

# In-Class Participation of All Students

**Goal:** Allow more students to practice the course material by encouraging all students to think and talk about geoscience and by actively managing student participation.

## Advantages:

- Promotes student engagement
- Allows multiple voices to be heard
- Does not add substantially to preparation time or time in class.



## Strategies

**Multiple Hands – Multiple Voices:** After asking for questions or responses, require a certain number of hands to be raised before calling on anyone.<sup>1</sup>

**Wait time/Write time:** After asking a question, allow students time to think or write before asking for responses. Allows all students to practice thinking about a question and for students to gather their courage.<sup>1</sup>

**Concept Test:** (Clicker questions) Multiple choice question that all students can answer with clickers or number of fingers. Allows all to participate and an alternative to verbal responses. Can be combined with think-pair-share.<sup>3</sup>

**Think-Pair-Share:** A thought-provoking question is posed to students who think about the answer, discuss it with their neighbors, then share to the whole class. Allows all students to participate in small groups and allows multiple ideas to be shared to the entire class.<sup>2</sup>

**Quick Around:** Instructor asks a questions that has multiple answers and can be answered in < 30 seconds. Each student in the class (or for large classes in a row or online) has the option to respond or pass. Allows for more students to be heard and to gather multiple diverse responses to questions.<sup>1</sup>

## Implementation

- After asking a question, incorporate one of the strategies.
- No additional preparation is required beyond being aware of strategy options.
- Most strategies can be implemented across a range of class sizes.
- Different strategies can be tried on different days. Strategies may be repeated to increase familiarity.

## References

1. Tanner, K.D., 2013, Structure Matters: Twenty-One Teaching Strategies to Promote Student Engagement and Cultivate Classroom Equity. CBE Life Science Education, v. 12, p. 322-331.
2. Lyman, F., 1987, Think-Pair-Share: An expanding teaching technique: MAA-CIE Cooperative News, 1: 1-2.
3. McConnell, D.A., Steer, D.N., Owens, K.D., Knott, J.R., Van Horn, S., Borowski, W., Dick, J., Foos, A., Malone, M. McGrew, H., Greer, L, and Heaney, P. J. 2006. Using conceptests to assess and improve student conceptual understanding in introductory geoscience courses. Journal of Geoscience Education, v. 54(1), p. 61-68.