

A Structural Equation Model of Mathematics and Language Achievement for Primary School Children: The Case of México City

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ABSTRACT

Many factors affect scholar achievement, including parents, peers, teachers, schools, and, most of all, students themselves. In most of the countries of Latin America most of 90% of children attend to primary school. However it is continued detecting that the scholar achievement is very low.

This research is applied in Mexico City, one of the cities with bigger population of the world (8 million inhabitants in the year 2000). The data used for the project, are part of the database that was obtained of the Secretary of Public Education of Mexico (SEP) through diverse surveys applied (years 1997 to 2000). We have information of 127 variables. Corresponding to 5 questionnaires applied to children (sixth grade of primary school), parents, professors, principal, and scholar infrastructure. Also, 80 items (tests of scholar achievement in mathematics and language).

The research objective is propose a Model of Structural Equations, its empiric contrast and model validation from different samples. The sample consisted of 3600 sixth grade children, 450 teachers, 193 principals, 3600 parents and 193 schools. The survey was applied in public schools of Mexico City.

In this study, it was carried out the validation of 80 items of achievement by means of ITEMAN computer program. To reduce the 127 variables (five questionnaires) the Principal Components Analysis was applied. We obtained finally, 14 latent variables.

The LISREL computer program was applied to compute 10 models. Statistical cross-validation among models was applied. The final model consists of 4 exogenous variables, 5 endogenous variables, and 17 measure variables. This model explain 44.86% of variance, the GFI is 0.9956 and the root mean square residual (RMSR) was 0.01601. Also was carried out a multigrupal validation using other sample of 1840 children obtained a GFI= 0.9917. Therefore it is considered that final model is invariant to data.