

## BOOK REVIEW

Teaching and Learning in Lower Secondary Schools in the Era of PISA and TIMSS. By Kirsti Klette, Ole K. Bergem and Astrid Roe (Eds.) (2016), 165pp. ISBN: 9783319173016, Switzerland: Springer.

This book is the 12<sup>th</sup> volume in Springer's series on *Professional learning and development in Schools and Higher Education* (Series Editors: Christopher Day and Judyth Sachs). The previous volumes in the series covered issues regarding teacher learning, professionalism, and practice in schools and higher education. This book, in particular, presents and discusses a number of video studies through theoretical lenses and methodological approaches intended to continue opening up the black box of classroom teaching and learning practices. In this regard, the book is an important addition to the existing literature on video studies, advancing work done earlier by researchers such as Stigler, Gallimore and Hiebert (2000), Ulewicz and Betty (2001), Clarke, Keitel and Shimizu (2006) as well as Janik and Seidel (2013). In the era of PISA and TIMSS, these kinds of work may prove increasingly important to provide the necessary counter balance when studying the dynamic processes in education systems and not just focusing on the products or narrow outputs of a system. Another goal of this book is to expand the discussion about students' and teachers' behaviours and practices in the classrooms – beginning with in-depth inquiries into Norwegian secondary school classrooms, and extending this discussion to Europe and other regions.

The first chapter provides an overview of the book, as well as key theoretical and methodological dimensions adopted by the contributors of this book. The four key dimensions that serve as analytical lenses as well as a theoretical backdrop are instructional clarity (clear goals, explicit instruction, content-focused instruction); cognitive activation (quality of the task, cognitive challenge, content coverage); discourse features (student engagement, quality of teacher–student interaction); and supportive climate (creating an environment of respect and rapport). The authors argue that these dimensions are essential for high-quality instruction, and video studies provide a unique approach to study these dimensions. The chapter then discusses video study designs and strategies for data collection and analyses. The aforementioned dimensions are analysed individually and together, quantitatively and qualitatively – in parallel for some cases – to develop a more nuanced understanding about the complexities of classroom learning. This trove of rich data includes: video recordings from 140 videotaped lessons, 57 videotaped interviews with pairs of students, 42 audiotaped student interviews, 18 interviews with teachers, as well as copies of students' work and assignments. These data were originally collected under the PISA+ (2010) project to examine some of the issues identified in Norway's PISA 2000 and 2003 results in science, mathematics and reading.

The subsequent eleven chapters are sectioned off into three parts. The first part, which includes chapters 2, 3, 4, 5 and 6, focuses on instructional patterns within and across science, mathematics and language arts classrooms. The findings indicate distinct differences between the three subjects, with specific challenges and patterns within each subject. One of the most interesting chapters in the book is Chapter 2, where the authors break away from what they refer to as false conceptual dichotomies and use multi-level coding schemes to analyse instructional practices together with the type of interaction that took place in the science classrooms they observed. The use of multiple analytical lenses in a parallel fashion led to a more nuanced understanding of the possibilities of classroom interaction for the purposes of facilitating learning. Other chapters (3, 4) in this first section reveal the teachers' struggles in implementing effective practices in the classroom and the support they require in making advances in their professional practice. Inter-subject classroom comparisons also revealed interesting similarities and differences (Chapter 2, 4 and 5). For example, while teachers in language arts classrooms in Norway seemed to vary their instructional practices,

the Norwegian math teachers used more repetitive ways of working, using either plenary teaching or individual seatwork as the basic form of instructional format.

The second part of the book – Chapters 7, 8 and 9 – focuses on discourse matters. The work presented here analyses language use and discourse features in classrooms within the three aforementioned subject areas. Their overall analyses suggest that the interaction patterns in the observed classrooms are conducive for student utterances, but these utterances are in large parts more concerned with practical and procedural questions rather than substantive discussions linked to the subject area. The authors also explore the relationship between social language and scientific talk in science classrooms (Chapter 7 and 8). While coding was difficult because there were overlaps, they report initial evidence that teachers did not explicitly help students to transition from everyday language to scientific language. In addition – despite active student participation in discussions – it was reported that teachers did not facilitate or scaffold opportunities for students to link (or compare and contrast) the theoretical aspects of science to the students’ practical experiences or preconceptions, and vice versa. Student participation in math classrooms involving turn taking and student–teacher interaction was also high, but the authors question if the interaction patterns they observed actually contributed to productive learning situations (Chapter 9).

Part 3 of the book focuses on “Engagement Matters.” Chapters 10, 11 and 12 discuss how different instructional formats support student engagement, and how increased levels of student autonomy have impacted learners. In Chapter 9, for example, evidence suggests that student-initiated work plans led to working strategies that were ineffective, such as not spacing out the doing of math assignments over more optimal periods or doing just enough to meet the requirements. While student autonomy and student-centred ways of working have been actively promoted by educational policies in Norway, the findings as reported by the authors suggest that students may have been given too much responsibility and this may have compromised students’ learning and attitudes towards learning. In Chapter 11, the researchers analysed a combination of data – from the TIMSS 2007 Study as well as their own video study – and found that increased levels of instructional variation can positively stimulate student attitudes to mathematics. Chapter 12 focuses on how teachers’ commitment, embedded partly in the teaching activity system and partly in the teachers’ personal interests and preferences, may influence teachers’ actions in the classroom. In this chapter with the title “Teacher commitments: Love and duty in science education,” the authors found that the teachers’ commitment to the school is often expressed as a strong feeling of duty while their commitments to the students and their profession are more characterised by love.

Overall, the book provides valuable insights into the black box of classroom practice and behaviour by drawing on analysis that involves video data from classroom studies, PISA and TIMSS data, and concepts relevant to domain-specific instruction. The book uncovers some of the dynamic interplay between discursive interactions, instructional practices, and students’ learning and behaviour in different subject areas. The findings provide critical clues where teacher professional development can be improved (e.g. where is tighter scaffolding and structure needed?), and how certain policies need to be revised. The various modes and combinations of analytical frameworks used to make sense of the different kinds of data also make it a stimulating read from methodological and theoretical standpoint.

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