

## The Effect of 'Teachers Teaching Teachers' Professional Development Course on Teachers' Achievement and Classroom Practices

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**Abstract :** High-quality teachers are the key to improve student learning. Without a professional development of the teachers, the improvement of student success is difficult and incomplete. This study offers an in-service training course model for professional development of teachers (PD) entitled "teachers teaching teachers" (TTT). The basic premise of the PD program, designed for this study, was primarily aimed to increase the subject matter knowledge of high school physics teachers. The TTT course (the three hour long workshops), organized for this study, lasted for seven weeks with seventeen teachers took part in the TTT program at different amounts. In this study, the effect of the TTT program on teachers' knowledge improvement was searched through the modern physics unit (MPU). The participating teachers taught the unit to one of their grade ten classes earlier, and they taught another equivalent class two months later. They were observed in their classes both before and after TTT program. The teachers were divided into placebo and the treatment groups. The aim of Solomon four-group design is an attempt to eliminate the possible effect of pre-test. However, in this study the similar design was used to eliminate the effect of pre teaching. The placebo group teachers taught their both classes as regular and the treatment group teachers had TTT program between the two teachings. The class observation results showed that the TTT program increased teachers' knowledge and skills in teaching MPU. Further, participating in the TTT program caused teachers to teach the MPU in accordance with the requirements of the curriculum. In order to see any change in participating teachers' success, an achievement test was applied to them. A large effect size ( $d_{Cohen}=.93$ ) was calculated for the effect of TTT program on treatment group teachers' achievement. The results suggest that staff developers should consider including topics, attractive to teachers, in-service training programs (a) to help teachers' practice teaching the new topics (b) to increase the participation rate. During the conduction of the TTT courses, it was observed that teachers could not end some discussions and explain some concepts. It is now clear that teachers need support, especially when discussing counterintuitive concepts such as modern physics concepts. For this reason it is recommended that content focused PD programs be conducted at the helm of a scholarly coach.

**Keywords :** high school physics, in-service training course, modern physics unit, teacher professional development

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