

Missouri high school science achievement tied to quality teachers, study finds

By Neil Schoenherr

April 21, 2009 -- While public officials aim to establish Missouri as an attractive place for emerging life sciences companies to start, a study by researchers at Washington University in St. Louis indicates that high school science proficiency in the state, especially among high-minority and poverty populations, is greatly dependent on having a core group of certified teachers who are highly qualified to teach courses in their content area.

It is possibly the first comprehensive study of high school science achievement for the entire state that incorporates school composition and context variables. Factors that influence science proficiency have been studied using national databases, but these do not answer all questions about variable relationships at the state level.

The study, "School Composition and Context Factors that Moderate and Predict Tenth-grade Science Proficiency," will be published in a forthcoming issue of the journal *Teachers College Record*.

"We wanted to examine the relationship between tenth grade science proficiency and school context factors related to school environment, courses and teachers," said William F. Tate, Ph.D., Edward Mallinckrodt Distinguished University Professor in Arts & Sciences and chair of the Department of Education. "While we did find that largely minority schools with higher drop out rates and higher rates of free-reduced lunch resulted in poorer science scores, it's interesting to note that higher science scores were associated with greater percentage of master's degree teachers, especially in largely minority schools."

The study focused on 2002 data from 423 Missouri high schools with a tenth grade class size of at least 25. It was co-authored by Mark Hogrebe, Ph.D., research statistician in the education department.

"The good news of this study is that having high quality teachers, in this case quality defined as certified, can positively influence achievement," Tate said. "While that has been indicated in previous studies, this is the first to look at it in the context of science achievement in Missouri."

The implication, Tate said, is a need for increased public policy aimed at making sure students in high-poverty and high-minority schools have high quality teachers if the state wants to give students an opportunity to learn science.

"In the 'Obama world,' some people think we are living in a post-racial society and we are 'beyond all that' and we don't need to talk about it anymore," Tate said. "But

our study indicates that we still have students in schools without high-quality teachers and in Missouri, race/class interaction is very important."

He said that while it is common for progressive cities like St. Louis or Kansas City to want to become the next biotechnology or telecommunications hub, the human resources development strategy often does not align with economic goals.

"I think this study has real implications for our state's largest cities," Tate said. "It says that a lot of people indigenous to those cities won't have a chance to participate in emerging science efforts unless we change our policies."

Tate does not think, from a federal standpoint, there will be money available to hire more master's degree teachers in the state. However, a program enacted last year in which anyone with a college degree can become state certified without going back to school, requires careful examination for its potential.

"They are making some attempts to bring in people who have training in a range of subjects, including science and math," Tate said. "However, this is such a new program we don't know how successful it will be in the long term."

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