

# DEVELOPING AN INNOVATIVE COURSE CONTENT LEARNING MODEL TO ENHANCE THE COGNITIVE LEARNING CAPABILITIES AND COMPETENCIES OF LEARNERS

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## ABSTRACT

*The current metadata guidelines in e-learning space have been dependent upon much analysis for its absence of a particular class of metadata to permit the psychologically-based depiction of learning assets. To overcome the lack of existing metadata norms, this exploration work proposed the substance model for a course-based e-learning condition. A course-based e-learning approach is utilized to help the understudies in developing their insight by mulling over psychological limitations. We are proposing the semantic-based structure to depict the informational material for the course based learning condition. Discoveries: The scientist analysed the necessary foundation information for psychological reasoning, the contrasts among information and perception and afterwards proposed the semantic-based organizing obviously substance for giving a versatile and smart learning condition. The proposed course content model impacts the reasoning abilities, intellectual conduct of student and to conquer the insufficiency of existing metadata guidelines.*

## 1. INTRODUCTION

To encourage understudy focused learning and to improve understudies' learning results, the innovation ought to be utilized to introduce down to earth issues and give related cases to students.1 To improve the student's understand ability and psychological abilities, the more significant part of the current course-based learning conditions convey learning materials dependent on student's inclinations. However, they are not interpreting about what degree the course material can impact the student's insightful reasoning and inventiveness. Psychological systems brought about the profound handling of data which needs ordinary association and introduction material that expands understudy's essential thinking.2 At each degree of instruction, the advancement of point of view and dynamic learning is the focal point of teachers. The dynamic learning instructional procedures can connect with understudies in essential thinking.3

The Cognitive Load Theory (CLT) clarifies the communication of the human psyche with instructional materials, and it prompts an incredible effect on working memory.4 So, there is a requirement for expanding wealth of learning conditions box consolidating legitimate instructional material.5 The instructional plan models related to separation training holds an extraordinary impact on aptitudes training.6 In an electronic learning condition, the student's earlier information impact during the time spent understanding the ideas. The earlier information and instructive

techniques in learning condition intercede the student's capacity to create psychological abilities. Subsequently, Learners are needed to create homogeneous foundation information on the theme.

The scientist has talked about the semantic-based organizing obviously substance utilizing the ontological methodology, means to give a more versatile and shrewd learning condition. So student gets presented to higher-request thinking aptitudes and can decipher the corresponded and inside and out ideas of the learning space. The primary role of the proposed system is to convey the subjects that are worried about the course educational plan dependent on student's reasoning aptitudes to improve the learning result. This is utilized to establish the necessary foundation information for psychological reasoning and the contrasts among information and comprehension. At that point, we proposed the ontological system for the depiction of learning assets in an understudy focused course-based learning condition. The proposed approach can improve the learning abilities and intellectual capability of e-student.

## 2. FOUNDATION KNOWLEDGE FOR COGNITIVE THINKING

The qualifications between the intellectual reasoning and information activation measure are not in every case obvious. The earlier information/(foundation information) helps the student in the psychological cycles to enact ground breaking thoughts. It likewise helps during the time spent comprehension and acknowledging different sorts of relations among gatherings of data about the specific branch of Knowledge. Information structure is the association of many data about the item's setting importance and activity (i.e., Meta layer over the data objects). A portion of the fundamental contrasts among information and comprehension areas appeared in Table 1.

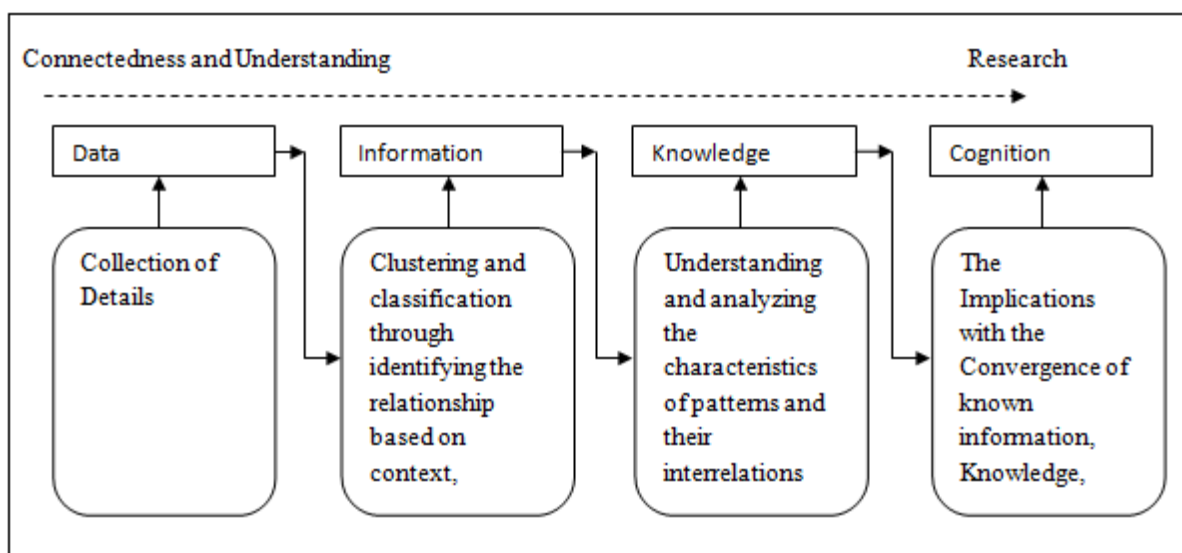


Figure 1. The Data-Information-Knowledge- Cognition hierarchy.

As appeared in Figure 1 (Data-Information-Knowledge-Cognition progression), Data prompts data utilizing grouping and order of information through recognizing the different sorts of connections, for example, setting, application, conduct, and so forth among information components. Data prompts Knowledge through comprehension and investigating the qualities of examples and their interrelations through grouping and looking at. During the time spent learning intellectual ability, improvement is a functioning methodology where the student attempts to subsume their present understandings with past information.

### 2.1 Cognitive Relevance of Prior Knowledge

Psychological reasoning includes unique intuition with the intermingling of known data, Knowledge, Ideas and significant standards. Table 2 quickly presents different sorts of information on learning ideas in the instructive space, which starts the student towards psychological reasoning.

Table 1. Differences between knowledge and cognition

Knowledge	Cognition
Can be Represented explicitly	Cannot be Represented
Knowledge is Domain dependent	Generic
it can be acquired through understanding	Through Experience
It is transferable from person to person	Self Initiated
It is Specific for Problem, Application and Context	Problem, Application and Context Independent
knowledge acquisition depends on learning process and environment	Acquisition of cognitive skills depends on learner's thinking ability

Table 2. The Required Background Knowledge for Cognitive Thinking

Type of prior knowledge	Cognitive relevance of prior knowledge
Declarative knowledge (what)	Improves understanding abilities, effective thinking and information organization capability. Activate Interest to absorb new information.
Procedural knowledge (how)	Improves Problem-solving, organizational and planning capabilities. The Sequential info Processing and self-regulated Capabilities can be improved. The ability to apply a rule or procedure to a situation that involves analysis and synthesis of two or more concepts. The knowledge of rules and their application.
Contextual knowledge (When)	Know precisely when and when not to perform the procedure? Understanding environment/ Existing problem/ Target/ Goal/ Situation/ etc to do the things.
Conditional knowledge (Why)	Understanding domain specific conditions, constraints and strategies Strategic and conditional thinking capabilities

### 3. EXTENT OF UTILIZING AN ONTOLOGY

In the field of software engineering, Geroimenko has characterized metaphysics as "An express portrayal of the MEANING of terms in a VOCABULARY and them interrelationships.<sup>7</sup> In a cosmology definition language, (for example, OWL or RDF), a philosophy is the assortment of STATEMENTS or other semantic definitions for a DOMAIN". In the instructive space, the pool ideas is associated with structure a hierarchy.<sup>8</sup> The area philosophy contains data about the area

information on learning content and depicts the substance structure. The utilization of Semantic Web innovation encourages the understudies to have self-composed or customized learning approach.<sup>9</sup>

The cosmology based portrayal of learning material metadata will make learning storehouses to permit progressed search choices through catching qualities of the learning assets and to record nitty gritty data about the space. Metaphysics based substance association and introduction obviously material, builds students getting capacity, basic reasoning and critical thinking aptitudes. Ordinarily, in a course based learning condition, a solitary learning idea will not be practicable for the student to comprehend and meet his objective. The cycle creation needs to comprehend the conditions between the learning objects.<sup>10</sup> So that the course content demonstrating can be custom fitted according to the considering aptitudes student that impacts the intellectual conduct of student while playing out an electronic separation learning.

#### 4. PROPOSED FRAMEWORK

Intellectual ability advancement is the recursive refinement and incorporating units of information through investigating, recognizing and examining the qualities, ascribes, connections, examples and relevance of learning idea. Following these thoughts, here, we proposed a metaphysics based way to deal with assume a focal function as a learning content structure, and it upholds adaptable intellectual systems. Ontologies have been utilized in E-Learning in various ways; our goal is to add to the structure of the ontological model for the depiction of learning resources.<sup>11</sup> That empowers Learner Cognitive Behavior and gives improved information the executives help to courseware architects. The proposed metaphysics, as in Figure 2 portrays the entire format of the course substance that goes about as a self-educational cost structure and supplements the study hall exercises.

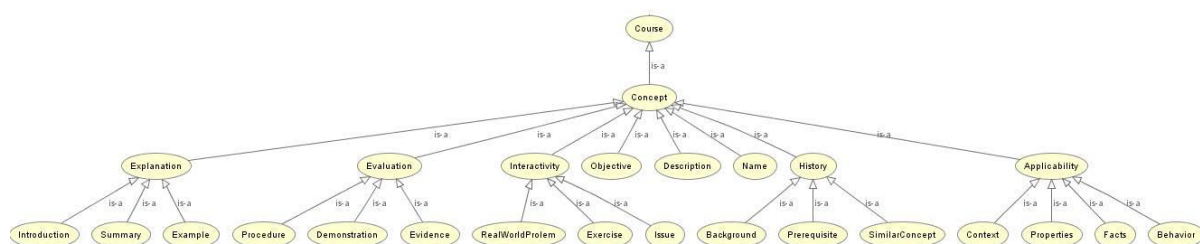


Figure 2. Layout of the Course Ontology.

The conventional electronic courses present the course substance from a particular perspective. The metaphysics portrayed here gives normalized vocabularies that mirror all subjects considered as applicable to catches the intellectual and instructional semantics of learning asset. The proposed approach incorporates learning plans that fortify the substance introduction and route encourages. It depends on a semantic-based introduction of the course substance to improve the understanding capacity of e-student. The student can allude to a wide scope of various ideas that are worried about

learning subject. This methodology encourages the obtaining of new information by the understudies through contemplating the related ideas despite the fact that they are not legitimately identified with course content.

The root class of the proposed philosophy is the Course class, which speaks to different ideas being canvassed in the course. The Course Class contains different properties, for example, Name, Objective, depiction, and so forth. The center subclasses of idea class are Explanation, Evaluation, Interactivity, History and Applicability that are clarified as beneath:

- Explanation: The Explanatory components (presentation, rundown, models, and so on.) manage the reciprocal data for clarifying a theme and client can uninhibitedly investigate parts of an idea without a predetermined objective, or with a goal.<sup>12</sup>,
- Evaluation: The components, for example, Demonstration, Evidence, and so forth give perceptions or verifications on the pragmatic utilization and trial subtleties of a learning idea.
- Interactivity: The Interactive components (issues, Exercises, Issues, and so forth.) demonstrate the reports where the understudy can interface and intended to create or prepare an expertise or capacity identified with the utilization of a concept.<sup>13</sup>
- History: The subjects, for example, Prior Concept, Related Concept, and Similar Concept show the assets that must be known to comprehend a given concept.<sup>14</sup>
- Applicability: Learner ought to have the option to apply the information in genuine circumstances and issues through understanding application setting, properties and realities of a learning idea.

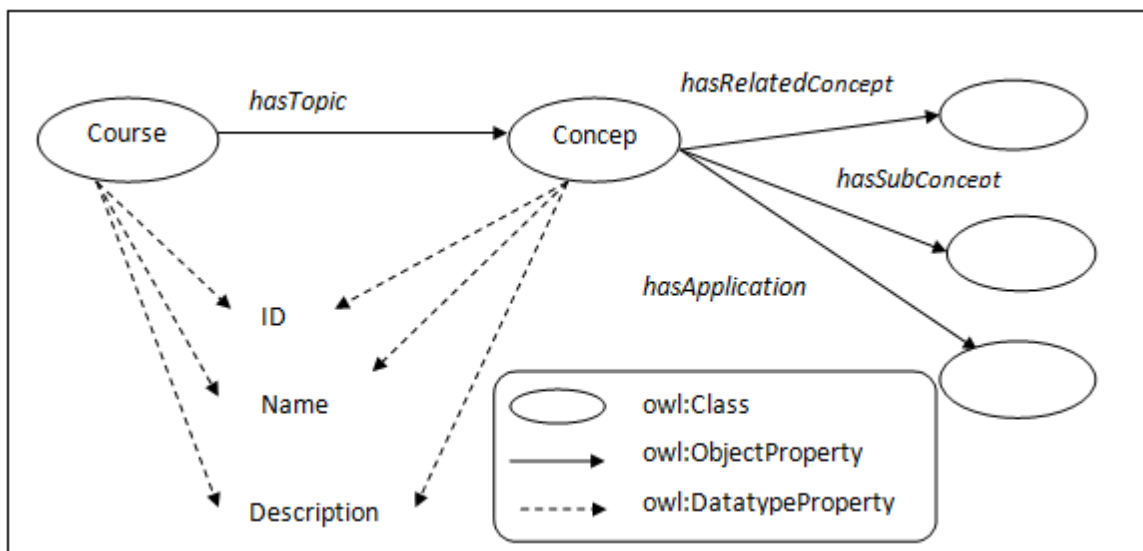


Figure 3. Semantic Relationships in Course Ontology.

## **5. CONCLUSION**

The web-based learning condition is engaging understudies. To become self-coordinated and drawn in learners.<sup>15</sup> In request to advance dynamic learning and necessary deduction in higher instruction, there is a need to start understudies to learn off-grounds by exploiting on the web instructive Assets. We proposed the semantic-based structure to portray the instructive material for the course based Learning condition. It can help as upgraded information. The board helps to courseware creators. The proposed course content model aides in impacting the Thinking aptitudes and psychological conduct of the student. It moreover assists with defeating the insufficiency of existing metadata Principles.

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