Measuring the Effectiveness Status of Schools in Promoting Equity: Secondary Analyses of Five Effectiveness Studies

Evi Charalambous[1], Leonidas Kyriakides[1] , Anastasia Panayiotou[1], Bert P.M. Creemers[2], & Margarita Christoforidou[3]

Department of Education, University of Cyprus, Cyprus[1]

Faculty of Behavioural and Social Sciences, University of Groningen, the Netherlands[2]

School of Educational Leadership, Cyprus International Institute of Management, Cyprus[3]

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INTRODUCTION

- EER recognizes quality and equity as the two dimensions of effectiveness.

However,

- The great majority of effectiveness studies attempt to identify teacher and school level factors which are associated with student achievement.

- Accountability systems have been developed in several countries which treat the progress made by students as the main criterion for evaluating teachers and schools (Ray, 2006; Sanders & Horn, 1994).

INTRODUCTION

- Studies reveal that teachers and schools matter most for underprivileged and/or initially low-achieving students (Kyriakides, 2004; Scheerens & Bosker, 1997).

It is important to use both dimensions of measuring effectiveness – **quality and equity** – in building theoretical models of educational effectiveness

This presentation

➤ proposes an approach to measure school effectiveness in relation to the equity dimension.

➤ attempts to identify the extent to which the effectiveness status of each school does not change significantly when the two dimensions of effectiveness (i.e., equity and quality) are used to measure their effectiveness status.

An approach to measure school effectiveness in relation to the equity dimension

➢ Multilevel modeling techniques are used to measure the impact that each school can have in reducing the gap on initial measures of student outcomes.

➢ The reduction of variance of student achievement at two different time points (e.g., at the beginning and at the end of a school year) is estimated at the classroom level.

➢ This indicator is treated as a dependent variable which can be modeled by taking into account at least two levels (classrooms nested within schools).

➢ The empty model is used to estimate the contribution of each individual school in promoting equity.

An approach to measure school effectiveness in relation to the equity dimension

Factors explaining variation of school effectiveness in relation to equity can be identified.

$$d_{jk} = \beta_0 + r_{jk} + u_k + \alpha_1 f_{1k} + \alpha_2 f_{2k} \quad \text{where}$$

j = classroom (or teacher) level

k = school level

$d_{jk} = (varY)_{jk} - (varX)_{jk}$

Y = student achievement at the end of the school year

X = student achievement at the beginning of the school year

$(varY)_{jk}$ = variance of final achievement at classroom level

$(varX)_{jk}$ = variance of initial achievement at classroom level

β_{0jk} = intercept which is random at the level of classroom and school

$f_1, f_2, \ldots f_k$ = factors which explain variation in the contribution of school to the equity dimension

An approach to measure school effectiveness in relation to the equity dimension

- The results that emerge from this analysis can be compared with the multilevel model used to measure the school effectiveness status in terms of quality.

In this way, the relation between the two dimensions of school effectiveness can be examined.

METHODS

- To demonstrate the use of this methodology and search for relations between the quality and equity dimension, we present the results of secondary analyses of five recent effectiveness studies

STUDY	Purpose	Participants	Focus
STUDY 1 **2003-2005** *Creemers & Kyriakides, 2008*	to test the main assumptions of the dynamic model of educational effectiveness	all Grade 5 students (n=2503) from each class (n=108) of 50 primary schools	teacher and school effectiveness in three different subjects (i.e., mathematics, Greek language, and religious education).
STUDY 2 **2005-2006** *Kyriakides & Creemers, 2009*	to measure pre-primary teacher effectiveness in mathematics and language)	all students (n=2812) who attended classes (n=141) of the last year of 76 pre-primary schools	pre-primary teacher effectiveness in mathematics and language
STUDY 3 **2008-2009** *Creemers & Kyriakides, 2010*	Replication of Study 1	same 50 schools as in Study 1	same as in Study 1
STUDY 4 *Antoniou & Kyriakides, 2011*	to examine the use of the Dynamic model for improvement purposes/ intervention study	2356 students of 130 primary teachers (appointed at 78 different schools)	teacher effectiveness in mathematics
STUDY 5 **2007-2008** *Demetriou & Kyriakides, 2012*	to examine the impact of three different approaches to establishing School Self Evaluation (SSE) mechanisms upon student achievement	all grade 4 and grade 5 students (n=4212) of 60 primary school sample	impact of SSE on student mathematics achievement

METHODS

Separate multilevel analyses for each learning outcome were conducted.

1. For each subject, the variance of final achievement at individual, class, and school level without explanatory variables (empty model) was identified.

2. Prior achievement and background factors were controlled in order to estimate the schools' ''value-added'' contributions.

3. The difference between the expected and the actual score for each school was plotted.

4. The standard error of estimate for each school was also taken into account and is represented by the length of a vertical line.

METHODS

➢ This line can be conceptualized as the range within which we are 95% confident that the "true" estimate of the school's residual lies (Goldstein, 2003).

> ➢ Where this vertical line does not cross the horizontal zero line and is also situated below the zero line the school it represents is considered as one of the least effective schools of our sample.
>
> ➢ Where this line does not cross the horizontal zero line and is situated above the zero line, the school it represents is characterized as one of the most effective schools.
>
> ➢ All the other schools are characterized as typical.

➢ To estimate the effectiveness status of schools **in terms of the equity dimension**, the same approach was used.

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43 out of the 50 schools had the same status in terms of both quality and equity

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Quality / Equity	Least effective	Typical	Most effective	Total number of schools
Increased variance	4	1	0	5
No change in variance	1	35	2	38
Reduced variance	0	3	4	7
Total number of schools	5	39	6	50

Table 2. The distribution of the school sample according to their quality and equity status in teaching Mathematics emerged from study 5

Quality / Equity	Least effective	Typical	Most effective	Total number of schools
Increased variance	9	2	0	11
No change in variance	3	31	4	38
Reduced variance	0	4	7	11
Total number of schools	12	37	11	60

RESULTS

- There is no school which was considered as among the most effective in terms of one dimension of measuring effectiveness and at the same time among the least effective in terms of the other.

- The majority of the schools which were considered as being among the most effective in terms of the quality dimension were also found to contribute in the reduction of initial achievement gaps among students.
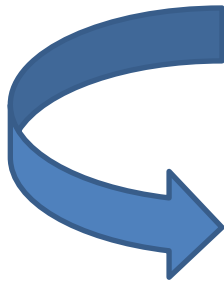
By promoting equity, schools may also achieve quality.

DISCUSSION

- The development of indices measuring the contribution of each school in promoting each dimension (i.e., quality and equity) is necessary

- School evaluation data should be used mainly for formative reasons in order to raise awareness of school management teams and other school stakeholders about the importance of promoting equity.

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