

Brookes Briefing: Promoting active learning: designing dynamic teaching

The notion of active learning refers to a range of approaches that focus on the student and what they are doing as active agents in the learning process. This requires a shift of thinking in Higher Education, away from those historic 'chalk and talk', didactic, transmission approaches, towards a more dynamic approach.

The case for active learning is underpinned by three core strands of research: cognitive neuroscience, sociology and education. In their work on neuro-processing, Guy and Byrne (2013) explain that the brain must actively process information to construct new neuro-networks: it takes individual pieces of data, assesses that data, pairs or connects it with existing or new data. All of this occurs within the processing power of the short-term working memory. This process creates new neural-networks, a semantic framework of ideas and pushes knowledge into long-term memory (ibid). This cognitive power is most effective when the brain engages with critical thought, abstract reasoning, meta-cognition and frequent recall.

Research in sociology offers another perspective based on the principle that knowledge is socially constructed through the process of negotiating meaning with others (Burr, 2003). This perspective reaches back to Vygotsky (1978) who indicated that the 'zone of proximal development' i.e. how much one can stretch one's learning, is positively enhanced by engaging in critical debate with a more knowledgeable other (MKO). That MKO label is often attributed to the lecturer, academic, or tutor. However research in education offers strong indicators that peer learning, i.e. students working together with other students, also provides opportunities to become the MKO or to test ideas out with each other and frame a response through those shared cognitive reasoning processes (Mazur, 2014).

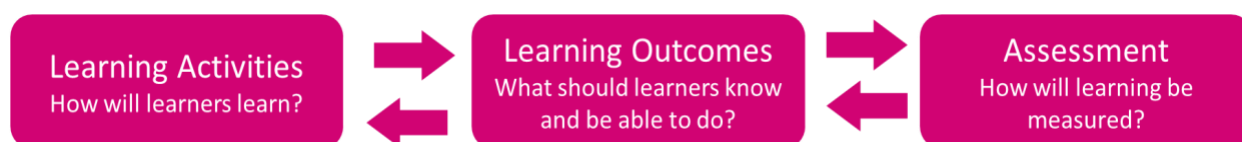
The bottom line is that active cognition and socially constructed learning activities strengthen the learning process. They support the formation of knowledge and the ability to think critically and construct meaning out of new data, information and experiences. Following a couple of years of disruption to learning due to the outbreak of COVID in 2019, many universities have rebalanced their learning offer, whilst encouraging students to return to in-person learning on campus. If we are to create a sticky campus, a place where students want to be and form their own learning communities (Berman, 2022), then active, participatory learning is an essential ingredient of this.

Principles and practices for promoting active learning and designing dynamic teaching

Principle 1. Design learning activities into your curriculum

Active learning requires a dynamic curriculum. There are plenty of models out there to support curriculum design, but the ABC model developed by Young and Perovic (2014) based on Laurillard's (2002) six learning types is useful to support the design of active learning. Laurillard's six learning types are: acquisition; investigation; practice; production; collaboration; discussion. Some of these activities may be completed autonomously, by individuals, at times that suit them. Other activities may be collaborative and require interaction with peers and teachers.

- Re-engineer 'content heavy' curricula towards an activity-based approach. e.g. switch from a series of three-hour didactic lectures on legislation relevant to professional scuba diving, to a series of real dive-accident case studies, based in different jurisdictions.
- Remember the 'curriculum' is not restricted solely to what happens in the classroom, it includes pre and post-class activities too. Use the 'flipped' classroom approach (Educause, 2012) whereby some of the 'input' is provided asynchronously pre-session, freeing up the synchronous 'class-time' for active collaboration and discussion with peers and teachers.
- Consider what kind of activities you might use - think outside the box. For example acquisition might include: searching/sourcing materials; interviewing people; listening to podcasts; answering given questions in response to an article or video. Depending on the discipline, production could be: designing an event; making an artefact; producing annotated drawings; creating a broadcast; writing a proposal or a report.
- Align the learning activities with the learning outcomes (this is called constructive alignment, see Biggs and Tang, 2007). Ensure that the activities are authentic and provide a direct route that will enable students to achieve the given outcomes.



- Scaffold the activities (Puntambekar, 2005). This can be done in several ways: clear instructions; stepped tasks which are broken down into stages; drip feed approach and milestones; increasing levels of complexity; built in support from library and learning advisors; reduced scaffolding and increasing levels of autonomy as studies progress.
- Avoid gimmicks, but engage with meaningful learning. e.g. an environmental waste course could design an immersive experience using virtual reality headsets. However a more effective approach may be a field trip to an environmental waste centre where students gain direct experience of smells, the scale of operation and hard hats. Or, if cost is a limiting factor - an alternative solution may be a video tour and the opportunity to discuss specific questions with the manager of the site.

Principle 2. Use effective approaches to facilitate interaction

Effective facilitation is an essential ingredient in successful active learning. The [Equality Act \(2010\)](#) places a clear responsibility on those who teach to ensure that all learners are treated equitably and with respect. At Brookes inclusivity is one of the five guiding principles that underpins the 2035 university strategy. Those who teach should role-model an inclusive ethos through their own professional behaviours and also support students to form positive, collaborative and respectful relationships.

- Start with low stakes, easy access buzz tasks or questions. These are the kind of activities that everyone can engage in with no 'wrong answers' e.g. complete a SWOT (strengths, weaknesses, opportunities, threats) analysis, 'chat to the person next to you about why you chose to study this subject' or, 'draw and label your idea of the ideal physiotherapist/engineer/business leader/university lecturer/etc'.
- Give clear, unambiguous instructions so that the students know what they need to do. 'Organise your group' may result in awkward silence, whereas 'identify the tasks, discuss your individual strengths and interests, allocate the tasks to named individuals on a shared doc, come back with a plan' will encourage more focused interaction.
- Ensure students can see an outline of the activity while they do it. This might be on screen, on a board or flip chart, in Moodle, in the 'chat' - this keeps them focused
- Forewarn students if you want them to feed back - this keeps the group on task and gives them time to prepare or rehearse a shared response.
- Wherever possible learn students' names and invite individuals to contribute, thereby sharing 'air-time' equally among the group.
- If your module includes assessment of group work, then ensure that group work essentials such as effective communication and collaboration are taught.

Principle 3. Build a sense of trust and inclusivity

Students will not actively engage with you (or anyone else) unless they feel comfortable or safe to do so. Those who teach students therefore need to check out how students are doing and set an invitational tone (Haigh, 2017). This is most effective through action and example.

- Ensure that interactions with students are positive, engaging, honest and respectful.
- Use the welcome time (online or in a classroom) to chat to people as they arrive and see how they are. Remember Maslow's (1943) hierarchy of human needs. Students need a good space to work in and the most basic needs met (warmth, food, headspace) before they can focus on learning.



- As students are registering for your programme, direct them to a social platform where they can interact with each other and start to form connections. Check out the offer from the [Students' Union](#).
- Learn students' names in your classes and in any other capacity that you might meet them such as through Personal Academic Tutoring. Research suggests that this supports the notions of individual value, positive relationships and can impact positively on participation and outcomes (Cooper et al, 2017).

References, resources and further reading

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