

## Research-based teaching tip

# Avoid giving hints

*Avoid giving hints to students before they have had adequate time to discuss, evaluate, or formulate responses to questions or problems you have posed during class.*

---

### Rationale:

Use of histograms to display the range of student responses to a question, or hinting at responses, between iterations in a question or activity decreases the quality of peer discussions, student effort, and learning outcomes.

### Evidence:

- When hints or histograms are displayed, making the correct answer easier to guess, students are less likely to expend effort to determine the correct response; this negatively impacts learning outcomes.<sup>1-2</sup>
- Use of a histogram of responses to hint at the correct answer in a clicker question can bias students' evaluations of the responses.<sup>3</sup>
- Use of a histogram of responses to hint at the correct answer in a clicker questions cause students who choose the correct answer (but not the most common answer) to lose confidence in their reasoning, while students who select the most common answer following discussion have increased confidence irrespective of whether their choice was correct.<sup>4</sup>
- Use of a histogram of responses to hint at the correct answer in a clicker questions negatively impacts the quality of peer discussions.<sup>5</sup>
- Use of a histogram of responses to hint at the correct answer in a clicker question causes students to choose the most common answer, whether it was correct or not.<sup>3-5</sup>

### Implementation:

Simply avoid giving students hints or showing histograms of responses to clicker questions before they have had adequate time to formulate, discuss, and evaluate their own responses.

---

### Sources:

<sup>1</sup>Kulhavy RW (1977). Feedback in written instruction. *Rev Educ Res* 47, 211–232.

<sup>2</sup>Eddy SL, Converse M, Wenderoth MP (2015). PORTAAL: a classroom observation tool assessing evidence-based teaching practices for active learning in large science, technology, engineering, and mathematics classes. *CBE Life Sci Educ* 14, 1-16.

<sup>3</sup>Perez KE, Strauss EA, Downey N, Galbraith A, Jeanne R, Cooper S (2010). Does displaying the class results affect student discussion during peer instruction? *CBE Life Sci Educ* 9, 133–140.

<sup>4</sup>Brooks BJ, Koretsky MD (2011). The influence of group discussion on students' responses and confidence during peer instruction. *J Chem Educ* 88, 1477–1484.

<sup>5</sup>Nielsen KJ, Hansen-Nygaard G, Stav JB (2012). Investigating peer instruction: how the initial voting session affects students' experiences of group discussion. *ISRN Educ* 2012, 1–8.