Chapter 11

Knowledge System and Spiral of Scientific Method by Dr. S. R. Ranganathan

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ABSTRACT

The paper deals with concept of spiral of scientific method given by father of Library science Dr. S. R. Ranganathan. It lays down relationship between types of research and spiral of knowledge. How the process of research is co-related with spiral of scientific method given by Dr. Ranganathan. The various types of research are elaborated keeping in view the spiral of scientific method. The approaches of research such as qualitative and quantitative approach are also examined. The spiral of knowledge is studied having relationship with research process.

INTRODUCTION

There are three often encountered words that sound same but had different in meanings: Data, Information and Knowledge.

The word data is originated from the Latin word ‘Datum’. “In the reference model for Open Archival Information System (OAIS) data is defined as reinterpretable representation of information in a formalized manner suitable for communication,
interpretation, or processing. Examples of data include a sequence of bits, a table of numbers, the characters on a page, the recording of sounds made by a person speaking, or a moon rock specimen” (‘Data’, 2016, para.2).

Information is a basically filtered, extracted and formatted data while, knowledge is the fact or condition of knowing something with familiarity gained through experience or association” (‘What is knowledge’, 2016, para.1). Thus, information produced from the data, knowledge produced from the information by refining and mining.

But, in the knowledge life cycle pre-existing information create data and knowledge. “That is, “just information” data, knowledge and problems are used in the knowledge life cycle to produce more information, including new knowledge” (Dhiman & Sharma, 2009, p.21).

Attributes of Knowledge

In general sense, it is difficult to articulate the knowledge. This brings us the concept of explicit, implicit. Explicit knowledge is articulated in formal through knowledge artifacts such as books, reports. Tacit knowledge is highly personalize, it is hard to articulate. Polyani characterized some tacit knowledge as inexpressible, or “ineffable” and stated that “we can know more than we can tell” (Dhiman & Sharma, 2009, p.30). While implicit is implied through observable behavior and can be articulated but has not.

Knowledge types are categories into descriptive, procedural, and reasoning knowledge. Descriptive knowledge is descriptive in nature which can be acquired through internal as well as external source. It is sometimes called declarative knowledge which can be articulated. Procedural knowledge is that it is knowledge about how to do something. “This view of procedural knowledge accepts a description of the steps of a tasks, or procedural as procedural knowledge. It is no different from the declarative knowledge except that tasks or methods are being described instead of facts or things” (Dhiman & Sharma, 2009, p.33). Declarative knowledge ties to describing, procedural knowledge ties to ‘doing’ (‘Type of knowledge’ n.d.). “Reasoning knowledge specifies what conclusion is valid and what action can be taken when a particular situation exists” (Dhiman & Sharma, 2009, p.26).

KNOWLEDGE CREATION

When two forms of knowledge comes together for conversion process and such process becomes knowledge creation or we can say that knowledge is created through interaction between tacit and explicit knowledge. In Nonaka and Takeuchi’s account
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