



**UNIVERSITI PUTRA MALAYSIA**

**TRAINING NEEDS OF SECONDARY SCHOOL MATHEMATICS  
TEACHERS IN THE YEMEN REPUBLIC**

**ABDULHAMEED AHMED DAWOD.**

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**TRAINING NEEDS OF SECONDARY SCHOOL MATHEMATICS TEACHERS  
IN THE YEMEN REPUBLIC**

**By**

**ABDULHAMEED AHMED DAWOD**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**June 2005**



**This thesis is dedicated to my parents, my brothers  
and sisters my wife and children. I would also  
like to record my thanks and appreciation to  
all members of my family**



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Doctor of Philosophy

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**June 2005**

**Chairman: Associate Professor. Mohd Ibrahim Nazri, PhD**

**Faculty: Educational Studies**

There is a need to conduct a research on identifying the training needs, which is considered one of the most essential components of a staff development programme. The present status of planning in-service training programmes and workshops for Mathematics teachers in Yemen lacks appropriate methodology and a systematic and comprehensive assessment of the trainees' needs. In addition, no attention has been paid to systematically identify in-service needs for Mathematics teachers of secondary schools in Yemen.

The purpose of this study was to identify the training needs of secondary schools Mathematics teachers in two urban cities Sana'a and Amran. The study focused on training needs as perceived by secondary school Mathematics teachers, supervisors and school administrators and identified the teachers' current practices of Mathematics teaching in secondary schools.



The sample of the study was a sample six hundred and twelve consisting of 389 Mathematics teachers, 34 supervisors and 189 school administrators using a stratified random sampling technique.

To obtain the data two instruments were used: (i) the new questionnaire was designed by the researcher. The questionnaire classified in-service training needs (59 items) into five categories which include: implementing of Mathematics instruction, planning of Mathematics instruction, evaluation of students in Mathematics instruction, diagnosing students' needs in Mathematics instruction and classroom management. (ii) The observation instrument was modified and developed by Shian Leou (1998) which consisted of 35 items covering four domains, teaching skills, material organization and presentation, management of the learning environment and teaching attitudes. The observation was conducted among 30 secondary school Mathematics teachers in the classes and a video camera was used to record the lessons.

Data were analyzed using the SPSS computer programme. The means, standard deviations, frequency and percentages were computed for the criteria indicators and independent one-way ANOVA and t-test were computed to determine significant differences between the means of the groups.

The findings of the study revealed that all the training needs represented necessary needs for Mathematics teachers in secondary schools and the teacher's current practice of Mathematics teaching was generally weak. These findings indicated highest needs in implementing of Mathematics instruction, followed by planning of Mathematics

instruction, evaluation of students in Mathematics instruction, diagnosing students' needs in Mathematics instruction and classroom management.

The One-Way ANOVA revealed that there are no significant differences in perceptions of training needs between teachers, supervisors and school administrators in all domains. As for the variable of experience, a significant difference was found in the domains of classroom management and evaluation of students in Mathematics instruction.

The effect of the t-test showed that there is no significant difference between male and female teachers in all domains. However, a significant difference was found between a variable of with educational and without educational background in the domain of evaluation of students in Mathematics instruction.

The results of this study were consistent with previous findings in other specialization studies; therefore, it is recommended that a future study should do a comparative study on the training needs among Mathematics teachers in secondary schools and primary schools. A future replication of this study with comparison with other countries is necessary.

Abstrak tesis yang dipersembahkan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KEPERLUAN LATIHAN GURU-GURU MATEMATIK SEKOLAH  
MENENGAH DI REPUBLIK YEMEN**

Oleh

**ABDUL HAMEED AHMED DAWOD**

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Terdapat keperluan untuk mengendalikan satu kajian untuk mengenalpasti keperluan latihan dan sebagai salah satu daripada komponen paling penting daripada program pembangunan staf/kakitangan. Status terkini perancangan program latihan dalam perkhidmatan dan bengkel untuk guru-guru matematik di Yemen mendapati kekurangan kaedah yang sesuai dan penilaian yang sistematik serta komprehensif yang diperlukan oleh pelatih tambahan. Dan juga tiada tumpuan yang diberikan untuk mengenalpasti keperluan dalam perkhidmatan bagi guru-guru matematik daripada sekolah menengah di Yemen. Tujuan kajian ini dilakukan adalah untuk mengenalpasti keperluan latihan untuk guru-guru matematik di sekolah menengah di dua buah kawasan Bandar iaitu di Sana'a dan Amran. Kajian ini difokuskan dengan keperluan latihan sebagaimana yang diperlukan oleh Guru-guru Matematik Menengah, penyelia dan guru-guru besar serta untuk mengenalpasti kaedah pengajaran terkini matematik guru-guru di sekolah menengah. Sampel kajian ialah seramai 612 orang sampel, terdiri daripada 389 guru



matematik, 34 penyelia dan 189 guru besar yang mana susunannya adalah secara teknik persampelan rawak.

Untuk mendapatkan data, dua kaedah telah digunakan, Kajiselidik baru telah direka oleh pengkaji. Kajiselidik diklasifikasikan sebagai latihan dalam perkhidmatan (59 item) dan dibahagikan kepada 5 kategori merangkumi pelaksanaan pengajaran matematik, perancangan pengajaran matematik, penilaian pelajar dalam pengajaran matematik, mengenalpasti keperluan pelajar dalam pengajaran matematik dan pengurusan kelas. Alat pemerhatian telah diubahsuai dan dibangunkan oleh Shian Leou (1998) yang mana mengandungi 35 perkara merangkumi 4 bidang, kemahiran mengajar, peralatan organisasi dan persembahan, pengurusan suasana pembelajaran dan sikap dalam pengajaran. Pemerhatian telah dijalankan di dalam kelas ke atas guru-guru di 30 buah sekolah menengah dan kamera video telah digunakan untuk merekod rakaman. Data-data kemudiannya di analisis menggunakan program komputer SPSS merangkumi purata, sisihan piawai, frekuensi dan peratus telah dibina sebagai kriteria-kriteria petunjuk dan one-way ANOVA bebas dan ujian t, telah dikira untuk menentukan perbezaan yang nyata di antara purata kumpulan-kumpulan.

Penemuan daripada kajian mendedahkan bahawa semua keperluan latihan diperlukan segera oleh guru-guru matematik di sekolah menengah dan kaedah pengajaran terkini oleh guru-guru matematik adalah secara umumnya tidak memuaskan (lemah). Penemuan paling tinggi diperlukan ialah dalam pelaksanaan pengajaran matematik, penilaian pelajar dalam pengajaran matematik, mengenalpasti keperluan pelajar dalam pengajaran matematik dan pengurusan kelas.



One-way ANOVA pula mendedahkan bahawa tiada perbezaan yang nyata dalam persepsi keperluan latihan di antara guru-guru, penyelia dan guru besar dalam semua bidang yang dinyatakan. Berkaitan dengan kepelbagaian pengalaman, perbezaan yang nyata ditemui dalam bidang pengurusan kelas dan penilaian pelajar dalam pengajaran matematik.

Kesan daripada ujian t menunjukkan bahawa tiada pembezaan yang nyata di antara guru lelaki dan guru perempuan di dalam semua bidang. Bagaimanapun, perbezaan yang nyata telah ditemui diantara kepelbagaian pendidikan dan bukan pendidikan dalam bidang penilaian pelajar dalam pengajaran matematik.

Keputusan daripada kajian ini adalah konsisten dengan penemuan sebelum ini dalam kajian pengkhususan yang lain, jadi adalah dicadangkan bahawa kajian yang akan datang dapat menumpukan kepada perbandingan kajian tentang keperluan latihan di kalangan guru-guru matematik di sekolah menengah dan guru-guru di sekolah-sekolah rendah. Peperiksaan kajian di masa akan datang dengan perbandingan dengan Negara yang lain adalah diperlukan.



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I certify that an Examination Committee met on 17<sup>th</sup> June 2005 to conduct the final examination of Abdulhameed Ahmad Dawod on his Doctor of Philosophy thesis entitled "Training Needs of Secondary School Mathematics Teachers in the Yemen Republic" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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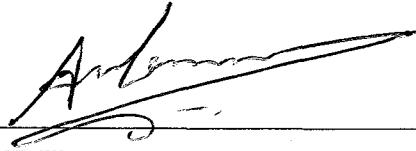
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## DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



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**ABDULHAMEED AHMED DAWOD**

Date : 19/AUG/2005

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# CHAPTER I

## INTRODUCTION

The improvement of the educational system in Yemen or in any other country is a purposeful project where teachers occupy a central position. The quality of education in a country, to a very large extent, depends on the quality of teacher education. Therefore, teachers play an important role in the success of any education system (Lourdusamy, 1994). The changes in prospective teachers' instructional practice mirrored their changes in beliefs, a finding consistent with the work of (Langrall, Thornton, Jones and Malone, 1996).

Despite the importance of the role of teachers in the achievement of the educational policy, such a role is still underestimated in the Yemenite educational policy. The reason is that teachers themselves still suffer from many kinds of weaknesses in performing their roles as teachers and educators hence the achievement of the educational objectives is usually crippled (Ahmad, et al. 1995). This can be observed in the different stages of the educational system. However, the secondary education is the most affected area because of weaknesses in the performance of teachers. In Yemen, many students failed in Mathematics courses according to the results from 1997 to 2001.

At the secondary stage of education Mathematics is at prime importance to inculcate in pupils the quantitative basics, and its application in the practical life, as the process of teaching Mathematics is eventually a conducive tool for better human intellect and to unveil the truth of events, and thereupon tactfully apply this truth to the facts of life.



The use of technology is an issue in most countries in terms of defining the role it should play in the teaching of Mathematics and how teachers should be educated to use technology. Many teachers lack the expertise to use such technologies (Bishop, 1996). Moreover, Mathematics derives its crucial importance from the critical importance of the secondary education, which is regarded as the most substantial and momentous stage of education, whereby youth are trained to meet both the present and future epistemic needs. Furthermore, at this critical stage, there are noticeable physiological and mental growths, that mark the appearance of early adolescence. Besides, higher education is, after all, a natural extension of the secondary learning phase. (Batanero, and Wenzelburger, 1994).

Since teachers are the essential element in the educational process, the improvement of their educational knowledge and teaching skills through a continuous training programme is no more than an extension of the pre-service training period, which requires to be fully maintained. An essential aspect of teacher education that is recognized as important for teacher professional development are the teaching practices (Conant, 1963; Zeichner, 1990). As a matter of fact, the increasing and rapid development of science and technology calls for an effective continuous training that adapts teachers' knowledge and skills with the requirements of such a development in terms of understanding, assimilation and making use of the new method of Mathematics teaching.



Based on the importance of the secondary school teachers' role as well as the position of Mathematics as a discipline in the whole curriculum, Mathematics teachers training needs in this study takes into account to the following considerations:

- A well-qualified teacher through an efficient training programme based essentially on his actual training needs is likely to succeed in performing his mission in fulfilling the requirements of the society's cultural, social and economic development.
- Secondary education in Yemen is an extended stage of the fundamental education, which paves the way for graduate education. Therefore, it emerges as an important step in educating the majority of the population.

Improving skills and knowledge of the teachers through training is one of the most popular human resource management activities and important agenda in many private in-service, pre-service colleges.

According to the American Society for Training and Development Report (2001), more than 30 billion dollars were spent for employee development per year. The training costs are increasing each year and teacher education needs to plan effective training programmes in order to improve the educational performance. Competency-based training was viewed as the foundation for reform in vocational and post-compulsory education (Beavers, 1993 and Smith & Keating, 1997) and the means of increasing skill levels and performances. Efficient and effective training programmes are needed to produce competent teachers in order to achieve the development goals of the country.

In Yemen, teacher training programmes do not reflect the actual needs and concerns of those teachers since they have been developed with out the consideration of those teachers' needs (Abu Zeyd, 1996).



But how can a planner be sure that all training programmes that they have conducted were the training needed by their teachers. Training needs assessment is considered the first and most important step by almost all experts on training management and design in designing and developing a successful training programme. Training needs analysis involves the process of information gathering and analysis to identify the right training to be conducted and the right teachers to be trained within the context of their teaching and education.

The in-service training programmes considered are the essential elements toward the improvement of teachers' educational performances. If the training programmes are conducted to instill new behavior or attitude for employees, the training evaluation should be planned to measure the changes in employees' attitudes and behavior after attending the training (Yee, 2001). The reason is that such programmes aim to resolve the negative aspects of weakness and failure in teachers' performances while performing their mission. The rarity and weakness of the periodical training sessions that aim to improve the teachers' professional background and development of those training programmes out of the consideration of the actual training needs of the teachers, may impede the achievement of the objectives of those training programmes (Radman, 2000).

This is particularly the case of those who had not had the opportunity to be subjected to the needed training. Rather, they were involved in the service because of the persisting need of teachers in the Yemenite schools (Ministry of Education, 2000). Therefore, the formulation of any programme to improve their educational performance must be necessarily set upon the identification of their training needs.





## Problem Statement

The process of teaching-learning in the republic of Yemen still experiences many weaknesses hence the educational output is unable to satisfy the increased needs to improve the whole social and economic conditions of the country. Undoubtedly, this is due to the different types of weaknesses in the educational input of the above-mentioned processed curriculum, teacher and learner (Al-Shamy, 2000).

Despite the importance of the whole input of the teaching-learning process, the teacher remains the most important element, rather, the essence of such a process (Ahmad, 1995). Such a fact requires a specific concern about the problem of teacher training and its function in relation to the requirements of the contemporary civilization. Additionally, a large decline in the students' academic achievements can be easily observed in the Yemenite secondary schools as the rate of failure in the general certificate examinations has reached 35 percent (Al-Khawalda et al, 1995). Through the analysis of the examination results provided by the Ministry of Education between the academic years of 1997-2001, it has been indicated that the majority of students failed in Mathematics courses in the secondary schools as mentioned by AL-Shami, 2000, Johnson, 2000, Daowd, 1998 and Abu-Zeid, 1996 confirmed that to the main cause of this phenomenon is related to the shortcoming of Mathematics teachers' competence as indicated by Leou, 1998. In 2001, a report from the training division of the Education Ministry confirmed the necessity of studying teachers' training needs. Hence, teachers' competences depend on their qualification in the pre-service and in-service training. In turn, this type of training requires certain knowledge concerning the professional needs