

Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. (Freeman et al. 2014)

" We compared students' self-reported perception of learning with their actual learning under controlled conditions in large-enrollment introductory college physics courses taught using 1) active instruction (following best practices in the discipline) and 2) passive instruction (lectures by experienced and highly rated instructors)."

"Our study sought to measure students' perception of learning when active learning alone is toggled on and off. [...] The entire protocol was repeated twice in physics courses taught during fall and spring at Harvard University. [...] Classes meet for 90 min twice each week, during a semester lasting 15 wk."

"The experimental intervention took place during 2 consecutive class meetings in week 12 of each course. Students were randomly assigned to 2 groups and told to report to 2 different classrooms: room A with instructor A and room B with instructor B. For the first class meeting, on the topic of static equilibrium, instructor A used active learning, while instructor B taught the same topic using a passive lecture. For the second class meeting, on the topic of fluids, instructor A used a passive lecture while instructor B used active learning."

"The crucial difference between the 2 groups was whether students were told directly how to solve each problem or were asked to try to solve the problems themselves in small groups before being given the solution. "

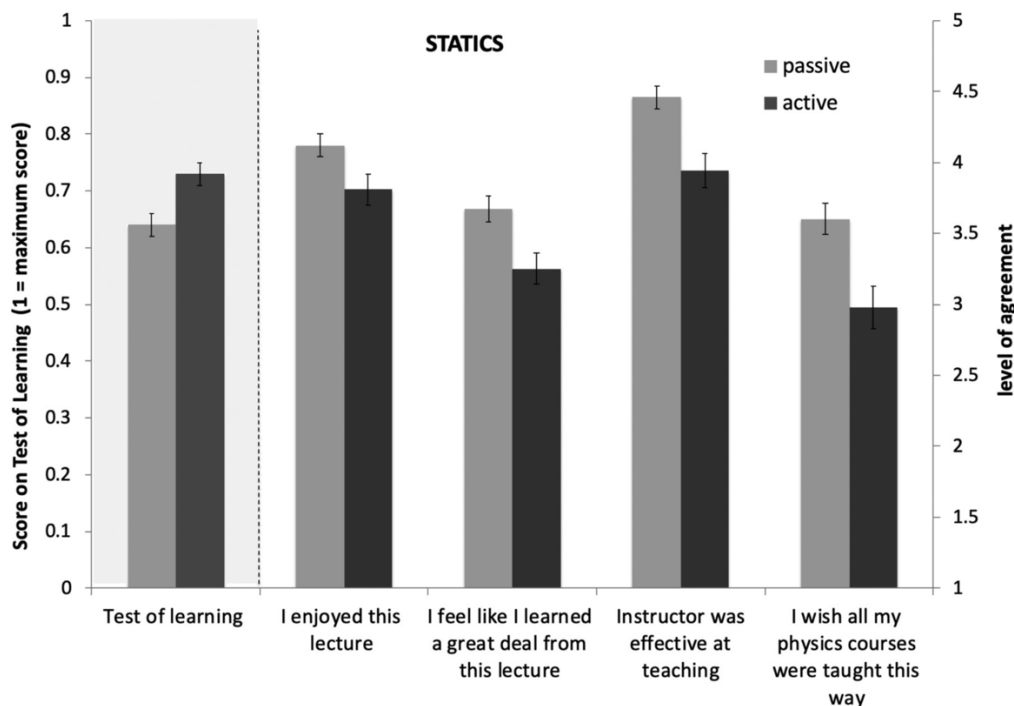


Figure 1: A comparison of performance on the TOL and FOL responses between students taught with a traditional lecture (passive) and students taught actively for the statics class. Error bars show 1 SE.

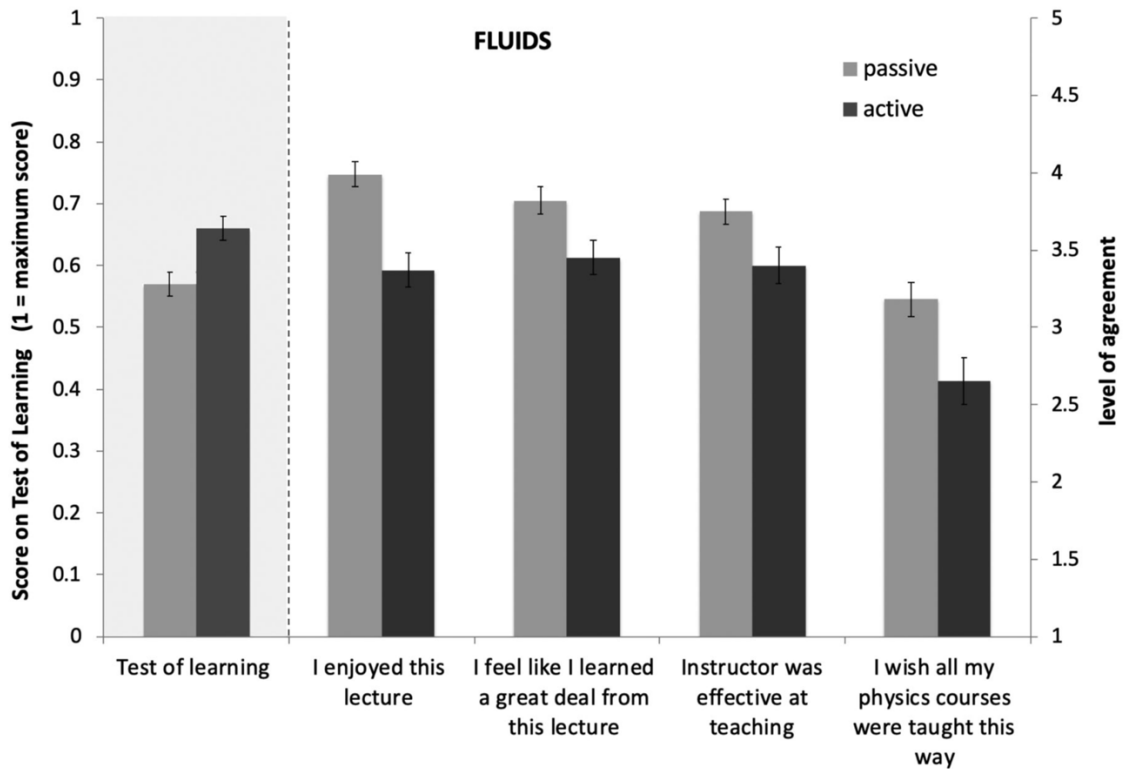


Figure 2: A comparison of performance on the TOL and FOL responses between students taught with a traditional lecture (passive) and students taught actively for the fluids class. Error bars show 1 SE.

"In conclusion, we find that students' perception of their own learning can be anticorrelated with their actual learning under well-controlled implementations of active learning versus passive lectures. These results point to the importance of preparing and coaching students early in the semester for active instruction and suggest that instructors should persuade students that they are benefitting from active instruction."