Iowa Chautauqua Program

Program Description

The Iowa Chautauqua Program is a multi-state professional development project designed to enhance instructional processes of K-12 science teachers through the study of science, technology, and society. The project's overall goals are to improve K-12 science education through inservice experiences, develop a network for continuing teacher enhancement, develop teacher leaders, and develop positive interaction among teachers, students, administrators, parents, scientists, and business/industry sponsors. The program focuses on learning science in a "real-world" context.

Content

- constructivist instructional processes
- science concepts applied in "real-world"contexts
- teacher leadership

It aims to help students use science to meet personal needs, see how science can help solve current societal issues, help students be aware of how science is used in careers, and pursue science academically and professionally.

The constructivist learning model is the core of the instructional strategies that teachers learn. It emphasizes that every learner constructs his/her own meaning as opposed to hearing or reading about the scientific explanations and then committing the explanations to memory for recall on tests later.

The project began in Iowa in 1983 and was funded as the Iowa Scope, Sequence, and Coordination Project. It was sponsored by the National Science Teachers Association and funded by the National Science Foundation. Eleven states offer some form of the program to teachers. The long history and success of this program and its impact on student achievement in science have been the subject of numerous research studies.

Program Context

Context

- multiple sites throughout Iowa and 10 other states

The Iowa Chautauqua Program has been implemented in five of Iowa's 15 Area Education Agencies and in 10 other states. Data about student demographics are not available. Students in grades 4-9 were included in the assessment. However, teachers of students in grades K-12 have participated in the program. Schools and districts included rural, suburban and urban settings.

STAFF DEVELOPMENT PROGRAM

The staff development model employed in the Iowa Chautauqua Program includes a three-week summer institute. In the training, teachers assume the role of students to explore issue-based questions. They look for key science concepts and study four different constructivist pathways for learning. The summer institute is a prelude to an academic year-long experience involving two three-day short courses, one in the fall and another in the spring. Continuous communication with central staff, lead teachers, and fellow participants occurs throughout the year. Lead teachers participate in ongoing action research within their classrooms, providing ongoing support for new teachers and serve as instructors for the summer institutes.

The staff development model for the Iowa Chautauqua Program recognizes that teachers are at the center of the change process. Teacher development and curriculum development are viewed as continuous improvement processes. The model is built upon ideas that closely align with the National Science Education Standards. It is characterized by the following key elements: (1) teachers are involved in planning, designing, and facilitating student learning experiences using constructivist teaching practices within a Science-Technology-Society context; (2) teachers work in site-based teams to develop and coordinate an integrated school science program for K-12 students; (3) teachers assess learning and analyze teaching to guide instruction; and 4) teachers work to create a community of learners with their students and other professionals within the school and beyond. The staff development model has four phases: invitation, exploration, coordination, and implementation.

Process

- training
- summer institutes
- demonstration
- curriculum development
- action research
- coaching

Intended Audience

- teams of volunteer teachers from schools

SUMMARY OF RESULTS

The Iowa Chautauqua Program increases teacher confidence in teaching science and increases teacher understanding and use of basic features of science. Lead teachers involved in the program have students who master more scientific concepts, better understand the basic processes of science, apply concepts and processes to new situations, develop more creativity skills, and have more positive attitudes about science, their science teachers, the usefulness of science, and science careers when compared to students in other classrooms.

EVIDENCE OF INCREASED STUDENT ACHIEVEMENT

Success Indicators

- project-specific multiple choice tests
- National Assessment of Educational Progress attitude survey

Multiple measures of student performance and changes in teacher practice indicate that the Iowa Chautauqua Program has produced positive results for students. For example, researchers have used project-specific, multiple choice tests to measure the concept, process, application, and creativity domains. The attitude domain was assessed using a Likert-type five point scale with items from the National Assessment of Educational Progress, Third Assessment of Science. Pre- and post-tests were administered to all students of 15 lead teachers in 1989-1990. In total, 723 students were assessed. The 15 lead teachers were selected from a pool of 50 Lead Teachers for the formal assessment. Lead teachers taught two or more sections, one serving as the control group with conventional instructional procedures and one serving as the experimental group with STS (science-technology-society) approaches to instruction. Data were also collected from at least one section of the 250 new teachers in the program. No contrasting data are available for those classrooms. Researchers state that the sample of teachers and students are representative of the larger population of teachers and students.

Results indicate that students in the control and experimental groups had similar conceptual knowledge about science on the post-test (effect size -0.03). Students participating in the Iowa Chautauqua Program had significantly higher gains in the process (effect size 2.20), application (effect size 3.21), creativity (effect size 2.12), and attitude (effect size 1.62) domains.

Science

The Iowa Chautauqua Program links staff development to student achievement. The research methodology used to obtain the initial results of the program has been criticized; however, over a number of years in a number of diverse implementation sites, the program consistently has increased students' performance in science. It is particularly noteworthy for the development of student assessments to measure increased student learning in five distinctly different domains of science knowledge and skill. Its extensive replication throughout 11 states is evidence of the program's widespread success as a staff development program that increases students'achievement.

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DOCUMENTATION

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