Computation of Assessing the Knowledge in One Domain by using Cognitive Skills Levels

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Abstract

Large number of questions are required to assess the knowing of the concepts in one domain. Novel methods are presented to map between the concepts in the domain and between the concepts and the questions of the assessment based on the cognitive skill prerequisite relation. The verbs of Bloom’s Taxonomy are used to determine the cognitive skills levels. The cognitive skill levels refer to the levels such as if a learner has acquired the state at the level of understanding, or applying, or analyzing, or evaluating, or creating a concept. The state of achieving knowing or not knowing a certain concept state at certain skill level is called, concept state. Previously, three types of concept states proposed known as Verified Skills (VS), Derived Skills (DS) and Potential Skills (PS). VS and DS refers to the concept state that the concept is learned or not learned by the learner. PS refers to the concept state that the concept is ready to be learned or not ready to be learned. The experiment proved that using the cognitive relation between the concepts increases the amount of the estimated concepts, even though the number of tested concepts may be minimized and eliminated under the conditions laid down by the target cognitive skill levels. Also, the researchers compute the probability of knowing the
concepts of two evaluated learners by using Bayes’ Theorem.

References

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Index Terms

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