HELPING STUDENTS GENERATE PHYSICS INQUIRY PROBLEMS

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ABSTRACT

Physicists' research usually begins when there are imperfections in previous experiments or theories, when new theories, data, materials, and experimental techniques are invented or developed, or when they discover conflicts between theories and experiments or within theories. However, these situations do not apply for school students, who need different conditions to generate their own physics inquiry problems (PIPs). This is despite the fact that students themselves perceive that generating good PIPs is the most difficult part of physics inquiry activities. Some students are often observed trying to discover inquiry problems that are improperly informed, or simply don't make sense. In this workshop, therefore, we will introduce specific strategies that can help students generate IPSs at the student's level of knowledge and inquiry experience.

Intended Audience: Secondary-school Educators

PRESENTERS

Professor Jongwon Park (Ph.D Science Education, Seoul National University; M. Sc. particle physics, Seoul National University), currently teaches in the Department of Physics Education in Chonnam National University. He received a number of academic awards including 'Distinguished Contribution Award through Research' from EASE (East-Asian for Science Education), 'Maximum Citation Award in 'New Physics', an international journal by KPS (The Korean Physical Society). Professor Park has proposed a variety of models to theorize students' learning processes, such as a model of generating scientific hypotheses, a model of scientific creativity, a model of scientific literacy, a model of scientific competency, and a model of the process of physics thought experiment. He has suggested a list of NOS (Nature Of Science), NOSO (Nature Of Scientific Observation), and NOSE (Nature Of Scientific Evidence), and developed various teaching strategies to help students discover physics inquiry problems, design experimental processes, and writing inquiry reports.

Professor Nam-Hwa Kang (Ph.D. Science Education, University of Georgia; M.Sc. condensed matter physics, Seoul National University) currently teaches in the Department of Physics Education at Korea National University of Education (KNUE). She was a reciepient of 2021 Best Paper Award, Asia-Pacific Science Education and 2020 Outstanding Academic Achievement Award by Korean Association for Science Education. She is a member of Physics Education Commission of IUPAP(International Union of Pure and Applied Physics). Her research centers on bringing science/physics inquiry practices to school classrooms through science/physics teacher education. She is currently the editor in chef of Innovation and Education and an associate editor of Asia Pacific Science Education. Prior to joining KNUE in 2012, she taught for a decade in the United States, most recently as an Associate Professor at Oregon State University and before that, as an Assistant Professor at University of Nevada, Las Vegas.

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