Characterization of Change Process Occurred in Science and Technology's Teachers, During and After Long In-service Training Programs

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Abstract

The main purpose of this study was to monitor changes that Science & Technology JHS teachers undergo during their participation in such long term in-service training courses. Our research questions focused on changes in teaching methods, teaching various content areas and utilization of new learning materials. Furthermore, we also tried to identify beliefs, opinions and attitudes that were altered during the in-service training course.

Specifically, we address a broad question: What are the changes that teachers undergo during and after INST? Within this very general framework, we try to study how the INST course in Science &Technology, we designed and executed, affect the teachers' teaching skills, content knowledge and views toward the teaching profession. Finally, based on the findings, an improved INST functional approach have been suggested.

Analysis of interviews and questionnaires that were carried in this study suggested that the general attitudes declared by the JHS teachers towards the INST were mainly positive, for the following topics:

- Personal development: that was expressed as an increase in teachers self–confidence, professional promotion and attitude.
- Social interaction: fruitful interaction between INST participants.
- Exposure to new teaching materials.
- Acquire some of the teaching skills and subject matter areas presented in the new syllabus.
- Nevertheless, it became evident that:
- A gap was found between teachers' formal declarations and their actual practice in classrooms, especially with regard to their views

towards the teaching profession, implementations of new topics (subject mater) or new teaching methods in schools.

- No significant changes were found during the three years of the INST in teachers' attitudes.
- The changes that occur by introducing new materials were correlated with the presence of teachers in the INST. It was found that in order to adopt new teaching materials, at least 50% of the Science & Technology teachers in a school need to participate in the INST.
- The effect of the educational system was shown to be correlated with the levels of cooperation between the superintendent and the interviewee, the principal and the interviewee, and team work of Science & Technology teachers within the school.

In school INST training differ from regular INST training by a better and earlier adaptation of teaching materials, better introduction of teaching strategies.

In conclusion, we find that desirable changes in teachers' attitudes, conduct and knowledge, are very limited even after very intensive INST programs. It is suggested that significant reform, leading to changes in Science & Technology teaching topics, requires a longer post-training professional support, as well as team work and administrative support, not only during but also after the formal training program.

To support an improved INST it is suggested to:

Improve staff development program and in attempt to bring about changes in classroom practices according to the new syllabus, an modified INST have been suggested. To deepening the changes in teachers belief and activity a tutor coaching program, during and after long INST should be established. This activity will sustain the implementation of teachers changes and extend the new activities in Science &Technology.

Finally, school principals, the government educational system, researchers, teacher educators and teachers need to work together in order to achieve the necessary reform in Science & Technology teaching. Professional Development programs are an essential component in Science & Technology teachers' development and change, but they cannot promote the necessary changes all by themselves. Only a functional and effective collaboration of the whole educational system can result in real reform.