

Think-Pair-Share (TPS)

What is it?

Devised by Frank Lyman in the early 1980s, think-pair-share (TPS) is a scaffolding technique which encourages students to think on their own, before sharing their ideas with another student, and then the whole class, to encourage analytical thinking and problem solving. Many students are reluctant to speak up, particularly in large classes. This may be due to uncertainty about their views, social anxiety, or lack of confidence in English as a second language.

Inviting students to think for themselves, before sharing their ideas with one another student, provides a safe space for the exchange of ideas. Students are more likely to subsequently share their ideas with the class, if they and their peer have first validated each other's views. Citing Kagan and Kagan (2009), Sugiarto and Sumarsono (2014) also note that TPS engages students actively in their learning, resulting in more focused thinking and higher quality responses to the question posed.

How does it work?

1. Students think for a few minutes about a problem; this could be a solution they need to solve, or they may be reflecting on preparatory work done before coming to class.
2. Student then pair up (or group into 3s or 4s) to share their thinking, allowing them to discuss any areas of disagreement. At this stage, the lecturer typically walks around the class, getting an idea of the issues that students are raising in their pairs.
3. Students share their ideas with the class – this could simply be done verbally, one student at a time, or pairs/groups of students could visually and verbally present their findings to the whole class.

Many teachers engage in TPS intuitively, not realising that it is a validated technique to promote student engagement and active learning through discussion.

TPS can be incorporated into other cooperative learning techniques – for example, the Pluses, Minuses and Interesting Points (PMI) active learning technique (Hickey, 2019) whereby students think individually about the pluses, minuses and other interesting points about a scenario, recording them on a structured worksheet, before sharing their thoughts with those in a group of 3-4, who create a poster to communicate the outcome of their discussions for presenting to the class.

Does it work?

There is no systematic review or meta-analysis of the use of TPS in higher education, so recent individual studies are reported here. An observation study of a sample of students in a large computing science class over several lectures indicated that 81% were fully or mostly engaged in the 'think' phase, 83% were fully or mostly engaged in the 'pair' stage, and 75% were fully or mostly engaged in the 'share' phase (Kothiyal, Majumdar, Murthy, & Iyer, 2013).

A critical thinking inventory distributed to intervention (TPS) and non-intervention groups of nursing students revealed a significant difference between the two groups in terms of their critical thinking ability overall, and significant differences in terms of four of five subscales (Kaddoura, 2013).

What do I need?

A key benefit to think-pair-share is that it can be used to promote active learning through discussion in any teaching space – including a lecture theatre or a seminar room.

If you want student groups to share their findings visually, then you will need large sheets of paper and marker pens (Smith, 2019), so, it is a good idea to have a classroom with tables that allow for this. If students are to verbally present their posters to a larger class, then microphones are a good idea, for accessibility.

Links

The think-pair-share technique is clearly illustrated in this [MIT video](#).

References

- Hickey, R. (2019). Pluses, minuses and interesting points (PMI). In S. Ferns (Ed.), *Active Learning Strategies for Higher Education, The Practical Handbook* (pp. 55-67): Centre for Higher Education Research, Policy and Practice.
- Kothiyal, A., Majumdar, R., Murthy, S., & Iyer, S. (2013). *Effect of think-pair-share in a large CS1 class: 83% sustained engagement*. Paper presented at the Proceedings of the ninth annual international ACM conference on International computing education research.
- Smith, J. (2019). Think, pair, share. In S. Ferns (Ed.), *Active Learning Strategies for Higher Education, The Practical Handbook* (pp. 83-93): Centre for Higher Education Research, Policy and Practice.