

Worked Examples Effects

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

The image shows a handwritten derivation of the quadratic formula for the equation $x^2 - 6x + 24 = 0$. The steps are as follows:

$$x^2 - 6x + 24 = 0$$
$$x^2 - 6x = -24$$
$$x^2 - 6x + 9 = -24 + 9$$
$$(x - 3)^2 = -15$$
$$x - 3 = \pm \sqrt{-15}$$
$$x = 3 \pm \sqrt{-15}$$

The final result is $x = 3 \pm \sqrt{-15}$.

Learners should be presented with a worked example of the procedure they're expected to learn prior to trying to solving 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.

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.

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