

Student-Centred Active Learning Environment with Upside-down Pedagogies

SCALE-UP is a unique combination of active learning pedagogies, group-work strategies and a highly collaborative learning environment.

Originally developed for use with Physics students by Professor Robert Beichner, it has now been adopted by over 375 institutions across the USA and worldwide.

It was developed to provide an alternative to traditional lecture-oriented instruction and to promote active learning, particularly for large cohorts. It has since been found to work just as well with smaller classes.

Evaluations of SCALE-UP at North Carolina State University found several benefits for learning including: enhanced problem solving ability, increased conceptual understanding and higher attendance and satisfaction rates.



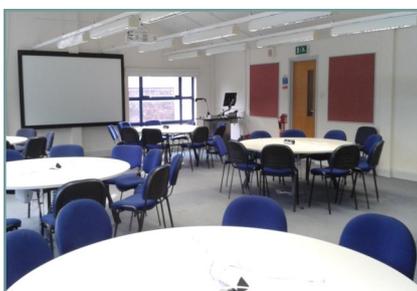
SCALE-UP was pioneered by Professor Robert Beichner at North Carolina State University (NCSU) in the USA.

Photo: *Beichner Honored as Digital Education Pioneer, [NCSU bulletin](#)*

There are three essential elements to the SCALE-UP approach:

- Students learn primarily through enquiry and problem based activities before, during and after sessions
- Groups are assigned and rotated strategically; group roles and reflective tasks build team working skills
- Room design and equipment promotes collaboration and a culture of 'public thinking' or ongoing peer feedback.

SCALE-UP at NTU



A SCALE-UP room at NTU

In 2013-14, NTU was the first UK university to pilot SCALE-UP in an institutional, multi-disciplinary project. 33 modules took part in the pilots, at both City and Clifton.

Pilot evaluation findings were positive: teaching staff reported greater student engagement with materials and more interaction with peers and tutor, leading to increased conceptual understanding. EvaSys scores indicated a high level of satisfaction with modules, and students expressed

appreciation for the increased level of interaction. Improved problem solving ability was highlighted throughout the evaluation, and there was a positive impact on grades overall. For 2017 NTU has 12 SCALE-UP rooms and over 100 modules involved in SCALE-UP teaching.

A SCALE-UP class

While there is no such thing as a typical session, characteristics include:

- Students sit at circular tables of 9 and work in groups of 3 or 4
- The learning environment is technology-rich and each group of 3 students shares a laptop
- Students in groups engage in a series of short learning activities interspersed with class-wide discussions
- Students might use the GOAL framework for problem-solving: Gather information, Organise your approach, Analyse the problem, Learn from your efforts
- Lectures are replaced with enquiry-based and flipped activities, interspersed with 'content chunks' such as mini-lectures
- Students are involved in teaching peers; tutors play more of a facilitator role, asking questions and sending one team of students to help another
- Students receive plenty of formative feedback during learning activities, from peers and from the tutor.

For further SCALE-UP resources including the SCALE-UP Handbook see: [SCALE-UP resources](#)

For the **report on the NTU pilot**, or to get involved in SCALE-UP, **Email:** NTUSCALEUP@ntu.ac.uk

External [resources on flipping](#): www.scoop.it/t/fliplearn-ntu

[NCSU SCALE-UP](#): scaleup.ncsu.edu/