Technologies and Their Effect on Learning as a Biological Process

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This special issue of The Journal of International Forum of Educational Technology & Society comprises an eclectic group of essays and studies that, collectively, investigates newer educational technologies in the light of learning as a biological process. All of the contributors would appear to share a common belief; learning is the result of something happening in the heads of learners and technology is useful if and when it facilitates that something.

The first study (Roth) shows how an interactive computer program can facilitate cooperative study. It verifies as well the observation that conceptualization can be correct before verbalization is adequate. In their study body language and gesturing led, somewhat gradually, to correct verbalization. Margaret Martinez's study shows how technology can be used to investigate and react to varying levels of student motivation.

Steven Tripp's speculative but provocative essay suggests that learning can be considered analogous to navigation. His arguments are based on the fact that the same small structure in the brain enables navigation and short term memory. He suggests that a link between learning and navigation has strong implications for software and program design. The contribution of Theresa Ochoa provides convincing evidence that computer technology can be used effectively in case studies and that it can even contribute to one of the most effective elements of study, emotional involvement with the content.

The study submitted by Judy Dori shows how technology and physical content with models of chemical structures can contribute toward understanding and conceptualization, as demonstrated by increased ability of students to generalize and verbalize. The guest editor's reflective essay attempts to explain the successes (and sometimes the failures) of educational technologies on the basis of their effectiveness in capitalizing on those biological processes that constitute learning. An understanding of the biology of the learning process leads inexorably to one conclusion; learning demands focused attention and practice. The successful studies reported here support this premise.

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