

# Worked Examples Effect

## Theory

The worked examples effect was first introduced in 1985<sup>1)</sup> 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

$$2x^2 - 8x - 24 = 0$$

$$x = ?$$

1. 
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(2)(-24)}}{2(2)}$$

$$x = \frac{8 \pm \sqrt{64 - (-192)}}{4}$$
2. 
$$x = \frac{8 \pm \sqrt{256}}{4}$$

$$x = \frac{8 \pm 16}{4} = 2 \pm 4$$

$$x = 6, -2$$

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."*<sup>2)</sup>

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

A recent research has systematically compared usage of worked examples, example-problem pairs, problem-example pairs and problem-solving, demonstrating that

- *"example study only and example-problem pairs were more effective and efficient than problem solving only and problem-example pairs."*<sup>3)</sup>

<sup>1)</sup>

[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.

3)

van Gog, Tamara, Liesbeth Kester, and Fred Paas. Effects of worked examples, example-problem, and problem-example pairs on novice learning. *Contemporary Educational Psychology* 36, no. 3: 212-218, July 2011.

From:

<https://learning-theories.org/> - **Learning Theories**

Permanent link:

[https://learning-theories.org/doku.php?id=research\\_results:worked\\_examples\\_effect&rev=1315914413](https://learning-theories.org/doku.php?id=research_results:worked_examples_effect&rev=1315914413)

Last update: **2023/06/19 15:49**

