

Worked Examples Effect

Theory

The worked examples effect was first introduced in 1985¹⁾ suggesting positive effects of providing a learner with an **example of the problem solution** before requiring him to solve one on his own.

This suggestion is contrary to many **constructivist discovery learning** methods which suggest a learner should try to solve the problem by himself. **Cognitive load theory** on the other hand suggests that searching for the problem solution places unnecessary load on the learner's mind preventing him from learning. A worked example will remove the load of searching for a solution and enable easier acquisition of basic steps leading to the solution.

Practice

$$\begin{array}{ll}
 1. \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} & 2. \quad x = \frac{8 \pm \sqrt{256}}{4} \\
 2x^2 - 8x - 24 = 0 & x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(2)(-24)}}{2(2)} \\
 x = ? & x = \frac{8 \pm 16}{4} = 2 \pm 4 \\
 & x = 6, -2 \\
 & x = \frac{8 \pm \sqrt{64 - (-192)}}{4}
 \end{array}$$

Learners should be presented with a worked example of the procedure they're expected to learn **prior to trying to solve a problem** which requires that procedure. For example, when teaching learners the formula for calculating roots of a quadratic formula, learners should first be provided with a worked example of using the formula, and then try to solve a problem on their own.

Still, it should be noted that under some conditions

- “*worked examples are no more effective, and possibly less effective, than solving problems.*”²⁾

This is due to the fact that even **worked examples can be badly designed** and not follow the **principles and effects** of proper instructional design.

Research status

¹⁾

Sweller, John, and Graham Cooper. The Use of Worked Examples as a Substitute for Problem Solving in Learning Algebra. *Cognition and Instruction* 2: 59-89, 1985.

²⁾

Ward, Mark, and John Sweller. Structuring Effective Worked Examples. *Cognition and Instruction* 7: 1-39, 1990.

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