Chapter 15: The Worked-Out Examples Principle in Multimedia Learning

Traditionally, example based learning consists of presenting a principle, rule or theorem, providing a worked out example, and then giving one or more problems for students to solve. However, this approach does not fully exploit the potential of example based learning. Example based learning has been shown to be more effective when using a series of worked out examples with successively faded worked-out steps than when providing single example-problem pairs.

In the initial stages of cognitive skill acquisition, learners have limited prior knowledge and are unable to use domain specific strategies. With this limitation, learners often rely on a means-end approach which focuses on just trying to obtain a solution to a problem rather than understanding the material. The transition from initial stages of skill acquisition to deeper understanding is facilitated by faded examples. In later stages of skill acquisition, studying worked out examples becomes less effective because the learner has to be able to think for himself which is best accomplished by actual problem solving.

When done appropriately, the fading procedure of example based learning can increase student learning by prompting self explanations. This chapter lists guidelines to be used when creating example based learning lessons. They are:

- **Self-Explanation Guideline:** Create examples which encourage learners to explain rationale to themselves.
- **Help Guideline:** Provide minimal example related instructional explanation on learner demand.
- **Easy-Mapping Guideline:** Design examples so that the relations between different representations can be easily detected.
- **Structure Emphasizing Guideline:** Make the relevant structural features salient so the learner can detect the problem type in terms of their solution relevant structure.
- **Meaningful Building Block Guideline:** Facilitate the isolation of meaningful building blocks in worked out procedures which can be applied to new problem structures.

Example based learning has been shown to be the information source preferred by learners. Specifically, given a choice, learners choose examples over text. In a computer based learning environment, example based learning is especially effective because the examples are user driven.

There are certain drawbacks to this method of teaching. Example based teaching is very effective in disciplines where the solutions to problems are algorithmic in nature, like math, physics, computer programming or chemistry. But this method is difficult to apply in other settings, like art or literature for example. Another drawback to providing a series of faded examples is that it leads the learner to only one method of solution as opposed to allowing for different approaches.

I found this chapter interesting because even though I had no formal teacher training before I began to teach, I found myself using this type of example based learning instinctively. It is nice to know that there is research which supports the method that I have found to be most successful at engaging students and helping them to make the transition to thinking for themselves.