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Science Notes - A Program for Teaching Issue Investigation

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SCIENCE NOTES

A Program For Teaching Issue Investigation

A set of modules designed to teach the investigation and evaluation of science-related social issues has just been published by Stipes Publishing Company, 10 Chester Street, Champaign, IL 61820. This middle and junior high school program was written by a curriculum development team composed of two middle school/junior high instructors, a resource specialist, and three science/environmental educators.

The program, titled *Investigating and Evaluating Environmental Issues and Actions*, takes at least a semester to complete. It is a process oriented program, designed to provide students with the skills needed to investigate and evaluate important science-related issues. A culminating activity is the autonomous investigation of an issue of the student's choice with subsequent feedback to his or her classmates. An additional module (beyond issue investigation) focuses on citizenship action skills which students can apply to the remediation of issues, e.g., persuasion, consumerism, political action.

The major components of the modules are defining problems and issues, analyzing how beliefs and values affect issues, using secondary sources in issue investigation, using primary sources in issue investigation, interpreting data, applying the investigation skills, and developing citizenship action skills. The modules are produced in a worktext format, providing students with opportunities to develop their writing skills and providing the teacher with an opportunity to give immediate feedback to students.

In five of the six modules, performance objectives are used to guide instruction and learning. An analysis of the program's objectives shows that approximately 30 percent of the objectives focus on science content, 30 percent on language arts content and 40 percent on social studies content. This interdisciplinary melding provides a climate in which students come to respect the notion that content areas do, in fact, interface in some very important ways.

The modules are accompanied by a teachers' manual which provides the instructor with additional information on many of the modular activities. The teachers' manual also recommends evaluative strategies, and provides guidelines for the development of investigation and action skills which are not taught directly in the modules themselves.

Ten years in development, the modules have gone through four revisions in order to maximize their potential for success. The 1985 edition utilizes research findings in environmental behavior, problem identification, issue investigation and evaluation, and the NSF funded Project Synthesis Study. Research and evaluation have shown that the modules result in improved student ability to research issues effectively, to identify problems, to participate in issue remediation and to clarify values.

Earlier editions of the modules have been used successfully in elementary, middle, junior high and high school classrooms. They have even been used at the college level to teach citizenship action skills. However, they are best suited for use with middle and junior high school students. The modules have been used by teachers of self-contained classrooms, by teacher teams in departmentalized situations and by leaders of gifted classes at the elementary school level.

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Because the modules are interdisciplinary, they are very appropriate for team teaching situations.

Interestingly, one of the major fears expressed by potential users of the modules lies in the area of autonomous student investigation. Teachers are sometimes concerned that they will lose control of their students by permitting them the opportunity to confront issues on their own. Often, teachers are also fearful that the students could stir up community anxiety by probing sensitive issues. These fears are certainly understandable. However, thousands of cases have proven them groundless. The investigative format has been used with "average" classes, bimodal classes and gifted classes. Notwithstanding the fact that such fears could be realized, the teachers with whom the writers have worked have reported no such problems. Furthermore, the writers are willing to provide a list of teachers who have used or are currently using this instructional design, permitting the potential user to interview users directly.

Research in both science and social studies clearly states that education should be focusing on social issues. At long last a program is available which permits the teacher to do exactly that — in a manner that results in long term benefits for the student and for society.

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Alaska in Eighty-Six

The study of the unique geology and botany of Alaska, Yukon and British Columbia will be the objective of a camping trip planned for June 9 to July 23, 1986. The field study program is designed for elementary and secondary teachers, college students and interested adults. The program is sponsored by the Iowa Academy of Science and is directed by Frank Starr of the Waterloo Community Schools with the instructional team led by James Walters of the University of Northern Iowa Earth Science Dept. University credit will be available.

Students will have opportunities for field study of geology, land forms, glaciers, soils, water-ice erosion processes, plant succession and flowering plant identification, as well as the environmental processes of development and maintenance and the stresses produced by human activities.

Plans are being made for visits to Fairbanks, Circle, Anchorage, Haines, Juneau, Skagway, Whitehorse and Tok. There will be a short trip along the coast on the state ferry. Backpacking trips, such as one along the Chilkoot Trail, will be highlights. Participants and staff will cook, camp, hike, drive and investigate the environment together on the entire trip. The group will travel by van, starting from and returning to the University of Northern Iowa in Cedar Falls.

Costs are not expected to exceed \$1500 per person plus tuition cost for six credit hours. The program will be limited to 24 participants.

More information may be obtained from the Iowa Academy of Science, P.O. Box 868, Cedar Falls, IA 50613.

— C.W.B.