

Collaborative Learning

Collaborative learning is a key feature of the UTS **learning.futures** strategy and the university's approach to student learning. This is well reflected in the teaching spaces and learning commons in the recently opened buildings (e.g. FEIT Building, Dr Chau Chak Wing Building). In these new spaces, students can easily shift from working individually to working with others. However, in order to be effective, the configuration of the physical learning space needs to be accompanied by pedagogically sound instructions. This guide provides an overview of collaborative learning and its conceptual underpinnings. A range of practices is outlined, along with a contextualised case study.

What is collaborative learning?

Collaborative learning is a subset of active learning. It is a term used to describe approaches to learning where students work with one another to achieve targeted learning outcomes (Barkley, Cross & Major 2005). Students passively listening to the teacher is at one end of a continuum, whilst collaborative learning is at the other end. Students are not 'transmitted to' in collaborative learning; they are cognitively engaged. Much of this engagement centres on students interacting meaningfully with their peers (Dooley 2008). By interacting with their peers, students are given the opportunity to engage with the intended learning material in a socially constructed manner (Dooley 2008). In this context, students are required to work with the material, rather than merely absorb and store it for later recall in an exam. Students are considered to better process information with collaborative learning, as they are required to 'do things' with the material they are being introduced to (e.g. explain it to others, accommodate different perspectives) (Barkley et al. 2005).

The conceptual underpinnings of collaborative learning

In collaborative learning, the teacher views him or herself as part of the learning process (Bruffee 1999). The power relationship between teacher and student is more horizontal than vertical. The teacher is the designer and facilitator of learning

"I enjoyed the group tests as this enabled group reasoning and sharing of knowledge/ logic/thought processes."

"It was fun and interactive! Very different and makes you want to participate in class."

UTS Students commenting on their experience of using scratch cards (see the case study for more information on scratch cards)

experiences, and often views students as valuable contributors to the knowledge acquisition process. Students' perspectives are welcomed and used in class discussions. Knowledge is dynamic in collaborative learning. This process lends itself well to university education, where the continual contribution to knowledge is central. Collaborative learning covers terms such as team-based learning, peer-assessed learning and cooperative learning (Barkley et al. 2005). Although each term varies slightly in its underlying philosophy and design, this guide considers all three as belonging to the same class of active learning. This is where students engage with one another for the purposes of learning.

Examples of collaborative learning

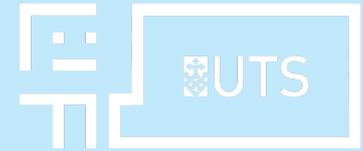
In the FACULTY OF SCIENCE Mary Garvey uses the collaborative learning technique of Learning Cells in her subject Chinese Diagnostic Systems 2.

Each week, students are required to construct two multiple choice questions. Students bring these to class and quiz the other members of their learning group. Groups then select two questions with which to quiz other members of the class.

The student-generated questions are also used later in the session with collaborative scratch card activities.

Collaborative learning is flexible and applicable to any student cohort. It can occur periodically or regularly in teaching sessions. It can last for an entire timetabled session or just a few minutes. It is also suited to classes of any size and can be effectively implemented in classes with very small or very large student numbers. Although some collaborative learning methods lend themselves to smaller student numbers (e.g. 20–40 students in a class), many can be used with classes exceeding 100 students (e.g. think–pair–share and collective quizzing or polling techniques). The following table provides a list of some well known collaborative learning techniques drawn from the literature (Tabot, Tufan and Hamada 2014; Berkley et al. 2005) and a brief description of each.

TECHNIQUES	DESCRIPTION	NOTE
Think–Pair–Share Write–Pair–Share Turn to Your Partner	Students are first given the opportunity to consider an issue (think) and record (write). Students are then asked to share their thoughts or recordings with another student. Students may be invited to share their discussions with the whole class.	This technique is suited to both small and large classes. However, students sharing their discussions with the whole class can be difficult in large classes with limited time and no microphone.
Buzz Groups Collective Quizzing Group Polling	3–5 students are broken into groups to discuss/brainstorm solutions or answers to a given problem. Groups might report their findings back to the class. They might also submit their results electronically (e.g. via a group quiz).	This technique is suited to both small and large classes. In large classes, the reporting back can be difficult (see above), but not if groups are engaging in an electronic group quiz or using clickers.
Learning Cells	Students generate questions related to various topics and quiz each other.	This technique is suited to both small and large classes. The student work (quiz questions) can be compiled and later used for whole-of-class quizzing (either performed individually or collaboratively). Submission of questions can be done electronically in large classes via an online survey tool.



Collaborative Scratch Carding

JANET GE, FACULTY OF DESIGN, ARCHITECTURE AND BUILDING

Based on the work of UTS' Keith Willey and Anne Gardner (2010a, 2010b), Janet Ge uses the Immediate Feedback Assessment Technique (IFAT) scratch cards in her subject 16236 Property Cash Flow Analysis. She uses the cards to foster a collaborative learning environment and active learning in the classroom. Scratch card sessions are linked to existing pre-work activity in an attempt to 'flip' student learning back into the classroom for additional feedback and discussion. That is, shift from:

- Learn in class → test out of class individually → receive lagged feedback

to

- Learn in class → test out of class individually → receive lagged feedback PLUS re-test in class collaboratively → receive immediate feedback → confirm/disconfirm learning and act upon feedback (e.g. re-solve problem).

Janet uses the cards as follows:

1. Students lectured in class on cash flow calculations, with demonstrations given.
2. Students complete quiz on the above outside of class.
3. Students attend class the following week and are given a group quiz with questions similar to the quiz completed outside of class:
 - they use IFAT scratch cards to select collaborative responses to questions
 - they receive instant feedback and are able to scratch and select again if wrong.
4. Students repeat process for three weeks.

Student feedback

"Actually learning things."

"If someone didn't understand, another would explain."

"Good to do interactive group work and be able to discuss the questions to work them out."

"All queries we had we could explain to each other."

More information on IFAT scratch cards, including how to purchase them, is available at:

<http://www.epsteineducation.com>

ADDITIONAL RESOURCES

The examples presented are just a few of the many collaborative techniques available. More details and other techniques, can be found at:

- Barkley et al. (2005). See references. IML has a copy of this book.
- Tabot et al. (2013). See references. This chapter is available electronically via the UTS Library.
- Iowa State University: <http://www.dso.iastate.edu/asc/supplemental/SIShowcaseCollaborative.pdf>
- The Global Development Research Center: <http://www.gdrc.org/kmgmt/c-learn/>
- UTS learning.futures: <http://www.uts.edu.au/research-and-teaching/teaching-and-learning/learningfutures/overview>

TECHNIQUES	DESCRIPTION	NOTE
Group Discussion	Students are invited to discuss a topic in an unstructured manner. This might be a topic prescribed by the teacher, but can also be chosen by groups. Groups report their discussion back to the class.	This technique is best suited to small class sizes. In classes with fewer than 10 students, the group can be the whole class with the teacher being a participant. In larger class sizes (25–40), the teacher does not participate, but facilitates the whole-of-class discussion and helps individual groups if needed.
Debates Between-group Interactions Role Plays	Groups of students take different perspectives on topics and discuss/debate the merits. Whole-of-class discussion follows.	This technique is best suited to small class sizes. Students can be assigned to groups or permitted to sign-up for one.
Jigsaw	For example, groups are given a reading (related to a topic) to explore, with each group member given a particular part of the text. Students then bring the extracts together to collate into a meaningful whole.	This technique is best suited to small class sizes. In situations where more than one group is given the same topic to explore, students with the same part of the text are given the opportunity to work with one another. Students thus work in two groups: their topic group and their home group.

References

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- Wiley, K. & Gardner, A. (2010b). Scratch that itch to learn: A comparative study. Proceedings of the AAEE Conference 2010, Freemantle, Western Australia.

FURTHER INFORMATION: <http://www.uts.edu.au/research-and-teaching/teaching-and-learning/learningfutures/>

IML welcomes feedback, suggestions and contributions to the IML learning.futures Series.