New tool helps teachers use technology more effectively

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A University of British Columbia researcher has piloted a tool to help elementary and secondary school science teachers get the most out of new classroom technologies.

One of the most frequently used tools is the remote control "clicker." Students use them to answer multiple-choice questions throughout their lesson, allowing for continuous feedback on their progress. This type of interaction has been found to increase overall student academic achievement, especially in the areas of science and mathematics.

"Technology has proliferated at an unprecedented rate and we tend to assume that by using new tools in the classroom, students will automatically gain a better understanding of the course material," says Marina Milner-Bolotin, an assistant professor in the Faculty of Education at UBC who will be presenting this research at the American Educational Research Association (AERA) annual meeting in Vancouver.

"The reality is that many teachers aren't taught how to get the most out of these tools and, in the case of the clickers, how to ask effective questions."

"With information readily available online, there is less emphasis on memorizing facts," says Milner-Bolotin. "Instead, students are increasingly being asked to put concepts together, solve problems, and analyze information and data."

Milner-Bolotin and her colleagues built a tool, called the Elementary Science Questions Evaluation Rubric, that helps teachers develop and evaluate multiple-choice science questions to use with clickers, also known as electronic-response systems.

“It is easy to make up questions that test whether a student has memorized the facts. But if the goal is to ensure that students can synthesize and analyze the concepts learned, then we need to be asking different questions.”

Milner-Bolotin and her colleagues piloted the Rubric with a group of elementary teacher education students in the Bachelor of Education program at UBC. The students developed 83 clicker questions relevant to the science curriculum. Graduate students in the Department of Curriculum and Pedagogy then used the Rubric to evaluate these questions.

Although the tool was developed for clicker questions, Milner-Bolotin says it can be applied to other technologies too. Teachers who are starting their careers now will likely be using different technologies and teaching methods over the span of their careers.

“It is a skill to ask a good a question that will work with any technology,” says Milner-Bolotin. “By giving teachers tools like the Rubric, they will be more open and prepared to try new technologies in the future.”

Provided by University of British Columbia