

Talking works: UB professor develops method to analyze creative problem solving

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(Phys.org) -- Talk -- if it's the right kind -- can increase creativity, leading students to create useful, new ideas that solve problems, a University at Buffalo professor has found by using a statistical tool that he invented.

The process of talking through faulty ideas can lead to the creation of a new, useful idea or "micro-creativity," the term coined by UB Graduate School of Education professor, Ming Ming Chiu, PhD.

"Wrong ideas, correct evaluations or justifications can lead to micro-creativity," says Chiu, who has developed [statistical methods](#) to detect [music industry](#) payola and devised programs for parents to help their children understand math by discussing world current events.

Chiu also is the creator of "[Brain Games](#)," simple but effective activities parents can use to help their young children understand [math concepts](#).

A video of these activities is available at: www.buffalo.edu/news/13349.

"Wrong ideas shouldn't always be trashed," Ming says. "A student can recognize the flaw in an idea and fix it to create a correct, new idea.

"When students correctly evaluate an idea by identifying its flaw or recognizing it as correct, they help build a foundation for further micro-creativity.

"After a student justifies an idea to strengthen it, other students often follow them by justifying their own ideas. As a result, they focus more on justifications and reasons (less on [emotional responses](#)) in rational discussions to create correct, new ideas."

Chiu, a professor in the Department of Learning and Instruction at UB, worked with Lawrence Khoo, PhD, an economist at City University of Hong Kong, to invent the statistical tool called Statistical Discourse Analysis or SDA. Capitalizing on the way people often take turns talking, SDA can use classmates' recent turns of talk to help predict what a student will say next.

Chiu applied this [statistical tool](#) to videotapes of 80 students working in groups of four on an algebra problem in his study published in the Journal of the Learning Sciences.

"[Justifications](#) had the most powerful impact on micro-creativity," Ming says, "while correct evaluations had the longest lasting effect, increasing micro-creativity in the next three turns of talk."

When analyzing these conversations, Chiu also found a subtle relationship between disagreements and micro-creativity.

"After a student disagrees politely, other students often listen carefully to the criticism and fix the wrong idea to create a correct, new idea," said Chiu, "However, after someone rudely disagrees with a student, that student often impulsively rejects the criticism, losing their opportunity to create a correct, new idea."

Based on this study's results, Chiu has several suggestions for teachers and other educators helping students work together:

- Evaluate classmates' ideas slowly and carefully, not impulsively.

- Justify ideas.
- Disagree politely rather than rudely.
- Create a safe environment for students to express ideas freely, including wrong ideas

Provided by University at Buffalo

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