

## *Research-based teaching tip*

# Peer explanation

*Allow students to discuss and explain answers to in-class questions and activity to their peers in pairs or small groups.*

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### **Rationale:**

Allowing students to discuss and explain answers to activities with their peers increases student interaction and information transfer, increases student accountability, and increases student performance.

### **Evidence:**

- Peer discussion and instructor explanation of clicker questions in genetics courses improved student performance compared to other conditions, including instructor explanation alone. This was true for both strongest and weakest performing students.<sup>1</sup>
- Students who actively collaborate on problem solving and memory tasks have higher performance compared to students who work individually.<sup>2-5</sup>
- Students who worked in pairs on a writing assignment had higher performance on assignments than did those who worked individually.<sup>6</sup>
- Students who work in pairs on experimental tasks have higher performance and engage in more explanatory activities than students who work individually.<sup>7</sup>

### **Implementation:**

When asking in-class questions, or requesting answers to in-class activities, direct students to work together in small groups to discuss and explain their answers prior to giving the answer to the class as a whole.

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### **Sources:**

<sup>1</sup>Smith MK, Wood WB, Krauter K, Knight JK (2011). Combining peer discussion with instructor explanation increases student learning from in-class concept questions. *CBE Life Sci Educ* 10, 55–63.

<sup>2</sup>Sampson V, Clark D (2009). The impact of collaboration on the outcomes of scientific argumentation. *Sci Educ* 93, 448–484.

<sup>3</sup>Menekse M, Stump GS, Krause S, Chi MTH (2013). Differentiated overt learning activities for effective instruction in engineering classrooms. *J Eng Educ* 102, 346–374.

<sup>4</sup>Wood E, Willoughby T, McDermott C, Motz M, Kaspar V, Ducharme MJ (1999). Developmental differences in study behavior. *J Educ Psychol* 91, 527–536.

<sup>5</sup>Relling AE, Giuliodori MJ (2015). Effect of peer instruction on the likelihood for choosing the correct response to a physiology question. *Adv Physio Educ* 39, 167-171.

<sup>6</sup>Gadgil S, Nokes-Malach TJ (2012). Overcoming collaborative inhibition through error correction: a classroom experiment. *Appl Cogn Psychol* 26, 410–420.

<sup>7</sup>Okada T, Simon HA (1997). Collaborative discovery in a scientific domain. *Cogn Sci* 21, 109–146.