

Editorial to the Special Issue

Closing the Gaps? Differential Effectiveness and Accountability as a Road to School
Improvement

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Introduction

Research on school effectiveness and improvement is primarily concerned with the interactions between students' learning outcomes, institutional settings, and classroom and school environments (Creemers & Kyriakides, 2007; Scheerens, 2016). Specifically, effects of the school learning environment, the classroom instruction, and teaching quality on student achievement have been evaluated extensively (Muijs et al., 2014). However, these effects may vary considerably across educational systems, countries, municipalities, schools, subjects, grade levels, cohorts, teachers, and groups of students, as Nuttall, Goldstein, Prosser, and Rasbash (1989) argued in their influential paper "Differential school effectiveness". As far as our research goes, Hunt (1975) was probably the first to define the term "differential effectiveness" in educational contexts (pp. 209-210):

"To consider the differential effectiveness of an educational approach (...) is not simply to point out a few persons to whom the principle does not apply (...). To take the differential approach seriously means asking different questions (...). Rather than ask whether one educational approach is generally better than another, one asks, 'Given this kind of person, which of these approaches is more effective for a given objective?'"

This definition points out that identifying groups of students for whom an educational approach may be more or less effective than for others represents only one perspective on differential effectiveness; it also stresses the relevance of the contexts, conditions, and intentions under which educational approaches operate.

Differential effectiveness research provides new research perspectives, particularly when addressing issues, such as social inequality, unequal opportunities in education, achievement differences, students' missing of minimal standards, and further gaps (Strand,

2016). Studying overall school effectiveness and improvement without taking into account possible differences across subgroups in a sample neglects the effects of these factors on promoting not only quality but also equity in education (Kyriakides, Creemers, & Charalambous, 2018). Besides, evaluating effectiveness differentially is needed in holding schools accountable for their performance and to come to fair judgments and accurate evaluations of schools, and a fair judgment and evaluation are also needed to improve the impact of such evaluations on educational quality and school improvement. In their review of the state-of-the-art, Muijs et al. (2014) identified “differential effectiveness” as a key area in the field of research on teacher and school effectiveness.

Despite the early calls for a differential perspective on teacher and school effectiveness (Hunt, 1975; Nuttall et al., 1989) and the consensus about its criticality to the understanding of educational interventions, reforms, and improvement (Muijs et al., 2014; Scheerens, 2016), it seems as if this perspective has not yet received significant attention in the field of school effectiveness and improvement, as the following numbers testify: We conducted a search in the databases ERIC and PsycINFO using the term “teach* effectiveness” and retrieved 29972 entries; similarly, we retrieved 8777 entries resulting from the search for “school effectiveness” (as of 2 March 2019). Both terms and their underlying concepts are key to the field of school effectiveness and improvement and dominate this field. Considering these as the points of reference, we also searched for “differential effectiveness” and identified only 188 entries in the two databases. Moreover, searching for “differential effectiveness” in the *School Effectiveness and School Improvement* database resulted in 42 of the more than 700 publications that had been released between 1991 and 2019 (i.e., after the publication of Nuttall et al.’s influential paper in 1989). Of course, these numbers may be biased by the authors’ using of different terms. For instance, authors may examine the moderating effects of socioeconomic status on the relation between teachers’ professional competences and student achievement without using the term “differential effectiveness” at

all (e.g., Baumert & Kunter, 2013). Nevertheless, we argue that the days of the “one-size-fits-all”-perspective on school effectiveness and improvement are numbered, as more and more evidence is surfacing that shows how certain groups of students, teachers, schools, educational systems, or even countries may not benefit from certain educational approaches, programs, or conditions to the same extent (e.g., Caro, Lenkeit, & Kyriakides, 2016; Sammons, Nuttall, & Cuttance, 1993; Strand, 2016). At the same time, some evidence against the differential effectiveness of certain educational approaches has been reported (e.g., Strand, 2010; Teig, Scherer, & Nilsen, 2018). The fact that researchers sometimes find support for differential effectiveness and sometimes don’t points to its context specificity and the need for examining possible differential effects independent of the outcome.

Objectives and Content

This special issue is aimed at illustrating state-of-the-art research on differential effectiveness and, ultimately, reviewing how differential effectiveness can inform and enhance school improvement in order to promote not only quality but also equity in education. As a consequence, this special issue contributes to the existing body of research by presenting studies that shed light on different aspects of differential effectiveness based on state-of-the-art research methodologies as well as educationally and socially relevant examples. The four studies in the special issue take a range of perspectives on the proposed topic, present diverse findings on the mechanisms and consequences of differentiation, and point to future research directions. Table 1 summarizes these perspectives.

Hübner, Wagner, Nagengast, and Trautwein (2018) present a German large-scale study, examining the effects of a curricular reform of curricular intensification, that is, the effects of increasing the number of mandatory courses and coursework in certain school subjects to enhance interest and decrease possible gender gaps. The authors did not find evidence for the success of the reform in closing such gaps in mathematics and science. Concerning students’ achievement in English reading and their self-concept, however, young

men were favored, while young women developed a more negative self-concept in mathematics.

Kyriakides et al. (2018) examined possible gender and socioeconomic gaps in language and mathematics achievement for large student samples in Cyprus. Accounting for the multilevel structure of the data (i.e., level 1: students, level 2: classrooms and teachers, level 3: schools), the authors identified gender and socioeconomic differences at different levels and found that the socioeconomic gaps tended to be smaller in more effective classrooms.

Scharenberg, Rollett, and Bos (2019) conducted a study among inclusive classrooms in German primary schools and explored the possible differences in reading achievement and social participation between students who needed special education and those who did not. Overall, there was no evidence for the negative effects of classroom composition, neither on achievement nor on social participation in the classroom. However, some effects at the individual level were observed.

Taut et al. (2018) present a study of Chilean in-service teachers and their students, evaluating the instructional practices and quality in classrooms. Differentiating between basic and more competent teachers, the authors found a positive and significant relation between teacher competences and instructional quality: the observer ratings of instructional practices suggested that more competent teachers had better practices. However, the effects on student learning were insignificant or weak.

Conclusions

The four papers in this special issue indicate the growing awareness of taking a differential perspective on teacher and school effectiveness, and all papers testify to the finding that “one-size-fits-all”-approaches may not be effective across all educational contexts and for all educationally relevant groups. Reviewing the findings and approaches the authors of the four papers have taken, we argue that any research endeavor focusing on “differential

effectiveness” needs to define what exactly “differential” and “effectiveness” refer to. Our main conclusions are as follows:

1. *“Differential” may have different layers and levels:* In fact, differential effects of educational programs and approaches may surface at the individual student level, the classroom level, the school level, and so forth, ranging from micro- to macro-units of educational systems (Snijders & Bosker, 2012). Together with Kyriakides et al. (2018, this issue), we argue for a multilevel perspective on differential effectiveness.
2. *“Differential” requires a clear definition of the “different” groups:* Put differently, who defines these groups and which indicators are used to differentiate between them? In some cases, the groups for which an educational approach is differentially effective may be well-defined by observable indicators, such as gender, socioeconomic status, or prior achievement (e.g., Scharenberg et al., 2019, in this issue). In other cases, however, such groupings cannot be observed directly and require researchers to identify possible latent profiles.
3. *Measures of “effectiveness” may not only include student achievement:* The study presented by Hübner et al. (2018, this issue) illustrated that differential effectiveness may not necessarily be observed in achievement only but in affective constructs as well. We therefore encourage researchers to extend the set of outcome variables to trace possible differential effects that go beyond achievement differences.
4. *Creating a validity argument for the “effectiveness” measures is critical to the evaluation of differential effects:* Without evidence that a measure operates equally well within and across the different groups, the validity of the resultant differential effects may be jeopardized (Pellegrino, DiBello, & Goldman, 2016). Taut et al. (2018, this issue) showcased how multiple measurement perspectives can enhance

the creation of a validity argument for seemingly hard-to-measure concepts, such as instructional quality.

Overall, we believe that gathering evidence for or against the differential effectiveness of educational approaches is critical to examining what works and what doesn't in educational research. Next to gathering such evidence, identifying factors that may reduce educational gaps and, ultimately, improve the instructional approaches that take into account the differential effectiveness perspective is equally important.

Tables

Table 1

Overview of the Four Papers Presenting Empirical Studies on Differential Effectiveness

Paper	Research topic	Main findings	Characterization of 'differential'	Outcome measures of 'effectiveness'	Perspective on differential effectiveness
Hübner et al. (2018)	Effects of a curricular intensification reform on achievement and motivation in Mathematics, English, Physics, and Biology in one federal state in Germany across gender	<ul style="list-style-type: none"> ▪ Differential effects on English reading and self-concept favoring young men ▪ Negative effect on young women's Mathematics self-concept ▪ No further evidence for differential effects in other domains and for other outcomes 	Differentiating the effects of the reform across gender	Student achievement and motivation in four selected domains	Student and system level
Kyriakides et al. (2018)	Differences in student achievement across gender, socio-economic status (SES), and prior achievement levels for two Cypriot samples	<ul style="list-style-type: none"> ▪ Smaller SES effects in more effective classrooms ▪ No evidence on differential gender effects 	Variation of the gender and SES effects on achievement across classrooms and schools	Student achievement in Emergent literacy, Mathematics, and Language	Student, classroom, and school level
Scharenberg et al. (2019)	Opportunities for learning and social participation in inclusive primary	<ul style="list-style-type: none"> ▪ No evidence for the negative effects of classroom composition on 	Differences in achievement and social participants, and the interaction	Student achievement in reading and	Student and classroom level

	school classrooms in Germany	achievement, but individual effects observed	with individual student background and classroom composition across special education needs status	perceived social participation	
		<ul style="list-style-type: none"> ▪ No interaction effects with student background characteristics 			
Taut et al. (2018)	Evaluation of Chilean teachers' competence, instructional practices and quality, and possible effects on student achievement	<ul style="list-style-type: none"> ▪ Small differences in teaching practices and instructional quality between basic and competent teachers ▪ Weak effects on student learning 	Differentiating between teachers' competence levels	Teaching practices, instructional quality, and student learning	Student and classroom level with a primary focus on teachers

Note. In the context of the studies presented in the four papers, the term 'effect(s)' is not meant to imply causality.

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