

Applying Cognitive Psychology to Education: Translational Educational Science

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Abstract : The scientific study of human learning and memory is now more than 125 years old. Psychologists have conducted thousands of experiments, correlational analyses, and field studies during this time, in addition to other research conducted by those from neighboring fields. A huge knowledge base has been carefully built up over the decades. Given this backdrop, we may ask ourselves: What great changes in education have resulted from this huge research base? How has the scientific study of learning and memory changed practices in education from those of, say, a century ago? Have we succeeded in building a translational educational science to rival medical science (in which biological knowledge is translated into medical practice) or types of engineering (in which, e.g., basic knowledge in chemistry is translated into products through chemical engineering)? The answer, I am afraid, is rather mixed. Psychologists and psychological research have influenced educational practice, but in fits and starts. After all, some of the great founders of American psychology—William James, Edward L. Thorndike, John Dewey, and others—are also revered as important figures in the history of education. And some psychological research and ideas have made their way into education—for instance, computer-based cognitive tutors for some specific topics have been developed in recent years—and in years past, such practices as teaching machines, programmed learning, and, in higher education, the Keller Plan were all important. These older practices have not been sustained. Was that because they failed or because of a lack of systematic research showing they were effective? At any rate, in 2012, we cannot point to a well-developed translational educational science in which research about learning and memory, thinking and reasoning, and related topics is moved from the lab into controlled field trials (like clinical trials in medicine) and the tested techniques, if they succeed, are introduced into broad educational practice. We are just not there yet, and one question that arises is how we could achieve a translational educational science.

Keywords : affective, education, cognition, psychology

Conference Title : ICEPS 2015 : International Conference on Educational and Psychological Sciences

Conference Location : Vancouver, Canada

Conference Dates : August 06-07, 2015