Title:THE EFFECTS OF COMPUTER-SUPPORTED INQUIRY-BASED LEARNING METHODS AND PEER INTERACTION ON LEARNING STELLAR PARALLAX

The presented study examined the effects of computer-supported inquiry-based learning and peer interaction methods on effectiveness of learning the stellar parallax concept. A computer-based tutorial Stellar Parallax Interactive Restricted and Unrestricted Tutorial (SPIRUT) was developed for this investigation. The research was conducted in the University of Missouri among 199 non-science major students enrolled in an introductory astronomy course in the fall semester 2010.
The first investigated method in this study was enhancing engagement by the means of scaffolding for inquiry, which included scripted prompts and called for students' predictions and reflections while working in the learner-controlled or the computer-controlled version of SPIRUT. A second form of enhancing engagement was through peers working cooperatively during the learning activities. Results of the study revealed that students who learned the concept with SPIRUT constructed greater conceptual knowledge and were able to better transfer it to another situation while their mathematical skills were equally improved as those students who worked with the paper-based tutorial. It was also evident that there was no difference between students' performances after their engagement with the learner-controlled or with the program-controlled version of SPIRUT. It was also found that students who worked independently constructed slightly greater knowledge than students who worked with peers. Nevertheless, there was no significant difference found of retention of knowledge after any type of treatment.