EVALUATING STUDENTS’ ACHIEVEMENTS

THE ROLE OF STUDENTS’ CHARACTERISTICS AND FAMILY

BACKGROUND IN IRANIAN STUDENTS’ MATHEMATICS ACHIEVEMENT

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Introduction

The education system in the Islamic Republic of Iran is highly centralized and students’ learning goals are set at the national level. The Ministry of Education has the exclusive responsibility for developing the curriculum, syllabi and textbooks from grades 1 to 12. It is worth mentioning that grade 12 in Iran is allocated to pre-university courses and students get their high school diploma at grade 11. Students are required to take two school examinations in all subject matters during each academic year and pass them in order to be promoted to the next grade. Despite the full control of the Ministry of Education over curriculum and textbooks, teachers are responsible for assessing and evaluating students’ achievement, and individual schools use different test batteries in different academic years. Nevertheless, each year the Ministry of Education conducts
national examinations for a few courses in grades 9–12 (these courses are subject to change each year). But, even in this situation, schools and teachers are responsible for scoring. Findings from these examinations are dependent on the difficulty level of the items and on scoring procedures. In other words, there is no responsible body in Iran for:

(a) assessing educational inputs and outputs at national level on a regular, periodic basis at different grades, particularly transitional grades (i.e., fifth, eighth, last year of schooling, and pre-university);

(b) in-depth and multi-faceted study of the reasons behind the differences in achievement among genders, students in different geographical regions and with different cultural and economic backgrounds.

c) defining educational standards for different academic courses and grades.

When there are no reliable and valid data at the national or regional level, international studies such as the Third International Mathematics and Science Study (TIMSS 95), TIMSS-Repeat (TIMSS 99) and PIRLS (Progress in International Reading Literacy Study) are unique sources for evaluating Iran’s educational system. In the above-mentioned studies students’ achievement in mathematics, science, and reading comprehension has been subjected to comprehensive analysis. The information obtained from these international studies could help policy-makers, curriculum specialists and researchers at the national level to understand better the reasons behind the performance of their educational systems (Martin et al., 2000; Mullis et al., 2000). The endeavours made by researchers, policy-makers and educators on the basis of these data could contribute to identifying the weaknesses and strengths of educational systems and developing intervention programmes to improve educational effectiveness. Schmidt and Valverde (1995) argued that ‘by looking at the educational systems of the world we challenge our own conceptions, gain new and objective insights into education in our own country, and are thus empowered with a fresh vision with which to formulate effective educational policies and new tools to monitor the effects of these new policies’ (cited in Kyriakides & Charalambous, 2004, p. 70).

The present article aims at exploring the factors that contribute most to the Iranian students’ mathematical achievement using the TIMSS 99 data. Mathematics achievement involves a complex interaction of factors that have specific direct effects and/or indirect effects through other factors on school outcomes. Although the relationship between maths achievement and factors (such as academic self-concept, home background, attitudes towards mathematics and attribution) has been studied widely in other countries, it is important to probe the issue in the Iranian national context. This would help to fill the existing gap in the research carried out in Iran in this area. In addition, it could pave the way for more comprehensive research on the comparison of national and international research findings. In particular, the purpose of the present study is to:

(a) identify a number of factors that represent the relationship among sets of inter-related variables;

(b) Examine the contribution of each factor to the explanation of the variance in the students’ mathematics score and to determine the total variance that could be explained by these factors for the total sample and for each gender.