



Original Research Article

Campus gardens: Food production or sense of place?

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Abstract

Campus gardens can provide opportunities for experiential learning and enhanced physical and mental health; however, they require substantial commitments of time, money, and effort. This formative evaluation explores the perspectives of a university population on the establishment of a campus garden prior to its implementation. Phase One involved an electronic survey of the entire population at a small university (n=1293). Phase Two consisted of eleven in-depth interviews with survey respondents who were interested in furthering the dialogue. The majority (85%) of the 415 individuals who responded to the survey and all interviewees supported the idea of a campus garden. Compared to a shared/community garden or rental plot, participants preferred a low-maintenance forest garden. Food production was secondary to protection of the natural environment and providing a space for rest and reflection. Participants' sense of community, combined with knowledge of the university's history, mission, and values, reflected a strong sense of place, a key component of social sustainability. This research supports the consideration of alternative options to traditional community gardens on university campuses. It suggests that forest gardens, with their low-maintenance approach to food production, and their potential to promote social sustainability through an enhanced sense of place, may be a good place to start.

Keywords: community garden, forest garden, campus garden, sense of place, social sustainability, qualitative research

Introduction

Benefits of community gardens include better health, food source/food security, youth education, development, and employment, use and preservation of open space, crime prevention, neighbourhood beautification, leisure and outdoor recreation, cultural preservation and expression, social interactions/cultivation of relationships, stress relief, community empowerment, and mobilization (Armstrong, 2000; D'Abundo & Carden, 2008; Draper & Freedman, 2010; Ferris, Norman & Sempik, 2001; Kingsley, Townsen, & Henderson-Wilson, 2009; Van Den Berg & Custers, 2011). Gardens on university campuses in particular can address serious issues affecting students (e.g., nutritionally poor diets and food insecurity) (Chapparo et al., 2011; Hughes et al., 2011; Meldrum & Willows, 2006; Nugent, 2011). They also provide opportunities for environmental education and can foster a sense of community that transcends disciplines (Roubanis & Landis, 2007).

Food production has occurred on many North American university/college campuses since the nineteenth century (Lawson, 2005; Sayre, 2011). Campus gardens have increased in number over the past few decades with the “greening of the ivory tower” (Creighton, 1998) and official commitments by university administrators to sustainability in higher education (e.g., the Talloires Declaration) (University Leaders for a Sustainable Future, 2001). The primary focus, however, of most campus sustainability-related initiatives, including gardens, appears to be the *environmental* aspect (e.g., sustainability-related curriculum, “green” buildings, and improved campus management systems) (Quilley, 2009). The financial crisis of 2008 has also resulted in more attention to universities’ *financial* sustainability (MTCU, 2013), and campus gardens are not immune from questions of profitability. They are rarely self-sustaining and rely heavily on volunteers, adding pressure on students or the institution to maintain them (Bell, 2013). Interestingly, *social* sustainability is not mentioned in any of the measures taken by the top eight schools in the *College Sustainability Report Card 2011* (Finlay & Massey, 2012); yet, this third pillar of sustainability is as important as the other two.

Social sustainability includes a broad range of concepts, including well-being, quality of life, social interaction, sense of community, and sense of place (Ghahramanpouri, Lamit & Sedaghatnia, 2013). MacKenzie (as cited in Davidson, 2010) has defined it as “a positive, life-enhancing condition within communities, and a process within communities that can achieve that condition” (p. 12). Obviously, what constitutes a life-enhancing condition will depend on the context. Canadian university students have identified “facilities” as the number one way in which universities could, in a systematic way, enhance their health and the student experience (Patterson & Kline, 2008). Indeed, the Campus Population Health Promotion Model, the NASPA Ecological Approach, and the UK Healthy Universities Model all emphasize the creation of supportive campus environments (CCL Health and Learning Knowledge Centre, 2009; NASPA, 2010; UK Healthy Universities Toolkit, 2011). Furthermore, the collection and use of institution-specific data to design settings that promote mental health and well-being for all is encouraged (MacKean, 2011). Exploring campus constituents’ vision of a campus garden may therefore provide stakeholders with information that can be used to create a garden that is a life-enhancing condition for the campus community and addresses *all* aspects of sustainability.

Community gardens, as a communal pursuit, have been identified as providing a model for the promotion of urban sustainability (Holland, 2004). Yet Turner (2011) has suggested that any further development of the role community gardens can play in urban sustainability must “factor in the individual and (his/her) motivations and desires, not just those of an imagined

broader collective” (p. 514). Williams and Forbes (2012) built on this by saying, “if sustainability is to be more than an abstract idea, it must address the spirit of communities by speaking about what matters to them” (p. 116). Finally, the attainment of social sustainability involves “a process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work” (Social Life, as cited in Woodcraft et al., 2012, p. 16). Campus gardens should reflect the pluralism and diversity of the community within which they are situated. Given this, what might the motivations and desires of these individuals be regarding the establishment of a garden at their institution?

To answer this question, the authors conducted a formative evaluation at a small university. Formative evaluation/research involves a methodical, pragmatic approach to implementing a program based on the needs, wants, and resources of the community (Boyle & Holben, 1999) before the initiative is put into place. The goal is to identify participant preferences and obtain information pertinent to decision-making through systematic and rigorous data collection, to enhance the likelihood that the proposed initiative will be relevant to the populations involved, as well as feasible to implement and maintain (Schoster et al., 2012; Vastine et al., 2005). Conducting formative research demonstrates an interest in understanding both the population and the context. It can also “build trust, collaboration, and acceptance of the project” (Vastine et al., 2005, p.57). The objectives of this study were to (1) gauge interest in establishing a garden on campus; (2) explore various constituents’ vision for a potential garden; (3) assess the willingness of the campus community to participate in the garden’s implementation and maintenance; and (4) identify concerns and barriers. The findings, in particular the type of garden most preferred by participants and their reasons for that choice, speak to the importance of social sustainability on university campuses.

Method

The context for this study was Brescia University College, a small urban campus affiliated with Western University in London, Ontario. This university values holistic education, experiential learning, the spiritual dimension of the human person, the building of community, the struggle to raise social awareness and to promote social change, and the physical environment that enhances the spiritual search for truth and beauty (Brescia University College, 2013). Until 1962, Brescia University College produced much of its own food, including fodder crops for animals that were kept on the property. Professors “often went straight from lecture room to kitchen in harvest season” (Skidmore, 1980, p. 24) to preserve food. With renewed interest in gardening, and the fact that much of the campus continues to be farmed by a third party, many people have expressed interest in (re)establishing a garden on campus. The researchers, as members of this campus community, were aware of these “local murmurs” and decided that a formative evaluation would be a prudent and effective first step.

Phase One, an online survey of the entire campus population (n=1293), was distributed via email to all campus constituencies (i.e., students, staff, faculty, administration, and members of external boards). To increase response rate, two reminders were sent at one- and three-week intervals after the initial email (Archer, 2007). Respondents who completed the survey were invited to participate in a draw for one of two \$75 gift certificates. The survey was created using online survey software (www.FluidSurveys.com) and consisted of fourteen questions regarding multiple aspects of establishing and maintaining a garden (e.g., type most preferred; willingness

to contribute to its establishment, maintenance, and sustainability; options for garden produce; potential fundraising opportunities and potential outcomes; and how a garden might support the university's role as an educational institution). Questions were based on literature, expert opinion, and an understanding of the university's history, vision, and values. Face validity was assessed by piloting the survey with several students; content validity was assessed by local gardening experts. Individuals who pilot-tested the survey did not participate in the study. Quantitative survey results were summarized as descriptive statistics using the survey software. Qualitative results were coded and categorized into tables using a word processor.

Phase Two participants were recruited from a list of survey respondents who indicated they were interested in participating in an interview. The goal was to explore key themes that emerged from the survey. Interviews were conducted in a private room on campus and participants received a \$30 gift card. Responses were verified through member-checking at the end of each interview.

Interviews were audio-taped and transcribed verbatim. Descriptive qualitative analysis (Mayan, 2009) occurred concurrently throughout the interview process. Using a constant comparative method, both researchers independently coded transcripts line-by-line to identify categories and themes (Charmaz, 2000; Glaser & Strauss, 1967). Data were sorted into tables using a word processor. The researchers met frequently during this iterative process to discuss emerging themes until consensus was reached. Both researchers have experience in community gardening and one teaches about all aspects of the food system, including sustainable food production. The study was approved by the Research Ethics Board at Brescia University College.

Results

A total of 415 individuals responded to the survey (32% response rate). Staff members represented the highest response rate by constituency (Table 1). From the survey respondents who volunteered to participate in a post-survey interview (n=147), eleven individuals were purposively sampled to represent all constituencies (Table 1). Interviews lasted between thirty-five and seventy-five minutes, generating 151 pages of single-spaced transcripts. Quotes from survey respondents are anonymous; those from interviewees are identified by participant number and constituency (e.g., P3:Student; P11:Staff). Labeling quotes in this manner adds context without revealing the identity of the participant. It also indicates how often the same study participant has been quoted, which supports the credibility of the analyses.

Table 1: Participants by constituency for Phase One (survey) and Phase Two (interviews)

Constituency	Survey N (n)	Survey Response Rate (%)	Interviews (n)
Students	1100 (301)	27	3
Staff/Admin	55 (47)	85	3
Administration	11 (4)	36	1
Faculty	84 (34)	40	3
External Boards	43 (29)	67	1
Total	1293 (415)	32	11

Phase One: Online survey

1. High support for a garden on campus

The majority (n=328/400; 82%) of respondents indicated high support for establishing a campus garden (responses 8 to 10 on an 11-point scale with 0=NO agreement and 10=HIGH). Using a similar rating scale, more participants (n=215/371; 58%) gave high ratings to a forest garden than for a shared/community garden (n=185/369; 50%) or a rental plot (n=139/367; 38%). More respondents stated they would contribute physical versus administrative work (63% vs. 40% for garden establishment and 84% vs. 43% for maintenance, respectively). A plethora (n=196) of fundraising ideas were provided in response to an open-ended question on this topic. Although 80% (n=251/313) stated they would invest at least thirty minutes of their personal time per week towards the establishment of a garden, this dropped to 53% (n=197/373) when asked about maintenance. Thus, it appears the constituents of this campus would like a garden, but the sustainability of such an initiative might be compromised if the type of garden implemented would require a substantial amount of their personal time to maintain it.

2. Type of garden most preferred

Comments (n=76) provided in the open-ended section associated with the forest garden option reflected strong interest in this concept, with a third of respondents (n=24; 32%) using words such as “unique,” “innovative,” “exciting,” “amazing,” “interesting,” and “intriguing.” These respondents also stated that it was a “beautiful idea” and “definitely a more relaxed and less structured way to go.” One of them commented on its potential to support well-being and enhanced connections with the Earth: “Yes!!! Please!!! A lovely serene place to be at one with nature, just outside our door!” while another stated, “Food production, being seasonal, and during the season when the university is least occupied, should be a secondary consideration. Sanctuary in, and protection of nature is more important to me.” Ten respondents (13%) thought the idea of a forest garden was “very sustainable and would work for the long term,” and believed the prospect of little/low human maintenance was “ideal,” “a great idea,” and “very cool.” Eleven (14%) felt they could not comment on this type of garden due to a lack of familiarity with the concept, although they were willing to learn. Nine respondents (12%) wondered if such a garden would be difficult to maintain, stating it might become “unsightly,” “unappealing,” and look like “a weed and compost garden.” Six (8%) expressed confusion about what types of food could be grown in a shaded area, yet others (n=4, 5%) were interested in growing “plants that are indigenous to this area.” Four people (5%) felt that it would not be as useful as other types of gardens, especially for teaching students and faculty about gardening. Two (3%) believed a forest garden would support a sense of community; one (1%) felt there would be “less community involvement.” The remaining comments (n=5; 7%) related to garden placement, security, and concerns about wildlife. Overall, this type of garden appealed to participants more for its novelty, purported low maintenance, and ability to provide a place for quiet reflection, rather than for its ability to produce food.

Comments on a shared/community garden were provided by seventy-one survey respondents. A number of them (n=14; 20%) noted “distinct advantages” to this “collaborative and co-operative” approach, and saw shared responsibility in a positive way. They also felt that organization and administration of the garden could be accomplished through “a paid

coordinator” or a “student club.” One of these respondents felt that “team work and shared responsibility” would not be a problem as “Brescia is like our home.” In contrast, almost twice that number (n=26, 37%) had concerns about how the garden would be managed, stating there would be a “diffusion of responsibility,” and individuals may “get lazy,” or “lose interest,” negatively affecting the garden’s appearance. One wrote: “a core group would end up doing most of the work.” These respondents felt that the management of such a garden would be too complicated as there would be “too many cooks in the kitchen” and that “without committed leadership, this could fall apart very easily.” Sixteen (22%) respondents suggested that gardens that are shared can “enhance a sense of togetherness that comes with food” and “engender a sense of community.” These respondents wrote that this type of garden would “support Brescia’s unique community feel” and “build community spirit and a collective goal.” They felt that “a lush plant and flower garden” would be a “safe and welcoming space” that was “less intimidating” and would “encourage the development of new skills,” including “cooperative and leadership skills.” Twelve (17%) respondents’ comments reflected concerns about lack of time, skill, and personnel, with one worried about “people from the community walking around campus with gardening tools.” Another wrote: “I have so many gardens to keep up with at home (that I have trouble finding the time to tend to) that a shared garden, although a great idea, might contribute to my gardening guilt.” This was supported by the following: “I don’t think anybody (professors, staff or students) has the time to do any ‘extra’ work.” The remaining three comments (4%) related to the use of produce and a suggestion for a mixed approach. In summary, with proper administration and oversight, a number of participants felt this would support community spirit. However, more people were concerned that this garden would require too much additional work for time-starved campus populations, resulting in a core group of people trying to maintain it.

Comments regarding a rental plot garden were received from fifty-seven respondents. A third (n=20; 35%) suggested that people would have a “greater sense of responsibility” and “higher commitment” to it. These respondents believed that people would be “more inclined to take care of their plot if it belonged to them alone.” Several in this category also commented that “people value what they pay for” and “care for what they have invested in.” Others added that rental plots would be “easier to organize,” and that external garden plots in which they are involved “work out very well.” In contrast, 17 (30%) felt this type of garden would look “shaggy,” “unorganized, random, and unappealing,” especially if some plots were neglected or abandoned. Most notably, this related to lack of time, as evidenced by these comments: “People get busy with school and will leave plots abandoned” and “the garden won’t be a priority over school work.” Three respondents (5%) felt that a rental plot garden could “be a revenue stream” and “allow for some profits to be made,” however twice that number (n=6; 11%) were concerned that “not everyone can afford it,” suggesting that it be “geared to income” or based on “ability to pay.” Three (5%) felt this type of garden would engender a sense of community; however, one (1%) felt it “would lose the community aspect.” Miscellaneous comments (n=7; 13%) related to the desire for mixed models, the use of produce to provide food security, and the perception that it “would be too much like a ‘food box’ program.” A rental plot model therefore appealed to approximately a third of those who provided comments on this garden option, however a greater percentage had concerns about this approach.

When asked for other suggestions (n=24) for type of garden, nine respondents (38%) focused on the social aspect, as reflected in these comments: “a garden should be a nice space to visit and study,” “read and reflect,” and have “an area for reflection and spirituality” with

“benches where people can sit, read, talk, and relax,” a place where “anyone who wants to learn about growing foods is accepted.” Six (25%) participants wanted mixed models, with one suggesting benefits from all types presented for consideration: “a native plant/permaculture garden that’s edible, does not need a lot of maintenance, with the community caring for it collectively.” Five respondents (21%) wanted “affordable, local, and pesticide-free produce” for students or donated to local shelters. Two respondents (8%) wanted a rooftop garden; another two felt they lacked knowledge to comment. Interestingly, regardless of garden type (including this question asking for other suggestions), a recurring theme was respondents’ desire for it to satisfy a social need, from providing sanctuary and a place for rest and reflection, to a place that would support cooperative and leadership skills, and enhance the sense of community on campus.

3. Potential outcomes of a garden on campus

When asked to rate the likelihood of 10 potential outcomes of a campus garden, 70% of respondents (n=246) rated “skill development” as highly likely (Table 2). Two-thirds of respondents (n=234) rated “enhanced sense of community” as a highly likely outcome (Table 2). Only 27% (n=96) believed there would be a high return on investment (i.e., benefits realized to time, money, and effort invested). The interesting aspect of this result is that “enhanced sense of community,” while rated only slightly higher than leadership, access to food, and understanding of the food cycle, was still rated second most likely overall, suggesting the value respondents placed on this potential outcome.

Table 2: Highest ratings for potential outcomes of a garden on campus* (n=353)

Potential Outcomes	n (%)
Skill development	246 (70)
Enhanced sense of community on campus	234 (66)
Student leadership development	229 (65)
Increased access to food for garden participants	228 (65)
Increased understanding of the entire food cycle	227 (65)
Increased profile for university	218 (62)
Increased partnerships between the university and the broader community	197 (56)
Improved health of garden participants	189 (54)
High return on investment (benefits realized to time, money, and effort invested)	96 (27)
Increased recruitment and retention of students	94 (27)
Total	353(100)

* Includes responses 8 to 10 on an 11-point scale from 0 (very unlikely) to 10 (very likely). Respondents were allowed to rate each option provided. An open-ended question followed, to which respondents could provide additional outcomes.

4. How a garden might support the university's role as an educational institution

221 respondents provided 347 comments for this open-ended question (Table 3). Almost half (n=146) of the comments suggested that a garden was “the missing link in the FNS programs.” As one respondent put it, “considering Brescia is known for its Food and Nutrition program, it only makes sense to teach students how to grow their own food, so they will go on to teach their own communities.” A substantial number of responses (n=118, 34%), however, stated that a garden would support the social aspect of campus life. This included enhancing the existing sense of community at the college through the “sense of togetherness that comes with food.” One wrote, “a community garden strengthens relationships between participants and brings greater understanding of the issues of hunger and access to fresh, local food. Gardening also brings people together from many different cultures. Sharing food is a tenet of faith.” Several others wrote about how a garden would support enhanced spirituality: “Nature can help us understand the miracle of each of us existing at all. Many people report the presence of divinity in gardens, forests, by water, with animals, and in natural cycles.” Finally, many of the comments suggested that “gardening is good for the soul” and would offer “mental health opportunities.” One comment summed it up this way: “It could serve as an activity to reduce stress for students—which we greatly need.”

Table 3: How a garden on campus might support the university's role as an educational institution

Topic	Comments N (%)
Course component - primarily for Food and Nutritional Sciences program	146 (42)
Supporting the social aspect of campus life - enhanced sense of community; networking and socializing; extracurricular activity; interdisciplinary, intercultural, and intergenerational relationships; stress relief; physical and mental well-being; a calming, inspirational, and spiritual place	118 (34)
Community education - workshops on healthy eating, gardening/living sustainably, local ecosystem	36 (10)
Skill development - gardening, cooking, leadership, teamwork, recycling, costing, etc.	33 (10)
Research	7 (2)
Other - use of produce in cafeteria	7 (2)
Total	347 (100)

While it is not surprising that potential outcomes for an educational institution would reflect skill development, key social aspects were identified by a third of respondents, reflecting that which emerged from the open-ended questions about type of garden preferred and why.

5. Potential challenges to establishing a garden on campus

Tempering the overwhelmingly positive responses in support of a garden on campus were 510 comments from 260 respondents regarding potential challenges (Table 4). The majority of concerns (n=293, 57%) related to garden organization and maintenance, particularly the time commitment required. While campus constituents may be very supportive of the idea of a campus garden, this suggests significant apprehension about the success of a garden in a setting where all constituencies have other (work/study) commitments.

Table 4: Potential challenges to establishing a garden on campus

Potential challenge	Comments N (%)
Organization and maintenance - time commitment, volunteer retention, student turnover, few students during summer, planting and harvest seasons occur during busy school year	282 (55)
Externalities - land quality/finding an appropriate space, availability of water, animal/insect interference, security/vandalism, meeting food safety regulations/other bylaws	110 (21)
Cost	86 (17)
Weather	24 (5)
Gardeners' lack of skills	8 (2)
Total	510 (100)

Overall, these results lend support to respondents' interest in a forest garden, one of the interesting findings to emerge from the survey. Their desire for a place of sanctuary and for developing a sense of community, combined with the appeal of a type of garden that promised lower maintenance than a traditional model (e.g., community, rental), provides valuable insight prior to the implementation of such an initiative. A second discovery was the overwhelming response regarding how a garden might support the university's role as an educational institution. Surprisingly, respondents wanted support for the social aspect of campus life, not just the opportunity for skill development, curriculum enhancement, or food production.

Phase 2: Individual interviews

During the post-survey interviews, the researchers further explored (1) the high level of support for a campus garden; (2) why a forest garden was most appealing; and (3) how a garden might support the university's role as an educational institution. Interviewees were also asked about potential barriers and challenges to establishing and maintaining a garden on campus. Challenges discussed in the interviews mirrored those on the survey (Table 4) and provided little additional information; therefore, only results from the first three themes are presented here.

1. Why such a high level of support for a garden on campus?

Each interviewee made comments such as, "it just seems to fit" (P9:Faculty), "it just sounds like something Brescia would have" (P3:Student), or "it just makes sense" (P4:Board Member). One stated:

Because of our community nature, we are very well aware of our environment and our surroundings. A garden brings the community together and it allows us to obtain feedback from nature, which is great. It would allow every realm of the community to come together, which is really the core of what we're all about. (P5:Staff)

Echoing the comments made in the surveys about the value of a garden to the FNS programs, a faculty member said, "it seems kind of silly *not* to have that here because if you're going to study food, it (production) is a huge part of that." (P10:Faculty) Another explained that, due to climate change, experimenting with new food production techniques such as a forest garden will become a "bigger factor in your FNS programs than it has been in the past." This interviewee continued: "How do you balance nutrition within a local bioregion and environment? Draw on the human ecology aspect." (P11:Staff)

Reflecting the university's history of food production, one participant stated: "We've come full circle, so this is good." (P4:Board Member) She recalled the university founders selling pigs to finance building maintenance or being summoned over the PA system to retrieve the cows from the cornfields. She saw a garden as more than food production:

This is part of who we've been from the beginning. There was a day when we could feed ourselves here. That's not realistic now. But it's that connection with the land, with the earth, with the growing of things, with respect for the land, with the fact that we are dependent upon it. The cry of our society is we have to save our environment. We are doing so much damage. (P4:Board Member)

Asking interviewees to explain why there was such a high level of support for a garden on campus revealed a strong sense of community, as well as their perceptions of the university's mission and values. Their awareness of the college's history and the physical nature of its campus helped to provide a foundation for responses to questions about garden type.

2. *Why would a forest garden be the most appealing type of garden?*

One participant summed up every other interviewee's responses to this question by saying, "Maintenance. Maintenance. Maintenance." (P9:Faculty) "Gardens are not magic," stated another, "they are hard work!" (P4:Board Member), pointing to the appeal of a low-maintenance option. Another acknowledged there would be work involved in establishing a forest garden by saying, "you don't just plunk a tree in the ground" (P10:Faculty), however another who was more familiar with the concept stated, "forest gardening—classic permaculture—tends to be low maintenance and not feel like a garden to some people." (P11:Staff) Deeper understanding of this concept prompted a student to provide another explanation for a forest garden's appeal: "A forest garden is more environmentally friendly. It's taking some things out and putting other things back in and equaling it out. It's not destroying your habitat as much." (P8:Student)

Underlying the appreciation for a low-maintenance garden was the desire to maintain continuity in light of the transience of the student population. One student felt that the student population lacked the continuity to support a traditional campus garden: "We come back in the fall (to participate in a course with a garden component), but now it's a mess and we have to start all over again and again and again. That's disheartening and costly." (P1:Student) Staff members felt they could play an important role, as they would provide "more continuity than faculty or students" (P11:Staff).

Contributing to the desire for a low-maintenance option were participants' expectations that garden organizers not rely exclusively on volunteer labor. One participant made it clear that, while the garden might be on university land, one should "not expect employees to do all the work." (P2:Administrator) One staff member was excited about the prospect of "popping out on their lunch hour to do a bit of weeding," but was also cognizant that "students, staff, and faculty here in the Brescia community are all torn in different directions, so that (less need for volunteers) would be appealing." (P5:Staff) Students' comments resonated with this as well:

I want to say "yes" (that I would participate), and I want to say I would be super-enthusiastic about it, but once school starts, it's difficult to commit to things like that. It's such a good idea, but it's hard. I like the idea of being able to enjoy it without having to put too many hours of work into it.
(P3:Student)

One faculty member expressed ideological support for the garden, and envisioned participating "from an academic standpoint, but not the actual physical labour. When I come to work, I am wearing work clothes (i.e., suits/dresses)." (P7:Faculty) Making commitments small enough that they are "doable" and paying attention to garden programming (e.g., designing work schedules where small tasks could be completed in short periods of time) were common suggestions.

It is apparent, therefore, that these campus constituents were well aware of their primary obligations and commitments (e.g., work/study), but expressed reluctance to over-commit themselves to such an initiative (regardless of their strong support for it).

3. *How might a garden support the university's role as an educational institution?*

All interviewees envisioned numerous teaching opportunities. The majority of interviewees also felt that food production would be secondary to protection of the natural environment and the

opportunity to provide a space for rest, reflection, and spirituality. As one student put it, “gardening can be very relaxing, sort of therapeutic at the individual level. Even support for students who need that little extra bit of relaxing and like to be outside and talk to other people. It can be a social thing.” (P1:Student) Another student echoed this by saying, “It’s relaxing and a good stress reliever...(a place to) visit and enjoy.” (P3:Student) A staff member suggested that it would be important to provide seating areas where people would have “a chance to sit down, relax, and enjoy the sheer pleasure of it and the peace of it.” (P11:Staff) Many said that a garden would enhance the sense of community, which resonated with the college’s mission. Again, the idea of a garden addressing the social aspect of campus life emerged in response to a question about the institution’s educational role, as it did in respondents’ answers to the same question on the survey. This suggests that the social sustainability is an important aspect to consider for any campus initiative.

Overall, the results from Phase One (online survey) and Phase Two (individual interviews) indicate a high level of support for a campus garden. Greatest perceived challenges were organization and maintenance, with highest preference shown for a low-maintenance forest garden. While most participants believed that a garden would provide excellent learning opportunities, they also wanted a garden that would promote individual well-being and support the social aspect of campus life, often surpassing food production as a desired outcome.

Discussion

The purpose of this study was to conduct a formative evaluation for a garden at Brescia University College prior to its implementation, allowing stakeholders to design a garden that meets the needs and wants of diverse campus constituents while minimizing the risk of failure. Participants’ preference for a specific type of garden, and what they wanted to experience when participating in such a venture, constituted the most surprising results.

Garden type

In this study, campus food production *per se* was not rejected. Participants still wanted experiential learning opportunities, especially for students in the Food and Nutritional Sciences programs. In addition to proportion and frequency recommendations for consumption, these future dietitians will also need to possess broad-based food skills, understand the social aspect of sustainable agriculture (Coveney, 2000), and promote sustainable diets (characterized by seasonality, biodiversity, eco-friendliness, local food products, and supported by conviviality and rest) (Bach-Faig et al., 2011). Therefore, while healing gardens have been suggested as part of sustainable campus landscape design (Lau & Yang, 2009), these campus constituents wanted both food production and social benefits from a proposed campus garden.

Forest gardens, as a form of permaculture, were of specific interest to the majority of participants in this study. Quilley (2009) has suggested that the time is “ripe for experiments in permaculture” (p. 49) at schools, universities, and colleges. We agree. Forest gardens, a form of permaculture, epitomize environmental sustainability. They require few outside inputs and are “highly productive in relation to the amount of labour required” (Berezan, 2010). This coincides with participants’ desire for a low-maintenance garden option. Quilley (2009) goes on to

suggest that universities have “sufficient land and student labour to move in the direction of food self-sufficiency, with the growing and processing of food at the core of the student experience” (p. 49), while Bell (2013) has suggested that “producing food on campus provides opportunities for students to learn about food production and increases food security, food sovereignty, and sustainability of a university” (Bell, 2013, p.1). While it is true that gardens have the potential to provide excellent and varied learning opportunities, relying on student labour to maintain campus gardens is unlikely to make universities more economically sustainable. Even with substantial volunteer commitments by students, staff, and faculty, gardens rarely sell their produce and cannot cover expenses through sales (Bell, 2013). Choosing a garden with low maintenance features therefore appears to be a good option to ease costs without compromising aspects of social sustainability (e.g., by adding more stress to maintain it and make it financially viable).

Sustainability

Participants in this formative research repeatedly used the phrase “it just fits” to describe why there seemed to be such strong support for a garden on campus. Shilling (2012) suggests that “revealing a community’s existing character is key to developing a robust and enduring sense of place” (p. 237), an important component of social sustainability. Participants’ sense of community, combined with their knowledge of the university’s history, mission, and values, also contributes to “a robust and enduring sense of place” (Shilling, 2012, p. 237), where people aim to “preserve, enhance, and celebrate their community’s unique story, design, and feel” (Shilling, 2012, p. 247). Therefore, exploring campus communities’ needs and wants prior to the implementation of sustainability-related initiative such as a garden may help to ensure it enhances the site and serves the communities for which it is intended. Similar to research by Kingsley, Townsend, and Henderson-Wilson (2009), participants in this study also saw a garden as “a sanctuary from pressures of the world; a setting for learning, social connectedness, and place attachment; a supportive environment; a place for spirituality; and a sense of achievement” (pp. 211–213), additional aspects of social sustainability. Planning a garden that provides many of these outcomes has a greater chance for success and long-term sustainability.

While campus gardens have great potential to teach current and future leaders about sustainable food production, expecting/encouraging students to maintain a traditional community garden through volunteer labour adds extra pressure into an already high-pressure environment. By expressing interest in a low-maintenance garden, participants in this study confirmed Bell’s (2013) findings that “opportunities for short-term, low commitment involvement” (p. 32) are crucial for success. Bell also found that “distributing the workload and reducing the pressure on students or the institution” (p. 32) to maintain gardens is important. A low-maintenance forest garden, therefore, may be the most feasible option to facilitate this. The high response rate of staff members in this study also confirms the findings of Brinkhurst et al. (2011), that staff members are “unrecognized champions of campus sustainability” (p. 351). They too, however, were wary of the time commitment involved. A garden could nonetheless be part of an employee wellness initiative.

Mental health

Given participants' interest in wanting a garden for its social benefits, planning one that supports positive mental health is a good option for a university campus. Post-secondary institutions are now recognized as high-stress environments and important settings for promoting mental health and well-being (MacKean, 2011). Indeed, social sustainability has been identified as one of the campus factors that affect student mental health (CACUSS & CMHA, 2013), and mental health is a high priority for colleges and universities. In the past twelve months, 90% of Canadian university students felt overwhelmed by all they had to do; 64% reported feeling very lonely, 38% felt so depressed that it was difficult to function, and almost 10% had seriously considered suicide (ACHA, 2013). Tragically, an increasing number have even ended their young lives (Kennedy, 2013). Thus, regardless of the type of initiative, addressing social sustainability (of which mental health and well-being are key components) on university campuses is timely and significant.

Gardeners have reported that good mental health was their primary reason for gardening (Miedema, Desjardins & Marshall, 2013). Sustainable garden design is also undergoing "a general shift from physiological to psychological needs" (Dewberry & Groggin 1994, as cited in Clavin, 2011). Perhaps these results, where participants talked extensively about their social needs and wants, are a reflection of the growing concerns about mental health and well-being in post-secondary institutions (MacKean, 2011). Many universities provide opportunities for tight-knit groups to form; however, permaculture can enhance both sustainable land use and human well-being (Mollison, 1990). Key considerations for a supportive, inclusive campus climate and environment include spaces where students, staff, and faculty can "gather, socialize, and connect" (CACUSS & CMHA, 2013), and a forest garden has the potential to provide this type of space.

Next steps

Based on these findings, the researchers plan to collaborate with student clubs, the Student Life Centre, and the Mental Health and Wellness Committee, to prepare a business plan and grant applications for the establishment of a garden on campus. In terms of research, the social aspect of sustainability, including its sub-components of mental health and well-being, is the least-examined pillar of sustainability. There is a great deal of debate about what the concept does and should actually mean (Davidson, 2010); future research might therefore explore what it means on a university campus. It would also be prudent to review the Sustainability Tracking, Assessment and Rating System (STARS) used by universities to "gauge their progress towards sustainability" (AASHE, 2013, p.4), as the word "stress" is mentioned only once in this 348-page document, and "health" on campus is primarily addressed through a work-related lens (e.g., human resources; workplace health and safety) (ASHE, 2013). Finally, future research related to campus gardens can make mental health and stress reduction a central point of enquiry.

Strengths and limitations of the study

Pairing quantitative and qualitative approaches can corroborate findings, generate more complete data, and enhance insights attained from one research method with a complementary approach (Creswell & Piano Clark, 2007). Furthermore, triangulation of methods (survey plus interviews), sources (members of all campus constituencies), and analysts (two authors plus one research assistant) facilitated deeper understanding of the data (Patton, 1999). The inclusion of quotes from survey respondents and interviewees supported study rigor, as it allows readers to understand the findings of the analyses and to evaluate the plausibility, credibility, and face validity of the researchers' claims (Patton, 1999).

Limited funds restricted the number of interviews; however, this was counterbalanced by the good response rate for the survey. Although we provided a "thick description" (Holloway, 1997) of the research setting to allow the reader to evaluate whether the conclusions have applicability to other settings, it is acknowledged that the study was conducted at a small university which may limit transferability of the results. Unfortunately, no additional guidance was provided to survey respondents regarding the option "benefits realized to time, money, and effort invested." It was up to the respondent to assess this from their own perspective. Another limitation was that those who were most likely to participate were also most likely supportive of establishing a garden on campus (self-selection bias). It is unknown whether non-participants would have the same interests and motivations.

Conclusion

A university campus hosts multiple environments in which people study, live, work, pray, and play. Moreover, it is a vibrant setting within which advocacy for change is fostered by the academy and by the continuing exuberance of its ever-changing student population. How can we harness these unique attributes to teach campus populations about food production while supporting the social aspect of sustainability? This preliminary formative research suggests that forest gardens, with their low-maintenance approach to food production and their potential to provide a life-enhancing condition for the campus community, may be a good place to start.

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