Quick guide to active learning techniques

About Active Learning

Active learning is becoming increasingly recognised at the University of Glasgow as a key strategy for supporting student engagement and optimising learning outcomes. Although not explicitly mentioned in the UofG (2015) Learning and Teaching Strategy, it is congruent with some of the strategic aims, such as 'fostering critical thought and investigative learning', 'innovative and appropriate pedagogy', and 'developing physical infrastructure'. These aspirations are evidenced in the university's commitment to active learning, most visibly in the new James McCune Smith Learning Hub, but also in refurbished learning spaces around campus.

Active Learning Classrooms are based on a social constructivist pedagogy, which highlights the importance of student-centred learning, with teachers taking on the role of facilitator ('guide on the side versus sage on the stage').

Ways you can use the active learning

There are many different ways you can use spaces like this. We outline some here, but there are others and the University is developing a range of online and face-to-face resources and sessions to support staff who want to adapt their teaching approach, in the context of the SALT project (Supporting Active Learning and Teaching). It is certainly the case that spaces with group tables do not work well in traditional lecture mode and so we would encourage you to consider how to take advantage of the flexible learning spaces so that the educational benefits are maximised.

Collaborative & Cooperative Learning

These active learning spaces support cooperative or collaborative learning. These terms often used interchangeably (Barkley, Cross and Major, 2014); however, cooperative learning is more teacher-led and students can contribute to their groupwork individually (a 'jigsaw classroom' would be a good example of this), while collaborative learning is more student-led, and students are positively interdependent and mutually accountable in terms of engaging with the active learning task and any associated group outputs (here, team-based learning would be a good example)). The group outputs may or may not be assessed; however, it is worth noting that assessment can be a strong motivator for learning.

Think-Pair-Share

Think-Pair-Share is a cooperative technique that does not need to be used in a flexible learning space; it can be used in any teaching space such as a lecture theatre; however a flexible learning classroom can more easily encourage discussion. Students are typically assigned a task by their teacher to reflect on, then discuss it with another student, before being asked to share their findings with the whole class. This helps to create a safe learning climate and can encourage all students to contribute to the discussion in some way. It can be used in conjunction with other active learning techniques such as the Pluses, Minuses and Interesting points (PMI) worksheet (Hickey, 2019).

World café

The world café is a cooperative learning technique that can be used to crowd-source ideas and solutions in small groups. Typically used in conferences to stimulate discussion (Cassidy and Fox, 2013), this relaxed conversational technique also lends itself to student learning where there are several problems or considerations to investigate, and it supports constructivist learning in the sense that students' develop

their understanding by reflecting on and adding to the contributions of others, by moving around several tables in succession.

Jigsaw Classroom

The jigsaw classroom is as it sounds – students are divided into small groups to complete an investigative task. Within each group, each person is assigned a topic – e.g. topic 1, 2, 3, 4, 5. All the '1' students move to a single group (as do '2', '3', '4', '5' students) and research the topic together. In the third part of the exercise, the students move back into their original groups and share the outcomes of their focused research with their original group, for writing up outcomes (Keyes, 2019).

Flipped Classroom

Also called the inverted classroom, the flipped classroom capitalises on the affordances for technology-enhanced learning to allow students to prepare for a face-to-face class beforehand. This might involve working through online study resources independently, particularly if these resources are normally delivered in an 'information transmission, teacher focused' approach to teaching. Pre-session work then allows the face-to-face time to be used for more challenging activities that students undertake collaboratively in class (Bishop and Verleger, 2013). Teaching and learning in this form requires a shift in thinking on the part of the lecturer and an associated re-design of the class or course, however this can be achieved incrementally over time and the investment is hugely worthwhile in terms of lecturer and student satisfaction. If you do adapt your approach, it is important that you do not then revert to 'lecture' mode as this sets the expectation that students do not need to prepare before class. One common question asked is how to check that students have done their preparatory work. This could be evidenced by completion of an online activity, such as a quiz or wiki that documents each individual learner's contributions.

Team-based Learning

TBL capitalises on some aspects of the flipped classroom. Students are invited to prepare for the class, which is organised to support learning in teams. According to Michaelsen (2011), the four key elements of TBL are as follows:

1. Strategically formed, permanent teams – the teacher puts students into small groups and students remain in their groups for the rest of the course.
2. Readiness assurance – after completing the pre-session work (i.e. using a flipped format), students test their 'readiness' for learning through an individual multiple-choice test, and then a team readiness test, whereby the members of the team discuss their answers and agree on their preferred answer. A scratch card is used to enable the team members to scratch off their preferred answer, getting immediate feedback each time until they get the correct answer. Students can choose to 'appeal' as to why their answer is the correct one. The lecturer then presents a short lecture to clarify any misconceptions.
3. Application tasks – In teams, working in tandem, students are assigned an authentic problem to solve; they then report their findings to the class simultaneously, which allows for discussion of potential solutions.
4. Peer evaluation – students provide feedback to each other on their contributions to the tasks.

SCALE-UP

SCALE-UP (Student-Centred Active Learning Environments with Upside-Down Pedagogies) is another flipped classroom technique, where students come to class and work in three groups of three (typically around a round table of nine), with each set of three being allocated specific roles (manager, scribe or sceptic) to adopt when engaged in authentic problem solving (Beichner et al., 2007). Each trio can then

share and discuss their findings with the other trios at their table, before sharing their outcomes with the class as a whole.

Medical / Clinical Techniques

Some techniques have developed within clinical/medical education and appear to be most frequently used in these contexts – such as the 'fish bowl', where students observe other students engaged in an active learning experience such as interviewing a simulated patient (Sutherland et al., 2012) and provide feedback, though this could be applied to any active learning task.

Another technique is 'doughnut rounds' (Fleiszer et al., 1997), where students select a weekly piece of reading and then test their peers on its content in rounds of questions in a game show format. The doughnut aspect does not relate to any structural organisation of the groupwork, but instead to the attending surgeon bringing doughnuts and acting as a moderator.

References

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