

# Expertise Reversal Effect

## Theory

Expertise reversal effect means that

- *“instructional techniques that are highly effective with inexperienced learners can lose their effectiveness and even have negative consequences when used with more experienced learners.”<sup>1)</sup>*

This means that many practices that are helpful to novices are inefficient for experts due to the difference in knowledge. Information that might be crucial for novices to understand something is already well known and **redundant**<sup>2)</sup> to the experts so it may produce **unnecessary extraneous load**.<sup>3)</sup>

## Practice

In practice, expert reversal effect means learning materials should be adjusted to users depending on their **expertise level (prior knowledge)**. For example, studying worked examples is effective for novices, but due to prior knowledge practice and solving problems becomes more and more effective technique as the expertise level increases. Also,

- *“explanatory text may be essential for novices and so should be physically integrated with diagrams or presented in spoken form to reduce extraneous cognitive load. With increasing expertise, the text becomes redundant and should be eliminated.”<sup>4)</sup>*

To deal with this effect, a rapid **test of knowledge** has been proposed.<sup>5)</sup>

## Research status

Newer research has confirmed this effect and replicated results of previous studies.<sup>6)</sup><sup>7)</sup>

<sup>1)</sup>  
Kalyuga, Slava, Paul Ayres, Paul Chandler, and John Sweller. The Expertise Reversal Effect. *Educational Psychologist* 38: 23-31, March 2003.

<sup>2)</sup> <sup>6)</sup>  
Rey, Guenter Daniel, and Florian Buchwald. The Expertise Reversal Effect: Cognitive Load and Motivational Explanations. *Journal of Experimental Psychology: Applied* 17, no. 1: 33-48, March 2011.

<sup>3)</sup> <sup>4)</sup>  
Sweller, J. Human Cognitive Architecture. In *Handbook of research on educational communications and technology*, 369-381. Taylor & Francis, 2008.

<sup>5)</sup>  
Kalyuga, Slava, and John Sweller. Measuring Knowledge to Optimize Cognitive Load Factors During Instruction. *Journal of Educational Psychology* 96, no. 3: 558-568, September 2004. cited by Sweller, J. Human Cognitive Architecture. In *Handbook of research on educational communications and*

technology, 369-381. Taylor & Francis, 2008.

7)

Rey, G. D., & Fischer, A. (2013). The expertise reversal effect concerning instructional explanations. *Instructional Science*, 41(2), 407-429.

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