

# Physics Department Seminar

11 am May 3, 2024 Science Building Room 126

## Active vs. Passive Learning: What's Best for Students?

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The quality of a science education program can determine how many students entering higher education choose to pursue STEM careers. To maximize this number, it is crucial to repeatedly evaluate what strategies for teaching STEM classes are most effective. To investigate which of the two main teaching methods, active learning or passive learning, is more beneficial in introductory-level physics courses, various case studies were conducted. Here, the definitions, methods, and results from these published studies are compiled and analyzed.

Results synthesized from the literature show an improvement in content retention for classes based on the active method, with passive learning-based classes being the control [1-4]. Students in the active classes seem to develop a deeper understanding of the concepts, while students in passive classes are less successful at information retention and the ability to connect concepts to physical applications. However, students in the active classes seem to have less confidence in their knowledge than those in the passive classes, which could interfere with their class performance in the future [3]. Methods for boosting student confidence and morale in active-style classes are worth future investigation.