Many neuroscience faculty assign readings from the textbook or primary literature to their students. What can we learn from research about how many of the students actually “do” the reading and, of those who do it, comprehend what they read? This article presents findings from studies on college student compliance with and comprehension of assigned readings and offers research-based strategies for motivating students to complete the readings in ways that promote deep learning. Faculty are encouraged not only to ask about the role that reading plays in undergraduate learning, but also the role that they themselves play in developing college student reading proficiencies.

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of college graduates were proficient readers, meaning that they were able to read lengthy, complex texts, synthesize information and draw complex inferences (Kutner, 2003). This number declined from 40% in 1992. A separate and more recent study that focused on the reading comprehension skills of first semester freshmen found that of the 46% of the students who said that they completed the reading, only 55% of those were able to demonstrate basic comprehension of the text (Hoeft, 2012).

Research on comprehension indicates that what matters most for understanding a passage is (a) having a goal for the reading, (b) having background knowledge on the topic, and (c) having developed a self-concept as a reader (Willingham, 2017). Being clear about the purpose of a reading assignment and tightly aligning readings with class activities so that one builds off the other in explicit ways will help students develop the goals and background knowledge that are useful for developing reading proficiency. And the best way for students to develop self-concepts as readers is, in fact, for them to read more (Willingham, 2017). In other words, one of the reasons that students may not complete course readings is because they do not see “being a reader” as a salient aspect of their personal identities. Helping students develop habits of reading through increased practice in and accountability for reading in a single class may help them see themselves as “people who read” in general, increasing the likelihood that they will read for other courses as well.

College teachers can help their students develop goals for reading assignments by clarifying the purpose of an assignment, its intended outcomes, and describing (or, even better, asking students to describe) the way it connects to larger course goals or concepts from the lecture. If this process of reflection reveals that textbook readings largely duplicate the material covered by the lecture or course activities, it may be especially important to be clear about the purpose of the reading and/or to reevaluate the value of the assignment at all. Is the assignment a passive resource for exam review? A suggested (but not required) “pre-read” for the lecture? If it seems as if the reading largely duplicates the lecture, students are likely to be better served by one of two options. The first option would be to hold them accountable for reading the textbook by assessing their comprehension of it and then using class time to deepen their understanding by applying concepts from the reading to new contexts or cases. The second would be to keep the class activities as they are (e.g., lecture) but to ask students to read (and, again, be held accountable for) primary literature that extends or challenges their grasp of the foundational concepts established in class.

Research on learning in college identifies some strategies as more effective than others in getting students to engage the readings. For example, while many college teachers believe that a participation grade will encourage students to complete the reading, empirical studies suggest that most students are quite happy to participate in a discussion without having done the reading. In one study that surveyed students in 16 classes, only 20% of the students identified “not having done the reading” as a reason to not participate in discussions (Howard and Henney, 1998).

Participation grades may not work, but quizzes do. Several studies suggest that reading quizzes not only encourage reading compliance but also strengthen learning of the course material (Ruscio, 2001; Heiner et al., 2014; Connor-Greene, 2016). A recent study by Hodges et al. (2015) confirms the effectiveness of quizzes for developing student compliance with and comprehension of reading assignments in STEM classes and also offers concrete ideas for incorporating them in ways that promote deep learning. For example, the authors suggest that quiz questions aimed at lower-order thinking (e.g., defining a term or solving a problem similar to an example in the text) can be followed up by class activities that ask students to explain their reasoning or defend their answers.

Other strategies for promoting reading in STEM classes include structured exercises for helping students to read primary literature and make the best use of their textbook. Wenk and Tronsky (2011) have developed a reading guide to help first-year science students prepare to read primary research as well as a list of assignments aimed at helping students connect the primary research to textbook or lecture information. Their examples include “pre-reading” assignments in which students are asked to write about one graph or table in an article before reading the entire thing or “post-reading” assignments that ask students to update the textbook based on the research findings. Another approach, developed by Brownell et al. (2013), asks students to translate primary scientific research articles into one-page summaries intended for general readers, as one might find in the New York Times Science Tuesday section. An additional strategy for incorporating reading involves asking students to first identify “key sentences” in a passage and then evaluate its placement, clarity, and integration within a paragraph (Bennett and Taubman, 2013). Harmon and Pegg (2012) have suggested ways to embed laboratory experiences with activities that strengthen reading by, for example, asking students to make concept maps, break down vocabulary words, and write focused questions based on textbook chapter headings.

When facing the evidence that students did not “do” the assigned reading, it is tempting to either abandon reading assignments altogether or to keep the assignments but teach in a way that does not depend on their completion, e.g., by duplicating the content in the assigned reading in a lecture. Doing so minimizes the role that reading plays in undergraduate neuroscience education, but it also minimizes the responsibility of neuroscience faculty in developing college graduates who are proficient readers.

REFERENCES

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