Structural Learning

Structural learning theory is one of the cognitivist perspectives on instructional design proposed by Joseph Scandura. Scandura's theory suggests human knowledge is consisted of rules.

Each rule, according to has domain, range and operation as its parameters. **Domain** refers to its **applicable inputs**, **range** refers its **expected outputs** and **operation** reffers to the **procedure on the inputs**. New rules are learned through application off higher to lower order rules.

In accordance with structural learning theory, first step in instructional design or learning is **definition of the problem domain through structural analysis**. Problem domain can be both well- and ill-defined (when rules are quite simple, yet there is no direct complete solution like chess, or poetry writing). In case of an ill-defined domain, it should be divided into well-defined sub-domains which generate at least one rule. Domain sets the inputs and desired outputs for problem solving.

Domain definition is followed by **construction of hierarchy of rules** for well-defined domains. Rules should be explained on prototype problems, but can also leave some **gaps** in problem solving procedure, which **are then converted into higher-order problems** containing gap rules. Higher-order rules are then used to fill the gap, but can also validate lower level rules.

An important part of the theory is also **prior knowledge (rules)** of the learner, that will **enable construction of new rules**. This knowledge can be examined by instructor, that can be both human or artificial.

Structural learning theory's applications have been made in **mathematics** and **language learning**.

Bibliography

Structural Learning Theory.

Scandura, J. M. Structural learning theory. Instructional Design Theories and Models: An Overview of Their Current Status: p215–245. 1984.

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Reigeluth, Charles M. Instructional-design Theories and Models: An overview of their current status. Routledge, 1983.