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**RESEARCH NOTE**

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## RESEARCH GRANT REPORT IN 2008

## The Effects of Artworks and Gardening on Health

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### Abstract

The purpose of this study was to document students' perceptions of the effects of participating in art and gardening on their personal health and wellbeing while attending school.

**Methods:** From September 2008 through February 2009, 18 secondary students attending a small public charter school in Hawaii participated in gardening and/or art projects over a period of 18-20 weeks. Qualitative research methods utilized were writing prompts, a Likert Scale Survey, and semi-structured interviews.

**Results:** In the first survey N=15, It was found that 73.3% of the students participated in art and gardening projects at least two times per week, while 13.3% did not. From the 53.9% participating in art projects, 80% reported feeling relaxed and at ease while doing art. 85.7% reported being able to express their emotions and 86.7% said they felt good about themselves. 80% said they felt inspired when looking at art. Of the 93.4% participating in gardening projects, 86.7% reported enjoying growing plants and food, while 80% felt good about themselves while gardening and 73.3% reported feeling relaxed and at ease. In the second survey N=10, 90% of the students reported they were participating in art and gardening projects at least two times per week, while 10% said they were not. Of the 80% doing art projects, 100% said they felt relaxed and at ease and were able to express their emotions while doing art. 90% said that they felt good about themselves and were inspired when looking at art. Of the 80% working on a gardening project, 90% reported enjoying growing plants and food. 80% said they felt good about themselves and feeling relaxed and at ease. From the written responses to writing prompts (N=15), the majority of students reported enjoying the various aspects of gardening for a variety of reasons. All the students said they'd learned that plants and vegetables were good for them and how to plant food, and reported that one of the most satisfying things about being at the farm and gardening was that they were outside of the classroom and in the fresh air. From written responses N=17, Four (4) students recognized that by working outdoors they were getting exercise. Seven (7) students said that gardening was good for their health because they were learning different uses of plants and their nutritional properties such as the vitamin or mineral content. From written responses N=12, Three (3) students expressed feeling calm or peaceful while four (4) students said they felt happy or good. From interviews N=4, All students stated that they enjoyed working in the garden or doing art at the farm.

**Conclusions:** The majority of students experienced and expressed that there were positive effects on their health and wellbeing as a result of participating in art and/or gardening activities, and developed skills that could serve them at a later stage in their lives. In the second survey there was an increase in the number of students giving positive answers to the survey questions. This may be because students had spent a significant amount of time in both art and gardening activities.

### Keywords:

art activities, gardening activities, health, wellbeing, farm, feelings, effects.

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## Background and Introduction

Waters of Life Public Charter School (WOLPCS) is a school located in rural East Hawai'i on the island of Hawai'i, with approximately 150 students in grades K-10 for School year 2008-09. The primary vision of WOLPCS is to provide a culturally appropriate, alternative educational experience for students with an emphasis on agricultural and environmental sciences, technology, and community service. WOLPCS has provided a comprehensive Agricultural program for several years on the school's farm property. Approximately 40% of the students attending WOLPCS are Native Hawaiian or Part Hawaiian, approximately 90% of the students receive free and reduced lunch and 15% are designated as "Special Needs".

### Rationale

While agriculture has been a significant part of the school's curriculum over the past several years, art activities have been limited due to lack of funds and materials. The intention of the administration and teachers was for students to gain life-long practical skills and education from hands-on experiences. The gardening activities at the farm were to support students in gaining organic gardening skills and knowledge about healthy foods and eating habits and sustainability. The art lessons not only provided students with opportunities to develop creative skills and techniques in drawing, painting and design, but also supported students in appreciating aspects of the art they were creating. Having the opportunity to participate in the MOA Health Science Foundation's research grant would not only provide an opportunity to investigate and document students' perceptions regarding the effects of participating in art and gardening activities on their personal health and well-being while attending school, but would also support the opportunity to provide a quality art and gardening program to students during the 2008-09 school year.

This study has been reviewed and accepted by the institutional review board of the MOA Health Science Foundation.

## Review of Literature

### wellbeing

Concepts of Wellbeing vary within different traditions, but many of them view wellbeing as consisting of a number of inter-related components. In Buddhism wellbeing is expressed as being attained through engagement with compassion and creativity, while in Islamic traditions it is attained by living within God's will and following the teachings of the Koran (Wiseman & Brasher, 2008, p. 356<sup>1</sup>). Whatever the tradition, concepts of wellbeing are generally informed by individual and group perceptions of self and the environment in which they live (Camfield, Crivello and Woodhead, 2009, p. 8<sup>2</sup>).

In the World Health Organization (WHO) Millennium Ecosystem Assessment Report (2005),<sup>3</sup> emphasis is placed on the link between the ecosystem and human wellbeing and defines human health "as a state of complete physical, mental and social well-being" (WHO Millennium Assessment Report p.12). Webster's Seventh New Collegiate Dictionary defines wellbeing as "the state of being happy, healthy or prosperous" (p.1012).

According to Kingsley, J., Townsend, M., & Henderson-Wilson, C. (2009),<sup>4</sup> an individual's health and wellbeing is related to having contact with nature and their innate connection to the natural world (p. 208).

### healthy eating habits

According to McAleese, J.D., & Rankin, L.L., (2007),<sup>5</sup> research has indicated that eating behaviors and patterns are established early on in life specifically around eating fruits and vegetables, and that developing healthy eating habits in adolescents especially can help prevent and reduce overweight and obesity as well as reduce risk factors for diet-related diseases in the adult years. McAleese & Rankin (2007) also state that experts have found when interventions and effective nutrition are introduced in childhood healthful eating behaviors are established thus reducing the risk of developing chronic diseases later in life, and that School-based programs can aid in developing behavior change.

"Schoolyard gardens are emerging as health education tools in academic settings" (McAleese & Rankin, 2007,

p. 662). In their study of adolescent students, McAleese & Rankin, 2007 found that garden-based nutrition education had a significant effect on adolescents' consumption of fruits and vegetables and selected nutrient intake (p.663).

Research has also indicated that an increase in school gardening projects help promote opportunities for children to eat more fruits and vegetables and provide concrete learning experiences in the garden, as well as help develop an increase in consumption of fruit and vegetables (Heim, S., Stang, J., & Ireland, M. 2009<sup>6</sup>).

## Research Design Methods

This research was conducted using the following broad Qualitative Methods: A questionnaire (Likert Scale Survey), Student written responses to writing prompts related to gardening and art, and semi-structured interviews. Questionnaires are considered to be a useful way of gathering data from groups of students in the classroom, and "can provide useful information on the respondent's attitude, values and habits" (Burton & Bartlett, 2005, p.100<sup>7</sup>). Semi-structured interviews are a more flexible version of the structured interview and allow probing and expansion of the participant's responses. They are a common procedure used in educational research (Opie, C. 2005<sup>8</sup>). Qualitative research often utilizes interviews, observations and review of documents, often occurring in natural settings (Toma, 2006<sup>9</sup>).

## Data Collection

Students were given a survey on two occasions during the research period using a Likert Scale consisting of ten questions. Students could respond to each question with Strongly Agree; Agree; Don't Know; Disagree; Strongly Disagree.

Students were also given writing prompts relative to their experiences participating in gardening and/or art activities and were asked to respond in writing to the prompt. These were also known as their "journal entries". These written journal prompts were given at the beginning

or end of many of the sessions (Appendix 1). 25% of the participating students participated in semi-structured interviews to gain more insight, detail and personal reflection on their perceived effects of participating in the gardening or art activities on their health (Appendix 4).

## Participants

For the purpose of this research, 18 secondary students, grades 7 to 10 participated in gardening and art projects at the school's farm over a period of 18-20 weeks from September 2008 through February 2009. Participants self selected to participate in the gardening and art activities as part of their elective class requirements. Students were then asked if they would like to participate in the study. Eighteen students chose to participate in this study with permission from their parents or guardians. This Research project documents the student participants' perceptions of the effects of artworks and gardening on their health and wellbeing.

## Gardening Activities

18 students participated in the gardening activities at the school farm location for approximately two hours per session. Prior to gardening, time was spent going over the objectives for the session. In some cases mini lessons occurred where students learned about specific aspects of gardening or specific nutritional properties of the plants that they were growing before going into the field or beginning green house activities.

Students participated in the following gardening activities:

- Preparing beds for propagation of plants and vegetables
- Feeding beds
- Weed and pest management
- Weeding
- Sowing seeds in small containers
- Transplanting vegetable/herb starts
- Splitting and transplanting taro

Students utilized a variety of methods for preparing the

beds for propagation. This included weed management by covering weeds for a period of time with plastic or another hard surface cover and then removing them. In some cases, students cleared beds of weeds by hand, or used hoes and rakes. Students fed the garden beds with organic Okara\* by-product, which was tilled into the soil prior to planting. In some areas, cover crops were planted to add nitrogen to the soil before other crops were transplanted. In most cases, beds were fed with Okara after vegetable starts were planted to maintain healthy growth of plants.

\*Okara is a white or yellowish pulp consisting of insoluble parts of the soybean which remain in the filter sack when pureed soybeans are filtered in the production of soy milk. (cited from Wikipedia)

### Pest management

Students utilized natural and healthy methods of pest management by spraying the aphids on pepper plants with chili pepper water and soap.

### Seed sowing

Students worked in small groups and picked out a variety of seeds, which they wanted to grow. They were asked to consider the kind of crop, growing period, and hours of sunlight, color and nutritional value.

Students chose: peppers, eggplant, corn, onions, red cabbage, green bush and pole beans, a variety of basil, nasturtiums, Seeds were planted in potting soil in small containers or larger flats. When plants reached a suitable height, students transplanted them into larger pots or into the ground. Students collected data on their crops, determining height, soil quality, amount of moisture and overall health.

### Animal Husbandry

As part of the farm gardening program, 8 students also participated in raising chickens, as chicken manure was added to some of the compost to help feed soil. Students kept data on their chickens from when they were a few days old to almost fully grown. Students collected data on

weight, height and overall health over a period of several months. Students also designed and built a chicken house for the chickens to transfer them once they became fully grown.

### Art

Students participated in a number of art activities that included:

- Drawing — Still Life and Landscape
- Watercolor
- Painting — still Life and Landscape
- Pastels
- Fabric printing
- Sculpting

Students were taught specific techniques in drawing, watercolor, Still life painting, printing and sculpting. After practicing students were asked to complete a project utilizing one or some of the techniques they had learned.

### Analysis of Data

Surveys were entered into an online survey program that identified the number and percentage of responses to specific questions. The percentage of each response was then recorded in chart form.

The written responses were analyzed for themes and patterns using the “Constant Comparison Method (Gay & Airasian, 2000<sup>10</sup>). The analysis was then recorded in narrative form although attention is made to indicate the number of students responding in particular ways. (For example: three students said that they enjoyed working in the outdoors instead of in the classroom). This researcher also looked for indicators of perceptions of health and wellbeing in their responses. The semi-structured Interview responses were recorded on tape and then transcribed and analyzed for themes and patterns pertaining to health and wellbeing.

## Results

### Surveys

Fifteen (15) students completed the first survey (Survey

1) administered near the beginning of the research period, while twelve (12) students completed the second survey (Survey 2) given at the end of the research period, however, of those twelve, only ten (10) surveys were valid as two of the participants had given the same response of Disagree to all questions because they did not want to complete the survey. Therefore, only 10 student surveys are considered in this data collection (Appendix 2 and 3). The results of these surveys should not strictly be considered a pre and post-test, but rather a general survey to see how students would respond to the questions and whether they felt there were any benefits to their health and well being by participating in the projects (Figure 1 and 2).

The surveys were entered into an online survey program (Survey Monkey.com) that recorded the responses. The program calculated the percentage rates based on the number of students responding to a particular question. The survey responses were then analyzed for general themes and recorded in bar charts.

## Survey 1

N=15

### *Art and gardening*

73.3% of the students said that they were participating in art and gardening projects at least two times per week. 13.3% said they were not.

### *Questions Concerning Art*

53.9% said they were participating in art projects. 80% of the students said that they felt relaxed and at ease while doing. 85.7% of the students said that they were able to express their emotions while doing art and 86.6% said they felt good about themselves when working on an art project. 80% said they felt inspired when looking at art.

### *Questions Concerning Gardening*

83.4% of the students said they were participating in gardening projects. 86.7% of the students said that they enjoyed growing plants and food. 80% said they felt good about themselves while gardening. 73.3% said that they felt

relaxed and at ease while gardening.

## Survey 2

N=10

### *Art and Gardening*

90% of the students said that they were participating in art and gardening projects at least two times per week. 10% said they were not.

### *Questions Concerning Art*

80% said they were working on an art project. 100% said that they felt relaxed and at ease while doing art. 100% said that they were able to express their emotions while doing art. 90% said that they felt good about themselves while working on an art project. 90% said that they were inspired while looking at art.

### *Questions Concerning Gardening*

80% said that they were working on a gardening project. 90% said that they enjoyed growing plants and food. 80% said they felt good about themselves while gardening. 80% said that they felt relaxed and at ease while gardening.

In the second survey there were increases in the percentage of students giving positive answers to the questions compared with the first survey, especially for questions concerning art.

### *For Questions Concerning Art:*

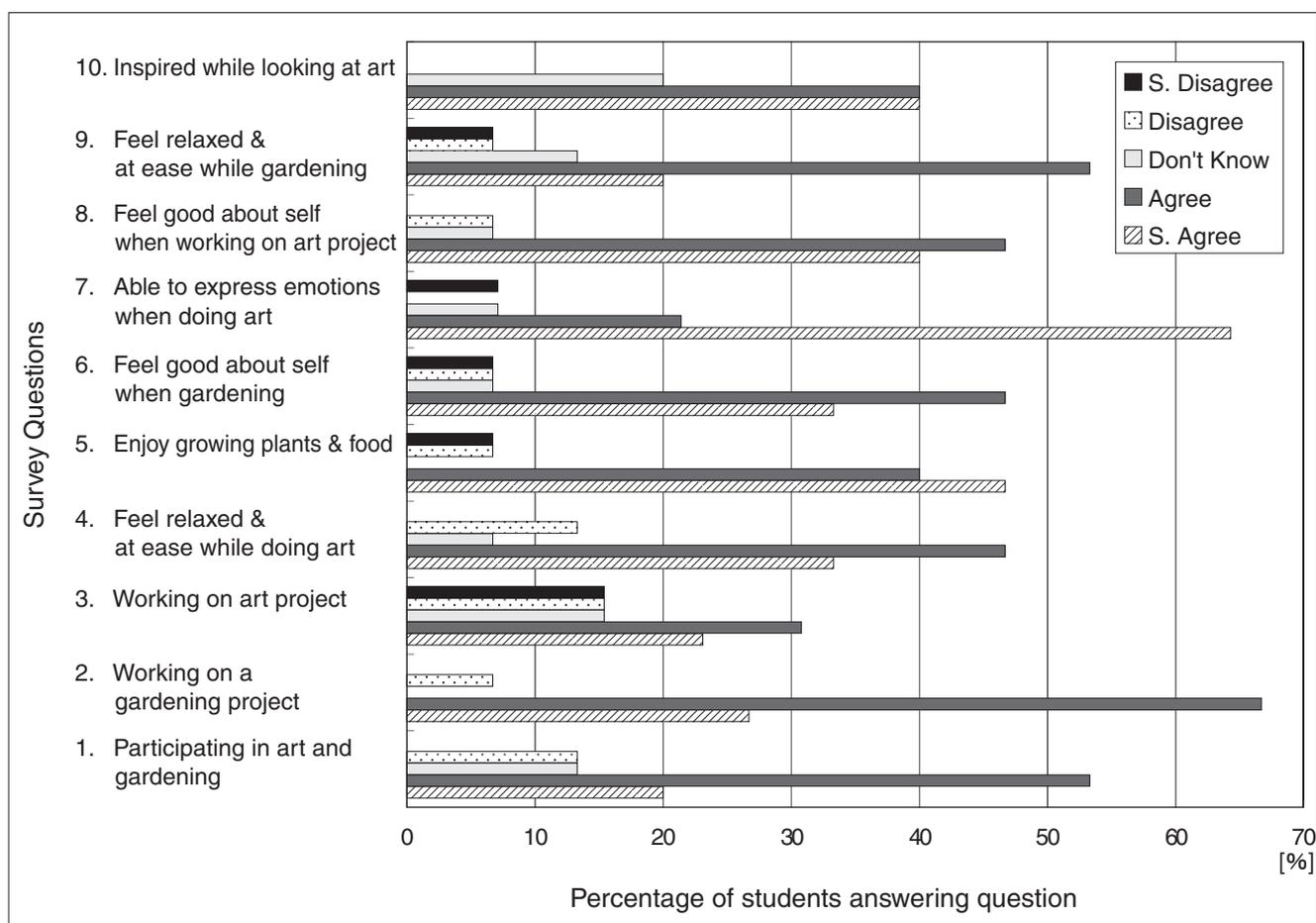
For the 1<sup>st</sup> question concerning art, there was a 26.1% increase. For the 2<sup>nd</sup> question a 20% increase, for the 3<sup>rd</sup> question a 14.3% increase, for the 4<sup>th</sup> question a 3.4% increase and the 5<sup>th</sup> question a 10% increase.

### *For Questions Concerning Gardening:*

For the 1<sup>st</sup> question concerning gardening, there was a 3.4% decrease. For the second question a 3.3% increase, for the 3<sup>rd</sup> question there was no change, and for the 4<sup>th</sup> question there was a 6.7% increase.

## Written Journal Responses

Students were given writing prompts to illicit more in-



**Figure 1. SURVEY 1.** All Students N=15

depth responses about their feelings and perceptions about the effects of participating in gardening and art activities.

Prompt #1: What do you most enjoy about gardening?

N=15

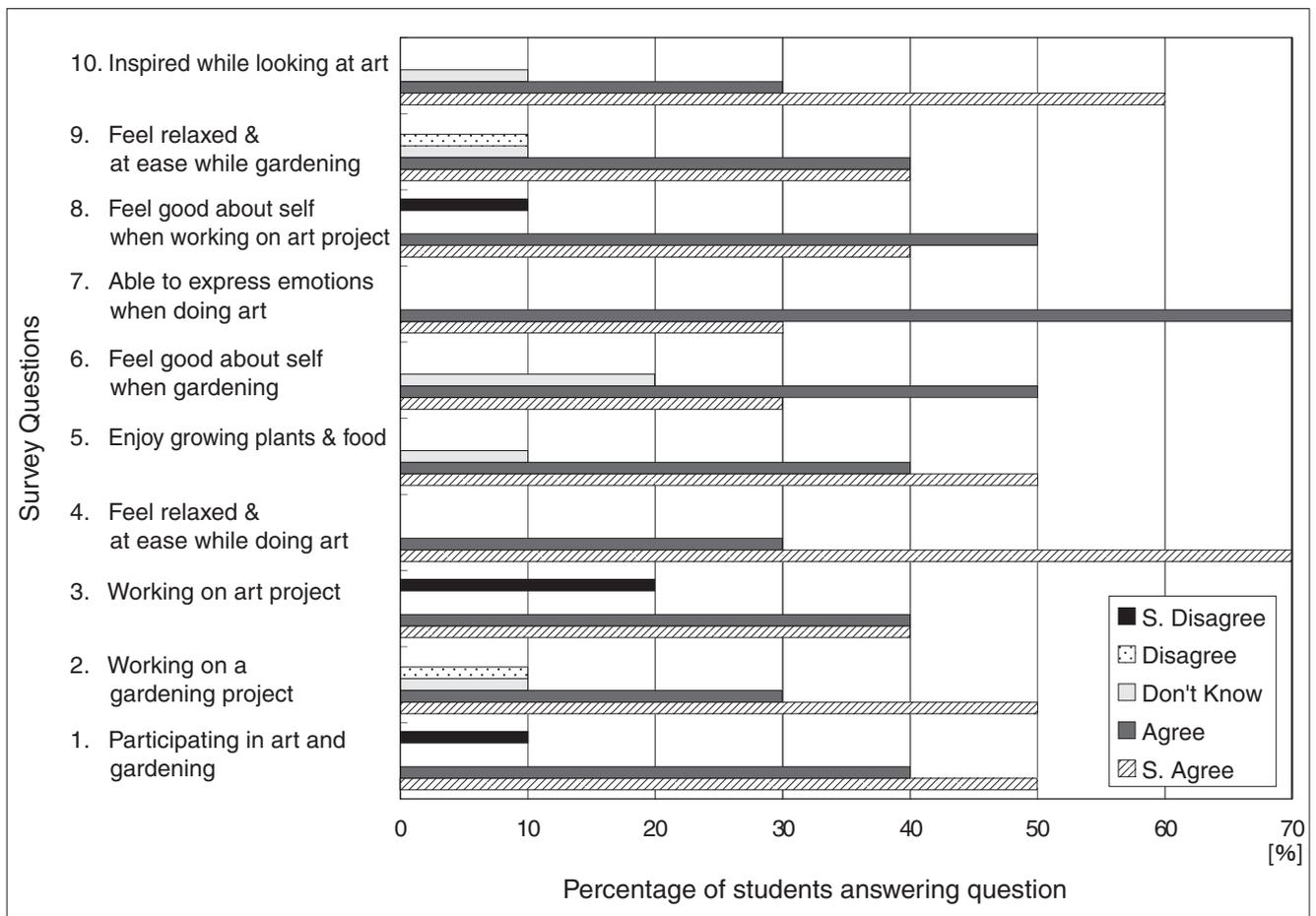
The majority of students expressed that they enjoyed gardening for a variety of reasons from the soil and bed preparation to the actual planting and transplanting of seeds and plants, to pulling weeds, and harvesting the crops. One (1) student reported that she enjoyed getting dirty. Four (4) students reported that they had fun and enjoyed being with their friends. Three (3) students reported that they enjoyed being outside and away from the school or classroom. Three (3) students reported that they enjoyed building the chicken coop and caring for the chickens. One (1) student said that she enjoyed taking whatever she learned while

gardening to then teach her family at home.

Prompt #2: What are the most satisfying elements about being at the farm and gardening?

N=15

Students' responses indicated that they had positive experiences while participating in the projects. All the students said that they had learned about how plants and vegetables are good for the body and how to plant food. Six (6) students reported that it was satisfying to help plants grow including mixing up the dirt, putting it into pots and planting new seeds. Two (2) students even mentioned that they even enjoyed pulling weeds as part of caring for the plants. Two (2) students also reported that the anticipation of waiting to see if the plants would grow and then harvesting them when they were ready was very satisfying. Three (3) students also enjoyed the social aspect of working



**Figure 2. SURVEY 2.** All Students N=10

on gardening projects with their friends and the social aspect of the group activities. Some additional elements of satisfaction gained while being at the farm was that all the students said that one of the most satisfying things about being at the farm and gardening was that they were outside of the classroom and in the fresh air. One (1) student stated that she could have a “clear head” and one stated that she felt calm when outdoors. Three (3) stated that they liked breathing fresh air and not feeling “locked up” in a classroom. Two (2) students also stated that they learned skills for later life such as how to plant healthy crops to eat and about the different varieties of vegetables and their healthy properties. Two (2) students felt that they were really doing something useful by growing food organically without using poison.

Prompt# 3: Describe the activities you have been doing at the farm and explain how they may benefit your health and wellbeing.

N=17

When asked about the activities they did at the farm and how those activities might benefit their health, students responded with aspects beyond just learning how to grow good food. Two (2) students said that they had learned how to work hard. One (1) student said she’d learned how to get along with others and respecting each other, the plants and the land. One (1) student was also cognizant of the fact that they were learning self-discipline and how to control themselves. Four (4) students recognized that by working outdoors they were getting exercise. Seven (7) students said that gardening was good for their health because they were learning different uses of plants and their healing

properties in the body, or nutritional properties such as the vitamin or mineral content. Two (2) students said that growing food organically benefitted them, and that they could support themselves in the future by growing their own food. Two (2) students also indicated that they had learned about plants they could use in their future lives and their children's lives, such as growing Taro.

## Art

Prompt # 1: How do you feel when you are doing art?

N=15

When asked to write about the art activities and how they felt when they were doing art students spoke about the effects on their emotions and self-esteem. Three (3) students said they felt happy while doing art and two (2) said they felt good. One student in particular wrote about being amazed at her own ability. Two (2) students reflected about being inspired by the beauty around them. Three (3) students stated that they felt relaxed while doing art. Two (2) students said that they felt like they were in their own world. Two (2) students expressed frustration at having to work on particular things during class rather than working on whatever they liked.

Prompt #2: Explain how art effects your emotions and wellbeing

N=12

In response to how art affects their wellbeing, Three (3) students expressed feeling calm or peaceful, with one (1) saying that he did not feel hyper when doing art. Four (4) students said they felt happy or good. Two (2) students stated that they felt relieved because doing art reduced stress and anger, one (1) saying she could vent on paper and therefore not hurt anybody. Two (2) students commented that they were able to draw how they felt. Two (2) students also stated that they felt good and that they could take their mind off their problems when engaging in art, with one student saying that they could make better judgments after doing art. One (1) student said that she could explore herself while doing art. Overall, students' written responses in their

writing journals showed that participating in art and or gardening had very positive affects on their health and well being.

## Semi-Structured Interviews

For this study 4 students were interviewed.

All students stated that they enjoyed working in the garden at the farm or doing art at the farm. One (1) student stated that there was more space at the farm than in the classroom. One (1) student stated that in particular for art, the environment provided a place to "really see what you were drawing". Two (2) students stated that they experienced a feeling of openness, while being outdoors. Some of the art projects that students explained they were involved in included: drawing, printing on cloth and painting on canvas. One (1) student explained that printing consisted of printing leaves and flowers after putting paint on leaves and printing, or cutting foam stencils of plants and printing with them. Three (3) students said that they liked the way the paint stood out on the cloth in particular. They also stated that doing art helped them to feel calm and allowed for concentration—not much talking.

Students stated that gardening activities included preparing the beds, tilling the soil, adding natural fertilizer to the soil, and transplanting. One (1) student said that she had participated in creating a botanical garden and explained that the colors of plants were chosen to make it look nice. These were green and red Ti leaves in the background, while other culinary herbs and medicinal herbs were planted in the foreground. When asked about the effects on their health, all the students stated that they got a lot of exercise from digging and carrying stuff and planting plants. One (1) student said that it was good to learn how plants were good for your health and what plants you could cook with.

## Discussion

Most of the students who participated in the gardening and art activities indicated that the effects were positive and beneficial to their health in broad terms. The results

indicated that students and feeling a sense of general wellbeing, including having a better outlook on things in their lives. This was very encouraging because many students endure challenging circumstances in their home life, and carry their issues with them to school. This can often result in disrupted classroom periods, a need for release of emotions and lack of concentration on class assignments. This study also showed that the students really appreciated getting out of the classroom, being outdoors and in the open air in a natural environment and being able to participate in activities with their friends. Some students indicated that being outdoors gave them space to really participate and appreciate the activities and their own personal participation. The gardening also helped students to work together cooperatively. Another positive indicator was that some students were able to grasp that the skills they were learning through the gardening activities had life-long impacts, in that they could utilize these skills as adults throughout their lives and possibly even use them in the future to benefit their families financially. I think that this research could be expanded in the future to include measurement of more specific indicators regarding health and wellbeing such as specific gains in understanding nutritional value of the food being planted and aspects of changes in behavior.

### Limitations of the study

The study had several challenges with the greatest one being getting students to write and give a significant amount of feedback to the writing prompts and even interview questions. There were also contradictions in the students' answers in the survey particularly with regard to whether they were participating in art and gardening projects. For example, some students answered that they were not participating in art and gardening, yet then answered that they were working on an art and gardening project further on in the Survey. The survey questions could have been clearer so as not to confuse the students in any way. The age and grade of the students participating may have been a factor. Another challenge was getting parental permission

for students to actually participate in the study. This caused there to be a limited number of participants for this study, although more students were participating in gardening and art activities. One final challenge was the weather. Due to several weeks of cold and wet weather, conditions for being outside were not at their best and students were limited to the greenhouse area to perform activities. This also limited the number of crop successes in the field.

### Conclusion

This study showed that overall, the students who participated in gardening and art activities experienced positive effects on their health and wellbeing. Students generally developed a positive attitude about gardening and a greater sense of respect for growing their own food. Students experienced positive emotions and attitudes from feelings of peacefulness to feelings of relief during and after participating in gardening and art. Students spoke of being able to express themselves particularly in the art activities. Students felt that they had more space in the farm outdoor environment and benefited from being in the open air and not being in a classroom. Students also benefited from learning skills such as cooperation and gain exercise from the gardening activities as well as the benefits of learning about the nutrients of the plants and vegetables they were growing. They also learned how to care of the environment by growing the food organically and without poisons. In the second survey there was an increase in the number of students giving positive answers to the survey questions. This may be because students had spent a significant amount of time in both art and gardening activities.

### Funding

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**Appendix 1. Student Written Journal Questions.**

1. Describe the artwork you have been creating in the farm environment.
2. What do you enjoy the most about doing art?
3. Describe how art makes you feel while you are doing the art.
4. Describe how you feel after doing art.
5. What do you enjoy most about gardening?
6. Describe how you feel when you are gardening.
7. What is the most satisfying element about being at the farm and gardening?
8. Explain how doing art and /or gardening effects your emotions or well-being.

**Appendix 2. Student Likert Scale Survey.**

Please circle the answer that best describes your feelings:

1. I have been participating in art and gardening projects at least two times per week  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
2. I am working on a gardening project at this time  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
3. I am working on an art project at this time  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
4. I feel relaxed and at ease while doing art  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
5. I enjoy growing plants and food  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
6. I feel good about myself when I am gardening  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
7. I am able to express my emotions when I do art  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
8. I feel good about myself when I am working on an art project  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
9. I feel relaxed and at ease while gardening  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree
10. I am inspired when I look at art  
a) Strongly Agree    b) Agree    c) Don't Know    d) Disagree    e) Strongly Disagree

### Appendix 3. Survey 1.

#### Response Summary

Total Started Survey: 15  
Total Completed Survey: 15 (100%)

Page: Default Section

1. I have been participating in art and gardening projects at least two times per week							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q1	20.0%(3)	<b>53.3%(8)</b>	13.3%(2)	13.3%(2)	0.0%(0)	2.20	15

6. I feel good about myself when I am gardening							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q6	33.3%(5)	<b>46.7%(7)</b>	6.7%(1)	6.7%(1)	6.7%(1)	2.07	15

2. I am working on a gardening project at this time							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q2	26.7%(4)	<b>66.7%(10)</b>	0.0%(0)	6.7%(1)	0.0%(0)	1.87	15

7. I am able to express my emotions when I do art							
<i>answered question</i>							14
<i>skipped question</i>							1
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q7	<b>64.3%(9)</b>	21.4%(3)	7.1%(1)	0.0%(0)	7.1%(1)	1.64	14

3. I am working on an art project at this time							
<i>answered question</i>							13
<i>skipped question</i>							2
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q3	23.1%(3)	<b>30.8%(4)</b>	15.4%(2)	15.4%(2)	15.4%(2)	2.69	13

8. I feel good about myself when I am working on an art project							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q8	40.0%(6)	<b>46.7%(7)</b>	6.7%(1)	6.7%(1)	0.0%(0)	1.80	15

4. I feel relaxed and at ease while doing art							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q4	33.3%(5)	<b>46.7%(7)</b>	6.7%(1)	13.3%(2)	0.0%(0)	2.00	15

9. I feel relaxed and at ease while gardening							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q9	20.0%(3)	<b>53.3%(8)</b>	13.3%(2)	6.7%(1)	6.7%(1)	2.27	15

5. I enjoy growing plants and food							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q5	<b>46.7%(7)</b>	40.0%(6)	0.0%(0)	6.7%(1)	6.7%(1)	1.87	15

10. I am inspired when I look at art							
<i>answered question</i>							15
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q10	<b>40.0%(6)</b>	<b>40.0%(6)</b>	20.0%(3)	0.0%(0)	0.0%(0)	1.80	15

## Response Summary

Total Started Survey: 10  
Total Completed Survey: 10 (100%)

Page: Default Section

1. I have been participating in art and gardening projects at least two times per week							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q1	<b>50.0%(5)</b>	40.0%(4)	0.0%(0)	0.0%(0)	10.0%(1)	1.80	10

2. I am working on a gardening project at this time							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q2	<b>50.0%(5)</b>	30.0%(3)	10.0%(1)	10.0%(1)	0.0%(0)	1.80	10

3. I am working on an art project at this time							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q3	<b>40.0%(4)</b>	<b>40.0%(4)</b>	0.0%(0)	0.0%(0)	20.0%(2)	2.20	10

4. I feel relaxed and at ease while doing art							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q4	<b>70.0%(7)</b>	30.0%(3)	0.0%(0)	0.0%(0)	0.0%(0)	1.30	10

5. I enjoy growing plants and food							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q5	<b>50.0%(5)</b>	40.0%(4)	10.0%(1)	0.0%(0)	0.0%(0)	1.60	10

6. I feel good about myself when I am gardening							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q6	30.0%(3)	<b>50.0%(5)</b>	20.0%(2)	0.0%(0)	0.0%(0)	1.90	10

7. I am able to express my emotions when I do art							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q7	30.0%(3)	<b>70.0%(7)</b>	0.0%(0)	0.0%(0)	0.0%(0)	1.70	10

8. I feel good about myself when I am working on an art project							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q8	40.0%(4)	<b>50.0%(5)</b>	0.0%(0)	0.0%(0)	10.0%(1)	1.90	10

9. I feel relaxed and at ease while gardening							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q9	<b>40.0%(4)</b>	<b>40.0%(4)</b>	10.0%(1)	10.0%(1)	0.0%(0)	1.90	10

10. I am inspired when I look at art							
<i>answered question</i>							10
<i>skipped question</i>							0
	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree	Rating Average	Response Count
Q10	<b>60.0%(6)</b>	30.0%(3)	10.0%(1)	0.0%(0)	0.0%(0)	1.50	10

**Appendix 4. Student Interview Questions.**

1. Tell me what you like most about being at the farm and gardening?
2. What kind of project you are working on?
3. What art projects have you participated in?
4. What do you like about doing art at the farm?
5. How is this different from doing art in the classroom?
6. How do you think doing art and gardening is beneficial to your health?
7. How does art effect your emotions or state of being?
8. How does gardening affect your health or state of being?

## 健康に及ぼすアートワークおよびガーデニングの効果

ヘレン・ヨリサ・デュレー<sup>1</sup>

### 抄 録

この研究の目的は、学生たちが学校に通いながら、アートやガーデニングに参加することによる、健康や福祉に及ぼす効果を個人がどのように感じ取るかを記録することであった。

**方法：**2008年9月から2009年2月までの期間を通して、ハワイにある小規模の公立チャータースクールに通う中等学校の学生18名が18~20週間に及ぶガーデニングプロジェクトまたはアートプロジェクトに参加した。使用された質的研究の方法は、自由記述法、リッカート尺度調査、および半構造的面接調査であった。

**結果：**第1回の調査(15名)では、73%の学生は、アートまたはガーデニングに少なくとも週2回参加したが、13%はそれほど参加しなかった。54%はアートプロジェクトに参加しており、80%が芸術活動中はリラックスして、くつろぎを感じ、86%が自分の感情を表現することができ、87%が心地よく感じ、80%が芸術作品を見ているときに心を動かされたと回答した。93%はガーデニングプロジェクトに参加しており、87%が楽しみながら植物や食物を栽培し、80%がガーデニング活動中は心地よく感じ、73%がリラックスして、くつろぎを感じたと回答した。第2回の調査(10名)では、90%の学生は、アートまたはガーデニングに少なくとも週2回参加したが、10%はそれほど参加しなかった。80%はアートプロジェクトに参加しており、100%が芸術活動中はリラックスして、くつろぎを感じ、自分の感情を表現することができ、90%が心地よく感じ、芸術作品を見ているときに心を動かされたと回答した。80%はガーデニングプロジェクトに参加しており、90%が楽しみながら植物や食物を栽培し、80%が心地よく感じ、リラックスして、くつろぎを感じたと回答した。自由記述欄に記入された回答(15名)では、大多数の学生は、さまざまな理由で、さまざまな視点からガーデニングを楽しんだと回答した。すべての学生が、植物や野菜は体に良いことを学び、食物になるまでの育て方を学び、さらに、農場にいることやガーデニングについて最も満足させられたことの一つは、教室を出て新鮮な空気に触れたことだと回答した。書面による回答(17名)では、4名の学生は屋外での作業が運動になったと認め、7名は、植物の種々の利用法や、植物がもつビタミンやミネラルなどの栄養学的特性を学ぶことができたので、ガーデニングは健康によいと回答した。書面による回答(12名)では、3名の学生は心が落ち着き平和的な気持ちになったと表現し、4名は楽しくて心地よく感じたと回答した。面接(4名)では、すべての学生が、ガーデニングもしくは農場での芸術活動を楽しんだと述べた。**結論：**大多数の学生は、芸術活動またはガーデニング活動に参加した結果、体験して健康や福祉により効果があったと表現し、その後の人生に役立つ技術を習得した。第2回の調査では、質問に肯定的な回答をする学生数の増加がみられた。これは、芸術活動またはガーデニング活動の双方で学生が有意義な時間を過ごすことができたからだと考えられた。

### キーワード

芸術活動、ガーデニング活動、健康、福祉、農場、気分、効果

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