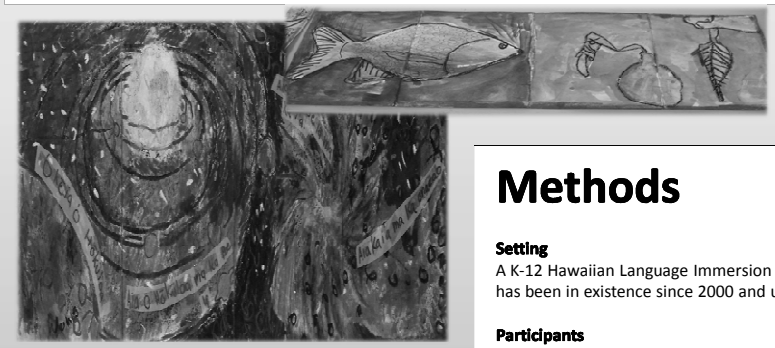
“Let Us Give Him a Vision of the Whole Universe”



Using Montessori’s Cosmic Curriculum in a Non-Montessori Setting

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Problem, Purpose and Research Questions

As the US population become increasingly more culturally and linguistically diverse (Datnow, Stringfield, & Castellano, 2005), educators need to consider how to best meet the needs of children from diverse backgrounds. Science education has been particularly challenging, especially for PK-6 teachers who may lack both science content knowledge and effective methods of teaching science. Montessori’s Cosmic Curriculum, a holistic curriculum based on the sciences was developed from over 50 years of research on students from diverse cultural and linguistic groups (Kahn, 2002). To date, little research has been conducted on its effectiveness in non-Montessori settings with culturally and linguistically diverse children.

The purpose of this qualitative case study was to examine how Montessori’s Cosmic Curriculum could be adapted for use in a K-6 Hawaiian language immersion (HLI) setting. It was also to discover if it could be used as the basis for a science curriculum model bridging two knowledge systems: one based on the epistemology and pedagogical practices of an indigenous non-western culture (Meyer, 2003) and the other on Western scientific perspectives and pedagogy (O’Laughlin, 1992).

We specifically wanted to know what elements of the cosmic curriculum would prove most useful to the culture-based program and how the implementation would impact teachers and students .

Methods

Setting
A K-12 Hawaiian Language Immersion Laboratory Public Charter School in a rural area of Hawai‘i. The school has been in existence since 2000 and uses a multi-age structure. Focused on Hawaiian culture

Participants
Five K-6 educators, two resource teachers, the Elementary Academic Leader (EAL), the 61 K-6 students and the first author, a Montessori specialist. All participating educators hold at least a Bachelor’s degree and speak the Hawaiian language. The EAL has a Montessori 3-6 credential and one of the resource teachers has a Montessori 6-9 credential. Four of the five educators and the other resource teacher had previously attended two workshops on the Montessori approach. Average experience of educators was 10 years; average age was 33 years. 90% of participating children were Hawaiian or part-Hawaiian with forty-three percent eligible for free or reduced lunch.

Data Sources
Data were collected from January, 2008 through May, 2009. They included field notes, teacher reflections, semi-structured group and individual interviews and classroom observations.

Procedure
To begin ,individual interviews and a focus group were conducted to discover specific teacher needs and desires for this project. Those resulted (a) in the creation of three workshops focused on the elements of the cosmic curriculum at the K-6 level and how to use a place-based inquiry approach, (b) release time for each teacher to conduct two full-day visitations to a K-6 classroom using the cosmic curriculum, and (c) an individual consultation and classroom observation with each teacher during the first semester of the investigation. After each visit and workshop, teachers completed a reflective journal. Two of the teachers began pilot inquiry projects with the students.

In June a focus group with teachers allowed for a more finely calibrated collaboration. A 45 hour graduate level course was designed that included instruction in Western science content, Montessori’s cosmic curriculum, and a unit plan model based on the cosmic curriculum (personal communication, Christina Trudeau, 2010). Participants used this information with their own cultural knowledge to create a school-wide, spiraling yearly science curriculum map based on Hawai‘i state science standards, the cosmic curriculum and Hawaiian cultural values and knowledge. Teachers wrote reflective journal entries after each class session. A focus group was conducted mid-way through the fall semester after teachers had implemented their new curriculum. At the conclusion of the fall semester children and teachers were interviewed in two separate focus groups. During the next year, teachers were interviewed at the end of the year to discover what aspects of the model they had continued to incorporate and what aspects had changed.

Data Analysis
The “constant comparison” method (Strauss & Corbin, 1994, p. 283), was used for data analysis. Researcher notes, transcriptions of interviews and focus groups, teacher reflections and classroom observation notes were coded by hand first as open codes, and as patterns emerged, as themes. Teacher work products, were coded and triangulated with above and student work. As new themes emerged procedures were further calibrated and understanding of student and teacher needs was deepened. The process was concluded by conducting member checks with the teachers.

Findings

Two elements of the cosmic curriculum emerged as important adaptations in the school. They were (a) the use of the scope and sequence of Montessori’s cosmic curriculum as the framework for organizing the science curriculum, and (b) the use of story-telling, timelines, and key lessons to engage students in the sciences.

Through creating and using this model, teachers gained confidence in their ability to teach science and children gained a deeper understanding of their roles in caring for the earth. As described by one of the keiki “Pono e mālama iā Papahānaumoku i hiki ke ola ka‘u mau mo‘opuna.” *We must care for Papahānaumoku, Earth Mother, so that my grandchildren can live.* This child understood the scientific and cultural concept that that we are not only responsible for ourselves in this lifetime but for the generations to come.

Implications/Next Steps

Implications for Montessori practices
Montessori’s Cosmic Curriculum forms the cornerstone for Montessori’s 6-12 programs however it is not well-known outside Montessori circles. Formulated while she was interned in India (Trudeau, 1984) it is taught only in Montessori training programs, giving non-Montessori trained educators little access to this model. Results indicate that non-Montessori educators who share values similar to those of Montessori may find this model useful in maintaining their own values and goals as educators while still meeting rigorous state-mandated science standards.

Limitations and Next Steps
This study was bounded by time and circumstance; it cannot be generalized. In addition, the author and EAL have collaborated for the past ten years and teachers may have felt intimidated or unwilling to share their true feelings. We attempted to mitigate this limitation by triangulating the data with samples of student work and student interviews. A confidential member check was also conducted at the end of the study.

Comparison studies of other HLI schools not using this model could be conducted. Longitudinal studies of teacher and student change in attitudes about careers in the sciences and in a sense of stewardship over time would also be useful in validating both of these non-traditional models.