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Smart Concept Map System (SmartCMS): An Innovative Application to Support Interactive Concept Map-Based Teaching and Learning in Computer-Mediated Classes

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Abstract:

This SmartCMS project aims to develop a smart concept map system to support interactive concept-map based teaching and learning in computer-mediated classes. The construction of concept map through hierarchical organization, progressive differentiation, and integrative reconciliation shapes an individual's ability of knowledge assimilation & accommodation, and improves learner's performance. On the other hand, concept map can also be used to enhance the interaction of teaching and learning with the goal to foster high order thinking, i.e., analyzing a problem situation, evaluating possible solutions, and creating innovative ideas for problem solving. Based on our prior related research and teaching experiences, we believe that our proposed interactive concept map-based teaching and learning can motivate and improve student participation in higher order thinking activities. But such belief receives little support from current commercial concept map software. Current concept map software put major efforts only on the user-friendly concept map drawing environment. But that is not enough to fully support our requirements. Therefore we propose to develop the SmartCMS system, with our newly developed ontology-based concept map technology, to support the interactive concept-map based teaching and learning. In summary, our proposed SmartCMS interactive concept map-based teaching and learning environment would serve to increase students' learning motivation and encourage students' participation in class; enhance student-student and student-teacher interaction in class; and foster students' high order thinking activities in class. The output of this project is potentially applicable to all courses for all CityU students.