APPLIED PROFESSIONAL PROJECT CAPSTONE PROPOSAL

PreK-8 ENVIRONMENTAL EDUCATION CURRICULUM

by

Scott P. Lacasse
B.S., University of Massachusetts, Amherst, 2002

Project Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Environmental Studies

Green Mountain College, Poultney, Vermont

Prepared for The Montessori School of Maui
September 9, 2018

Project Advisor: Dr. Teresa Coker, PhD, Green Mountain College, Poultney, VT
Committee Member: Dr. Elizabeth Park, PhD, Chaminade University, Honolulu, HI

APPLIED PROFESSIONAL PROJECT CAPSTONE PROPOSAL

PreK-8 ENVIRONMENTAL EDUCATION CURRICULUM

by

Scott P. Lacasse

Has been approved
(DATE)

APPROVED:

Dr. Teresa Coker, Ph.D.
Project Advisor / First Reader

Dr. Elizabeth Park, Ph.D.
Committee Member / Second Reader

ACCEPTED:

Dr. Meriel Brooks, Ph.D.
Environmental Studies Graduate Program Director

ABSTRACT

There is a need in the Montessori community for an integrated environmental education curriculum for outdoor classrooms based on the philosophies of Dr. Maria Montessori. While there are many published "Montessorian" outdoor activities for young students aged 3-6, I have yet to find a fully integrated curriculum that transitions across Dr. Montessori's planes of development and builds upon the skills and experiences developed in the previous plane. This graduate capstone project aims to fulfill that need by generating materials and guidelines to support children's natural curiosity, their desire to be authentically challenged and to reach their fullest potential. The proposed preK-8 inquiry and place-based curriculum that I create will achieve these goals using a scaffolded, integrated thematic approach to understanding the concepts of plant production, ecological connections, and resource management through Hawaiian and Western perspectives. Feedback from student journals and individual teacher mentors will be used as data sources to measure the curriculum's projected success throughout its development.

TABLE OF CONTENTS

I. LIST OF TABLES & FIGURES
- To be completed as necessary

II. ACKNOWLEDGEMENTS
- To be completed at a later date

III. INTRODUCTION

The Montessori School of Maui, founded in 1978, "provides a comprehensive curriculum from early childhood into adolescence by following the principles, spirit, and philosophy of Dr. Maria Montessori's method of education. This approach features a collaborative learning environment to stimulate each student's critical thinking skills, cultivate inquisitive minds and empower children to actively participate in the rapidly changing environment of the twenty-first century" (Montessori, 2018).

In 1996, the school received a $25,000 grant to design and build an organic garden in the center of the campus. Over the years, it evolved into what has now become "The Living Classroom," a prepared environment where students, preK-8, experience their interconnectedness with the natural systems that surround them. It is my role, as the Living Classroom's Resource Teacher, to prepare and maintain this unique educational environment for the benefit of the preK-8 students who participate in the program.

Currently, The Living Classroom curriculum is comprised of hands-on and purposeful task-oriented activities reflective of essential garden procedures and methodologies. The program seeks to promote awareness, knowledge, and understanding that enables valuation of the outdoor environment and its processes within the context of a garden setting. Observational skills and investigative approaches are integrated and highlighted within the fundamental activities of composting, fertilizing, planting, maintenance, and harvesting. Emphasis on sensory and gross motor skill development take place daily within a framework of grace and courtesy. In place of formal teacher-centered lessons, children are presented with the opportunity to choose from a variety of necessary garden works that spark curiosity, build a sense of stewardship and promote further individual exploration of relevant topics.

There are plenty of "Montessori" activity ideas for ages 3-6. However, I have yet to find a integrated preK-8 comprehensive outdoor classroom curiculum based upon the Montessori philosophy.

The goal of this applied professional project is to create a three-part culturally integrated preK-8 environmental education program for the Montessori School of Maui's Living Classroom that is rooted in the philosophies of Dr. Maria Montessori. This program will 1) include agricultural and native plant production, 2) promote ecological awareness, knowledge, and respect among students, and 3) revitalize the sustainability mission of the school.

The proposed curriculum will use the subjects of agricultural/native plant propagation, ecology, and resource management as a foundation to explore and foster an appreciation of the place in which we live. In this case, Hawai'i. Hawaiian culture offers a wealth of meaningful environmental perspective. The presentation of the lessons/activities will center on the educational philosophies of Dr. Maria Montessori and the cultural traditions of ancient Hawaiians. It is my goal to use these lessons and activities, developed during this project, in the hopes of increasing the ecological literacy of the students through a more efficient and integrated use of the Living Classroom. While the material is specifically targeted to Hawai'i, the idea is to create a format that is replicable for the Montessori Community as a whole.

IV. REVIEW OF COMPARABLE PROJECTS

a. Wings, Worms, & Wonder - https://www.wingswormsandwonder.com/
    i. Author Background – BFA Savannah College of Art, Montessori 6-9 teaching credential (AMS), MA Environmental Studies Goddard College – self published 1st ed of *Wings, Worms, Wonder*
    ii. This second edition 2017 activity-based guide focuses on what to do with a school garden or outdoor classroom to setup, maintain, and create meaningful outdoor experiences for students.
    iii. Based upon the historic Nature-Study Movement, Montessori pedagogy, and the theories of:
        1. David Sobel

2. Michael Stone
3. John Dewey
4. Anna Botsford Comstock
5. Rudolph Steiner
6. Richard Louv

iv. Blends art journaling, ecological exploration, gardening, and nutrition
v. Introduction covers:
    1. the history of integrating education and nature
    2. role of education in nature reconnection
    3. encouraging a sense of wonder and teaching for ecological literacy

b. Montessori School of Maui's "Guidelines of Sustainability" - https://issuu.com/montessorischoolofmaui/docs/sustainability_final_print_use_this_one
    i. 2003 curriculum introducing the concept of sustainability to students
    ii. "template of ideas from which teachers can develop their own specific plans that are best suited to their own campus and goals" (Meder & Winans-Burns, 2003).
    iii. developed to be integrated with sustainability guidelines for the capital project campus expansion at that time – the multipurpose building achieved Leed Silver Status
        1. based on Montessori philosophy of education
        2. framed around the developmental stages highlighting:
            a. micro - empathy – ages 3-7 – foster a sense of wonder through songs, movement, seasonal celebrations, and informal nature walks
            b. meso - exploration – ages 8-11 – expanding geographical range – imaginary worlds, forts, care for animals and gardens
            c. macro - social action – ages 12-15 – lean toward making a difference – managing recylcling programs, going on school expeditions, testifying at hearings
        3. stories to introduce topics – "creates contextual references to universal life principals."
        4. led by emergent student-based inquiry
        5. based upon Sobel's theory "that environmental education should have a different tenor and style during each of the stages." (Meder & Winans-Burns, 2003).
        6. Meder & Winans-Burns (2003) argued " When we ask children (especially those under twelve) to deal with environmental problems we are expecting them to think too abstractly of weighty,

scary subjects before they have a chance to fall in love with, explore, find comfort in, and begin to understand the natural world of their backyard neighborhood streets and school campus."

c. SEEQS – School for examining essential questions of sustainability - http://www.seeqs.org/
    i. A public charter school in Honolulu founded in 2013 (grades 6-8)
        1. interdisciplinary, project-based, community-focused curriculum whose educational philosophy highlights:
            a. Real-world situations and real-world contexts enable real-world learning.
            b. Learning occurs when learners take ownership of their learning.
            c. Everyone is a teacher; everyone is a learner, all of the time.
            d. A learning environment is composed of its community members, cultural values, and physical surroundings.
            e. Improvement of the organization requires consciously collaborative participation by community members.
        2. Portfolios to document learning over time
        3. "Self-asses their learning using rubrics developed in partnership with fellow classmates, teachers, and experts from the community" (School for Examining Essenrial Questions of Sustainability, 2018).
        4. Emphasizes collaborative partnerships

V. LITERATURE REVIEW OUTLINE
- a. Montessori Pedagogy
    - i. General (preK, 1-3, 4-6, 7&8)
        1. executive functioning
        2. gross & fine motor skills
        3. indirect and direct preparation
        4. preparing the environment
        5. teacher as guide/expert
        6. follow the child
        7. choice within limits
    - ii. Child in Nature
    - iii. Observation
- b. Traditional Hawaiian Educational/Ecological Practices
    - i. agricultural
    - ii. ahupua'a

c. Education Methodologies
    i. Nature-based Learning
        1. Biophilia Hypothesis
        2. Nature-Study Movement
    ii. Place-based Learning
        1. cultural integration
        2. bioregionalism
    iii. Project-based/Thematic Learning
d. Measurement of Results
e. Ecological Literacy
f. Resource Management Education
    i. fundamentals of resource management
    ii. student-led initiatives
g. Community Outreach

VI. POTENTIAL LITERATURE REVIEW SOURCES

American Forest Foundation. (2010). *Project Learning Tree: PreK-8 Environmental Activity Guide.* Washington, D.C.: American Forest Foundation.

Allen, P. (n.d.). The Elementary Child's Place in the Natural World, 4.

Bernice Pauahi Bishop Museum, & Moanalua Gardens Foundation. (1989). *'Ōhi'a project: An environmental education guidebook for Hawai'i grades 1-3 & grades 4-6* (2nd ed.). Honolulu, HI: Bernice Pauahi Bishop Museum, & Moanalua Gardens Foundation.

Cosgrove, S. A., & Ballou, R. A. (2006). A Complement to Lifestyle Assessment: Using Montessori Sensorial Experiences to Enhance and Intensify Early Recollections. *Journal of Individual Psychology*, *62*(1), 47–58.

DeManche, E. (1980). *Hawaii nature study program*. Curriculum Research and Development Group. University of Hawaii at Manoa. Honolulu, HI.

Fortuin, K. P. J., van Koppen, C. S. A. (Kris), & Leemans, R. (2011). The Value of Conceptual Models in Coping with Complexity and Interdisciplinarity in Environmental Sciences Education. *BioScience*, *61*(10), 802–814. https://doi.org/10.1525/bio.2011.61.10.10

Goodwin, T. (2016). Educating for Ecological Literacy. *The American Biology Teacher*, *78*(4), 287–291. https://doi.org/10.1525/abt.2016.78.4.287

Grant, E. (2015). The Pink Tower Meets the Ivory Tower: Adapting Montessori Teaching Methods for Law School. *Arkansas Law Review (1968-Present)*, *68*(3), 603–667.

Haskins, C. (2012). Order, Organization & Beauty in the Classroom: A Prerequisite, Not an Option. *Montessori Life*, *24*(2).

Howe, E. M. (2009). Henry David Thoreau, Forest Succession & The Nature of Science: A Method for Curriculum Development. *The American Biology Teacher*, *71*(7), 397–404. https://doi.org/10.1662/005.071.0703

Johnson, K. (2017). *Wings, worms, and wonder: a guide for creatively integrating gardening and outdoor learning into children's lives* (2nd ed.). Oakland, CA: Johnson, K.

Johnson, L. (2011). *Teaching outside the box: how to grab your students by their brains* (2nd ed). San Francisco, CA: Jossey-Bass.

Kelling, I., & Schonleber, N. (2011). He 'ike papa o ke ao me ka po: Teaching science in a Hawaiian cultural context. *Hulili*, *7*, 223–258.

Kiefer, J., & Kemple, M. (1998). *Digging deeper: integrating youth gardens into schools & communities: a comprehensive guide*. Montpelier, Vt: Food Works, Common Roots Press.

Lillard, P. P. (1996). *Montessori today: a comprehensive approach to education from birth to adulthood*. New York: Schocken Books.

Lillard, P. P. (2011). *Montessori: a modern approach : [the classic introduction to Montessori for parents and teachers*. New York: Schocken Books.

Louv, R. (2010). *Last child in the woods: saving our children from nature-deficit disorder*. London: Atlantic Books Ltd. Retrieved from http://www.myilibrary.com?id=862673

Meder, S., & Winans-Burns, C. (2003). *Montessori School of Maui sustainability guidelines*. Retrieved from http://www.momi.org/about/sustainability.cfm

McCarty, M. (2006). *Little big minds: sharing philosophy with kids*. New York: Penguin Group.

McTamaney, C. (2007). *The tao of Montessori: reflections on compassionate teaching*. New York: iUniverse Star.

Mitchell, D. D. K. (1992). *Resource units in Hawaiian culture* (Rev. ed). Honolulu, Hawaii: Kamehameha Schools Press.

Montessori, M. (1989). *The absorbent mind* (Repr). Oxford: Clio Press.

Montessori, M. (1989). *To educate the human potential*. Oxford: Clio Press.

Montessori, M. M. (1992). *Education for human development: understanding Montessori*.

Montessori, M. (1996). *The discovery of the child*. New York: Ballantine Books.

Montessori, M. (2007). *Education for a new world*.

Montessori, M. (2007). *From childhood to adolescence: including Erdkinder and The function of the university*.

Montessori, M., Juler, C., Yesson, H., & Schulz-Benesch, G. (2008). *The child, society and the world: unpublished speeches and writings*.

Moore, R. C., & Wong, H. H. (2000). *Natural learning: the life history of an environmental schoolyard : creating environments for rediscovering nature's way of teaching*. Berkeley, Calif.: MIG Communications.

Padilla, M. J., Miaoulis, I., & Cyr, M. (2007). *Prentice Hall science explorer*. Boston, Mass.: Pearson Prentice Hall.

Palavan, O., Cicek, V., & Atabay, M. (2016). Perspectives of Elementary School Teachers on Outdoor Education. *Universal Journal of Educational Research*, *4*(8), 1885–1893. https://doi.org/10.13189/ujer.2016.040819

Parkay, F. W., & Hass, G. (Eds.). (2000). *Curriculum planning: a contemporary approach* (7th ed). Boston: Allyn and Bacon.

Pedersen, H. (2007). *One hundred child development tips: insights and suggestions from Montessori teachers*. San Anselmo, CA: Sandpiper Press.

Rule, A. C., & Stewart, R. A. (2002). Effects of Practical Life Materials on Kindergartners' Fine Motor Skills. *Early Childhood Education Journal*, *30*(1), 9–13.

Schonleber, N. (2006). *Culturally congruent education and the Montessori model: Perspectives from Hawaiian culture-based educators* (Unpublished doctoral dissertation). University of Hawaii at Manoa, Honolulu, HI.

School for Examining Essential Questions of Sustainability. (2018). *Philosophy of learning*. Retrieved from http://www.seeqs.org/philosophy-of-learning.html

Smith, G. A., & Williams, D. R. (Eds.). (1999). *Ecological education in action: on weaving education, culture, and the environment*. Albany, NY: State University of New York Press.

Stewart, R., Rule, A., & Giordano, D. (2007). The Effect of Fine Motor Skill Activities on Kindergarten Student Attention. *Early Childhood Education Journal*, *35*(2), 103–109. https://doi.org/10.1007/s10643-007-0169-4

Stone, M. K. (2009). *Smart by nature: schooling for sustainability*. Healdsburg, Calif: Watershed Media.

Sutton, A. (2009). Educating for Ecological Sustainability: Montessori Education Leads the Way. *Montessori Life*, *21*(4), 18–25.

Wilson, J. B. (1986). *A naturalist's teaching manual: activities and ideas for teaching natural history*. New York, N.Y.: Prentice Hall.

Wolf, A. D. (1996). *Nurturing the spirit in non-sectarian classrooms*. Hollidaysburg, PA: Parent Child Press.

Wood, C. (1997). *Yardsticks: children in the classroom, ages 4-14: a resource for parents and teachers* (Expanded ed). Greenfield, MA: Northeast Foundation for Children.

VII. BODY OF CAPSTONE

This graduate capstone project will address the need to create a scaffolded and integrated environmental education curriculum in the Montessori School of Maui's Outdoor Living Classroom. The resultant curriculum will be based on the philosophies of Dr. Maria Montessori, a thorough study of educational frameworks, and the concepts covered in the Green Mountain College Masters of Environmental Studies Program. I anticipate the curriculum will be a blend of nature, place, and project-based learning that weaves sustainability guidelines and integrates Hawaiian cultural practices throughout. Using specially prepared didactic and journaling materials, age appropriate skill building lessons will naturally lead to self-directed project and inquiry-based learning in the outdoor classroom. The individual curriculum framework developed as a synthesis of my research will be divided as follows:

a. Primary Curriculum (preK – K)
b. LE Curriculum (Lower Elementary 1-3)
c. UE Curriculum (Upper Elementary 4-6)
d. MS Curriculum (Middle School 7-8)

Since a comprehensive preK-8 environmental curriculum is well beyond the scope of this graduate project, the proposed educational curriculum will be presented as a collection of sixteen

intentionally created and fully developed age appropriate lessons, guidelines, and/or activities. A singular lesson within each theme (Observation, Plant Production, Ecological Connections, and Resource Management) will scaffold up through the four divisions (Primary, LE, UE, and MS) thereby totaling sixteen individual, yet interconnected lessons. As suggested by Kelling & Schonleber (2011), each lesson within the themed unit will be approached from the five perspectives of Historical/Geological, Geographical, Analytical, Cultural, and Human. Feedback from student journals and individual teacher mentors will be used as data sources to measure the curriculum's projected success throughout its development.

Our Head of School, Eric Dustman, and the Curriculum Support Specialist, Melinda Lyle-Javier have both pledged their support in the development of this project. In addition, teachers at each grade level have offered to review and offer feedback as necessary and the Hawaiian practitioners on staff and within our community will also contribute knowledge and expertise in these areas. Although capital improvements to the classroom would enhance its efficiency and expand the depth of programming, they are not essential to the success of this project; all of the proposed lessons will be capable of execution within the environment as it stands. In the unlikely event that I must leave my position at the Montessori School of Maui, I fully intend to complete the project as described above.

VIII. PROJECT PLAN

a. Admin
    i. Sept 2018 - Capstone Proposal Approval
    ii. Sept 2018 – Committee Approval
    iii. Oct 2018 – Project Timeline Finalized
    iv. Oct 2019 – Final Capstone Approval
b. Research
    i. Aug 2018 – Basic general curriculum ideas generated and ready for trial and error in field tests on campus – (ongoing process)
    ii. Nov 2018 – Review of Comparable Projects Completed
    iii. Dec 2018 – Literature Review Completed

iv. Dec 2018 – Introduction Completed

c. Writing
   i. Feb 2019 – 1st Draft
   ii. March 2019 – Review Cycle
   iii. April 2019 – Revised Draft
   iv. May 2019 – Review Cycle
   v. June 2019 – Final Draft

IX. IMPLEMENTATION PLAN

a. SY 2018-2019 - Secure Funding and begin construction of capital improvements to support curriculum (nursery & pavillion/storage)
b. SY 2018-2019 – Begin trial and error process with basic curriculum ideas / refinement
c. SY 2019-2020 – Implement completed APP
d. SY 2019-2020 + Beyond – Refine and add depth to the curriculum

X. BUDGET

At this time, I do not anticipate any significant financial expenditure on my part. The final curriculum will appear in digital form and any hard copies made will be the responsibility of the Montessori School of Maui.

XI. WORKS CITED

Johnson, K. (2017). *Wings, worms, and wonder: a guide for creatively integrating gardening and outdoor learning into children's lives* (2nd ed.). Oakland, CA: Johnson, K.

Kelling, I., & Schonleber, N. (2011). He 'ike papa o ke ao me ka po: Teaching science in a Hawaiian cultural context. *Hulili*, *7*, 223–258.

Meder, S., & Winans-Burns, C. (2003). *Montessori School of Maui sustainability guidelines*. Retrieved from http://www.momi.org/about/sustainability.cfm

Montessori School of Maui. (2018). Retrieved from http://www.momi.org/

School for Examining Essential Questions of Sustainability. (2018). *Philosophy of learning*. Retrieved from http://www.seeqs.org/philosophy-of-learning.html

XII. APPENDICES

- To be completed as necessary