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Developing a Pedagogical Content Competence Evaluation for Apprentice
Physical Science Teachers—A Case Study
發展國中理化科實習教師學科教學知能評鑑之個案研究

Tuan, Hsiao-Lin; Chang, W. H. ; Lee, C. K. ; Wang , C. Y. ; Cheng, P. Y.

Abstract

An evaluation which sought to reinforce apprentice physical science teachers' teaching competency during their one-year apprenticeship was conducted and validated over the past three years. The process of developing the evaluation was based on constructivism and fourth generation evaluation (Guba & Lincoln, 1989), and involved all stakeholders connected with the evaluation process—science educators, college science supervisors, school administrators and experienced school teachers. The determination of teachers' teaching competence was based on pedagogical content knowledge, national science teaching standards and empirical data collected from beginning and intern Taiwanese physical science teachers' teaching. The final assessment consisted of the following categories of teaching competency—lesson planning, concept presentation, overall teaching performance, construction of the classroom environment, laboratory teaching, lab safety, facilitation of group cooperation, and reflection on teaching performance. The inter-rater reliability of each category of teaching competency showed significant cohesiveness among different raters. Lastly, a survey was conducted among 89 experienced physical science teachers enrolled in an in-service science teacher education program. The results of the survey indicated that the majority of the experienced science teachers agreed with the importance and feasibility of most of the teaching competencies. The apprentice physical science teachers' pedagogical content competence assessment could aid future apprentice physical science teachers by reinforcing their teaching competencies, and help future schools recruit capable teaching candidates for their schools.

Key words : Pedagogical content knowledge; Portfolio assessment;
Apprentice physical science teacher evaluation; Teaching competence

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