

An Evaluation of Ferry Beach Ecology School's SELU Program 2010 - 2011

EXECUTIVE SUMMARY

Science and Ecology: Live and Unplugged! (SELU) helps students grades K-5 explore the ecosystems that surround them and develop a sense of stewardship for the Earth. The distinguishing feature of the SELU design is offering lessons in a planned, cumulative sequence over the course of a student's elementary school career. This document reports on findings from evaluation instruments piloted in 2009 - 2010, and fully implemented in 2010 - 2011.



Summary of Key Evaluation Findings

The main finding was:

Strong evidence for science and stewardship outcomes

Data from all student and educator sources consistently suggested that SELU programming was associated with increases in student *Ecology and science knowledge*, and also with measures of *Environmental stewardship*. These outcomes are very directly and proximally connected to the content and goals of the SELU program. Ferry Beach Ecology School can proceed with confidence in the data supporting moderate achievement of these outcomes, especially in the 5th grade.

Additional findings included:

- The evidence for non-academic benefits (e.g. student personal development) was mixed (moderately strong in student focus groups, rarely significant in survey results).
- While student surveys from the treatment group did report significantly higher results than the control group for *Environmental stewardship* in all

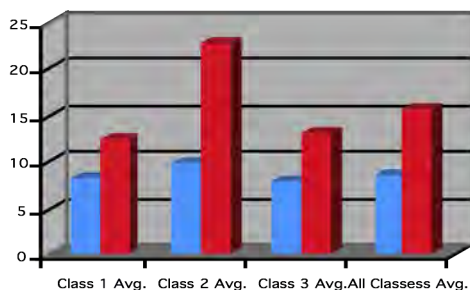
“Since we started being green at school I have been more careful about what I throw away at my house and at school.”

– 5th Grade
SELU Student

“It’s not like you have pine trees and sea pickles in your house. You have to go outside to see that.”

– 3rd Grade
SELU Student

Figure 1. Comparing # of Nodes on Concept Maps, Before (blue) and After (red) Spring 2011 5th Grade Residential FBES Program (N=56)



grades, and for six of eight measures in 5th grade, the hypothesis that outcomes would increase from 3rd through 5th grade in treatment groups is not supported by the current student survey data.

- Post-concept maps¹ included an average of 200% more content about the topic (ecosystems) than pre-concept maps (see Figure 1).
- Student reports of stewardship behavior centered on recycling, trash pick up, composting, and gardening.

¹ Concept maps are a visual representation of understanding of a concept. Having students complete these maps before and after they learn a concept allows for the opportunity to see what they have learned in between.



Evaluation Methods

In the 2010 - 2011 academic year, external evaluators from PEER Associates, Inc. guided the second year of evaluation of the SELU program. FBES staff administered (or guided school staff in administering) the majority of the evaluation measures. Data reported here spans grades 3 - 5 in 7 schools in 2 Maine school districts, and included: 773 student surveys; 86 student focus group participants; 56 matched pairs of pre- and post-concept maps; 26 educator surveys; and 14 educator focus group participants. The outcomes evaluated included: *Environmental stewardship, Comfort outdoors, Ecology content knowledge, Academic engagement, Classroom climate, and personal development (i.e. Leadership, Self-esteem, Cooperation)*. Student survey analyses were based on a quasi-experimental, delayed treatment design and analysis of variance (ANOVA) tests among various comparison groups.

"I really feel like there needs to be more like 3-4 visits per year. The overnight was fabulous, but then boom, we're gone. The kids were just getting into it."

– 5th grade
SELU Teacher

Implications for Practice

Focus future evaluation measures on ecology and stewardship content

This strategy would broaden and deepen the current body of evaluation evidence in directions that have demonstrated the most compelling SELU findings thus far. Specific possibilities include: administer concept maps on the seven crosscutting concepts of the national Framework for K-12 Science Education Standards and/or the topic of sustainable food systems; discontinue self-report survey items on the more distal personal development outcomes; develop more curriculum-specific measures intentionally tied to sequential and cumulative SELU content; cautiously explore longitudinal trends in standardized test scores.

Continue to incorporate feedback from participating educators

Most of the feedback educators offered about the SELU program was positive and affirming. Educators also offered a few suggestions for improvement, including: expand the experience (through more pre- and post- visit curriculum resources and/or more field trips); consider focusing the scope and pace of 3rd grade curriculum; be more consistent and comprehensive with program and lesson wrap-ups; continue to emphasize experiential, tactile, hands-on experiences.

"The program was informative, exciting, engaging, and interesting. The students ALWAYS looked forward to FBES!"

– 4th grade
SELU Teacher



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