

### Introduction

Knowledge often comes to us via transcribed content or artifacts, which is derived from other's knowledge. These are facts, concepts, processes, procedures, and principles (Clark & Chopeta, 2004). Thus, artifacts are used in the learning process for creating knowledge, while in turn, knowledge creates new artifacts.

Credits: <http://www.nwlink.com/~donclark/learning/artifacts.html>

### Content (Artifacts of Knowledge)

There are five primary types of content (artifacts of knowledge): facts, concepts, processes, procedures, and principles (Clark, Mayer, 2007):

**Facts** Specific and unique data or instance.

**Concepts** A class of items, words, or ideas that are known by a common name, includes multiple specific examples, shares common features. There are two types of concepts: concrete and abstract.

**Processes** A flow of events or activities that describe how things work rather than how to do things. There are normally two types: business processes that describe work flows and technical processes that describe how things work in equipment or nature. They can be thought of as the big picture, of how something works.

**Procedures** A series of step-by-step actions and decisions that result in the achievement of a task. There are two types of actions: linear and branched.

**Principles** Guidelines, rules, and parameters that govern. It includes not only what should be done, but also what should not be done. Principles allow one to make predictions and draw implications. Given an effect, one can infer the cause of a phenomena. Principles are the basic building blocks of causal models or theoretical models (theories).

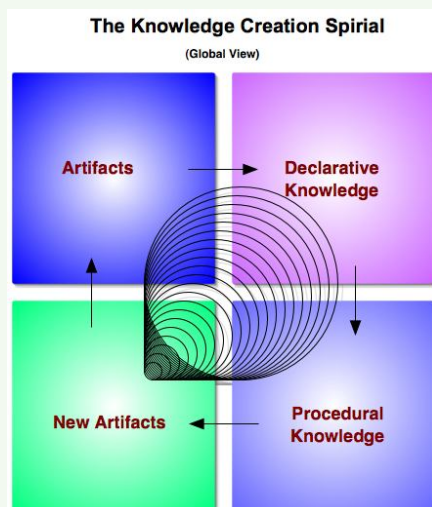
### Declarative Knowledge

Declarative models refers to representations of objects and events and how these knowledge and events are related to other objects and events. They focus on the why rather than the how. It allows us to think and talk about the world. Declarative models include propositions and schemata.

### Procedural Knowledge

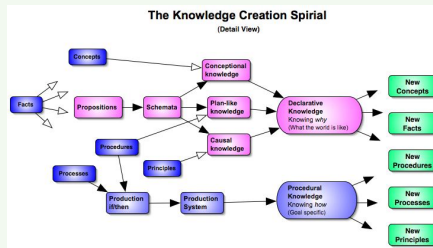
Procedural models focus on tasks that must be performed to reach a particular objective or goal. It is characterized as knowing how. Procedural knowledge is often difficult to verbalize and articulate (tacit knowledge) than declarative knowledge. Procedural knowledge emphasizes hierarchical or information processing approaches based upon productions. A combination of productions create production systems.

### Knowledge Creation Spiral Overview



The artifacts (content) are used in the knowledge creation process to create two types of knowledge: **declarative and procedural**, as shown in the global view.

## The Knowledge Creation (Detailed)



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