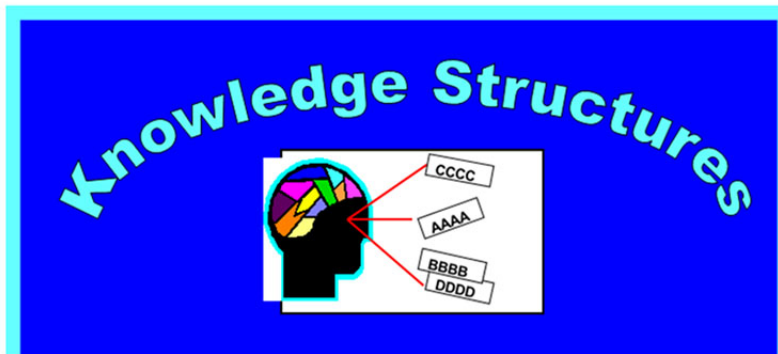# Knowledge vs. Knowledge Structures – Across the Disciplines
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BASIC PROBLEM

Instructors assess knowledge – what students know about course material. But what about knowledge structures? Do students perceive course concepts as relatively unrelated, somewhat related, or part of an overall pattern or structure? To examine this problem, we developed a 5-minute online exercise. Students saw a list of key concepts in their course and sorted them into piles based on perceived similarity. They could define "similarity" in any way they wished. Then they answered questions about their experience in working on the exercise.

MAIN RESULTS

1) Type of Structure. Students often sorted concepts according to the order of topics in the course. This modular approach is relatively superficial – it is based on time-based, topic-based principles. Sometimes they saw similarities in concepts across course topics. This inferential approach reflects deeper thinking. 2) Amount of Structure. The amount varied widely, across courses and/or for topics within a course. Overall the amount of structure was often low, suggesting that students acquired knowledge but did not integrate it into an overall structure. 3) Academic Disciplines. The exercise worked well across acdemic disciplines – natural sciences, social sciences, humanities. 4) Student Experience. Students reported enjoying the exercise, that it stimulated their thinking about course concepts, and that it would be useful for thinking about concepts in other courses.

IMPLICATIONS

The Knowledge Structures exercise is brief and simple, yet powerful. It reveals information that is ordinarily difficult (or impossible) to observe – about the amount and type of knowledge structures students possess. It engages students in thinking about concepts in new ways, which can enhance their existing knowledge structures. Instructors find the exercise revealing – they learn about student understandings, misunderstandings, and insights. This feedback can validate instructors' teaching methods and/or suggest modifications. The exercise stimulates discussion between students and instructors and can be used to examine many questions, such as the effects of in-person vs. online teaching, alternative teaching methods, similarities and differences across disciplines, and the nature of higher education in general.