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UD Researchers Make Recommendations on Improving Public Schools' Science Curriculum

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UD RESEARCHERS MAKE RECOMMENDATIONS ON IMPROVING PUBLIC SCHOOLS' SCIENCE CURRICULUM

DAYTON, Ohio -- Public schools should get rid of science texts at the elementary and middle school levels and replace them with materials that teachers and students can use in hands-on activities. In addition, teachers must emphasize critical thinking and science process skills such as observing and comparing, rather than the teaching of science facts, if we are to improve science education.

These are some of the recommendations of University of Dayton researchers who are directing the University of Dayton/Dayton Public Schools Science Project--a partnership intended to improve science education in the public schools.

National statistics indicate that half of all students in grades seven and eight do not understand basic information in the life and physical sciences, and fewer than 10 percent of 17-year-olds graduate with an understanding of biology, chemistry and physics.

The UD researchers, Thomas J. Matczynski, professor of educational administration, and Thomas J. Lasley, chair of teacher education, conducted a survey on the "attitude" of every science teacher and school principal in the district.

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They also studied science facilities in the schools, and they developed recommendations for the district's science curriculum based on the opinions of science experts throughout the country.

Among the findings of these studies are:

- Teachers need to be exposed to more hands-on practices for teaching science, and they need materials that can be used in hands-on activities.
- Teachers need content seminars to expand their science knowledge base.
- Teachers need access to technologies that can be used to supplement the quality of science practices.
- The curriculum should emphasize the importance of the science process skills of observing, communicating, comparing, organizing, relating, experimenting, inferring and applying and should be designed around critical science concepts and process skills.
- The curriculum should provide a better balance of earth, physical and the life sciences.
- Science facilities range from relatively sophisticated equipment to virtually no laboratory equipment at all because of disrepair.

Based on these findings, a science-writing task force of public school teachers and administrators is rewriting the entire science curriculum, grades K-12. The curriculum will feature a "unit/laboratory kit approach," says Matczynski.

For example, first graders will study a unit centering on plant parts, second graders will study animals and their world, and so on.

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Eventually, teachers at each grade level will teach a unit in each of the different sciences--life, physical and earth--plus a fourth, elective unit. Teachers will be provided with kits including hands-on materials to help them teach the subject matter.

This summer, UD will present workshops on how to teach these units and process skills. Elementary teachers may attend workshops on how to teach hands-on activities.

UD and the public schools formed the science partnership last year with more than two dozen area businesses and organizations. The three-year project began with a $195,000 grant from the Dayton Public School Board and substantial personnel services from local corporations and Wright-Patterson Air Force Base.

Through the efforts of the partners, who are providing both personnel and financial resources, all components of the program will be in place in five urban, Dayton schools by the 1991-92 school year.

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