

# Answering Part of the Significant Question

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Most scientific articles address particular questions which are part of larger questions. The part-whole relationship varies.

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The purpose of scientific inquiry is to add to the body of knowledge. According to Shavelson and Towne [2002], one of the guiding principles of scientific inquiry is “Pose significant questions that can be investigated empirically.” Answering such questions should lead to progress in a field and a better understanding of how things work.

It is often true, of course, that an individual study’s research question is part of a larger question, and is done in the context of other work. In this issue, the two articles illustrate two ways in which a study’s question might relate to larger ones.

In the first article, “Reduction in CS: A (Mostly) Quantitative Analysis of Reductive Solutions to Algorithmic Problems,” Michal Armoni looks at students’ use of reduction in problem solving. The use of reduction is widespread in computing, but is normally introduced formally rather late, in the context of

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a complexity theory. This article asks the question whether students appreciate and can use reduction in problem solving. Specifically, the reported study is a quantitative study that builds on previous qualitative work: it examines whether a theory developed from a small number of qualitative observations generally holds over a larger population.

In the second article, “The Problem of Labels in E-Assessment of Diagrams,” Ambikesh Jayal and Martin Shepperd look at a fairly narrow question: how does the number of synonymous labels on UML diagrams vary with the number of student diagrams? To do so, they examined student-produced UML diagrams for a particular task, processed the labels used into standard forms, and counted the number of different labels used. They examine how the number of synonyms observed changes with increases in number of students, and observe that the number of synonyms keeps increasing with added students. These results are important in the context of the larger question, “How can UML diagrams be assessed electronically?” in part because it indicates that recognizing equivalent labels may be quite difficult, but also by providing some baseline results using real data.

#### REFERENCE

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