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Student Led Governance of a Campus Community Permaculture Garden at a Liberal Arts University

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Abstract: This case-study supports the implementation and social investment in university campus community gardens as an interdisciplinary resource for academic research, extra-curricular activities, and community building. Using a permaculture design model, the St. Lawrence University community permaculture garden in Canton, New York State exists to enhance the diverse academic curriculum and varied community engagement opportunities to provide experiential and interdisciplinary learning opportunities for students, faculty, staff, and remaining stakeholders. This case-study will focus on one of St. Lawrence University's student-led clubs, its operations, history, and challenges (e.g., participant transience). Our findings suggest that campus permaculture gardens require adequate investment, including financial and academic support. The development of a conceptual seasonal and academic community calendar provides a fundamental framework for operations and governance. The sheer number of opportunities and broad capacity of the club and the presence of physical student space brings meaningful accessibility and community engagement. Over time, the club and garden has remained resilient due to a holistic approach which keeps the bigger picture in mind. Each year the club faces a variety of challenges and obstacles, yet such experiences have provided opportunity for adaptation and evolution. Recommendations can be used to support a replicable model for other educational environments and communities in both urban and rural areas, interested in developing a permaculture garden as a resource that improves social cohesion during a time of ecological fatigue, social unrest, the COVID-19 pandemic, and climate change.

Keywords: sustainability, experiential learning, interdisciplinary learning, student organizations, student clubs

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Introduction:

The presence of community gardens and those involved can serve as an experiential and interdisciplinary space for communities of all scales. Community gardens have proven to serve a multitude of socio-environmental functions through different goals and designs. Within these functions exist the opportunity for environmental and social benefits such as food provisioning (Harris, 2009), food sovereignty (Larder et al., 2014), and food justice across diverse communities (Porter, 2018). The ability of a community to grow food can also catalyze further environmental and social change including improved nutrition (McCormack et al., 2010), educational opportunities (Datta, 2016), and improved physical and psychological wellbeing stemming from accessibility and a sense of place (Harris, 2009). Considering these contributing aspects of a community garden, the opportunity for interdisciplinary experiences further provides a sense of place across all communities. Additionally, the biophilic design utilized in community gardens can provide individuals with a greater sense of place, along with benefits associated with human interaction with nature (Wilson, 1984). The implementation of a biophilic design can further increase opportunities for the co-design of a space through an interdisciplinary lens (Boffi et al., 2021). The self-sustaining nature of biophilic design means both ecological and social goals can be continuously set and achieved, enabling interdisciplinary outcomes to exist within the garden space. The university setting provides an exceptional context due to the educational goals of the institution.

The Ecological Value of Community Gardens:

First, it is fundamental to understand the ecological value of community gardens. On an ecological level, the physical landscape of a community garden increases both habitat availability and biodiversity, influencing the overall ecological functioning of the garden (Cabral et al., 2017). The introduction of habitat increases species richness, including microbial (Baruch et al., 2020), pollinators (Baldock et al., 2019), and plant species (Barrico et al., 2018) previously absent from the physical landscape. Further, healthy garden landscapes can support ecosystem services including nutrient cycling, food provision, and water regulation (Cabral et al., 2017). Moreso, different community garden models can be implemented to address both the environmental and social goals and challenges of a particular community.

Integrating Permaculture as a Core Socio-Ecological Design Element:

In order to continuously support the goals of a community garden, the design of the garden must be able to sustain environmental and social benefits over time. A design intentionally used to sustain a social ecological system is commonly known as permaculture. Originally defined as “an integrated, evolving system of perennial plant and animal species useful to man,” the term permaculture has since evolved into a self-sustaining agricultural design (Mollison, 1988). With the guidance of twelve universal principles, permaculture today exists to mimic a naturally-occuring ecosystem However, the permaculture model extends further than its self-sustaining nature. Three ethical approaches are also stressed within permaculture design, those being people

care, earth care, and fair share (Holmgren, 2020). The implementation of an ethical approach to permaculture design extends its functioning to both the physical and human landscape, allowing for the permanence of environmental and social benefits.

Community Gardens and Food Justice in the Liberal Arts:

Considering the self-sustaining approach to design, community gardens continue to provide an opportunity for students to partake in interdisciplinary sustainability interests at the university level. More specifically, students are becoming more involved in both social and environmental pursuits of sustainability of small scale-agriculture and local food systems (Parr, 2009). With a growing emphasis on experiential learning among colleges, it is argued that sustainability is taught most effectively through hands-on leadership of students, (Selby, 2006). Individuals across varying degrees of academic interests can benefit from involvement in on-campus gardens. Students interested in both science and humanities can use a garden space to develop both a personal and academic relationship with nature within their respective goals as a student. Community gardens provide interdisciplinary learning opportunities that oftentimes support a common goal. In many cases, these opportunities allow for learning to take place while simultaneously caring for the garden space. Additionally, student-led initiatives across all disciplines can be supported through direct garden activities (e.g. growing food, monitoring biodiversity) and more passive uses such as a welcoming and nourishing space to be. Although on-campus clubs and organizations oftentimes share different goals, student involvement in community gardens create opportunities for positive atmospheres, developing social relationships, and increasing activism both on-campus and in the local community, (Okvat and Zautra, 2011).

Universities of all sizes across the United States have also adopted learning opportunities for students through on-campus community gardens. Successful community gardens have emphasized the importance of place attachment (Sorge, 2022) and place-based experiential learning (Angstmann, 2019) to improve attitudes and sense of belonging (Ray, 2013). The University of Tennessee has used community gardens as an opportunity for undergraduate and graduate studies in public horticulture. The design places emphasis on student education through plant identification, plant photography, garden design, plant use, mapping and cataloging plants, garden maintenance, garden writing, and internship opportunities, (Hamilton, 1999). In comparison, some garden models strictly revolve around food provision for students. Hendrix College, a private institution in Conway, Arkansas, allows all students to access garden provisions without any involvement. However, students that volunteered were able to access a larger share of garden provisions. The university also placed emphasis on a student-led model, placing leadership of the garden space on a student organization, (Jones, 2011). At Washington University, a private university in St. Louis, Missouri, the student garden holds support from a variety of resources on campus, especially dining services.

Integration of Diverse Experiential and Interdisciplinary Learning Opportunities – Exploring Agricultural Systems at St. Lawrence University:

St. Lawrence University is a small, residential, liberal arts university with a tight-knit residential community of approximately 2,280 undergraduate students. Located in Canton, New York, the university takes advantage of its rural setting for opportunities in experiential learning with local non-profit organizations, farms, and other businesses in the county. St. Lawrence county is also known for its local food system, placing emphasis on increasing community access to farm provisions through operations such as Cornell Cooperative Extension and a local non-governmental food security organization GardenShare. There are approximately 15,430 food insecure residents in the county, with a recorded food insecurity rate of 14.2% in 2019. Of the food insecure households, 33% of county residents have incomes too high to qualify for government assistance. However, approximately 67% of county residents rely heavily on government assistance through Supplemental Nutrition Assistance Program (SNAP) benefits which are eligible at most grocery stores and select farmers markets in the county (Supplemental Nutrition Assistance Program State Activity Report Fiscal Year 2020, 2022). For Environmental Studies students, St. Lawrence University hosts a diverse and vast variety of agricultural-centered programming from student led-clubs to a curriculum with registered courses, community based learning (CBL), a living laboratory for agriculture-related research projects, and a year-long Sustainability Program living on an organic farm. The emphasis on place-based learning also provides students with the opportunity to support food security initiatives such as preparing snacks for local schools at the Cornell Cooperative Extension, and cooking meals for food insecure residents with the Campus Kitchens Project. Additionally, students at St. Lawrence are required to take an Environmental Literacy distribution, providing students the opportunity to delve into the local food system regardless of academic background.

To facilitate and promote community between students residing on campus and local businesses, the CBL office provides experiential learning opportunities at off-campus placements. Many small family farms have long standing partnerships and rely on the support. One of the founders of the permaculture garden participated in a CBL course at Bittersweet Farm as one of her first introductions to local food systems.

Student Led Clubs:

Examples of registered on-campus student clubs include Seed to Table, Environmental Action Organization / Divestment, SLU Ducks Unlimited, and a themed student residence the Green House. Clubs provide opportunities where students can exercise agency by creating governance and structure to host events and activities to support the agricultural movement, bringing awareness and support for food justice, food sovereignty, sustainable food production, and more within the local Canton community. Agriculture events include the management of the Community Permaculture Garden, supporting student grown food for the dining services and advocating for change, festivals on campus and at the Sustainability Program farm, community

meals, hosting guest speakers to discuss food justice and diversity, equity, and inclusion (DEI) initiatives, opportunities for students to engage with local farmers, and more.

Interdisciplinary Curriculum:

With an emphasis on interdisciplinary teaching across several departments, the study of agriculture and food systems takes on many forms within Environmental Studies, Biology, Sociology, English, and the First Year Program, amounting to over a dozen agriculture-related courses at St. Lawrence University in any given year. Courses include 'Sustainable Agriculture' and 'We can Pickle this' to 'Literary Harvest', 'Food from the Sea', 'Ethnobotany', 'Eggplant Ecosystem, Entrepreneurship', and 'Green Cafe'. The garden benefits from consistent course collaboration and coordinated logistics with the instructor and garden leadership team. Activities are further bolstered through regular reminders to instructors and campus groups about garden utilization generating new engagement opportunities and logistical needs. Spontaneous activities that present themselves might require greater logistical support and external funds, but most frequently are accommodated within the capacity of the club or organization and department. Courses like ecological restoration taught each fall uses class time to maintain garden space by weeding and turning garden beds in addition to journaling phenology and monitoring biodiversity. Embedded in the course syllabus are project opportunities to use the garden as a subject for developing grant proposals (e.g., terracing and orchard expansion), developing interpretive signage/trail, incorporating art etc. Multiple first year and introductory courses include a garden visit and activity to become introduced to the garden. A number of faculty use the space for teaching purposes, such as growing indigo or collecting fibers for papermaking or exploring Korean natural farming techniques (for explanation see Keliikuli et al., 2019).

The variety of courses offer students multiple frameworks to consider their living environment from, which bolsters a system's thinking approach, a method that acknowledges the complexity of agricultural challenges that demands responses from multiple perspectives to have a more versatile approach (Arnold, 2015). Systems thinking is inherent to the Environmental Studies Department and the Sustainability Program curriculum, where multiple classes teach systems thinking. Students can utilize a system's thinking approach by parsing out and integrating various models, dynamics and relationships within all the available disciplines, which allows for a reframing of their living environment. Prepared with the appropriate frameworks, students tackle challenges through extended experiential learning opportunities.

A common trend among agricultural programming at St. Lawrence University is the presence of experiential and site-based learning where students enhance their understanding of course material and theories through practical applications outside the classroom. St. Lawrence University offers multiple placed-based learning opportunities. Campus opportunities include the university's flagship agricultural experience at the Sustainability Program organic farm, a year-long residential sustainability competency based learning experience, classes and research opportunities at the Living Laboratory, a 110-acre tract of land stewarded by the Environmental Studies department, and integration of the community permaculture garden into courses. Student engagement at local agriculture sites also thrives through the community based learning (CBL)

which blends civic engagement, academic instruction, critical thinking, and reflection to bolster the students' learning experience at university by integrating lived experiences like community service for example with course content. Community partnership extends to local farmers (e.g., Birdsfoot farm, Bittersweet Farm LittleGrasse Foodworks), food justice organizations including Gardenshare, and the Cornell Cooperative Extension. St. Lawrence hosts a variety of agriculture programming by emphasizing the study of and the hands-on application of agricultural content within the local North-Country environment and community.

Case Study: Seed to Table - A Campus Club Committed to Social Justice and Food Security:

Seed to Table, formed in 2010, existed with the ideal of establishing a student lead garden focused on growing food for dining services and local donations utilized the Environmental Studies Living Laboratory gardens and subsequently the Sustainability Program garden space (both a few miles from campus). A permaculture garden was constructed in 2012 to expand gardens to campus. The Fruits of the Future club was established as the governing group of the garden with a mission as an educational space to teach students how to grow food and as a provisional space providing yields for the community. A common interest of both clubs' students resulted in a merger between Fruits of the Future and the Seed to Table club in 2015.

Today, Seed to Table focuses mostly on social justice and sovereignty issues through their weekly club meetings and events organized to bring awareness and experiences to students in topics regarding food systems and the local reality of these. The organization serves as a gathering space for people who share interests around these topics and has the potential to educate and congregate the majority of volunteers for the garden. Garden oversight is through a subcommittee of student leaders who organize garden activities on a seasonal basis. An innovation grant in 2021 was used to revitalize and increase inclusivity of the garden space as a community based permaculture garden. The garden has adapted a community based design in the pursuit of permaculture through education, maintenance, student, staff, faculty, and community involvement. Even through the natural evolution and development of the garden, it has remained true to its original intention of being a local food resource led by students (pers. Comm. C. Tina garden founder). Student leadership and governance of the community permaculture garden continues to evolve with support of faculty advisors and community stakeholders.

Community Permaculture Governance:

The community permaculture garden governance relies on collaboration encompassing an inclusive multi-field approach (See Conceptual Calendar, Fig. 1). It is important to recognize the variety of groups that can at any point in time be involved in the space, considering their possible contributions and needs. Ideally, the club strives for a committee consisting of a core group of leaders representing various campus organizations. The core group attempts for consistently scheduled meetings to discuss actions to achieve goals, activities, partnerships, and logistics of

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all permaculture pursuits throughout the academic year and summer months. Leadership roles within the committee ideally consist of a student chair, treasurer, DEI representative, secretary, and faculty advisor to ensure efficiency and documentation of past and ongoing activities. Representatives from community stakeholder groups are appointed by those respective groups and are likely subject to change on a semester basis. To foster inclusivity, any campus or community group may have a representative join meetings. As the St. Lawrence experience for students is limited to 4 years, it is important that a solid transition of the governance is instilled within the committee.

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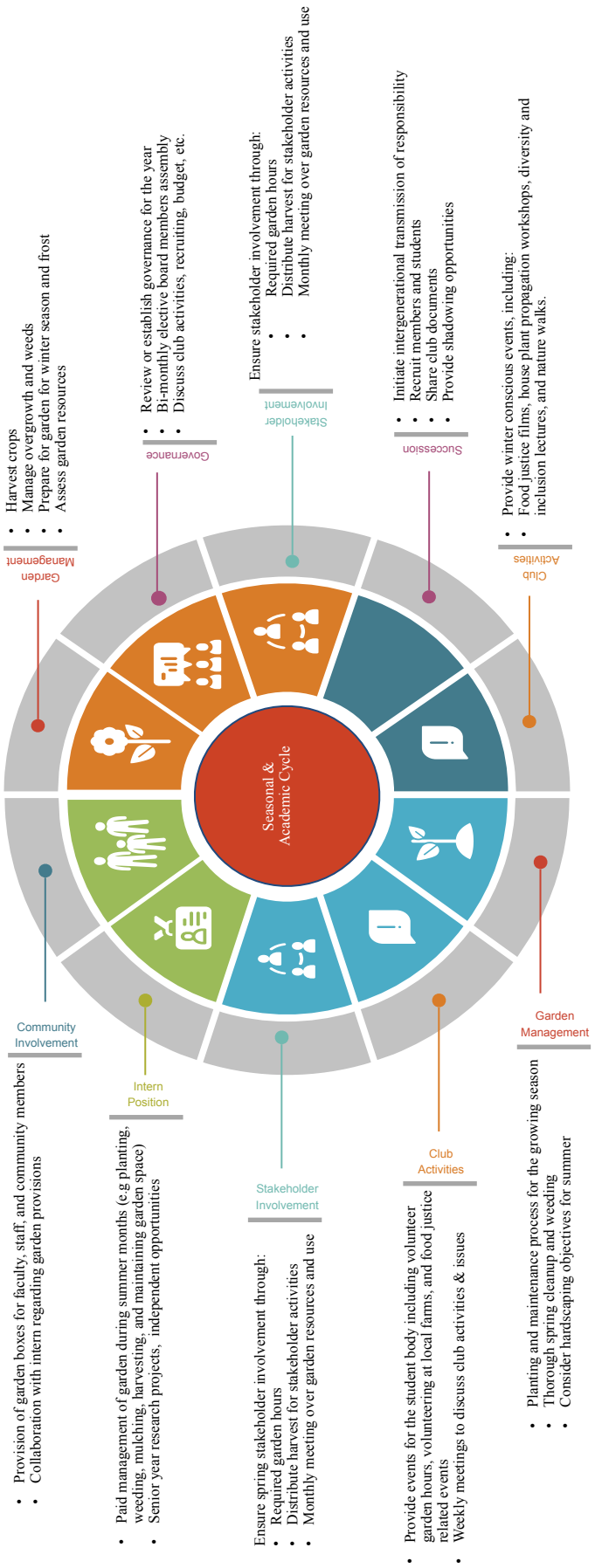

Figure. 1. Ten stage community calendar. A seasonal and academic guiding framework for the campus community permaculture garden and Seed to Table student organization, designed to build resilience.

The participation and development of projects in the space will certainly vary each semester and depends on the interest manifested from the student body. Nevertheless, we consider that if a calendar of activities and involvement is solidified, the efficiency and output from the garden will remain consistent each semester. An ideal transition involves the evaluation of positions at the end of each semester or academic year. These positions must be evaluated in order to account for abroad students, new group interest, and new member interest in the garden. The successional plan of Seed to Table governance, and subsequently the community permaculture garden committee, has members nominations including self-nomination. From there, club members vote for who is best fit for the position.

Stakeholders and allies:

Within the on-campus and local community exist both allies and stakeholders that align with the goals of the community garden. Stakeholders include individuals, communities, and organizations that receive direct benefits from the garden such as food provision and research opportunities, whereas allies contribute to the functioning of the garden through their indirect involvement (See Stakeholder involvement, Table 1). Both stakeholders and allies are subject to change based on factors such as seasonality, academic semester, and change in leadership.

Table 1. Stakeholder involvement in the on-campus community permaculture garden typically falls into two categories, food provision and curriculum. A diverse set of stakeholders and allies help to support diverse activities and accessible community space.

Types of interaction	Example of activities	Stakeholders involved	Allies involved
Experiential learning and research opportunities for course curriculum	Independent studies, research fellowships, internships, class projects	Environmental Studies Department, Biology Department, Sustainability Program, First-Year Program	Admissions, Community Based Learning Program
Food & farmer justice and food sovereignty; Food provisioning	Guest speakers, local farm visits, fundraisers, volunteerism, campus awareness and advocacy campaigns	Seed to Table Club, Campus Kitchens Project, Green House (theme residence), Dining Services, Green Cafe	Native American Student Alliance (NASA), SLU Ducks Unlimited

ISSN: 2151-7452

Community permaculture garden management and operations	General maintenance, planting, harvesting, distribution, funding,	Seed to Table Club, Campus facilities	Commons College (theme residence) Climate Neutrality and Campus Sustainability (Faculty Council) Committee), Tree Campus Committee, Thelomathesian Society (student governance body)

Campus Community Permaculture Garden Features:

The current permaculture garden consists of a 30 x 50 m plot of land on campus, consisting of garden features such as perennial plants, fruiting trees, and a selection of planted herbs (Fig. 2). More recently, raised garden boxes, birdbaths, birdfeeders, and a green roof have been installed in the garden space. The raised garden boxes are accessible to St. Lawrence faculty, staff, and community members for a designated space to grow food. However, plants grown outside of the raised boxes are utilized for the Seed to Table club and other on-campus organizations. Perennials in the garden include asparagus, sunchokes, comfrey, wild leeks, lavender currant bushes, perennial flowers, and a variety of apple, plum, mulberry and pear trees. The garden has also introduced an herb spiral consisting of basil, cilantro, parsley, thyme, sage, rosemary, and mint varieties. The majority of the plants in the garden have been sourced from local nurseries or provided as donations. However, there are a multitude of unknown plant species in the garden from undocumented plantings in previous academic years. The garden continues to evolve its space with plantings occurring in early spring and throughout the summer.

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Figure 2. St. Lawrence University's campus community permaculture garden activities: sedum planting on a green roof tool shed (a), cardboard mulched path (b) and perennial flower beds (c), and vegetable raised beds (d) (Photo credits L. Urzetta, S. Ashpole).

Interpretive Trail:

The garden space is currently accessible to all St. Lawrence students and faculty members, located on campus behind Commons College. However, the addition of an interpretive trail to the garden space seeks to increase accessibility through the implementation of knowledge with both visual signage and audio recordings. Environmental Studies students in the department's Ecological Restoration course developed working materials for the installation of the interpretive trail, including plans to provide recipes, indigenous plant knowledge, and multilingual signage. With these comprehensive plans, the trail seeks to provide a greater sense of cultural inclusion within the goals of the garden. Additionally, the trail seeks to place emphasis on both plant and permaculture knowledge through specific signage on the twelve permaculture principles (for list of principles see Holmgren, 2020), as well as both medicinal and culinary uses of the plants grown in the garden space. The addition of this knowledge will provide a greater sense of belonging in the garden space across all students and community members, reinforcing the permaculture ethics of people care, planet care, and fair share.

Green Roof:

In the fall of 2021, Environmental Studies students in the Urban Green and Restoration Ecology courses worked to construct an innovative green roof into the garden space. The green roof was designed and constructed with materials from Recover Green Roofs; founded by St. Lawrence alumni. Recover green roofs places emphasis on stacking functions within its design, allowing for an additional implementation of permaculture principles working outside of the garden space (hands on learning; innovation; demonstration etc). The roof consists of a variety of regionally adapted drought tolerant and cold resistant sedum (Crassulaceae) plants (hardiness zone 4a), and engineered soil (NatureCycle, green roof media; https://naturcycle.com/green-roof-media/).

Overcoming Organizational Challenges:

While the campus community permaculture garden is a valuable resource for a wide variety of uses within the St. Lawrence University community, the garden experiences persistent and recurring challenges that impact the garden's potential as a self-sustaining interdisciplinary resource. Such experiences have become learning opportunities for improvement and an adaptive model allows for ongoing change and recommendations for future projects and evolving goals. Establishing the physical space of the community garden using permaculture design principles, particularly 'Integrate Rather than Segregate' (principle 8) 'Use and Value Diversity' (principle 10) allows for multi-functional use and appreciation of the space (Holmgren, 2020). By initially intending for the garden to act as a multi-purpose tool and space, the design principles create opportunities to further diversify and develop the garden (Holmgren, 2020). Challenges and recommendations for how to overcome them can be roughly categorized within engagement, governance, and financial resources.

Engagement & Participation:

Challenges:
Community engagement within the garden is greatly influenced by the academic calendar, growing season, and location. The fall-spring academic calendar has historically shaped the garden's difficulties maintaining year-round engagement during each season. The majority of the student body is absent during the summers, there is difficulty engaging students during the beginning of the fall semester as students are transitioning back to campus life, the New York State 'North Country' has long snowy winters between mid-November through to late March which pauses all physical work in the garden. The academic calendar and the growing seasons limit students to only three and a half months in a year to utilize the community garden, the end of August through the end of October and the month of April. While cold frames can extend the shoulder season, a greenhouse would be valuable. However, the campus's three existing greenhouses, including construction of a deep winter geothermal one, make collaboration more likely.

The location of the garden poses additional challenges for community engagement because the garden is not central on campus and is located between a parking lot, garbage bins, the campus safety and security building, and student theme housing. The garden's location between the buildings makes it hidden from street view, with the only visible side facing a frequently used walkway from the parking lot. To complicate the matter, the visible side is not currently offering any 'curb appeal', in other words, the most visible side of the garden is currently unused which further limits the exposure of the garden to onlookers and potential members.

When community engagement is limited, the management of the garden becomes increasingly more difficult and laborious because the plots are easily overgrown with unmanaged or unused sections, and some unplanned plots. Unmanaged overgrowth in the garden creates a reinforcing cycle of increasing challenges as community engagement remains low.

Recommendations:

In response to the garden needing year-round support, we recommend turning to those who are present and established in the broader community including staff, faculty, and community partners. These community members transcend the challenges of the academic calendar and continuously cycling-student body, thereby forming a more reliable foundation for community engagement. The community partners can be engaged through the varying departments on campus and through the volunteer services office.

In response to early semester engagement, we recommend creating annual workshops and activities built into student orientation, similar to the traditions UC Berkeley uses where they conduct four workshops as part of an annual Fall Orientation in the two or three days leading up to the start of fall classes in order to prevent engagement concerns as the students get busier as the semester goes on (Hillhouse, 2019). Further, we recommend creating annual and seasonal

traditions to help the club run smoother by giving students time to plan and prepare for the events and to maintain intergenerational momentum of the club. Traditions may include winter lectures about BIPOC farmer Justice, annual indigenous blessing of the space, harvesting Fall pumpkins for theme houses to decorate their homes, holding annual spring concerts in the amphitheater, and more.

When planning for the garden's location, we recommend ensuring it is in proximity to and is accessible by the majority of the stakeholders, specifically environmental housing, ensuring the garden is visible from street view with a beautified curb appeal. Additionally, ensure the garden is adjacent to necessary resources like water pumps and is getting ample sun exposure for its intended use to avoid challenges faced by the University of Tennessee where resource challenges contributed to the disrepair of their garden in 2015 (Rateike, 2015). Further, we recommend that sitting areas are available and comfortable in order to make the space more comfortable and accessible, making the garden not just a place to work, harvest, and learn, but also lounge and relax in a beautiful greenspace.

Student Governance:

Challenges:

Establishing the governance of the Seed to Table club has been a challenge for the garden due to annual shifts in the student body, widely attended study abroad programming, and the COVID-19 pandemic. The annual cycling of the student population every year due to incoming first-years and graduating seniors greatly challenges the maintenance of intergenerational knowledge. The maintenance of intergenerational knowledge is compounded upon by the widely attended abroad programs where dedicated students and members of the club are absent for whole semesters at a time, increasing the frequency of knowledge transfers between students each year. Additionally, the total lack of a knowledge transfer during the COVID-19 pandemic has left the Seed to Table club with a limited number of dedicated members and limited knowledge about club traditions and programming. The challenges to governance have weakened the organizational structure for leadership and members to follow, limiting the garden's potential as an interdisciplinary resource.

Recommendations:

We recommend creating concrete leadership positions with clear tasks and deadlines to find dedicated students who set intentional goals that are in line with the club's mission. Leadership positions include a garden manager, diversity and inclusion chair, collaboration communication chair, social media manager, first-year through senior representatives, and stakeholder representatives. As a leadership team they must be proactive in establishing, maintaining, and reflecting on the club's mission and goals, with a prioritization on the intergenerational transfer of knowledge and responsibility by creating shareable documents and beginning the transfer early in the semester with shadowing opportunities for future leaders. The perseverance of club

governance requires the annual reflexive questioning of 'Who is dedicated?', 'What are this year's members' goals and expectations of the garden?', 'How is club governance amended accordingly?'. Future leadership recruitment must be an early priority to create momentum for the club, students can be recruited through the several stakeholder clubs, organizations, and departments.

Financial Resources:

Challenges:

Since the permaculture gardens inception it has relied on diverse, intermittent, sources of funding. An environmental initiatives grant from the Mellon Foundation of $800K, was awarded in 2009 and supported the initial "Seed to Table" club. The permaculture garden was constructed and made possible with a campus innovation grant ($4450, 2011) and an alumni grant (2012) to expand gardens to campus. For a few years the Thelomathesian Society awarded the club an annual budget to include full-time summer interns, but since 2019 the annual amount has been significantly reduced (~$1100) and funds cannot include student wages, but can be used for activities and garden materials. The expansion to develop the community raised beds and garden shed was supported by a campus innovation grant ($2500, 2020), plus funds to run a permaculture design certificate credit course ($5600, 2021). The garden has relied on donations of tools and time from student, staff, faculty and community members. While many creative approaches have been utilized, part time paid student wages remain the greatest need.

Recommendations:

In response to financial instability, we recommend a garden be designed to function with minimal management and resource, a true permaculture approach. If garden needs and core functions can be made redundant and embedded within multiple campus groups the likelihood that activities will persist. However, a more permanent solution to summer garden management is needed and might be best served as a collaborative paid internship.

Discussion - Vision of The Future:

The role of student involvement in the permaculture garden has varied over the years, resulting in challenges in maintaining devoted leadership. Within the past two years, leadership engagement has consequently decreased due to the isolative effects of the COVID-19 pandemic. Students were subject to social distancing and masking regulations, causing a severe decrease in social interactions and productivity (Kong, 2021). In addition to the social effects of the pandemic exists a common organizational trend known as participation transience. The participatory trend is a predictable turnover rate as students are admitted and graduate each year (McKinne and Halfacre, 2008), resulting in a fluctuating amount of involvement in organizational activities over time. In order to combat this trend, it is recommended that involved students and faculty maintain a governance and transition plan, (conceptual seasonal and

academic community calendar), on a semester basis to sustain a management plan for future years.

While the garden's focus has transitioned from a food-provisioning space to adopting a permaculture design, elements of social cohesion are becoming more emphasized through overlapping interactions. Although the stakeholders and allies of the garden are more involved organizations, the garden provides a space accessible to all students outside of related academic disciplines. Similarly, interactions in the garden promote opportunities for students to form relations and offer each other mutual help (Veene, 2015), increasing social cohesion on-campus. On an organizational level, the governing body of the permaculture garden remains the Seed to Table club. Consistent collaboration between the club, stakeholders, and allies is also recommended to ensure social cohesion and efficiency in garden management. Examples include collaborative events, meetings, and establishing traditions that both continue and evolve from year to year. Establishing annual traditions for the club is a valuable method to create momentum for reliable participation by allowing students to prepare and plan for the events. Future scenarios may involve an increase or decrease in governance and transition, hindering collaborative strategies and dynamics within the garden space.

Research on community gardens is also oftentimes limited to urban communities. In regards to on-campus community permaculture gardens, few investigations have been done on their interdisciplinary design and goals for specific communities such as a student body. However, similar research can provide alternative models, strategies, and designs to execute varying goals of the garden space. Moreso, greater opportunities exist for student - faculty researcher collaborations within academic institutions, thus supporting meaningful experiential learning opportunities.

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