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Asking Better Questions for Learning:

*Techniques to Elicit Deeper
Thinking and Understanding*



ASKING BETTER QUESTIONS FOR LEARNING: TECHNIQUES TO ELICIT DEEPER THINKING AND UNDERSTANDING

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Not all questions are created equal. Some check for surface-level recall, whilst others trigger deeper reasoning, prompt reflection and reveal misconceptions. Questions and quizzes don't just have the potential to assess learning; they can help accelerate it as well.

This article considers different types of questions and the timing of these questions, as well as taking an extended look into how multiple-choice questions can help improve student learning.

DIFFERENT TYPES OF QUESTIONS

There are three powerful types of classroom questions:

1. Pre-questions

These are posed before students begin learning the new material. The aim is not to test prior knowledge but to prime attention and enhance memory. In a key study, Carpenter and Toftness (2017) found that students who were asked questions before learning the content were more likely to remember the key information later on.

There are several theories as to why pre-questions may be of benefit. Some have highlighted the power of prediction in the learning process (Brod, 2021), whereas others have noted that the 'Hypercorrection Effect', which describes how we are more likely to remember information that we have previously got confidently wrong, may play a role (Metcalf, 2017). Finally, a recent study suggests that pre-questions may help improve student attention, as they signal to students which information they should focus on in the lesson (Soderstrom and Bjork, 2023).



2. Hinge questions

These are quick, focused questions posed at pivotal points during a lesson, often in the middle. A teacher's next move hinges on the responses. William and Leahy (2015) emphasise that good hinge questions are short, diagnostic, and provide real-time feedback. Often delivered in multiple-choice format, they reveal misconceptions and help teachers decide whether to move to the next part of the lesson or to re-teach the content.

3. Elaborative interrogation

This technique involves asking students to explain why a fact or concept is true. It prompts connections with prior knowledge. A seminal study by Pressley et al. (1987) found that asking "why" questions significantly improved both memory and comprehension. By helping students connect the new information with previously learnt material, it helps strengthen their memory and supports deeper learning.

MULTIPLE-CHOICE: MORE THAN JUST AN ASSESSMENT

Multiple-choice questions (MCQs) are often used for testing, but, if designed well, they can also support learning (Marsh et al., 2007). A seminal study in this area highlighted some quick wins that teachers can use to improve the quality of multiple-choice questions in order to accelerate student learning (Butler, 2018). These tips include:

- **Avoid using complex questions or answer formats** - When things are too complex, your questions can lead to misunderstandings and students guessing the answer. By keeping the format simple, they become a more reliable assessment of what the students do or don't know.
- **Avoid using "None of the Above" and/or "All of the Above" as potential answers** - The main issue with "None of the Above" is that, if it is the correct answer, then the test-taker has been exposed to numerous false answers. This therefore represents a missed opportunity to reinforce what the correct answer was.

"All of the Above" may be helpful when it is the correct answer because, as Butler explains, "*the test taker is only exposed to the correct information*". However, it is still generally regarded as a weak answer option (DiBattista et al, 2014)

- **Carefully consider the number of answer options** – If only two answer options are given (i.e. A or B), then students are not required to think too hard in order to gain a high success rate. Conversely, if you provide too many answer options, although the amount of effort and retrieval will be high, it will take a long time to go through each question. Therefore, it is advised to use 3 or 4 answer options, representing a sweet spot when using multiple-choice questions to improve learning.
- **Ensure you provide feedback on the correct answers** – When giving feedback to students, the researchers noted that “*one important caveat is that the effectiveness of feedback depends upon students being motivated to process it and their motivation tends to decrease over time.*” Therefore, if feedback is delayed, it would be wise to take steps to ensure that students are “*required or incentivized to process it*”.

FINAL THOUGHTS

Asking better questions doesn't mean asking more complicated ones; it means asking the right ones at the right time. It is not just about quantity (although that can play a part); it is about quality as well. Whether through a pre-question that sparks curiosity, a hinge question that diagnoses understanding, or a follow-up that prompts explanation, effective questioning can transform learning.

Multiple-choice questions can help with this. They are quick to ask, quick to answer and can be quick to mark. Plus, if designed in a clever and thoughtful way, multiple-choice questions can help ensure that students are thinking hard about the material.

REFERENCES

Brod, G. (2021). Predicting as a learning strategy. *Psychonomic Bulletin & Review*, 28(6), 1839–1847. <https://doi.org/10.3758/s13423-021-01904-1>

Butler, A. C. (2018). Multiple-Choice testing in education: Are the best practices for assessment also good for learning? *Journal of Applied Research in Memory and Cognition*, 7(3), 323–331. <https://doi.org/10.1016/j.jarmac.2018.07.002>

Carpenter, S. K., & Toftness, A. R. (2017). The effect of prequestions on learning from video presentations. *Journal of Applied Research in Memory and Cognition*, 6(1), 104–109. <https://doi.org/10.1016/j.jarmac.2016.07.014>

DiBattista, D., Sinnige-Egger, J.-A., & Fortuna, G. (2014). The “none of the above” option in multiple-choice testing: An experimental study. *The Journal of Experimental Education*, 82(2), 168–183. <https://doi.org/10.1080/00220973.2013.795127>

Marsh, E. J., Roediger, H. L., Bjork, R. A., & Bjork, E. L. (2007). The memorial consequences of multiple-choice testing. *Psychonomic Bulletin & Review*, 14(2), 194–199. <https://doi.org/10.3758/bf03194051>

Metcalfe, J. (2017). Learning from errors. *Annual Review of Psychology*, 68(1), 465–489. <https://doi.org/10.1146/annurev-psych-010416-044022>

Pressley, M., McDaniel, M. A., Turnure, J. E., Wood, E., & Ahmad, M. (1987). Generation and precision of elaboration: Effects on intentional and incidental learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 13(2), 291–300. <https://doi.org/10.1037/0278-7393.13.2.291>

Soderstrom, N. C., & Elizabeth Ligon Bjork. (2023). Pretesting enhances learning in the classroom. *Educational Psychology Review*, 35(3). <https://doi.org/10.1007/s10648-023-09805-6>



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