School Gardens in the United States: Current Barriers to Integration and Sustainability

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Objectives. To elucidate details about the barriers (time, funding, staffing, and space) to integrating and sustaining school gardens.

Methods. A total of 99 school gardeners from 15 states participated in an online survey in June 2017. The 29-item survey contained qualitative and quantitative items that we analyzed using descriptive statistics and inductive content analysis.

Results. In order of greatest to least barrier, gardeners ranked time, staff, funding, curriculum, and space. Time for classes to use the garden (66% of respondents) and time for staff training (62%) were the most frequently listed time-related challenges. Respondents also reported low engagement within the school community. An overall lack of funding was the most common funding-related barrier, and gardeners were unaware of how to obtain more funding.

Conclusions. We identified 3 aspects of school gardens as opportunities to address time- and staff-related issues: strengthening of garden committees, professional development, and community outreach. Better channels are needed to disseminate funding opportunities within schools and to communicate with communities at large. Ultimately, doing so will strengthen existing school gardens as a vehicle to promote dietary, physical, and social health within communities. (*Am J Public Health.* 2018;108: 1543–1549. doi:10.2105/AJPH.2018.304674)

(including an overemphasis on volunteers) and space,[11,16] limited time,[11] low teacher interest or training,[17] a lack of funding or poor funding allocation,[16] and an unfamiliarity with funding opportunities[18] and challenges incorporating a curriculum.[19,20] To date, there have been no large-sample, cross-sectional studies exploring barriers to success, so little is known about the prevalence of each barrier, what schools need to overcome each barrier, or whether other major barriers exist. To maximize school gardens' success and sustainability, more information is needed about the challenges gardeners experience in order to develop specific resources to overcome them. We present details about these challenges: time, funding, staffing, and space.

Schools are ideal settings for implementing enrichment programs because they provide continuous and intensive contact with children and adolescents during their formative years.[1,2] Research demonstrates that school gardening is a promising strategy for promoting healthy physical, psychosocial, and dietary behaviors.[3] Gardens give students an opportunity to be physically active[4] and to build connections with other students, the school community,[5] and the environment.[6] In addition, children involved in growing food are more willing to try and to prefer fruits and vegetables.[3,7–9] School gardens have also been shown to improve students' academic achievement in science, math, language arts, and writing.[10] In addition to the direct benefits, school gardens have been shown to improve perceptions of well-being, quality of life, and social and cultural cohesion,[11] which are important public health concerns.[12] Federal public health initiatives, such as Healthy People 2020,[13] emphasize the importance of strengthening programs to target

these behavioral and social determinants of health.

To generate these benefits, gardens must be integrated into schools.[14] A well-integrated school garden has been defined as one that is maintained at or near a school, fosters meaningful educational experiences for students, and is valued as part of the school's culture.[15] Yet schools struggle to establish, implement, and sustain gardens[15,16] to achieve integration or success. (Throughout this article, the term "success" or a "successful" school garden will be used in lieu of "well-integrated.")

Commonly listed barriers to initial implementation include inadequate staffing

METHODS

We examined the barriers to implementing and sustaining a school garden using an online survey disseminated nationally via e-mail in June 2017 through the National Farm to School Network, New York City's Grow to Learn, and Washington, DC's REAL School Gardens listservs. We used snowball sampling and digital posts on social media platforms associated with these organizations to broaden our reach. Participants were eligible to participate if they were affiliated with an active school, were English speakers, and were aged older than 18 years. We incentivized participation with an opportunity to win a $100 Visa gift card.

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Instrument

The survey consisted of 29 multimodal items, using categorical yes–no items, Likert scales, and open-ended questions. We collected participants' demographic data (gender, role) and school garden characteristics (location, years of operation, operating budget, funding sources, and whether or not the garden was edible). We assessed the challenges that gardeners experience through Likert scale items and allowed respondents an opportunity to expand on their responses in a qualitative open-ended format. We developed detailed questions to deeply explore barriers that integrated previously identified challenges to school gardening[11,16–20] with literature about important components critical to school gardening success.[11,15] We used open-ended questions to explore new concepts for which no previous data existed; in this survey, we used these questions in 1 of 3 ways: (1) to explore concepts that have not been explored in previous literature (such as how school gardeners define success), (2) to explore how gardeners would use additional resources (such as more funding), and (3) to identify new challenges to achieving garden success.[15]

Data Analysis

We calculated descriptive statistics using SPSS version 24 (IBM, Somers, NY). We used inductive content analysis to count source and frequency data overall. We gathered narratives from qualitative responses to open-ended questions. Using line-by-line inductive coding to identify themes, patterns of words, perceptions, and ideas, we classified themes into categories to develop an initial codebook. Given that a theme could be referenced multiple times by a single respondent, in developing the inclusion criteria, we considered both how frequently a theme was referenced and the number of respondents who referenced the theme. We defined themes as topics, issues, or suggestions that met the following criteria: they were discussed at least 3 times (frequency) and by at least 3 sources (different respondents).

Two independent coders (the lead researcher and the second author) met to reach consensus on their codes after coding the responses of 10 different participants for each open-ended question. We resolved discrepancies between coding pairs through discussion

and established a final codebook. We used SPSS 24 to calculate a chance-corrected agreement (Krippendorff's α reliability estimate) across coding pairs of 0.72 (substantial agreement).[21] After establishing reliability between coders, the second author coded the remaining open-ended questions with the qualitative software NVivo 11 (QSR International, Melbourne, Australia). For subgroup analysis, we weighted the qualitative data according to subgroup representation to generate comparable findings based on the prominence of each subgroup within the sample.

RESULTS

A total of 113 respondents completed surveys; we omitted 14 because they were not affiliated with an active garden (n = 13) or did not report on a single school garden (n = 1), leaving 99 respondent surveys for analysis. Respondents' demographic characteristics and garden characteristics are presented in Table 1. Most respondents (83.8%) were female; 62.6% were the primary gardener. Most were from either New York State (58.6%; of those, 62.1% were from New York City) or Washington, DC (20.2%). Most respondents were teachers, and many were administrators or garden educators, but some were parents, volunteers, other school personnel or FoodCorps members. Respondents reported on gardens that were in operation from less than 1 year to more than 10 years; 92.9% of the gardens were edible, and most were located in urban areas (70.1%). All data were self-reported.

A Successful School Garden

Respondents were asked to generate a description of a successful school garden. Content analysis yielded the following main themes:

1. creates community,
2. is an inviting space,
3. is resourced and supported,
4. is thriving, and
5. is used.

Three subthemes emerged with respect to the parent theme "is used": that the garden (1) would be incorporated within the school curricula, (2) is used to create a positive

student experience, and (3) is a venue to teach about environmental health and sustainability. Table 2 provides the themes, the frequency with which they were mentioned, and the number of sources (survey respondents) who referenced each theme. Appendix A (available as a supplement to the online version of this article at http://www.ajph.org) provides direct respondent quotes defining a successful school garden.

Challenges to Implementing and Sustaining a School Garden

Respondents ranked 5 categories of challenges (funding, time, staffing, space, and curriculum) on a 5-point Likert scale (1 = least challenging to 5 = most challenging). Each category was ranked lowest by at least 1 respondent and each category was ranked highest by at least 1 respondent). Time (mean = 3.82, median = 4) and staffing (mean = 3.54, median = 4) were the most challenging aspects of sustained garden operation, followed by funding (mean = 3.26, median = 3). Curriculum (mean = 2.46, median = 2) and space (mean = 2.01, median = 2) were the least challenging categories.

Within each ranked category, respondents also ranked challenges that they experienced in implementing and sustaining their school gardens. Table 3 presents rankings for each category and the proportion of respondents who selected each challenge within each category. Appendix B (available as a supplement to the online version of this article at http://www.ajph.org) provides direct quotes about each challenge. Expectedly, weighted subgroup analysis demonstrated that respondents tending younger gardens (those in operation 1 year or less) reported proportionally more challenges with respect to curriculum, funding, teacher–faculty support, seasonal barriers, staff, and time compared with those tending gardens that had been operating for more than 1 year.

Time. "Time for all classes to use the garden" and "time to train staff and faculty about gardening" were the most frequently cited challenges (65.6% and 61.6% of respondents, respectively). "Time to host gardening clubs" (2.0%) and "no time challenges" (2.0%) were least frequently cited.

Staff. "An inadequate number of volunteers" and "teacher–faculty disinterest" were

TABLE 1—Characteristics of Study Participants and Gardens, Collected From a National Sample of School Gardeners: United States, June 2017	
Characteristics	No. (%)
Participants	
Female	83 (83.8)
Primary gardener	62 (62.6)
Role	
Teacher	34 (34.3)
Garden educator	14 (14.1)
Administrator	17 (17.2)
Parent or community volunteer	15 (15.2)
FoodCorps member	5 (5.1)
Other school personnel[a]	14 (14.1)
Gardens	
Location	
New York State[b]	58 (58.6)
New York City	36 (33.3)
Washington, DC	20 (20.2)
California	3 (3.0)
Iowa	3 (3.0)
Wisconsin	3 (3.0)
Colorado	2 (2.0)
Washington	2 (2.0)
Hawaii	1 (1.0)
Kansas	1 (1.0)
Minnesota	1 (1.0)
Mississippi	1 (1.0)
Maryland	1 (1.0)
Massachusetts	1 (1.0)
Connecticut	1 (1.0)
New Jersey	1 (1.0)
Type of location	
Urban	70 (70.1)
Suburban	15 (15.2)
Rural	14 (14.1)
Length of operation, y	
< 1	14 (14.1)
1 to < 3	37 (37.4)
3 to < 5	20 (20.2)
5 to < 10	16 (16.2)
≥ 10	12 (12.1)
Edible garden	92 (92.9)
Operating budget, $	
< 2000	67 (67.7)
2000 to < 5000	17 (17.2)
5000 to < 10 000	7 (7.1)
10 000 to < 50 000	8 (8.1)
≥ 50 000	0 (0.0)
	Continued

TABLE 1—*Continued*	
Characteristics	No. (%)
Primary gardener paid	35 (35.4)
Maintenance sources[c]	
Teacher	52 (52.5)
Administrator	7 (7.1)
Volunteer	21 (21.2)
FoodCorps member	18 (18.2)
Students	35 (35.4)
Designated committee	17 (17.2)
Other school personnel[a]	13 (13.1)
No maintenance	1 (1.0)

Note. A total of 99 school gardeners participated in the survey.

[a]Personnel also employed at the school, other than teachers, garden educators, and administrators (including personnel from school food, farm school, sustainability groups, librarians, custodians, special education assistants, other, not specified).

[b]Includes participants from New York City.

[c]Respondents selected all sources of garden maintenance that applied; percentages do not total to 100.

the most frequently listed challenges (64.6% and 59.5% of respondents, respectively); only 2.0% of respondents indicated that "no compensation" was a staffing challenge. Qualitative findings emphasized the need for greater buy-in at all levels (from administrative support to ancillary staff support).

Funding. A general lack of funding was the greatest concern among respondents (54.5%), followed by a general lack of awareness of funding sources (35.3%) and poor allocation of funding (18.1%).

The following themes were generated on the basis of how respondents would allocate additional funding:

1. Infrastructure (53/99; 53.5%): referred to any permanent structures or fixtures to the garden. Most respondents felt that added funding would be important to provide additional gardening infrastructure (e.g., fencing, more raised beds, sheds and storage, water and electricity sources, and greenhouses, hoop houses, and other indoor spaces).
2. Staff expansion and support (28/99; 28.3%): referred to hiring and training additional support staff to help with ongoing garden maintenance.
3. Program expansion (20/99; 20.2%): referred to increasing the number of programs and educational materials, use of the garden during the day, and curriculum.
4. Tools and materials (19/99; 19.2%): referred to exhaustible materials that need to be replenished (e.g., seeds or tools) and those required for educational purposes or instruction, (e.g., signs and message boards).

Curriculum. A number of themes emerged about the challenges related to generating a positive student learning experience in the garden. Most respondents felt that there were no issues at all; others felt that issues related to gaining teacher–faculty support and poor integration into the day-school curriculum were prominent problems. General curricular issues related to curriculum design, classroom management, and student engagement were also discussed. Appendix C (available as a supplement to the online version of this article at http://www.ajph.org) presents direct quotes about each challenge related to the curriculum.

In subgroup analyses for respondent role with teacher versus nonteacher, we applied sample weights. This demonstrated that a greater proportion of nonteachers (administrators, garden educators, FoodCorps personnel, other school personnel, and parents) reported 3 curricular challenges more than teachers: classroom management (2.0 times more), student engagement (3.8 times more), and curriculum design (1.6 times more).

Space. A lack of space for indoor gardening (36.3%) and to store gardening tools (36.3%) were the most frequent space concerns, whereas lack of a water source or space to present information about the garden were the least frequently noted challenges. Participants also discussed issues about maintenance and use of the garden during the summer, when school is not in session.

Figure 1 presents the specific physical changes that respondents wanted to see executed in their existing school garden; garden expansion (13%) and better access to a water source (11%) were the most commonly listed changes. Changes related to the aesthetics of the garden (1%) was the least frequent physical change listed.

TABLE 2—Determinants of a Successful School Garden, Collected From a National Sample of School Gardeners: United States, June 2017

Themes	No. of Sources	Frequency Across Sources
Creates community: brings people together and gets the school community involved.	21	23
Inviting space: aesthetically pleasing (well maintained and beautiful) and encourages people to come into the space.	8	8
Resourced and supported: funded, staffed, and supported by administration or leadership.	21	22
Thriving garden: productive (yielding) and healthy.	28	29
Used: space is used by teachers, students, and community members.	6	6
Integrated into school curriculum: integrated into the school curriculum, classes, and cohorts; widely used for educational purposes.	31	31
Positive student experience: generates student ownership and excitement.	40	46
Teaches sustainability: used to teach about and build interest in environmental health and sustainability practices.	7	9

Note. "Number of sources" refers to the number of participants that discussed the theme (n = 99). "Frequency" refers to the total number of instances in which the theme was referenced.

Challenges to School Community Involvement

In general, respondents reported low garden engagement within the school community, among teachers and faculty (12/99, 12.1%), and in the community at large (10/99, 10.1%). They felt that engaging the community outside of the school was difficult because family and community members were perceived as too busy to be involved (5/99, 5.1%). Additionally, respondents discussed communication barriers (9/99, 9.1%) related to uncertainty of how best to reach the community, lack of a forum to do so, and language barriers.

DISCUSSION

Although several studies have identified broad categories of challenges to implementing gardens in schools,[15–20] this study is the first to detail and quantify the challenges that gardeners experience. These findings are important for guiding further research on the development of specific resources needed to increase school gardens' success and, ultimately, their sustainability. Our results describe the challenges and barriers that school gardeners experience. It helps to fill a gap in the literature by exploring the transition from garden startup to long-term maintenance,[16] which can be further explored with a national representative sample. This study confirms the definition of a well-integrated school garden generated in previous literature, explores persisting barriers to implementing school gardens, and explains how additional resources might be used to achieve school garden success. Respondents in this study described a successful school garden as a space that creates community, is aesthetically pleasing, is resourced and supported by the school community, is thriving and healthy, and is used as an engaging, educational tool. The important aspects of a successful school garden identified by field experts in this study substantiate the definition of a "well-integrated" garden generated by earlier research.[15]

Time

Respondents ranked time as the greatest challenge to implementing a school garden, indicating that time remains the most significant barrier to success.[19] Time to plan lessons, train staff about gardening, and facilitate the use of the garden with classes were frequently mentioned barriers for teachers.

Teacher training has been previously cited as necessary to improve school garden success,[20] as making curricular connections and using the garden for education is easier for teachers with horticultural knowledge. Additionally, having garden lessons that are mapped to educational standards may help reduce the burden on teachers (curricular issues are discussed in the Curriculum subsection).

Presumably, both a tailored garden curriculum and professional development would require funding; however, only 20% of respondents favored spending additional funding on program expansion (including curriculum development), and none mentioned spending it on professional development. This implies that teachers may be unclear as to how to overcome the time barrier, and thus time may remain a significant challenge.

Staff

Triangulated quantitative findings demonstrated that the greatest staffing challenges were an inadequate number of volunteers and a lack of teacher interest. Qualitative findings also emphasized the desire for greater support from administrative and ancillary staff (e.g., custodians) and with teachers. In addition, research has demonstrated that gardening programs that generated wider school- and community-based support more consistently demonstrated greater increases in fruit and vegetable intake among students.[14] The results of this study indicate that school gardeners perceive a lack of interest among other school staff, which may necessitate specific strategies to gain more teacher support; for instance, if teachers are not interested, activities that engage or excite them (rather than training to increase horticultural knowledge) may be warranted.

When volunteers support the garden, administrators may be more interested in a school garden,[16] which may be of particular benefit because in this study, "uncooperative administrators" were cited as a barrier to garden success. Previous research has not identified administrative support as a significant barrier, and depending highly on volunteers has been found to threaten the sustainability of the garden.[11] Therefore, it may be important to strike a balance between volunteer involvement and ensuring adequate support for the garden among the staff, through effective garden committees.[11,15]

TABLE 3—Ranked Categories and Challenges by Category, Collected From a National Sample of School Gardeners: United States, June 2017

| Category and Challenge	Rank, Median (Mean)	No. (%)
Funding[a]	3 (3.26)	
Lack of funding		54 (54.5)
Unaware of funding		35 (35.3)
Poor allocation of funding		18 (18.1)
No funding challenges		16 (16.1)
Grant seeking		13 (13.1)
Distribution of funds		2 (2.0)
Time to seek funding		2 (2.0)
Staffing[a]	4 (3.54)	
Inadequate number of volunteers		64 (64.6)
Teacher–faculty lack of interest		59 (59.5)
Lack of knowledge of how to incorporate gardening into school curriculum		46 (46.4)
Lack of knowledge about garden maintenance		36 (36.3)
Uncooperative administration		16 (16.1)
No staff challenges		6 (6.0)
No compensation		2 (2.0)
Time[a]	4 (3.82)	
Time for all classes to use the garden		65 (65.6)
Time to train staff and faculty about gardening		61 (61.6)
Time constraints for garden maintenance		48 (48.4)
Time for lesson planning		44 (44.4)
Time to host gardening clubs		2 (2.0)
No time challenges		2 (2.0)
Curriculum[b]	2 (2.46)	
Low teacher–faculty support		13 (13.1)
Garden not integrated into the school day		11 (11.1)
Classroom management		10 (10.1)
Student engagement		9 (9.1)
Curriculum design		6 (6.0)
Competing out of school time programs		4 (4.0)
Weather and seasons		4 (4.0)
No curriculum issues		36 (36.7)
Space[a]	2 (2.01)	
Lack of space to store gardening tools		36 (36.3)
Lack of space for indoor garden		36 (36.3)
Lack of space for garden outside		27 (27.2)
No space challenges		19 (19.1)
Security		3 (3.0)
Space for curriculum materials		2 (2.0)
Water source		1 (1.0)
Lack of space to present information about the garden		1 (1.0)

[a]The data presented in this category are a synthesis from several questions. One question asked participants to rank each category. A second question asked participants to identify their greatest challenge within each category and presented several multiple choice options as well as a write-in option.

[b]Unlike other categories, curriculum challenges were explored exclusively through an open-ended question.

Community partnerships with individuals or organizations may provide a variety of supports for school gardening.[22] Connecting the school garden with other garden initiatives in communities (e.g., community gardens) has been proposed as a way to increase sustainability,[11] and the results of this study indicate that the lack of a communication channel is the greatest challenge to reaching the community at large. Creating more connections to community gardens may be easier in urban areas (where most respondents in this study were from), as in cities between 2008 and 2013, community (food) gardening increased 29% and community garden participation increased 300%.[23] One way to develop community connections around growing food may be to build online networks or tap into existing communication channels through organizations that coordinate food-related activities (e.g., food pantries, farmers markets, food hubs).

Funding

School gardeners indicated that they need more money and do not know where to find additional funding opportunities. Even schools that have access to funding through their school district or organizations may still require additional funding.[9] Developing partnerships may be a way to overcome challenges to obtaining funding,[22] and applying for nongardening grants (e.g., math grants that use gardening as a teaching tool) may be a creative approach.[17] However, because the results of this study indicate that time is such a significant barrier, more time spent writing grants to acquire funding is likely difficult. One way to overcome this barrier may be to strengthen garden committees and delegate responsibilities to allocate resources appropriately.[15] Resource allocation was a barrier mentioned frequently by study participants. Another way to overcome funding challenges may be to seek corporate partnerships; some corporations offer service days to engage employees in making positive contributions to communities (e.g., helping purchase materials and build garden infrastructure), or they participate in philanthropic programs aimed to give back to communities financially. In fact, up to 61% of companies offer paid release time for employees to volunteer; when these companies
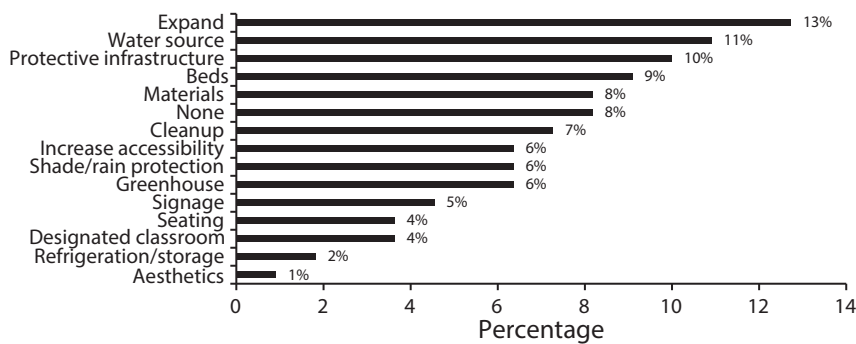
Note. Expand—increasing the size of the garden; water source—having access to a water source; protective infrastructure—fences, hedges, sound barriers, or enclosures; beds—raised beds or garden beds; materials—for example, soil, flowers, grass, seeds; none—nothing to change; cleanup—cleanup or removal of weeds, trim trees or hedge; increase accessibility—improved accessibility for classrooms, community members, disabled persons; shade/rain protection—enclosures related to coverage for protection again the elements; greenhouse—hoop house, greenhouse, indoor growing space, nursery; signage—signage for instruction or educational purposes; infrastructure—seating; designated classroom—space for classes within the garden; utility—refrigeration or storage; aesthetics—changes to improve the aesthetic quality of the space.

FIGURE 1—Desired Physical Changes to School Gardens, Cited by National Sample of School Gardeners: United States, June 2017

donate money, the largest recipients are in the educational sector.[24]

A large proportion of study respondents indicated they would spend additional funds on infrastructure and staff support. This may be because a greater proportion of the sample was associated with young gardens (less than 3 years old). It is likely that infrastructure and staff support are important in early years and less so once the garden is more established. However, this is a particularly interesting finding because increasing garden size also increases the amount of time necessary to care for it, which may indicate that the primary gardener has hopes for the physical garden itself, regardless of other barriers (like time and staff support).

Curriculum

Barriers to garden curricular integration include teachers' sparse knowledge of horticulture.[20] Professional development training improves teachers' horticultural knowledge and helps connect them to the science, math, and language arts curricula. Because most US states require teachers to earn professional credits to maintain certification, schools may facilitate teacher collaboration to explicitly incorporate the garden within the curriculum. Teachers may consider reaching out to local botanical gardens; the Chicago Botanic Garden, for instance, offers for-credit

workshops for teachers to learn more about integrating gardening into the classroom.

This study also revealed that a larger proportion of nonteachers experienced challenges related to delivery of education than teachers; in particular, nonteachers report more classroom management issues and challenges with task distribution and student engagement. Although this finding is not surprising given that nonteachers likely do not have as much training about teaching methods and classroom management techniques as teachers, it is interesting because many teachers have reported fewer classroom management issues when using the garden as an educational tool.[25]

Space

This study demonstrated that school gardeners' main space concern is summer maintenance. This was a particular issue in the context of student use of the garden, as most of the harvest is available in the summer or early fall, when students are not in school or have just returned to school. Creative solutions to address maintenance of the garden during school breaks (including summer) have included planting annual vegetables—which require considerably less attention—or developing partnerships with youth or senior organizations to care for the garden during the summer.[26,27] Respondents revealed

additional strategies; they identified indoor gardening spaces as a way to expand gardens and to increase students' opportunities for garden activities. Summer maintenance may be another benefit of partnering with other local food organizations; community gardeners or food pantries may be interested in contributing time during the summer to maintain the garden in exchange for harvested produce.

Limitations

There was limited existing literature to inform the development of the survey. There may be important barriers to school gardening that were not identified previously. In an effort to address this limitation, the questions used in this survey included broad and specific open-ended questions to identify new barriers, such as "What is your biggest challenge to achieving a successful school garden?" and, more specifically, "Describe some of the challenges you face related to planning, establishing, and maintaining the physical garden." We included other specific questions about barriers in each area important to success.

The use of a convenience sample and snowball sampling to capture school gardeners may be considered a limitation; however, it is widely used in studies such as this, where access to a particular group (e.g., a national sample of school gardeners) is difficult to obtain through other methods. Nonetheless, the use of a nonrepresentative sample limits the generalizability of these findings.

Public Health Implications

The number of school gardens in the United States has nearly tripled in the last 10 years, but more resources and support are needed to facilitate school garden integration.[26] To alleviate the time demands put on teachers, some schools employ garden educators to deliver gardening education. As this study finds, there may be differences in the experiences of these 2 groups, demonstrating the need for targeted professional development that increases excitement and motivation among teachers and provides execution and delivery skills to nonteachers. Further research is needed to systematically study the providers of garden education in

terms of education levels, teacher training, and gardening experience, and how professional development that bridges these deficits relates to student outcomes.

To best promote public and community health, additional research is needed to identify strategies to engage others in the school and the community at large. One promising area for urban schools may be partnerships with community gardens, local botanical gardens, or university extension programs. This may be of particular benefit in low-income and minority urban areas, where public health programs (including gardens) may be promoted as ways to improve food access and dietary intake, increase physical activity, and promote social cohesion. **AJPH**

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