ONTOLOGY DEVELOPMENT FOR PEDAGOGIC CONTENT INFORMATICS

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ABSTRACT

This paper reports the development process of ontology on number bases topic in mathematics that will enable personalization in the delivery of pedagogic content when incorporated with an appropriate application to form an e-learning platform. Pedagogic attributes of number bases topic were analyzed, delineated and defined through a requirement engineering process. The concepts arrived at as the outcome of the requirement engineering process were the basis for the design of the ontology which included an algorithm that was used to implement the ontology with an incorporated markup mechanism. Implementation of the ontology was carried out with Protégé software and the resultant ontology was put through different tests including tests using inbuilt reasoners such as HermiT and FaCT++. After the completion of reasoner-based testing D2R server was used as an external testing tool to ensure that all data representations in the ontology were actually accessible. At the end of testing, the outcomes of the tests were evaluated to certify that the ontology had captured all the requirements arrived at during the requirement engineering phase. The positive outcomes of the evaluation processes were the basis for certifying the ontology fit for deployment. The successful outcome of this ontology creation process indicates that availability of pedagogic materials could be increased through the collaboration of education experts and software developers.

Keywords: Ontology, Pedagogy, Semantic, E-learning, Markup.