Researchers in the US have analysed 225 studies in order to compare student performance in classes with active learning versus traditional lectures in STEM courses (science, technology, engineering and mathematics).

The researchers defined active learning as in-class activities or discussion, and traditional lecturing as ‘continuous exposition by the teacher’ with no student activity apart from note-taking and perhaps asking occasional questions of the teacher.

Average examination scores improved by about 6% in conditions of active learning, and students in traditional lectures were 1.5 times more likely to fail than students in active classes.

While active learning techniques are perhaps more widely used in tutorials and workshops, there are many ways to encourage student engagement in lectures, including:

- Problem solving in groups or pairs
- Completing quizzes or worksheets
- Randomly calling on individuals or groups
- Using questioning methods with clickers or students’ own devices
- Cooperative learning teams

You can see some of these techniques in action in these short videos of teachers at Sydney:

- Associate Professor Adam Bridgeman on using worksheets and demonstrations in lectures
- Dr Lynne Chester on using clickers in lectures