfires that same summer burned down their 157-year old farmhouse and all of their apprentice-housing buildings. They had to cancel their apprenticeship programming, which was central in how they maintained their high levels of farming production. “We pulled on our community and they came through,” they said. Through community donations and volunteering, they were able to pivot their organizations’ operations to create a food hub (see the spotlight box “Creating a Food Hub” in Ch. 4) and are now rebuilding their apprentice housing, hoping to relaunch the apprentice program this season.

Supported Learning Opportunities for Staff

A number of interviewees mentioned supported learning opportunities for themselves and other staff as helpful in keeping their organization sustainable. Interviewees discussed being supported by the organization through financing and time-off to attend workshops and trainings that they requested. Some organizations required periodic all-staff trainings, such as anti-racist training (this is discussed further in Ch. 4’s section on Food Justice and Sovereignty).

Cross-Departmental Communications and Support

Organizations discussed strong cross-departmental communications and support, through regular check-in meetings, vision-alignment discussions, regularly working together, and using a third-party to assist in communications, as all helpful strategies in maintaining organizational resilience. Many organizations spoke of the idea that everyone, regardless of department, knows what everyone else does and is able to fill-in various roles. For example, Organization #4 says,

“nobody on this farm is only production. There are some people who are like 98% production but everyone at the farm is considered an educator even if it is not the main focus of their role.” Organization #8 discussed how their monthly vision and solidarity meetings are helpful, but that actually working together across departments was most “meaningful.” Organization #8 also uses a third-party communications consultancy group to aid in their communications. The consultancy group they use puts special focus on how the “personal histories and social contexts of issues such as race, gender and religion influence and affect our attitudes and behaviors toward each other” (Be Present, 2022). From understanding people’s unique backgrounds and “listening... in a conscious and present state,” employees are able to “build effective relationships.” On top of building organizational resilience, having strong cross-departmental communications and support was also described as aiding in achieving a symbiotic balance between farming production and educational activities (see Ch. 4, RQ1 section).

Farm-Based Education for Transformation

Farm-based education organizations demonstrated that they are collectively taking actions which connect them to food-system transformations across the themes of CFSE, 1) agroecology, 2) food justice and sovereignty, and 3) popular education and the four pillars of TAL, 1) horizontalism, 2) wisdom dialogues, 3) building social movements, and 4) combining the practical and political. Nearly all farm-based education organizations were connecting in particular to the themes of agroecology and popular education. Many organizations, though particularly those which were urban and/or address food justice and sovereignty issues in their mission statements, were connecting to the theme of food justice and sovereignty. Much of this thesis has focused on how farm-based education can connect to food system transformations at the organizational-level. This section will zoom-out and discuss farm-based education itself, including what makes farm-based education well-suited as a form of transformative agroecological education and how farm-based education can improve its connection to food system transformations.

What makes farm-based education well-suited as a form of transformative agroecological education?

Farm-based education is well-suited as a form of transformative agroecological education because of its focus on practical, hands-on learning, its tendency to create and rely on local partnerships with other food system actors, and its location outside of traditional top-down structured school systems. The hands-on and place-based learning innate within farm-based education strengthens learning experiences and is conducive to building confidence, capacity, and actualization in students, all elements of “horizontalism,” one of the four TAL pillars. The focus on praxis and direct application to real-life food system issues creates a natural platform for “combining the practical and political,” another TAL pillar. The “practical” component of this TAL pillar is inherent in farm-based education, and many case-study organizations from this thesis demonstrated different ways to add political components to this practical training.

Farm-based education offers opportunities for organizations to partner and connect across various food systems roles. These partnerships can both serve in “building social movements” and in providing spaces for intergenerational and inter occupational “wisdom dialogues” to occur. Finally, due to most farm-based education occurring outside of traditional school environments with top-down power structures, it is relatively easier for farm-based education to challenge hierarchy and politicize its programming without the barriers or consequences a traditional school may face for such actions.

How can farm-based education improve its link to food system transformations?

Farm-based education as a pedagogical movement and network can deepen its connection to food system transformation movements by actively “resignifying” what farm-based education means. Resignification refers to the process of “rearticulat(ing) existing knowledge, ideas, and norms from dominant discourses in new ways” (Goris et al, 2019, p. 3). Resignifying farm-based education could include reshaping or “reworking” the weaknesses in the dominant language, practices, and activities within farm-based education. Overall, case-study organizations were not consistently using the term “farm-based education” to describe their education programming and there was confusion among farmers’ market interviewees and some case-study organizations on what “farm-based education” actually means. Because there is not an incredibly strong dominant discourse yet on what farm-based education *is*, it is entirely possible for farm-based education organizations to resignify what farm-based education is to include a more explicit connection to food system transformation movements.

The Farm-Based Education Network (FBEN) is in a unique position to assist in this resignification process. Around half of the case-study organizations interviewed in this thesis had some connection to FBEN. Even when these organizations had only participated in one FBEN community meeting or workshop, organizations with any link to FBEN at all were more likely to use the term “farm-based education” in interviews than those with no link at all to FBEN. This suggests the potential power of FBEN to participate in resignification and framing processes. FBEN has expressed intentions to conduct a participatory process for re-defining its values and goals as a network. This is an excellent opportunity for the network to democratically assist in re-framing farm-based education as a pedagogical movement connected to and nested within the broader food system transformation movements of agroecology, food justice and food sovereignty, and the pedagogical-transformation movement of popular education.

Reflections and Limitations

Methodology

The Applications of Theory

The use of “Transformative Agroecology Education” (TAL; Anderson et al., 2019) and Critical Food Systems Education (CFSE; Meek and Tarlau, 2016) were both helpful in analyzing how actions connected to broader food system transformation. TAL provided a useful structure

for analysis, creating practical sub-themes for grouping actions which I may have not necessarily grouped together had I chosen to use a solely inductive strategy. Not all four of the key characteristics of TAL were equally practical to use, however, and where they fit into the major themes from Critical Food Systems Education theory (CFSE; Meek and Tarlau, 2016) was often confusing. Wisdom dialogues was the easiest TAL characteristic to group actions into, as the definition for wisdom dialogues is clear and straightforward. Combining the political and practical, building social movements, and horizontal learning all were sometimes challenging to distinguish and group actions into. For example, actions which were “capacity-building,” a category within “horizontalism,” were also actions which “combin(ed) practical and political skill-building.” These actions could also all be argued to fit within agroecology, popular education, and food justice and food sovereignty. Overall, both CFSE and TAL added to the depth of the thesis analysis, but overlapping the two theories added redundancies which slowed down the analysis process and were sometimes incoherent.

Participatory Research Benefits and Challenges

The participatory component of the data collection, referred to as “Phase 3” in Ch. 2, Methodology, added real-life and real-time applications to the thesis, but was not incorporated sufficiently into the analysis structure and therefore is unfortunately not as present as it could have been in the thesis. When I began living at case-study organization #14 in France in March, I initially felt that I had already collected enough data from interviews in the United States and would merely be doing a work-trade while analyzing and writing the rest of the data. As I was preparing to host the online workshop with FBEN in May, however, I became inspired to conduct a similar in-person workshop with Organization #14’s collective members. Collective members participated enthusiastically in the workshop and discussion was so active that we ran out of time to complete all of the activities. I created a “homework” packet for the collective members to finish the reflections I had intended but members never completed this “homework” packet. In retrospect, I would have scheduled individual interviews with multiple collective members rather than having members fill-out forms at their own leisure, which proved to be unsuccessful.

The other participatory component of the research, the online workshop conducted in collaboration with FBEN, also had positive elements and drawbacks. Around 20 participants attended the workshop, which was more than I anticipated, but only 6 stayed for the discussion portion at the end. I was hoping to collect meaningful data from this workshop, but due to the low retention-rate, I did not get nearly as much data as I thought I would. The online format, along with the fact that participants had never met each other before and had no time to build rapport with each other or myself, made meaningful discussion much more difficult than the in-person version of the workshop I conducted with Organization #14. Despite the challenges of the online workshop in gathering useful research data, the collaboration with FBEN throughout the thesis was a highly positive and valuable experience. FBEN added insightful questions to the

research and has graciously provided a network for which to discuss and add real-life meaning and application to the thesis.

Practical Applications and Recommendations

It is the aim of this thesis that people working within farm-based education will find this thesis useful and applicable in attempting to reflect on and potentially improve their organizations' balance between pedagogy and production, connect their own farm-based education programming to food system transformations, and add organizational resilience to their organization. In particular, the myriad of ways farm-based education organizations are connecting to food system transformations listed in the results section are intended to provide organizations with inspiration to reflect on:

- 1) How does my organization take actions already which may fit within the three major themes of agroecology, food justice and sovereignty, and popular education?
- 2) How *could* my organization take more actions in the future based on the actions other organizations are already taking?

Appendix E includes a link to a PDF document made for FBEN which summarizes the results of the thesis. This PDF provides a far more concise version of the thesis, including reflection questions throughout and is intended for people working within farm-based education.

Final Conclusions

Farm-based education programs are diverse regarding location, geopolitical context, farming landscape and practices, mission, and pedagogical approach. While some programs may struggle with balancing their farm production with hosting educational activities, many organizations were found to in fact have a symbiotic balance between farm production and education. Having sufficient staff, space, and time allotted for both farming and education was found to help organizations in having a symbiotic balance between farm production and education. Long-term, service-based learning opportunities like internships and apprenticeships were also found to be helpful in creating meaningful education opportunities that also provide real farming production help.

Overall, based on the farm-based education organizations explored during this thesis, farm-based education itself can provide a natural pedagogical platform for a number of “transformative agroecology learning” elements to occur and fits well within the theory of “critical food systems education.” Farm-based education tends to have a focus on practical, hands-on learning, forging local partnerships with other food system actors, and is usually located outside of traditional top-down structured school systems. These characteristics make farm-based education readily able to support regional sustainable and ethical food system transformations. Many farm-based education organizations, particularly those located in urban spaces and with mission statements which explicitly work towards addressing food justice and sovereignty issues, are already taking laudable actions connecting their programming to food

systems transformations in their respective regions. An effort from farm-based education organizations, aided by support networks such as FBEN, to clarify what farm-based education is, could help strengthen farm-based education as a pedagogical movement. A resignification process, embracing the many actions some organizations are already taking and using concepts such as food justice and sovereignty, which are already present within the discourse of many farm-based education networks, could help strengthen farm-based education's relationship to food system transformations.

Appendix A: Literature Review

Agroecological education has been offered by academic scholars and movement activists alike as a central tool in transforming current industrialized and globalized food systems into sustainable and ethical ones. While the unifying purpose of agroecological education remains grounded in teaching towards sustainable food system transformation (Lieblein et al. 2012), the underlying approaches, praxis, and outcomes of agroecology education differ greatly (Meek et al 2016; Anderson et al. 2019). There are clear intersections between agroecological education and other related education movements such as garden or farm-based education, place-based education, experiential learning, sustainability education, and more. Understanding the connections and differences between these pedagogical movements is helpful in situating this master's thesis among relevant literature, as well as developing an understanding of farm-based education and its connection to food system transformation movements, the topic of this thesis. This literature review presents an overview of the most common pedagogical approaches seen within agroecological education programs studied in published academic literature. The review then discusses how the various pedagogical approaches are interacting with broader agroecological food system transformations. Research gaps include a lack of research into youth and/or young-adult specific programming, programming which is informal, or not connected to formal academic institutions, and programming taking place on farms. Research gaps also include the actual processes and methods programs are taking which are connecting them to sustainable and ethical food system transformations, as well as educators and farmers' perspectives on the programs they host. The research gaps found through this literature review have informed the research topic, purpose, and questions of this master's thesis, which focuses on farm-based education for youth and young adults as a form of transformative agroecological education.

Pedagogical approaches commonly seen in agroecology education

From school gardens to movement-based educational initiatives, agroecology and food systems education has commonly highlighted the importance of **experiential education** (Francis et al 2011; Parr and Trexler 2011; Lieblein et al. 2012; David and Bell 2018). Experiential education was first coined in the literature by John Dewey (1916), who suggested that learning must be contextualized within a students' existing knowledge and experience and that students will more fully learn by doing. Generally, the experiential-learning approach within the university context focuses on action-learning and action-research, where students learn by "collaborating with non-university stakeholders" (Lieblein et al. 2012). The "learning by doing" method has been a cornerstone for agroecological education pedagogy across program types, which differ in praxis and social, economic, and environmental contexts (Francis et al. 2011; Krogh and Jolly 2012; Lieblein et al. 2012; Parr and Trexler 2011).

Systems thinking has also been a common pedagogical discourse within agroecology education, particularly at the university and post-university level. Formal agroecology degree

programs have become increasingly popular (David and Bell, 2018), emphasizing systems-thinking which entails an interdisciplinary and holistic approach (Francis et al. 2011; Lieblein et al. 2007). There has been criticism of this approach as being “universalistic” or “reductionist” and “self-referential” within academia (David and Bell 2018). Anderson et al. (2019) argue that formal degree programs are often targeted at “experts” rather than farmers and miss the connection to political movements. Anderson et al. (2019, p. 522) also cautions that their embeddedness “within the dominant system, close to centers of intellectual, political and economic power” can lead to knowledge production that is influenced or lobbied by corporate structures. Some universities, in a laudable awareness of these critiques, have attempted to leverage action research and experiential learning to encourage students to engage with active social movements during their studies (Anderson et al 2019), though this formal engagement with social movements remains a rarity. Regardless, the holistic approach of systems thinking has become widespread within agroecological education in the formal university setting (David and Bell 2018). Systems thinking is commonly found in non-formal education settings as well, where programs look at broad food system-level challenges (Meek and Tarlau 2016).

Placed-based learning¹⁶ can be thought of as a form of experiential learning and is used in many agroecological education programs (Gruenewald 2003; Barbosa 2016; Angstmann et al. 2019). Place-based learning emphasizes the social and environmental context of a place as crucial to learning (Gruenewald 2003). When the “place” of place-based learning is a farm or garden, place-based learning may be called **garden or farm-based education**.

Formalized **garden-based education**, such as school gardens, where the garden is situated within the context of a formal educational institution, have roots as early as 1814 in Europe (Nowatschin et al. 2017). By the 1860s, school gardens were becoming popular across Europe and North America (Nowatschin et al. 2017). Dewey’s aforementioned (1916) experiential learning pushed school gardens into the forefront of progressive education curriculums in the USA in the early 20th century. School gardens have had a resurgence in popularity in the past thirty years, particularly in the USA. For example, increasing obesity rates led California to adopt a “garden in every school” program in the late 1990s (Ozer 2008). School gardens are often implemented with goals for improving student nutrition and health, boosting academic achievement through hands-on learning, and instilling a care for the environment in students (Nowatschin et al. 2017). While most evidence of their effects remains anecdotal and understudied (Ozer 2008), school gardens have been shown to strengthen community networks, social development, and food literacy (Nowatschin et al. 2017). There are an increasing number of studies demonstrating their efficacy in changing children’s dietary habits to include eating more vegetables and trying new foods (Crary et al, 2022). School gardens are not without their critique, however. Some scholars postulate that school gardens are often quixotic, depoliticized and aimed at “shaping the purchasing choices of future white upper-middle class consumers” (Meek and Tarlau 2016, p. 240). There is a gap, however, between the fecundity of school

¹⁶ Place-based learning is also called “contextual-learning” or learning in “authentic-learning environments,” as in (Smeds et al. 2015) and (Barbosa 2016), respectively.

gardens in the field and in the literature and their efficacy as a form of agroecological education remains understudied.

While garden or farm-based education can (and often does) take place outside of an institutionalized education setting, for example, at a working farm or garden, most studies found in this literature review discuss **farm-based or garden-based education** within the context of a formal academic or educational institution. Mindel (2014) calls farm-based education any education in which children or adults are “partaking in hands-on learning... in any kind of farming system.”¹⁷ This thesis will define garden or farm-based education as broadly as Mindel’s (2014) definition above to leave room for the diversity of programs crafting experiential education within farming and gardening spaces. Dilafruz (2018) agrees that farm-based education relates closely to the parallel movements of “outdoor education, place-based education, experiential education, nature-based education, environmental education, and sustainability education” and adds a further connection to grassroots projects like the slow-food movement and community supported agriculture¹⁸. The efficacy of farm-based education as a pedagogical approach is relatively understudied, however, the few studies focusing on the topic show promising results. Parr and Trexler (2011) found that learning within a farming environment enhanced university-level students’ appreciation for and understanding of farming practices. Smeds et al (2015) looked directly at the value of place-based learning within a farm education program for youth and found that students demonstrated a deeper and longer-lasting understanding of the subject when learning took place in an “authentic learning environment.”

Student-led farms are a type of farm-based and agroecological education found at universities, particularly in the USA context due to historical ties with land-grant universities (Lewis et al. 2011).¹⁹ Student-led farms often blur the line between formal and informal education. While taking place at formal academic institutions such as universities or colleges, student farms differ from formal degree programs in terms of pedagogical approach and structure because they are often created and run by students and pre-date formal programs (Parr and Trexler 2011). Student-led farms offer for-credit farming courses, student volunteering opportunities and jobs, and food, often through a community-supported agriculture structure (Lewis et al 2011). Student farms utilize the pedagogical approaches of experiential-learning, place-based learning, and can contain aspects of popular education, to be discussed shortly. Even with the benefits of providing hands-on learning opportunities and producing and distributing food to students and university-communities, student farms remain understudied in the agroecological literature (Lewis et al 2011). Farm-based education as a whole, from

¹⁷ Whether the “place” or setting of farm-based education is truly a garden or farm remained difficult to define during the entirety of this thesis. Finally, I chose to use Mindel (2014)’s rather broad definition of farm-based education as it leaves room for garden-spaces to be included as well as a productive working garden can certainly be argued to be a “farming system,” regardless of its connection to capitalistic commerce.

¹⁸ Community supported agriculture describes farms which have a direct relationship with the people who eat their food, often share-holders or members of the farm (Cone and Myhre 2007).

¹⁹ The Land-Grant Act of 1862, otherwise known as the Morrill Act, established colleges across the USA specializing in agriculture. While most of these colleges have expanded beyond agricultural education, many still exist today with student farms having been operating on their premises since their inception (Lewis et al. 2011).

school-gardens to student-led farms, is an understudied yet increasingly common pedagogical approach seen within agroecological and food systems education.

Connecting to Food Systems Transformations

Pedagogical approaches inspired by movement-based education

Often the “place” within place-based education includes but is not restricted to the farming or gardening system. Much like agroecology itself, the “place” does not end at the garden or farm gates. but spills over into the social and structural systems affecting the entire food and farming system. The educational initiatives of food justice organizations and social movements constitute a significant amount of on-the-ground and informal programming occurring within agroecological education. These **movement-based** agroecology educational programs frequently take inspiration from **popular education**²⁰. Popular education evolved from Latin American peasant movements of the 1960s and 1970s (Gruenewald 2003). Popular education stems from the social reproduction theory, critical pedagogy, which challenges the narrative that education must reproduce dominant societal structures and norms (Meek and Tarlau 2016). Popular education encourages students to reflect and evaluate dominant paradigms and “turn education and schools into forces for liberation” (Freire 1972). Many of the aspects of popular education, such as dialogue spaces, the articulation of diverse forms of knowledge, participatory research, and contextualizing critical thought processes (Freire 1972; Goris et al 2021), overlap with the 13 principles of agroecology developed by Wezel et al. (2020) and are highly relevant for agroecological education.

Human-environment and human-human relationships are central to agroecology and agroecological education. In an effort to create education that teaches towards ethically navigating these relationships, Gruenewald (2003) proposed a **critical pedagogy of place** in which place-based learning is combined with critical pedagogy (or popular education) for a dual purpose of recontextualizing and decolonizing education. Critical place-based education blurs the boundaries between school and community such that both school and community can affect and be affected by each other (McCune and Sanchez 2019). Drawing from the collectivity principles of popular education, McCune and Sanchez (2019) recommend moving past education that is centered on individual subjects and towards a territory-centered approach in which the territory itself is learning from the pedagogy and the pedagogy is learning from the territory. This pedagogical expansion towards a territory scale mirrors evolutions within agroecology itself to expand focus from the scale of “specific agricultural systems” to “agroecological territories” (Wezel et al. 2016). Through a territorial scale of critical pedagogy of place, agroecology education can better teach towards broader sustainable food system transformations (McCune

²⁰ Popular education is also referred to as “critical pedagogy,” particularly within academia in the USA (Meek and Tarlau 2016). I have chosen to use the term “popular education” in this text for similar reasons to Meek and Tarlau (2016), who use “popular education” over the more formalized and academic term “critical pedagogy” in an attempt to lift the education practices within social and political movements as opposed to lifting academic terminology.

and Sanchez 2019) rather than limiting itself to teaching individuals at the field and plot scale alone.

Recently, the synthesizing concept of **critical food systems education** has emerged within pedagogical approaches seen in agroecological education. Meek and Tarlau (2016) created the framework of critical food systems education (CFSE; seen in Figure 1 below) to synergistically “leverage education and innovative pedagogical techniques so that students and educators can transform the food system” (Meek and Tarlau 2016, p. 241). CFSE draws from 1) food sovereignty; 2) food justice; 3) agroecology; and 4) critical pedagogy. **Food sovereignty** is a concept that has emerged from activist movements and is defined by La Via Campesina as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (Patel 2009: 665).²¹ **Food justice** emerged in the USA in the 1960s and 1970s as a grassroots-offshoot of the civil rights and environmental justice movements (Mares and Alkon 2011). Food justice focuses on the “structural racial and class-based inequalities in the food system” (Meek and Tarlau 2016, p. 243). Both food sovereignty and food justice can serve to complement agroecological education by highlighting how power and resource distributions affect pedagogical processes (Meek et al. 2019). Meek and Tarlau (2016) intentionally utilize the non-academic and movement-based concepts of food sovereignty and food justice in their CFSE framework in order to connect CFSE to existing global movements which are mobilizing for sustainable food system transformation. Agroecology, particularly in its politicized form, is seen as a “central part of food systems education” within CFSE (Meek and Tarlau 2016).

²¹ See La Via Campesina’s website (<https://viacampesina.org/en/food-sovereignty/>) for more information.

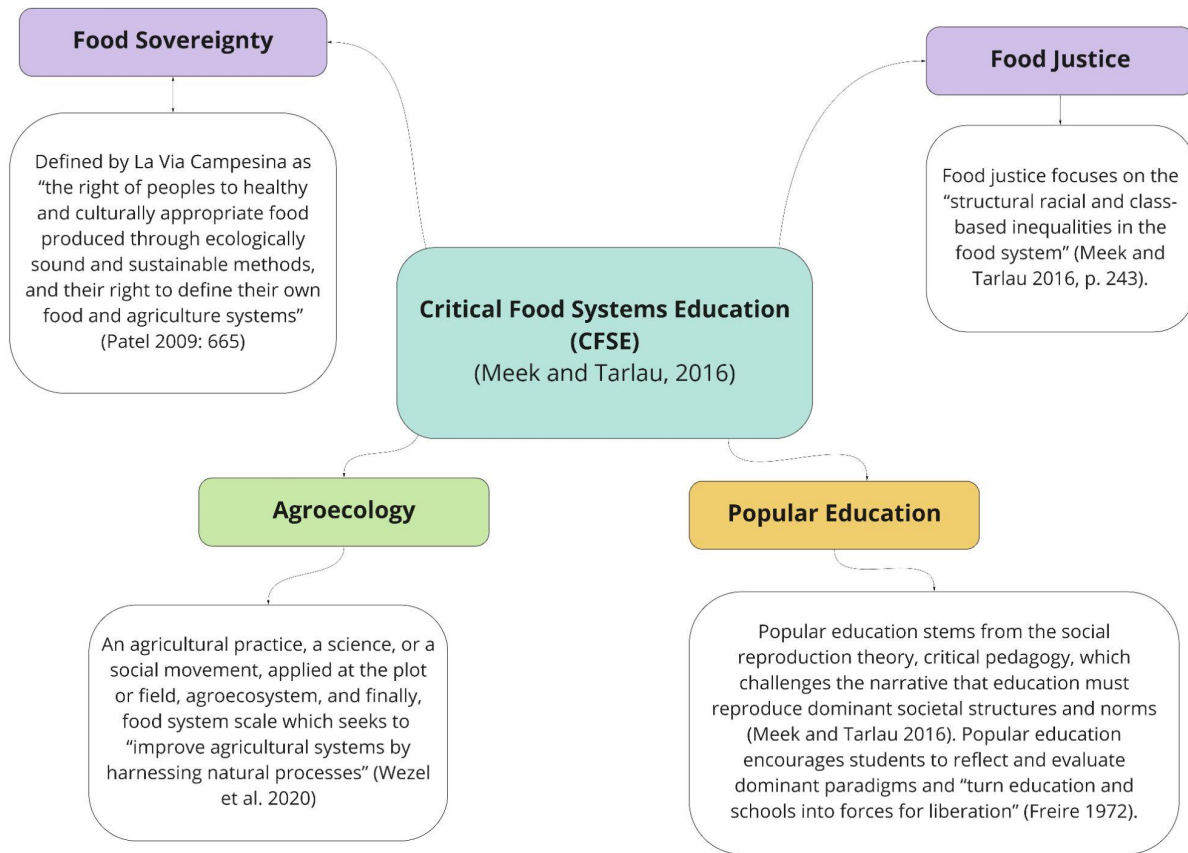


Figure 1: Critical Food Systems Education

Movement-based education in action

Movement-based education programs are often hallmarked by the pedagogical approaches of popular education, experiential and action-learning, critical place-based learning, and CFSE (Meek et al 2019). Educational initiatives of social movements often emphasize collectivism over individuality in an effort to turn isolated farming experiences into “landscape-level social action” (McCune and Sanchez 2019). Rather than asking “how do we teach a political agroecology?,” movement-based educational programs tend to ask “how do we teach the human, political, and technical qualities needed to collectively scale-out agroecology?” (McCune and Sanchez 2019) In this way, the aims and goals of programs are pushed towards praxis rather than remaining in theory. Meek et al (2019) looked at six educational programs teaching towards food sovereignty and found that programs most often emerge from issues stemming from “industrialized food systems; social inequality; food insecurity; and decontextualized education systems” (Meek et al 2019, p. 616). All six case studies reviewed by Meek et al (2019) in North and South America emphasized agroecological practices with a political focus. For example, seed saving is a commonly emphasized agroecological practice by social movement educational programs. Seed saving involves the agroecological principles of input reduction, land and natural resource governance, and participation (Wezel et al 2020) and is

an agroecological practice at the field and food systems level. Educational programs of movements are also teaching “communal social practices and cooperative production strategies” like traditional and culturally appropriate cooking, cuisine, nutrition, and food transformation and preservation practices (Meek et al 2019, p. 617). Unfortunately, the published literature on the educational initiatives of social movements and food justice organizations is limited in regional scope to primarily Latin America and the USA.

In the USA context, grassroots organizations which focus on food justice, such as the Detroit Freedom Farmers in Michigan (White 2018), Phat Beets in California²², and Soul Fire Farm in New York (Penniman and Washington 2018), are incorporating education for youth as a cornerstone of their food justice campaigns (Meek and Tarlau 2016). For example, Soul Fire Farm in New York runs on-farm workshops for their primarily BIPOC²³ youth participants, combining hands-on agroecological farming training with reflective activities that encourage students to question oppressive and unsustainable structures within the food system (Penniman and Washington 2018). Taking inspiration from massive cooperative networks of the civil rights movement, many USA-based food justice organizations take action to embed their work within the greater canopy of food justice and sovereignty movements. For example, Soul Fire Farm makes their education curriculum free and publicly-accessible in an effort to amplify their work across a larger network of organizations. USA-based education initiatives of food movements are often informal, with purposeful autonomy from the state, contributing to a lack of formal academic literature (Meek et al 2019).

The educational initiatives of social movements in Latin America are relatively well-studied in terms of number of and depth of studies. Two notable and well-studied examples include the educational initiatives of the food sovereignty movement, La Via Campesina (LVC) and the Brazilian Landless Worker’s Movement (MST). La Via Campesina (LVC) has formed around 65 agroecological schools since 1996 across Latin America (Rosset 2015). These schools are largely autonomous and self-funded through fundraising efforts and grant-acquisitions (Meek et al 2019). Amplifying and scaling-out agroecology has become a central goal of LVC’s educational initiatives (Rosset et al. 2019). LVC partners with food sovereignty organizations across the world. Programs emphasize horizontalism, dialogues, and the leading role of the peasantry and can range from formal schools to wall-less “peasant-to-peasant” dialogue and training spaces (Rosset et al. 2019). The Brazilian Landless Worker’s Movement (MST), alongside LVC, is one of the largest agrarian movements in Latin America, having secured land rights for over 350,000 families in 30 years (Barbosa 2016). Seeing that Brazilian public schools were increasingly teaching to urbanize rural children and devalue agrarian life, MST realized that in order to re-occupy and revitalize rural land, they would need to re-occupy and revitalize rural education (Barbosa 2016). MST drew on informal popular education programs, often created by women, to form a pedagogy known as “Educaco de Campo.” Educaco de Campo has the five goals of: 1) promoting food sovereignty; 2) democratizing land use; 3) pushing agrarian reform;

²² For information on Phat Beets, see: <https://www.facebook.com/Phat.Beets.Produce/> 5

²³ BIPOC refers to black, indigenous, and peoples of color and is a term primarily used in the USA: <https://www.thebipocproject.org/>.

4) creating a new paradigm of power and technology; and 5) creating a new organization of production based on cooperation. MST schools, like LVC programs, use dialogical and horizontal teaching practices (Meek and Tarlau 2016; Barbosa 2016). MST schools often use an “alternating” teaching style, in which students alternate between long periods of time spent at home and at school. While at home, students are asked to conduct action research of the political-economic forces influencing their own settlements through interviewing local farmers and community members. In this way, the schools are “legitimizing community research” and breaking down barriers between school and community (Goris et al 2021). MST, unlike LVC, has worked directly with the state to create publicly funded policy for agrarian education based on the five “Educaco de Campo” principles (Barbosa 2016). This state-supported curriculum had reached around 500,000 youth by 2016 (Barbosa 2016). The educational initiatives of social movements in Latin America have helped researchers and educators alike to better understand how agroecology education can be linked to social transformation.

Exploring the relationship between programs and broader food system transformation

Now that a foundation has been presented for what pedagogical approaches within agroecological education programs exist, their relationship to food system transformation can be discussed. Authors such as Goris et al (2019), Anderson et al (2019), and Meek et al (2019) are focusing on transformative agroecological learning, or using agroecology education as a “collective strategy for food system transformation” (Anderson et al 2019, p.531). Goris et al (2019) looks to popular education and youth specifically as key in linking education and social transformation. Goris et al. (2019) found that young people specifically play an important role in linking education to social transformation by “resignifying,” or redefining what agroecology means through critical and reflective probing. For example, young people in the Zona da Mata region in Brazil are making agroecology more inclusive (of different populations, genders, and ages) and bringing an emotional appreciation of the relationship between humans and nature to agroecology (Goris et al 2019). Meek et al (2019) similarly point to popular education and youth’s abilities and rights to challenge dominant inequitable education systems as important in transforming food systems. Finally, Anderson et al (2019), through a review of research focusing on the European Agroecology Knowledge Network (EAKEN), an offshoot project of La Via Campesina (LVC), developed the following “**four pillars**” of transformative agroecology learning (see Figure 2 below):

a. **Horizontalism**, stemming from popular education, is referring to democratic communications within education systems which seek to be non-hierarchical and anti-authoritarian (Anderson et al 2019).

b. **Wisdom dialogues**, or dialogos de saberes, refers to intergenerational and inter-place dialogues between food producers, food system actors, students, and formal and informal education and research institutions (Anderson et al 2019).

c. **Combining the practical and the political** aims to empower and educate farmers in articulating and acting on their political demands. This starts from youth education, where

“linking localised learning activities to global discourses of food sovereignty and agroecology” helps productively politicize education programs (Anderson et al, 2019 p. 541) .

d. **Building social movement networks.** “All major success stories in grassroots agroecological education depend on nested local organizations to facilitate and coordinate collective action at different scales” (Anderson et al 2019, p. 542). In order to participate in transforming food systems, agroecological education programs must connect to social movements.

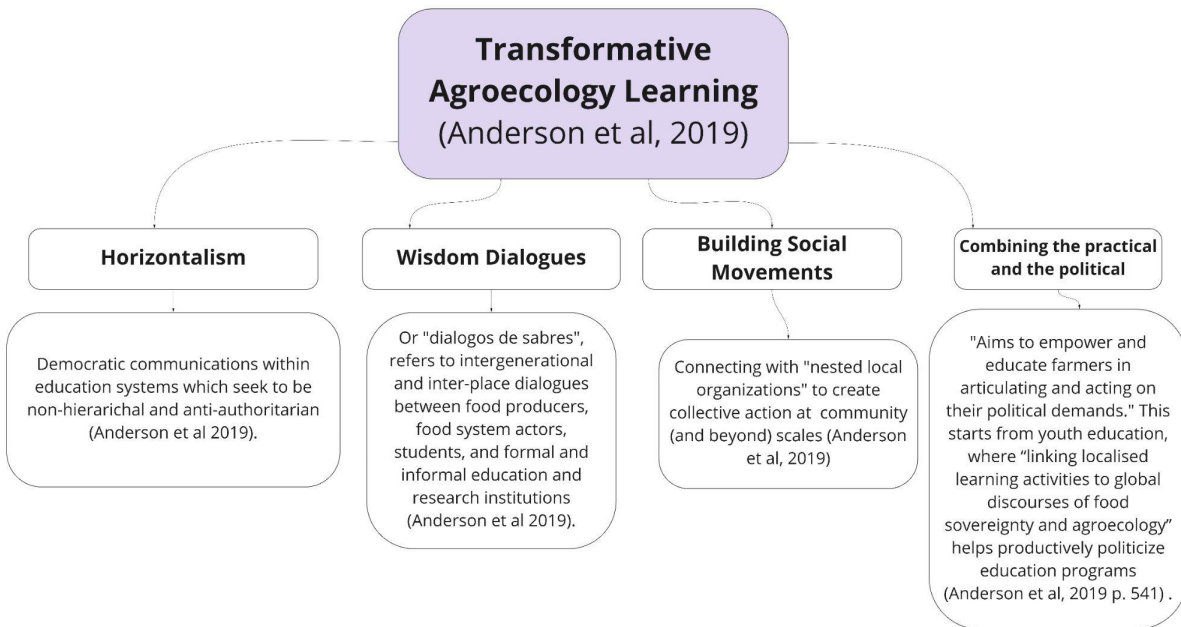


Figure 2: Transformative Agroecology Learning

Research Gaps

Research has overwhelmingly focused on the Americas and Europe, with very little literature on Asia, Africa, or the South Pacific. When researching with the keywords “agroecology education,” only one article was found centering on agroecological education within Africa and one within Asia. This regional disparity in the literature leads to geographically-biased pedagogical theories and approaches which can create decontextualized programming when applied to new regions. For example, Bezner Kerr et al. (2019) postulate that Latin American popular education approaches do not translate smoothly to a Sub-Saharan African context, where formal education levels and literacy rates make the approach less empowering. Rather than attempting a “one-size-fits-all” approach, this gap in regionality can only be solved by increasing the diversity of regional representation in the literature.

There was also a limited amount of literature found on youth-specific programming. Most literature found using the keyword “youth” focused on school-gardens or education initiatives of social movements. In order to obtain a sufficient amount of literature, the scope of the research question had to be changed to “youth and young adult programming.” It is essential to fill this literature gap, as young people are central in educating for social transformation.

Notwithstanding authors focusing on informal popular education programming in Latin America, informal programming remains a substantial literature gap. There is a clear disparity between the thousands of programs existing globally and what is studied in the literature. Furthermore, most literature present on informal programming focuses on large-scale informal programs and little is known regarding small-scale informal programming. Farm-based education remains understudied, particularly in its informal and small-scale forms, with most studies focusing on school-gardens or university-level farm-based education.

A literature gap is seen in the constructed dichotomy between urban and rural programming. Anderson et al. (2019) attempts to bridge this gap by including urban programs in their review of transformative agroecological education in the Americas, but relatively little research exists which discusses both urban and rural educational programs. Urban agroecological education programs are understudied overall (Anderson et al. 2019) and tend to be found through social movement-oriented keyword searches like “food justice education” or “food sovereignty education.” Rural programming, on the other hand, can be found through keyword searches like “agroecology education.” Since urban and rural agroecological educational programs often have similar aims of food sovereignty and food system transformations, concomitantly studying both approaches could strengthen the overall transformative impact of programs.

Regarding the connections between education and food system transformations, Anderson et al. (2019) point to a few key areas where further research is needed. Firstly, they point to closer investigation of the “organizational, methodological, and institutional innovations” coming from programs that can support transformative education in a “durable way.” Particularly more knowledge is needed regarding “actual processes and methods” for enabling their four pillars of transformative learning. Secondly, they point to understanding better the “role of educators and facilitators” within transformative learning. Lastly, Anderson et al. (2019) encourage further research to understand how to best adapt to the “contingencies of place” unique to each program’s context.

Literature Review Conclusions

This literature review culminated in a better understanding of the various pedagogical approaches taken within agroecological education and the ways in which programs are connecting to food system transformations. The research gaps found, particularly the lack of research on farm-based, informal and small-scale programming, youth-specific programming, studies looking at both rural and urban programming, as well as the recommendations put forth by Anderson et al (2019) to better understand transformative learning approaches, have all shaped the research aims and methodology of this thesis.

Appendix B: Tables

Table 1: Case Study Organization Overview

Case Study #	Location	Population Density	Total Size of Land Notes	Organization Structure	Mission Statement/Keywords
1.	Nicasio, CA, USA	28/km ²	103 ha	For-profit ranch; separate non-profit entity for educational activities	Sustainable, humane agricultural practices are utilized
2.	Berkeley, CA, USA	4,601/km ²	0.8 ha	Non-profit farm, education, and spiritual/cultural center	Jewish tradition, mindfulness, sustainable agriculture, and social action/justice
3.	San Francisco, CA, USA	7,194.31/km ²	0.4ha	Private garden-based Waldorf-style School	Practical, experiential, play-based, ecological and place-based curriculum.
4.	Shelburne, VT, USA	122.5/km ²	567ha total 2.8 ha vegetable garden	Educational non-profit farm; For-profit farm	<i>“An education nonprofit on a mission to inspire and cultivate learning for a sustainable future.”</i>
5.	Issaquah, WA, USA	1,200/km ²	0.5 ha	Non-profit care farm for adults with developmental challenges	<i>“Empowers adults with intellectual and developmental disabilities to experience personal growth in nature, the community, and the classroom.”</i>
6.	Half Moon Bay, CA, USA	730/km ²	0.8ha	Non-profit farm-based educational project	<i>“Our mission is to teach kids where their food comes from and why it matters”</i>
7.	Manchester, Vermont, USA	41.1/km ²	1.2ha	Township high-school with a garden-based farm and food studies program	<i>“to educate students intellectually and morally for a life of responsibility, integrity, and service.”</i>

8.	Pescadero, CA, USA	57/km ²	5.7 ha	Non-profit educational farm	<i>“to cultivate a healthy and just food system from seed to table through food education, farmer pathways, and regional partnerships”</i>
9.	Greenville, DE, USA	428.69/km ²	72 ha	Non-profit nature and farm preserve	<i>“to connect people with the natural world to improve our environment through education, conservation, and advocacy.”</i>
10.	Oakland, CA, USA	3,041.87/km ²	0.6 ha	Non-profit urban and backyard farming org	<i>“to co-power community members to meet the basic need for fresh, healthy food by creating sustainable, high-yield urban farms and backyard gardens”</i>
11.	Danby, VT, USA	12/km ²	2023 ha owned; 1.21 ha pedagogically farmed	Educational farm and land trust	<i>“Land, agriculture, and learning.”</i>
12.	Brooklyn, NY, USA	14,917/km ²	0.2ha	Non-profit urban farm and community center	<i>“to organize youth and young adults to address food justice in our community by promoting local sustainable agriculture and community-led economic development.”</i>
13.	New Mexico, USA	NA	NA	National Americorps non-profit working on sustainable food education in schools through building school gardens	<i>“creating healthy school food environments”</i>
14.	Boffres, Ardeche, France	20/km ²	5 ha	Eco-community of 11 long-term occupants hosting different on-site working associations: farm-to-bakery* (1); ecological English education (2); vegan cooking (3); small-scale brewery (4); eco-tourism hosting guests, workshops, and trainings (5); permaculture gardens (6)	<i>“to create a place of life and sharing whose common will is to find a fairer way of living, cultivating the land, educating, fulfilling oneself within a collective project, and sharing know-how and interpersonal skills”</i>

Table 2: Farming Production and Pedagogical Activities Overview

#	Farming Production Overview*	Pedagogical Activities Overview	Balance Between Farming and Pedagogical Activities
1.	<p>Production: ranch-vineyard; pigs, rabbits, chickens, pigeons (squab), guinea hens, quail; wine</p> <p>Distribution: Sell to restaurants, farmer’s markets, and direct-retail</p> <p>Practices: “trying to keep in balance with nature;” integrated crop-animal systems; relatively low inputs</p> <p>Farm Revenues: around \$6,000USD /selling day</p> <p>Overall Farm Production Size*: large</p>	<p>Programming: Local internship program with paid International internship program hosting 1-2 paid F interns; used to do summer camps but stopped since trips;</p> <p>Approach: Kids choose subjects; use story-telling; encourage critical thinking, observation, and asking questions; outdoors, “hands-on,” and “contextualized”</p>	<p>Overall, camps didn’t affect their production; had different camp and educational staff; the intern program has been a way to provide educational opportunities and “get real production help”</p>
2.	<p>Production: Mixed vegetables and fruit; honey bees; laying chickens; flowers; 2 milking goats; aquaponics</p> <p>Distribution: give away all food produced to food banks, bag distribution program and an on-site free fridge; free fridge is stocked with their produce as well as donations from local restaurants and grocery stores;</p> <p>Practices: cover cropping; diversified production; crop rotations</p> <p>Farm Revenues: none from farming</p> <p>Overall Farm Production Size*: medium</p>	<p>Programming: fellowship program: 3-month residential program for young adults ages 21-30; 12-14 fellows; runs 2x/year; youth summer camps; school field trips; retreats for families</p> <p>Approach: fellows have lessons in mornings and work hands-on at the farm in the afternoons; for summer camps, “more farm and nature-based play”</p>	<p>Not a problem as they have full-time farming staff who also teach sustainable ag classes for the fellows</p>
3.	<p>Production: Mix of veggies, herbs, flowers, herbs, fruit and native plants.</p> <p>Distribution: Most is used by students cooking their own lunches when they are at the garden; rest is given away for free to staff, student’s families, neighbors, etc.</p> <p>Practices: Permaculture-based; high diversity; biodynamic composting methods; “focus on building soil;” drip-irrigation</p> <p>Farm Revenues: none from farming</p> <p>Overall Farm Production Size*: small</p>	<p>Programming: Waldorf-style school; each grade spends one full day/week at the farm site doing both farm programming and other hands-on classes; Summer day-camp at farm open to all kids: mixture of “crafting, farm work, and free play.”</p> <p>Approach: Hands-on, experiential, and land-based learning; using farm themes to experientially explore topics they learn in school;</p>	<p>“The focus is definitely more on the education and less on the production;” “They don’t feel super contradictory sometimes they do feel in conflict, though. Like, I really need to lesson-plan but I also need to do this practical thing that has nothing to do with my lesson plan.”</p>

<p>4. Production: Mixed vegetables, fruits, animals (100 cows, 150 lambs/yr, chickens), mushrooms, berries, and value-added products like dairy, maple syrup, meals, jams, relishes, etc. Distribution: On-site farm stand; online direct and whole-sale; local CSA; farmer's markets; on-site restaurant; weekly donations to town food bank; gleaning org partnership; feeding staff and guests on-site; sell low-cost to school district Practices: Organic; intensely-managed rotational grazing; cover cropping and rotations; wetland natural margins; mostly autonomous with animal feed; careful nutrient cycling and reduced off-site inputs Farm Revenues: For-profit farm earns them 66% of total operational budget (including that of the non-profit) Overall Farm Production Size*: large</p>	<p>Programming: School field-trips; after school programs; educational farm-yard; host workshops for educators on sustainability education (serving around 1500 teachers/year); family events and festivals; offer space, educational resources, and staff support to partner local schools to use for their own programming; week-long overnight summer camps for 600 kids/summer (but stopped from Covid); 4-H²⁴ internship programs Approach: Maintain "working farm" element; hands-on, experiential learning; educators as "facilitators of wonder;" making outdoor spaces feel safe and confidence-boosting for kids</p>	<p>"As a farm-based education center it's felt really important to us that we maintain the working farm side;" "they definitely complement each other"</p>
<p>5. Production: Mixed vegetables, culinary and medicinal herbs, cut flowers, and laying chickens. Distribution: members used to sell at farmer's markets (but stopped since Covid); sell value-added products on Etsy; Practices: Organic; no-sprays; organic fertilizer mix; minimal off-site inputs Farm Revenues: sell value-added products on Etsy; will be auctioning off CSAs this season; garden is supposed to be self-sufficient financially, but "it's not necessarily the goal." Overall Farm Production Size*: small</p>	<p>Programming: Members spend one day a week gardening at the farm-site assisting with farm tasks Approach: member-focused: "the garden is for the members, it's not for me or my own production." Role of an educator is "to make a beautiful space for people to spend time in but also a space that can be learned from and benefited from."</p>	<p>"I would say finding a balance between having it be a space that can successfully grow while at the same time, an open space for people who don't know a lot about gardening and don't have full bodily control... how can I involve everyone in this while also making sure that it is successful as a garden?"</p>

²⁴ 4-H is an USA-based network of youth organizations working on youth development through experiential learning programs.

<p>6. Production: Around 450kgs of produce/yr; mixed vegetables, honey, fruits, herbs, flowers Distribution: Farmer's markets; small CSA; free food bag distribution at local schools (from grant) Practices: crop rotations/successions; crop diversity; biodiversity attractors; no-biocides ("plant-positive approach"); maintaining soil cover and minimize soil disturbance; composting and minimizing off-site inputs Farm Revenues: sales at farmer's markets and small-scale CSA sales but "not trying to make money off food" Overall Farm Production Size*: medium</p>	<p>Programming: School field trips March – Nov at reduced/free-cost on need-basis (serving 2500 kids/year); six weeks of summer camp for local kids; Intensive Garden Program (IGP), a 26-week program for 2nd-3rd graders; Junior Marketeers program for 4th and 5th grade IGP graduates Approach: land/place-based experiential outdoor education opportunities for "as many kids as possible"; farm seen as a platform for learning to unfold through interactions with plants, bugs, and ecosystem; focus on "where food comes from and why it matters"</p>	<p>Production is secondary and "separate" from education; have full-time farm manager who collaborates with educators but mostly works separately on farming; sometimes kids help but "it's a bit tough with certain ages"</p>
<p>7. Production: non-profit partner farm has sheep, alpacas, and angora rabbits for fiber; pigs for meat; laying chickens; heritage cows for breeding; goat dairy; and a mixed vegetable market garden; the school garden grows diverse mixed vegetables Distribution: local catering company; food access groups; gleaning organization; school cafeteria Practices: no chemicals, organic seeds, limit chem. inputs; closed-compost system w/ animal manure and green waste Farm Revenues: none from school's vegetable production Overall Farm Production Size*: small</p>	<p>Programming: high school level farming and food systems classes come to farm for class, which is owned and actively farmed by a partner non-profit; Approach: interdisciplinary use of farm space; trying to use education to "answer real questions or solve real problems in the community;" making space for critical reflection and dialogue; community at the center; experiential, place-based, problem-based learning;</p>	<p>A "juggle" with trying to find a scale that's both useful for pedagogy and for food production (for example, producing enough food to be useful in school cafeteria)</p>

8. **Production:** high-diversity veggie and fruit production with some animals (chickens, goats, sometimes pigs and cows)
Distribution: on-site farm stand; culinary programming; managing a food hub which gathers, boxes, and distributes produce from them and many other local farms to families in need; used to do a CSA but now on hold
Practices: crop diversity and rotations; growing biodiversity and pollinator populations through hedgerows, perennials, and non-cultivated areas; building soil through leaving fields fallow and rotationally grazing animals; relearning garden of native plants run by local tribe
Farm Revenues: sales at their farm-stand
Overall Farm Production Size*: medium

Programming: school field trips (day and overnight); youth corps and intern program with local high school students where students are paid to help with farming, selling at farm stand, and helping at Native partner orgs' land; before fires burned down housing, they had a young-adult apprenticeship program where 8-10 apprentices would live on-site and work for a few months;
Approaches: started with exposure to "where food comes from" but has moved now to incorporate discussions on food systems issues of social justice, food justice and food sovereignty; giving space for discussion, empowering youth to train towards leading their own programming and events;

The balance works well if they keep it simple in terms of production; a lot of how much they can produce depends on staff drive and capabilities

9. **Production:** 7 sheep, 3 goats, 6 cows, 150 chickens (laying and broilers), 100 turkeys, and diversified vegetables production
Distribution: on-site farm store open from April-Dec, which makes up much of their sales; also sell to local co-ops and restaurants and direct-to-consumers through their website; any extra food gets donated to the community senior center and to areas that "don't have fresh food access"
Practices: switched to regenerative agriculture practices 5 years ago; leave soil to rest; low-till (no tractors but use a hand-held BTS tiller); keep animals outside grazing as much as possible; seasonal cover crops; mimicking nature
Revenues: "diversify revenue sources" by selling to grocery stores, restaurants, direct-to-consumers online and in-person at on-site market
Overall Farm Production Size*: large

Programming: summer day camps (11 weeks; 4 camps of 12 kids per camp); farmer's apprentice program is a summer camp for older kids where they do "real farming work;" Young Farmers Club is a continuation of summer camp for older kids where they volunteer one Sat. a month at farm; Chicken Tenders program where families raise chicks for them through spring; weekend DIY workshops; nature hikes and u-pick; used to do field trips but stopped since covid.
Approaches: farm tasks are built into all educational programming; want tasks to be both educational and useful for the farm; focus on creating "real and meaningful learning experiences"

It works by giving each more "space"; separating by time; weekends are education, weekdays are farming. Before covid, they were on a "crazy train" of school field trips every day, but covid made them "stop and think" and put more time back into farming.

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10. **Production:** Diverse mixed vegetable production (around 2000kg/year of produce); laying chickens.
Distribution: all produce is donated, mostly through their Farm to Fridge program; extra in summer is offered at pop-up farm stand
Practices: Follow restorative agriculture and permaculture principles; efficient nutrient cycling through large scale and efficient composting systems; cover cropping; n-fixing crop rotations; integrated animal-crop systems with chickens; efficient irrigation through drip and rainwater catchment systems; rely on donations of compost especially for backyard gardens
Farm Revenues: none; all food is donated
Overall Farm Production Size*: medium

Programming: over 400 offsite backyard gardens w continuous mentorship; high school mentorship pro. alternative spring break program where 8-10 local classes; social media as an educational platform
Approaches: "inquiry-based" approach teaching what the students want to learn; adapting techniques to different individual learning styles; teaching soft skills like social awareness and hands-on skills like culinary and farming skills; explicitly incorporating food justice into programming with older students

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11. **Production:** Roughly 1.2 ha for the Community Farm Project, a pedagogical mixed and diverse vegetable farm producing 362– 544 kgs of produce/yr; 39 ha leased to a commercial mixed vegetable farmer; 162 ha leased to a conventional dairy farmer; 2 ha of maple sugar bush.
Distribution: Community farm project production all goes to regional hunger relief programming including an 8-10-week free vegetable bag drop-off program at the local elementary school; supply summer lunches for kids in nearby towns; work with local food transformation orgs
Practices: try to follow "natural farming" methods, for example no chemicals/pesticides; biodiverse production; tarp weed management; till with tractor
Farm Revenues: none; food is donated
Overall Farm Production Size*: medium

Programming: work closely with the local elementary school, offering field trips (3x/year every year of school), education programming at the school, and a 6-week summer camp; also offer one-on-one learning opportunities at farm for kids with alternative learning needs
Approaches: hands-on, service-based learning; using the farm environment to "provide a platform for inquiry and wonder;" long-term progression through every year of elementary school

"Something has to give, because we can't (do it all)." the "impact (of food) is more important" than the quantity of food produced; it helps that everything is donated because then there's no expectations in terms of specific crops or quantities produced.

<p>12. Production: Highly diverse “culturally relevant” vegetable production; mushrooms Distribution: for free at their own on-site farmer’s market; Practices: utilize regenerative and restorative farming practices (rotations, closed nutrient cycles); low off-site inputs Farm Revenues: none; all food is donated Overall Farm Production Size*: medium</p>	<p>Programming: Paid youth internship program; work full-time during summer at farm, selling at markets, learning farming and “entrepreneurial and community economic development skills.” Approaches: teachers as mentors; youth are given responsibility and decision-making powers; “straight talk” one-on-one check-ins with youth; hands-on learning; intergenerational relationships w/ community elders</p>	<p>Both are equally important; have separate staffing for both; “they work hand in hand.”</p>
<p>13. Production: Primarily mixed vegetables; dependent on each partner school site Distribution: dependent on each partner school site; some schools grow food to increase their own cafeteria autonomy, some just give food away to staff, students’ families, etc. Practices: dependent on each partner school site, but often low-input, diverse vegetable gardens Farm Revenues: dependent on each partner school site, but usually none Overall Farm Production Size*: small</p>	<p>Programming: Americorps program where service members are placed at schools for one year of service in which they will develop and implement sustainable food education curriculum and school gardens; Approaches: offers Americorps members curriculum materials and support but it's up to each member and their school what happens; focus on hands-on and land-based learning activities; members are trained in anti-racism and anti-colonialism, self-care, and reconnecting to land.</p>	<p>Dependent on each school site’s goals, but education is primary and production is secondary in support of education</p>

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14. **Production:** mixed diverse vegetables, wheat, buckwheat, chickpeas, soy, lavender; value-added products of bread, hummus, beers, fermented beverages;
Distribution: vegetables/fruits eaten on-site, bread from grains sold on-site and at weekly farmers' markets; chickpeas and hummus sold on-site and at weekly farmers' markets; products sold to nested cooking association
Practices: permaculture-style vegetable and fruit gardens (low off-site inputs, diverse production, composting and closed nutrient cycles, n-fixing crop rotations, drip/efficient irrigation systems); grains grown in rotation with N-fixing legumes, no irrigation or sprays
Farm Revenues: none from fruits and vegetables; bread sales support two full-time salaries per year
Overall Farm Production Size*: large

Programming: host woofers, permaculture and agroecology workshops throughout year; have 2-3 ecological summer camps for kids per summer;
Approaches: hands-on, participatory, outdoor learning; workshop guests often asked to design elements of their own curriculum;

Different priorities for different members of collective; some focus much more on production and some focus more on education; would like to balance the two more evenly.

Appendix C: Interview Guide

- **Can you tell me a little about the farm itself... What are the main products you grow and sell?**
- **What size is the farm production? (can give examples of a few things)**
- **Can you tell me about your organization's farming philosophies? How do you grow _____? What kinds of inputs or soil amendments do you utilize? What kinds of machinery?**
- **How would you describe your organization's relationship to the land you farm in general?**
- **What do you do with all that food you produce? How do you sell and/or donate your products?**
- **How do you interact and engage with the community? Both formally and informally...**
- **How are you able to balance farm production with programming?**
- **Can you tell me more specifically about the educational programming you have... What kinds of programming do you offer? For what ages?**

- **What were the reasons for starting the program?**
 - **In your opinion, how have they evolved over time?**

- **What does a day in _____ program look like for a student?**

- **What is most important for you in terms of your educational work?**

- **Can you describe for me the role of a teacher or educator at your farm?**
 - (if other education staff...) What kind of training is offered for staff/educators?

- **What would you say have been the biggest successes for you of the program?**

- **What would you say have been the hardest parts?**

- **How has your programming been affected by the pandemic?**

- **How has your org built organizational resilience and sustainability over time?**

- **What do you want your project to look like in 10 years?**
 - What would help you in achieving that?

- On a scale of 1 to 10, what score would you give your farm for its level of community engagement? With 1 being “we’re just doing our own thing” and 10 being “community engagement is everything to us”.... (remind them there’s no wrong answer or judgment with this and they’re answers are strictly confidential)

- As someone hoping to go into farm-based education, is there any advice or anything you’d like to tell me?

Appendix D: Reflection Sheet for C1

Thank you again for participating in the discussion last Monday, May 23rd surrounding the topic of farm-based education! Here is **your reflection homework** as well as a summary of our meeting (including definitions of concepts) and some further thesis materials. Hopefully these reflections are useful for you both as individuals and a collective! They will certainly be useful for me for my thesis. :)

Thanks again team!
Shelby

Your Homework

- Choose one (or more!) of the following most relevant concepts to *you* and your work within C1: 1. Agroecology; 2. Food justice and sovereignty; 3. Popular education; 4. Organizational sustainability, and fill out the following table for what you think C1 does *now* and what you would like C1 to be doing *in the future*. In terms of “the future,” I will leave that up to you to decide! It could be 6 months, 1 year, 5 years, or anything! Just note how long into the future you’re thinking. You can keep your answers anonymous or sign your name! I will also leave that up to you to decide! Either way, it will be kept anonymous for the thesis. There will be a printed paper copy taped onto the table in the Bureau if you prefer to fill this out by hand!

Concept	What are you doing <i>now</i>	What would you like to do <i>in the future</i>
Agroecology	<ul style="list-style-type: none"> ● ● 	<ul style="list-style-type: none"> ● ●

Concept	What are you doing <i>now</i>	What would you like to do <i>in the future</i>
Food Justice and Sovereignty	<ul style="list-style-type: none"> • • 	<ul style="list-style-type: none"> • •
Popular Education	<ul style="list-style-type: none"> • • 	<ul style="list-style-type: none"> • •
Organizational Sustainability	<ul style="list-style-type: none"> • • • 	<ul style="list-style-type: none"> • •

Appendix E: Summary Document

Link to PDF: [Farm-Based Education Masters Thesis Summary.pdf](#)

Appendix F: Participant Info and Informed Consent Form

Link to Participant Info Form:

[Participant information sheet - Farm-based education master's thesis.pdf](#)

Link to Informed Consent Form: [Informed consent form.pdf](#)

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