What Makes Self-Directed Learning Effective?

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In recent years, educators have come to focus more and more on the importance of lab-based experimentation, hands-on participation, student-led inquiry, and the use of "manipulables" in the classroom. The underlying rationale seems to be that students are better able to learn when they can control the flow of their experience, or when their learning is "self-directed."

While the benefits of self-directed learning are widely acknowledged, the reasons why a sense of control leads to better acquisition of material are poorly understood.

Some researchers have highlighted the motivational component of self-directed learning, arguing that this kind of learning is effective because it makes students more willing and more motivated to learn. But few researchers have examined how self-directed learning might influence cognitive processes, such as those involved in attention and memory.

In an article published in Perspectives on Psychological Science, a journal of the Association for Psychological Science, researchers Todd Gureckis and Douglas Markant of New York University address this gap in understanding by examining the issue of self-directed learning from a cognitive and a computational perspective.

According to Gureckis and Markant, research from cognition offers several explanations that help to account for the advantages of self-directed learning. For example, self-directed learning helps us optimize our educational experience, allowing us to focus effort on useful information that we don't already possess and exposing us to information that we don't have access to through passive observation. The active nature of self-directed learning also helps us in encoding information and retaining it over time.

But we're not always optimal self-directed learners. The many cognitive biases and heuristics that we rely on to help us make decisions can also influence what information we pay attention to and, ultimately, learn.

Gureckis and Markant note that computational models commonly used in machine learning research can provide a framework for studying how people evaluate different sources of information and decide about the information they seek out and attend to. Work in machine learning can also help identify the benefits – and weaknesses – of independent exploration and the situations in which such exploration will confer the greatest benefit for learners.

Drawing together research from cognitive and computational perspectives will provide researchers with a better understanding of the processes that underlie self-directed learning and can help bridge the gap between basic cognitive research and applied educational research. Gureckis and Markant hope that this integration will help researchers to develop assistive training methods that can be used to tailor learning experiences that account for the specific demands of the situation and characteristics of the individual learner.

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