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Ways in which the involvement in community and school garden projects among school aged children foster participation in meaningful student centered occupations

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Ways in which the involvement in community and school garden projects among school aged children foster participation in meaningful student centered occupations

Disciplines
Occupational Therapy

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Ways in which the involvement in community and school garden projects among school aged children foster participation in meaningful student centered occupations.

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Date: November 2010
Review date: November 2012

CLINICAL SCENARIO:
I have always enjoyed exploring the intricacies of nature and was fortunate enough to grow up in an environment where I had immediate access. The outdoors created a setting for many occupations; it was a place to play, a place to learn, a place to explore, a place in which I had my first job weeding my neighbour’s garden and my second job building hiking trails. Recently I had the opportunity to mentor a student at an alternative high school while he was a caretaker for his school’s garden. The garden was an innovative practice project implemented by third year Masters of Occupational Therapy Students from Pacific University. Through informal interviews, I learned that the tasks he performed at the garden gave him a sense of meaning and a skill set he could use to find future employment. Before his work at the school’s garden, he had a very sedentary job and rarely took the initiative to be physically active. The garden provided him with responsibility, pride and physical exercise. It also introduced him to new vegetables. Through this experience I learned that occupational therapy combined with school and community gardening programs could provide the opportunity for participation in meaningful activities for youth. The purpose of this critical appraisal was to further explore what opportunities garden programs provided in relation to involvement of meaningful occupations for youth.

FOCUSED CLINICAL QUESTION:
Among school aged children, does involvement in school and community gardens foster participation in meaningful student centered occupations?

CLINICAL BOTTOM LINE:
This critical appraisal reveals that there are many ways in which school gardens may promote healthy development, encourage healthy occupations and enhance school environments. However, little research has been done to measure outcomes, specifically related to occupational therapy. More research needs to be done to explore the implications that occupational therapy combined with garden activities have on the occupational outcomes for youth.
Limitation of this CAT: This critically appraised paper has not been peer-reviewed. The writer is not an expert in the subject of the CAT and did not perform an exhaustive review of the evidence. The writer is a novice practitioner with little clinical experience.

SEARCH STRATEGY:
Terms used to guide Search Strategy:

- **Patient/Client Group:** K-12 School Children
- **Intervention (or Assessment):** Participating in a school or community garden activity
- **Comparison:** No comparison
- **Outcome(s):** Meaningful “student centered” learning, health, social and work preparation occupations.

<table>
<thead>
<tr>
<th>Date of search</th>
<th>Databases and sites searched</th>
<th>Search Terms</th>
<th>Limits used</th>
<th>Number of articles found</th>
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</table>

INCLUSION and EXCLUSION CRITERIA

- **Inclusion:**
  - Children and Adolescents
  - School Gardens
  - Community Gardens

- **Exclusion:**
  - Adults
  - Infants
  - Articles published before 2000
  - Parks and green spaces
RESULTS OF SEARCH

Five relevant studies were located and categorized as shown in Table 1 (based on Levels of Evidence, Centre for Evidence Based Medicine, 1998)

Table 1: Summary of Study Designs of Articles retrieved

<table>
<thead>
<tr>
<th>Study Design/Methodology of Articles Retrieved</th>
<th>Level</th>
<th>Number Located</th>
<th>Author (Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic reviews, meta analysis, randomized controlled trials</td>
<td>I</td>
<td>1</td>
<td>Ozer, E.J. (2007).</td>
</tr>
<tr>
<td>Two groups, non randomized (e.g. cohort, quasi-experimental)</td>
<td>II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One group non randomized (e.g. pre test and post test)</td>
<td>III</td>
<td>3</td>
<td>Dyment, J.E., Bell, A.C. (2008).</td>
</tr>
<tr>
<td>Descriptive Studies that include analysis</td>
<td>IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case reports and expert opinion, which include narrative literature</td>
<td>V</td>
<td>1</td>
<td>Rahm, J. (2002).</td>
</tr>
<tr>
<td>Qualitative</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SUMMARY of Search, ‘Best’ Evidence appraised, and Key Findings:
The following study/paper was identified as the ‘best’ evidence and selected for critical appraisal.


Reasons for selecting this study were:

This study was chosen based upon the study design (systematic review) and because it provided the most comprehensive view of the range and scope of the current characteristics and future needs for school garden programs. This study was directly related to the focused clinical question for occupational therapists as a garden is an environment that fosters occupational opportunities for youth.
Other studies reviewed include:


- Greening: replacing asphalt with trees, shrubs, gardens, water features, artwork and gathering areas.
- This study explored the relationship between school ground greening and social inclusion.
- Questionnaires and interviews were conducted to school staff and parents.
- The study revealed that green school grounds are more inclusive of people who may feel isolated on the basis of gender, class, race and ability, suggesting that these spaces promote social inclusion.


- Ninety-three 4th-6th grade children attending a YMCA summer camp were involved in a 12 week pilot intervention designed to promote fruit and vegetable intake.
- Weekly educational activities included fruit and vegetable taste tests, garden-based activities, preparation of fruit and vegetable snacks, and family newsletters sent home to parents.
- The intervention was measured using a pre and post survey to determine the short-term impacts of the program.
- Impact data suggest that the intervention led to an increase in the number of fruits and vegetables ever eaten (P<0.001), vegetable preferences (P<0.001), and fruit and vegetable asking behaviour at home (P<0.002).


- Explored the effects of community gardens on youth dietary behaviors, values and beliefs, and cooking and gardening behaviors.
- Focus groups were conducted with inner-city youth involved in a youth garden program and with those uninvolved.
- Findings indicated that youth garden participants were more willing to eat nutritious food and try ethnic and unfamiliar food than those not in the program.
- Garden participants had a stronger appreciation for other individuals and cultures and were more likely to cook and garden on their own than youth not involved in the garden program. Garden programs positively impact youth garden habits, food choice, social skills, nutrition knowledge, and cooking skills.

- Examines the ways in which an inner-city youth gardening program gave support to the emergence of learning opportunities that were created from youth-initiated actions and talk.
- Youth participating in a City Farmers program sponsored through 4-H that targets inner-city middle school children who are at risk of dropping out of school and have few opportunities to engage in other extracurricular programs.
- Twenty-three youth participated in the program, aged 11 to 14 years and one group of 6 was chosen to gain a more focused perspective of what the experience was like for the students.
- Transcribed video recordings documented youth-initiated questions and comments and activities that youth participated in the garden.
- Types of learning opportunities and questions asked by youth were categorized and data was collected from pre and post interviews.
- This study showed that a garden environment encouraged active inquiry amongst students. The garden was a good setting to enhance the student’s education, social and work skills.

**BEST EVIDENCE**

The following study/paper was identified as the ‘best’ evidence and selected for critical appraisal.


Reasons for selecting this study were:

- This study was chosen based upon the study design (systematic review) and because it provided the most comprehensive view of the breadth and scope of the current characteristics and future needs for school garden programs.
- This study was directly related to the focused clinical question for occupational therapists as a garden is an environment that fosters occupational opportunities that are youth centered.
- This systematic review offers a conceptual framework that focuses on the child and his/her immediate contexts or micro systems that help to shape development. This suggests that a change in school may set in motion processes of change in the family and community environments and that a change in one domain of functioning may influence other domains of functioning.
SUMMARY OF BEST EVIDENCE

Table 2: Description and appraisal of The effects of school gardens on students and schools: Conceptualization and considerations for maximizing healthy development by Ozer, E.J. (2007).

| Aim/Objective of the Study/Systematic Review | The purpose of this systematic review was to review current literature on the effects of school garden programs, provide a framework for future implementation, and provide suggestions for further research. |
| Study Design | Systematic review |
| Setting | The literature reviewed was within the United States and interviews and observations were conducted in two school districts in Northern California. |
| Search Strategy | The author searched the Psychinfo, PubMed and ERIC electronic databases using the keywords “school” and “garden” as well as “community” and “garden” which was then searched further for community gardens at school sites. The search was conducted in July 2005. The author then examined the reference sections of applicable articles for further studies. The internet was used to search school garden websites that may have had articles; Google was searched using the keywords “school garden” or “instructional garden”. Fewer than ten journal articles that were peer-reviewed were found from these searches. However, some of the articles referred to results of the same study and out of those ten, five distinct research studies were identified. |
| Selection Criteria | Articles that did not assess any health, mental health or academic effect were excluded from the review of literature. Articles were peer-reviewed journal articles. |
| Methods and Participants | The study reviewed 5 articles in relationship to the health and developmental outcomes. These studies include: |
| • A quasi-experimental study among 200 fourth grade students which found that children’s’ knowledge and preference of vegetable in school where a nutrition education curriculum enhanced by a garden was used. |
| • A pilot study of 97 first grade students from 2 different schools which used a pre/post test design and found that students were more likely to taste vegetables if their school had vegetable garden vs. the control group. |
| • A pre/post design study of 111 third and fifth grade students from 5 schools which implied that a garden based nutrition program was associated with more positive attitudes about eating fruits and vegetables but not necessarily associated with consumption of fruits and vegetables. |
| • A pre/post evaluation of 338 youth found an increase in vegetable consumption and physical activity after participating in a school garden program. |
- A quasi-experimental study of 598 children enrolled in 2-8 grades that examined the impact of a school garden program on the attitudes toward school and interpersonal relationships found that there were positive effects for girls but not for boys.

**Original Authors’ Conclusions:** Ozer, E.J. (2007) concluded “there are multiple pathways by which school garden programs may potentially strengthen healthy development of students while strengthening qualities of the school and the relationship of the school to the family and broader community. Although there has been very little research thus far assessing the effects of school garden programs, there is theoretical support for support for the potential of the program activities to directly or indirectly achieve intended outcomes.” (p. 858-859)

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**Critical Appraisal:**
This review aimed to summarize current literature, provide a conceptual framework to guide inquiry and suggest further research needed to advance practice. After reviewing the current literature, the author proposed a framework of practice that outlined the implications for youth, their families, schools and communities. The review seems promising but inconclusive. There is a lot of anecdotal evidence and the author suggests that more research needs to be done.

**Summary/Conclusion:**
This article focuses on how school gardens provide a setting for healthy youth development. Occupational therapy and school gardens can be paired to foster healthy behaviour amongst school children, to address health and social disparities, address a variety of learning styles, promote positive peer relationships, promote employment preparation and aide in the discovery of many other meaningful student centered occupations. A garden provides a dynamic setting that fosters occupation, inquiry, action and curiosity

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**IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH**
Given the limited research involving occupational therapy and school gardens, it is difficult to provide evidence based facts on the implications for practice. However, the limited research that has been done suggest school gardens have a positive influence on students, their families, and community.

Results from various studies shows that gardens can be a valuable tool for increasing physical activity and making healthier nutrition choices that may reduce the incidence of childhood disease and obesity as well as positively influence the child’s family. It has been indicated that children’s level of attention and academic performance are affected by their nutritional intake. School gardens have shown to improve social inclusion and could be used as a tool to work with children with behaviour problems or autism. Students who may not academically excel in the classroom may demonstrate skills and interests that would not otherwise be used. Gardens require participation, planning, work and responsibility and can provide work-readiness skills for students preparing for employment.
Research suggested that school programs are most sustainable when parents become invested in the program. Unlike other classroom projects that may require fluency in English, parents who may not speak English can be involved through modelling and teaching by example. The involvement of parents may reinforce occupations discovered in a school gardening to be nurtured within the home environment.

Involvement in a school or community gardening program introduces students to potential future occupations. It teaches students about how food production works, and how consumption patterns impact the natural environment. Through observation, discussion and critical thinking, students may formulate an idea of what role they play in the process of obtaining healthy food and maintaining a healthy environment.

Occupational therapy and school gardens can be paired to foster healthy behaviour amongst school children, to address health and social disparities, address a variety of learning styles, promote positive peer relationships, promote employment preparation and aid in the discovery of many other meaningful student centered occupations. A garden provides a dynamic setting that fosters inquiry, action, curiosity and exploration of occupational possibilities.
REFERENCES

DOI 10.1080/13603110600855671

DOI 10.1016/j.jada.2009.04.009

DOI 10.1007/s10460-006-9051-z

DOI 10.1177/1090198106289002

DOI 10.1002/tea.10015