# Supplemental Instruction and Related Rates Problems

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In this study, we observed first semester calculus students solving related rates problems in a peer-led collaborative learning environment. The development of a robust mental model has been shown to be a critical part of the solution process for such problems. We are interested in determining whether the collaborative learning environment promotes the development of such a mental model. Through our observations, we were able to determine the amount of time students spent engaging with the diagrams they drew to model the problem situation. Our analysis strove to also determine the quality of the student interactions with their diagrams. This analysis provided insights about the mental models with which the students were working. Engaging students with complex, non-routine problems resulted in the students spending more time developing robust mental models.

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