HILLSDALE
DAILY NEWS

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Gender roles, career stereotypes to be challenged at 3 local middle schools

HILLSDALE COUNTY — Where are all the girls?

Davis Middle Schoolers like Jenn Cole could be the primary subjects of experimental spatial awareness evaluation as part of a country-wide study funded by Ohio State University. JASON DAFNIS PHOTO

That's one of the questions a new Ohio State University study asks – and it hopes to find the answer in Hillsdale County, among other places in the U.S.

The study, led by OSU professor Dr. Sheryl Sorby, began as a pilot at a rural Colorado school district to determine what long-term impact Sorby's spatial visualization training curriculum could have on 7th-grade students. The initial study tracked the proclivity of middle school students who received the training to join the STEM (Science, Technology, Engineering and Math) career fields.

Three schools in Hillsdale County – Davis, Reading and Jonesville Middle Schools – opted into the national study. Multi-axis object rotation and reflection, isometric sketching, symmetry, cross sections, orthographic projection – students could be introduced to several new concepts alongside their current middle school geometry curriculum.

The randomized cluster trial will place each of the schools in either an experimental group, which receives the curriculum, or the control group, which will populate the other half of the study – those schools that don't receive the curriculum and are instead studied to measure the effects of the training on those that did.

That randomness means there's a chance that all three schools could receive the training, just as there's a chance none of them could – but that, regardless of which group they fall into, all will be part of the study.

Dr. Linc Miller, a Hillsdale County resident who has worked extensively in various teaching positions and with the Hillsdale County ISD, who presented the study to local schools, said it's most likely that one or two of the schools will receive the training.

The schools will also receive grant funds to defray the costs of data collection and professional development – and the schools will be allowed to keep the curriculum and materials for themselves after the end of the study.

"This is a non-trivial national study," Miller said.

Reading Community Schools Superintendent Chuck North echoed Miller: "The biggest thing is that we get the chance to be part of a national study," the superintendent said. "It gives a school information to improve instruction, regardless of how big you are."

The four-year study is currently in its first year, during which math teachers at Davis, Jonesville and Reading are receiving instruction and providing baseline data, like economic, gender and ethnic demographics, for use in the study. All are considered important aspects of tracking student college and career decision-making.

"In 7th grade – or middle school, at least – you begin to find many kids engaging in stereotypical perceptions of some subject matter," Miller said, "particularly girls who may be discouraged from being involved in STEM because it doesn't fit with the 'feminine mystique' or whatever."

STEM fields have struggled with gender representation for years: The National Girls Collaborative Project reports that though women make up 47 percent of the national workforce, only 13 percent of engineering jobs and 25 percent of math and computer sciences jobs belong to women.

The numbers can get more and more marginal when race, ethnicity and socioeconomic background are factored in. Finding ways to reverse these trends is no small part of the study's proposed research outcomes.

In fact, girls are a huge part of the study. Separate studies have hypothesized that early men, evolving into their societal roles as hunters, demonstrate a preclusion toward spatial awareness where women, shuffled into gatherer roles, gained a natural proclivity for recognizing and remembering food sources.

"Studies have indicated that males tend to be more adroit in spatial skill manifestations," Miller said. "However, a well-conceived training in spatial skills appears not only to benefit all students in their mathematical achievement, but inordinately more so females."

Those studies, along with Sorby's work, now inform the Hillsdale County trials: In Sorby's pilot program in Colorado, girls especially benefited from the training, going on to place in higher-level 9th-grade math courses than those who didn't receive the training.

"At this age," Miller said, "you already have the socio-cultural expectations entering and discouraging many females. It's the classic deal: 'Oh, you shouldn't be out there in the toolshed with your father. Come in here and help me clean the house,' or whatever the case is."

"There's kind of a social expectation that females go into certain areas," North said. "But it doesn't have to be that way."

"To break out of stereotypical confinement," Miller said, is a central theme of the research; to promote diversity and parity in STEM fields while defying the "stereotypical limitations which society inadvertently imposes.

"You're expanding horizons, potentially," Miller said, "and at the same time, you're increasing quantitative competence. What you're really doing is opening vistas for young people."

Spatial visualization training

What it is: A national study to research the efficacy of spatial visualization training in middle school Who's conducting/funding it: Ohio State UniversityWhat Hillsdale schools are participating: Davis, Jonesville, Reading Middle SchoolsHow long it lasts: 2015 - 2018 (currently in research stage; two years for implementation; one for data tracking)