Structural Learning Theory

General

Structural learning theory is one of the cognitivist perspectives on instructional design proposed by Joseph Scandura in 1970s. Scandura's theory suggests human **knowledge is** consisted of **rules** which are to be learned. Those rules are determined by parameters of **domain**, **procedure**, and **range**.

What is structural learning theory?

Structural learning theory suggests that structures (problems) that a learner must learn, need to be formed as rules. Those rules can be simplified into **lower-order rules** (*atomic components*) which represent most basic concepts learner needs to know when dealing with a problem from given domain. By combining these atomic components and application of more complicated to lower order rules new **higher-order rules** are derived. Higher-order rules are rules which can have other rules as inputs or outputs and they can be used to solve complex problems in the whole domain.

Rules, according to the structural learning theory have three parameters:

- **domain** - its allowed **inputs**,
- **range** - its expected outputs, and
- **procedure** - the sequence of **operations** to perform **on the inputs**.

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[1)]. In case of an ill-defined domain, it should be divided into well-defined sub-domains which can 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**.

What is the practical meaning of structural learning theory?

Criticisms

Keywords and most important names

Bibliography

Instructional Design Theory Database Project: Structural Learning Theory. Retrieved March 15, 2011.

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

Read more

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

1)
An ill-defined domain is one in which rules are quite simple, yet there is no direct complete solution like chess, or poetry writing.

From:
https://learning-theories.org/ - **Learning Theories**

Permanent link:
https://learning-theories.org/doku.php?id=instructional_design:structural_learning&rev=1300262022

Last update: **2023/06/19 15:49**