Explanation Prompts

Theory

Explanation prompts are an instructional aid which promotes understanding of the learned material and **conceptual knowledge** by requiring the learner to elaborate on the step of a procedure he has just learned about.[1)]

Two possible explanations were offered for this effect: first, claiming the enhanced learning result is caused merely by being exposed to additional information and that result would be the same if learners were offered teacher-provided explanations, and second, claiming the enhanced learning result is caused by the process of generating explanation from learner's own background knowledge. A recent research has supported the second hypothesis, suggesting that

- "*the important variable for learning was the **process** of producing an explanation.*"[2)]

Practice

In practice, explanation prompts can be **verbal**, **automatically generated by a computer** or **incorporated in the learning material**, but no matter the form, their goal is to elicit active processing and verbalization/explanation of the learned principle.

An example of an explanation prompt is the following:

- "*We would like you to read each sentence out loud and then explain what it means to you. That is, what new information does each line provide for you, how does it relate to what you've already read, does it give you a new insight into your understanding of how the circulatory system works, or does it raise a question in your mind. Tell us whatever is going through your mind–even if it seems unimportant.*"[3)]

Research status

A recent research has revealed some negative aspects of explanation prompting. Prompts can lead to cognitive overload facilitating conceptual, but hindering procedural knowledge acquisition.[4)]

1) , 4)
Berthold, Kirsten, Tessa H. S. Eysink, and Alexander Renkl. Assisting self-explanation prompts are more effective than open prompts when learning with multiple representations. Instructional Science 37: 345-363, April 2008.

2)
Hausmann, R. G. M., & VanLehn, K. Explaining self-explaining: A contrast between content and generation. In R. Luckin, K. R. Koedinger & J. Greer (Eds.), Artificial intelligence in education: Building technology rich learning contexts that work, vol. 158, pp. 417-424. Amsterdam: IOS Press, 2007.

3)
Chi, M. T. H., DeLeeuw, N., Chiu, M.-H., & LaVancher, C. Eliciting self-explanations improves understanding. Cognitive Science, 18, 439-477, 1994.