

Researcher discovers how to ignite, retain female interest in the study of science

March 20 2008



Professor Sheryl Tucker holds "glow-in-the-dark atomic worms" and demonstrates that some dye molecules impart not only color but also additional properties when interacting with light. In this case, the glow results from the molecules interacting with black light. Credit: Shane Epping/University of Missouri

It might be surprising that 40,275 grams of slime, 4,030 ink dots, 3,876 M&Ms, 977 baby diapers, 489 cups of milk and a few electrified pickles can make a difference in the academic lives of adolescent girls, but it's true.

A challenge at the forefront of science education is the lack of women entering science-related fields, especially chemistry. National studies have shown that girls begin to lose interest in these areas around grade

five. University of Missouri researcher Sheryl Tucker is combating this issue through the creation of a program that has kept girls interested in science. A recent study, being published in this week's *Science* magazine, found that Tucker's program is making a difference.

Nearly a decade ago, the Magic of Chemistry was created to encourage female adolescents in grades four through six to discover and maintain an interest in the sciences. Since then, it has served more than 2,500 girls and evolved from a one-time program with 35 Girl Scout participants to a bi-annual partnership program of rotating workshops: "Case of the Unsigned Letter," "Fun with Polymers" and "Chemistry of Color."

In each workshop young girls have the opportunity to take part in a variety of activities that include working with "goldenrod" indicator paper; creating slime, silly putty, and "moo glue;" and discovering the secrets of tie dying cotton. Each year, the workshops are organized in conjunction with National Girl Scout and National Chemistry weeks.

Through anecdotal research and a compilation of data, Tucker and MU assistant professor Deborah Hanuscin found that 81 percent of the girls who participated in the Magic of Chemistry professed an interest in learning more about science and the related careers. More than 40 percent of girls attended the workshops multiple times. Moreover, the outcomes of the workshops reflected the program's goal of teaching girls about science and its relevance in their daily lives.

"There was a critical national need to start a program targeting young girls with the purpose of igniting and retaining their interest in science at an age where national studies indicate they begin to lose this curiosity," said Tucker, an associate professor of chemistry and associate dean of the graduate school. "We must have girls entering the 'pipeline' before we worry about them leaking from it."

Tucker has partnered with the Girl Scouts-Heart of Missouri Council, which spans 18 mid-Missouri counties, to provide junior Girl Scouts in grades four through six with an experience to build confidence and knowledge of their scientific abilities. This program provides hands-on, inquiry-based workshops on a college campus with female undergraduate and graduate student role models. Girls are encouraged to ask questions and think critically after completing experiments that include practical applications to the real world.

“We hope that performing hands-on experiments and seeing women scientists in action will inspire the girls to explore science as a possible career choice,” Tucker said. “For our country to reach its full potential, we must recruit the brightest people to science from all sectors of the population. We have shown that the Magic of Chemistry program can be part of the solution to closing this educational gap.”

Source: University of Missouri-Columbia

Citation: Researcher discovers how to ignite, retain female interest in the study of science (2008, March 20) retrieved 3 May 2024 from <https://phys.org/news/2008-03-ignite-retain-female-science.html>

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