

# Knowledge-Based Cooperative Learning Platform for Three-Dimensional CAD System

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**Abstract.** Cooperative learning is a social interaction that involving a community of learners and teachers, where members acquire and share experience or knowledge. Recently, researchers have initiated studies that explore which factors are relevant to learner satisfaction or education effectiveness in a cooperative learning environment. However, little research effort for developing a cooperative learning platform for information system training, such as three-dimensional CAD system training. Thus, our study aims to narrow these gaps. We present the cooperative learning platform for 3D CAD system. This approach can be helpful for better establishing cooperative learning for information system training. We introduce a case involving three-dimensional CAD training with the web-based cooperative learning platform in China. This research is specifically related the context of a state-of-the-art cooperative learning platform that is based on network technology for real-time interaction amongst users, instructor, and the cooperative learning system itself.

**Keywords:** Cooperative learning, Three-dimensional CAD, Knowledge management.

## 1 Introduction

E-learning and cooperative learning is a social interaction that involving a community of learners and teachers, where members acquire and share experience or knowledge. Learning is no longer viewed as an individual process, but a social one in which knowledge and skill are discovered and built via interaction with instructor and other learners. The success of e-learning and cooperative learning activities requires the constant generation, transfer, and understanding of knowledge, making collaboration an essential and highly valued process. E-learning applications may appear with different forms of designation such as web-based learning, virtual classrooms, and digital collaboration [1],[2], which is conducted using the Internet (or Intranet/Extranet) and web technologies. Many researchers paid attention to e-learning and collaborative learning system. Wang [3] argued that current models for measuring user satisfaction and learners' evaluation of teaching effectiveness are inapplicable to the e-learning environment. The results of his work showed that a total of 17 items applicable to measuring e-learner satisfaction could be classified into the following dimensions: content, personalization, learning community and learner interface. Volery and Lord [4] developed instruments for measuring learner satisfaction with asynchronous e-learning systems. Koschmann [5] studied the web-based collaborative learning systems in the

CSSL paradigm, which has been built upon a rich history of cognitive science research about how students learn. Essentially, web-based collaborative learning can be described as a context where the computer, information, and network technology facilitates interaction among learners for acquisition or sharing of knowledge. Dewiyanti *et al.* [6] presented that learners' satisfaction with collaborative learning can be described as the degree to which a learner feels a positive association with his/her own collaborative learning experiences. Scardamalia and Bereiter [7] presented web-based collaborative environments allow equal opportunities for learners to participate without the limitation on knowledge levels. Kagan [8] stated that learners' characteristics might promote or enhance their participation in the collaborative learning. Baker [9] presented that effective knowledge management within the context of ongoing educational processes can lead both to the successful development of learning improvement and the creation of more stable communities' relationships based on knowledge sharing.

The problem with these researchers is that few papers have addressed the cooperative learning for 3D CAD training. In this paper, 3D CAD cooperative learning or training system is presented. Then, we introduce a case involving 3D CAD training with a web-based cooperative learning system.

## 2 Knowledge-Based Cooperative Learning System

The knowledge based cooperative learning system consists of three layers: client layer, application layer and server layer. Fig. 1 shows the framework of our cooperative 3D CAD learning or training system.

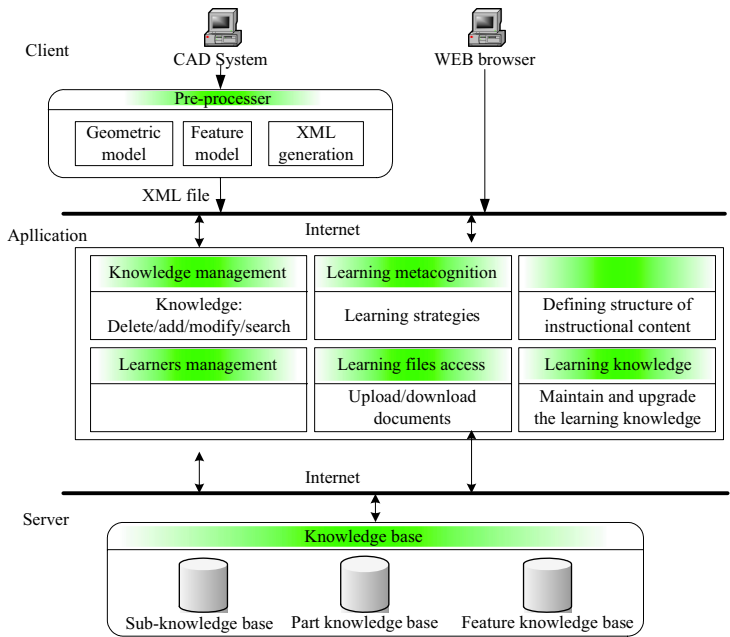


Fig. 1. The framework of our cooperative 3D CAD learning system