The Effects of the Medium of Instruction in Physics on Achievement and Motivation to Learn

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Chair: Professor Amy Tsui

Abstract:
A three-year study was launched in a Hong Kong secondary school to investigate the effects of the medium of instruction (MOI), specifically English and Chinese, on the learning of certificate-level physics. A total of 199 Secondary Four (S4 or tenth-grade) students, divided into three major ability groups, participated in a teaching intervention designed to determine the effects of MOI on their learning achievement and motivation. The results of conceptual assessments and physics examinations revealed Chinese to be a superior MOI in enabling low-ability students to attain a higher level of achievement, whereas English was more suitable for their high-achieving counterparts. However, little conclusive evidence regarding the role of MOI for the medium-ability groups was found. A questionnaire-based survey indicated that students were more motivated to learn physics through Chinese as the MOI (CMI) rather than English (EMI), although significant limitations to its use were identified for the topic of “Heat”. Deficiencies in the vocabulary needed for abstract scientific concepts in Chinese may account for these limitations (for instance, Chinese uses the same word, “re” (熱), for both “heat” and “hot”). Finally, follow-up interviews at the end of the study revealed a sharp contrast between the learning prospects of EMI and CMI students.

About the speakers:
Dr. Dennis Fung specializes in physics education and collaborative group work. He has published some articles related to medium of instruction and science education. He is a co-investigator of the project funded by UGC-ESRC titled “Bilateral (Hong Kong) the effects of social pedagogic contexts in the teaching of primary mathematics: facilitating learning in two cultures”, in collaboration with the University of Cambridge. He is a recipient of the Doris Zimmern HKU-Cambridge Hughes Hall Fellowship in 2012 and 2015 and was a visiting scholar in the Faculty of Education, the University of Cambridge.

Dr. Valerie Yip is a science and liberal studies educator specializing in using English as an instructional medium to teach the two disciplines. She has worked for projects funded by GRF and EDB on classroom practices in L1/L2, teacher professional development in assessment, self-directed learning, as well as teaching nature of science and scientific inquiry.

Sandwiches and coffee served.
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