Teaching science: Is discovery better than telling?

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Western Michigan University researchers have discovered that in the academic debate over whether young science students learn more through experimenting or direct instruction, there's little difference.

Neither teaching approach provides a significant advantage for middle school science students, according to research by three Western Michigan University faculty who will present their findings at the American Association for the Advancement of Science Annual Meeting Feb. 12-16 in Chicago.

Drs. William Cobern, David Schuster and Renee Schwartz, members of WMU's Mallinson Institute for Science Education, will speak Sunday, Feb. 15. The annual meeting, "Our Planet and Its Life: Origins and Futures," will highlight the 200th anniversary of Charles Darwin's birth and the 150th anniversary of the publication of his book "On the Origin of Species by Means of Natural Selection."

Cobern, Schuster and Schwartz, who hold joint appointments in the departments of physics and biological sciences, will speak on the educational and political debate surrounding instructional approaches. The science community overwhelmingly teaches science though inquiry and experimentation. However, in some states there is political pressure for a return to direct instruction in science and math for K-12 students.

"The essential difference between the two approaches lies in how students come to the concept. That is, do students infer or are they told?"

Cobern explains.

The researchers, supported by a National Science Foundation grant, studied middle school instruction during two-week summer programs over several years. In comparing the two methods of instruction, they found there actually was no significant difference in learning by students. More important, they say, was having a positive attitude toward science, a well-designed curriculum and good teachers.

"The data, while marginally favoring inquiry, really show that as long as the instruction is good either way, the two approaches lead to no significant difference--at least as far as science content understanding is concerned," says Cobern.

Source: Western Michigan University