

WHAT MAKES YOU SAY THAT?

Tom Gordon^a, Helen Georgiou^b, Manjula Sharma^a

Corresponding author: Tom Gordon (tom.gordon@sydney.edu.au)

^aSchool of Physics, University of Sydney, Sydney NSW, 2006, Australia

^bSchool of Education, University of Wollongong, NSW, 2522, Australia

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ABSTRACT

Since the mid 1950s-1960s, scholars like Schwab (1960) regarded inquiry and laboratory learning as important. As well as responding to national policy, teachers and academics needed to respond to changing ideas, where traditional methods of education of the time would not be appropriate. Schwab called for a radical overhaul of aims, methods and structure of science education to cope with changing content and ideas. Focus continued on practical work and laboratories through the development of three types of experiment to be carried out in physics courses. Those being a) unusual or surprising, b) common or relevant materials and/or experiences c) problem solving and knowledge integration (White, 1979), laid out in detail by Leonard (1997) and formalised by the National Research Council (2000). The Australian context to this work was outlined by Cornish (2019) and applied by Gordon (2019). In this project, we build on the previous work done on the importance of investigations in laboratories and classrooms which underpin five inquiry based investigations which are being used in a high school outreach context.

The investigations were done during an established outreach program run by a university physics department. Surveys asking if the investigations helped with the understanding of concepts and then probing “What makes you say that?” were given to 990 students with responses qualitatively and quantitatively coded. Results show that students were overwhelmingly positive that physically seeing the practical helped them understand concepts, with students being able to notice the nuanced differences in inquiry features between the investigations, boding well for the learning of inquiry skills in science education. Their answers to conceptual physics questions demonstrated that they did get the physics. Our findings indicate that carefully designed investigations can offer a range of valuable learning opportunities.

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