

# Ninth Grade Student Performance Comparison Between Traditional Science Curriculum and Synergistic Systems

## Synopsis of Study Review by Brenda LeTendre, Ed.D.

**Data Provided by:** Curriculum Research and Evaluation, Inc.

**Location:** Hartford Public High School, Hartford, CT

**Date:** Fall 1999

**Number of Participants (N)** = Fall 1999 Cohort 1 (Exp.): 223, Control: 79. Fall 2000 Cohort 2 (Exp.): 245, Control: 56

### Study Overview

In Fall 1999, teachers at Hartford Public High School implemented a Synergistic Systems curriculum in the ninth grade Science 1A (Academic track), 1G (General track), and 1B (Basic track) courses. Curriculum Research and Evaluation, Inc. (CRE) examined the final grades of both the experimental and control groups in science for the ninth grade year (1999-2000). Cohort 1 in the study included 223 students who received their science instruction in the Synergistic Systems lab and a control group of 79 ninth graders enrolled in Classical Biology/Lab who did not participate in the Synergistic Systems curriculum. CRE also compared the Connecticut Aptitude Performance Test (CAPT) science scores for these Cohort 1 students when these students took that test during their tenth-grade year (2000-2001). During the 2000-2001 school year, CRE gathered data on a new cohort of ninth graders. In Cohort 2, 245 students took Science 1 courses and experienced the Synergistic Systems curriculum (experimental group) and 56 took the Classical Biology/Lab course (control group). As they did for the previous cohort of ninth graders, CRE compared the final grades of both the experimental and control groups in science. Finally, CRE conducted interviews with the administrators at HPHS, the teachers who acted as facilitators in the Synergistic Systems lab, and the students who participated in the Synergistic Systems curriculum.

### Significant Findings

Ninth grade students in Cohorts 1 and 2 who participated in the Synergistic Systems curriculum in their Science 1A and Science 1G courses (experimental group) attained science grades and CAPT results that were not significantly different from those of the ninth grade students enrolled in the Classical Biology/Lab course (control group). This “no difference” represents a positive outcome. Despite having lower reading scores than students in the Classical Biology/Lab course, the Synergistic Systems students performed on par with the more capable control group students on both science course grades and state assessment science scores.

Researchers present a detailed report of the evidence collected during observations and interviews with HPHS students, teacher facilitators, and administrators. Overall, the interviews and observations concur with the positive findings from the quantitative data and yield the following key points:

- Students found the Synergistic Systems Modules highly motivating.
- Students found the Synergistic Systems Modules both challenging and engaging.
- Students came to enjoy the partnering as they completed Modules.
- Students felt that having the Synergistic Systems curriculum in ninth grade gave them an advantage when they later took science in the tenth grade.
- Students benefited from working with others.
- Students developed a sense of independence coupled with responsibility.
- Students recognized the integrated nature of the content disciplines.
- Students increased their academic self-confidence.
- Teachers acting as Synergistic Systems facilitators concurred with the comments made by their students about the benefits of the Synergistic Systems lab.

### Strengths Identified by This Study

- The successful implementation of the Synergistic Systems’ lab proved resilient despite considerable turnover among top administrators and the Pitsco-trained teachers, as reported by the researchers. “Synergistic System[s] may operate in some respects independent of the staff turnover at a school, which in any educational system would be a good outcome, but it is especially important in a school like HPHS, where students characteristically have difficulty achieving a state goal.”
- Students found the Synergistic Systems curriculum interesting, challenging, engaging, and fun.