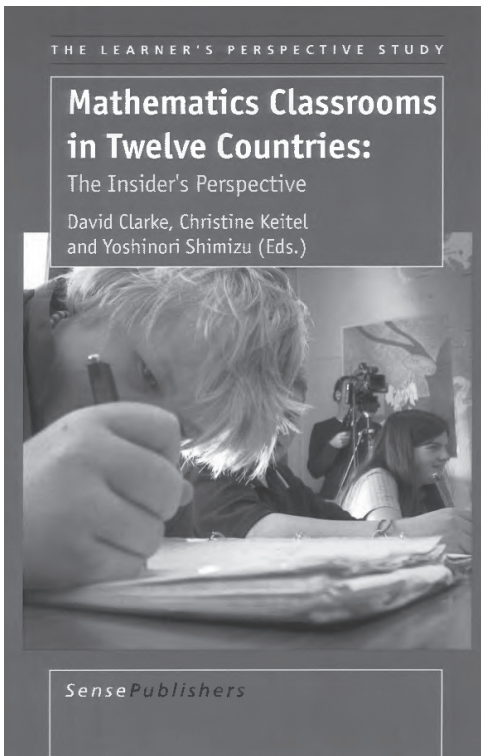


## The Learner's Perspective Study: A Report

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The Learner's Perspective Study (LPS) is the research direction aiming at international comparative research in mathematics education. The title stresses the intention to carry out teacher-focused studies by stressing the learner's perspective. An informal community of researchers from countries all over the world was formed around the project. The research framework was originally designed to realize research studies reporting on national norms of teaching practices with an in-depth analysis of mathematics classrooms in Australia, Germany, Japan and the USA. Eighth grade mathematics classrooms (students aged approximately 14) were chosen. Since its inception the project has grown, its purpose has been progressively reinterpreted and expanded. Research teams from other countries have continued to join LPS (for example, China, Sweden, New Zealand, Singapore, the Czech Republic).

A significant characteristic of LPS is its documentation of the teaching of a sequence of consecutive lessons. This feature enables to take into account the teacher's purposeful selection of instructional strategies. Another important feature of LPS is the exploration of learner practices. Technically, LPS methodology is based on the use of three video-cameras in the classroom supplemented by post-lesson video-stimulated interviews. What is vital here is that all interviews be held immediately after the lesson. They enable the revelation of the teacher's beliefs and comparison with students' perception and researchers' view.



The work of LPS community is reported in a series of books published by Sense Publishers. In this text, we will report on two of them.

International comparative and cross-cultural research emerging within the community offers the insights into the practices employed in different school systems, can help to identify common values and shared assumptions, causes to question and revise the assumptions about own practice and the theories on which this practice is based. All these features could be found in the book *Mathematics Classrooms in Twelve Countries. The Insider's Perspective* edited by David Clarke, Christine Keitel and Yoshinori Shimizu. The book brings various portraits of classroom practice from twelve countries participating in LPS. The insider perspective is given by the fact that the authors of the chapters are insiders in the country, in the cultures and school systems, and did their analysis from their positions.

The book provides different views on school practices in mathematics.

- Observation of teaching practices from the point of view of the teacher – pupil cooperation and its cultural specific.

Keitel (in a chapter '*Setting a Task*' in *German Schools: Different Frames for Different Ambitions*) looks closer at mathematics classroom practice in Germany to find out what kind of tasks are set, what are the differences in the ways teachers set tasks and if, and how, these differences may affect students' learning. Similarly Hino (*The Role of Seatwork in Three Japanese Classrooms*) examines the reality of the teacher's support for individual students during seatwork (Kikan-Shido in Japanese).

- Identification of connections between the learner's and the teacher's actions.

Begehr examines how students participate in mathematics lessons and current status of students' verbal communication (*Student's verbal Actions in German Mathematics Classes*). Williams studies student construction of valued social and mathematical meaning supported by particular documented teacher and learner practices (*Autonomous Looking-In to Support Creative Mathematical Thinking: Capitalising on Activity in Australian LPS Classrooms*). Huang, Mok and Leung in their common chapter characterize, examine and compare the practice problems in Hong Kong, Macau and Shanghai schools (*Repetition or Variation: Practising in the Mathematics Classroom in China*).

- The use of variety of teaching approaches by individual teacher in the course of teaching a lesson sequence.

Kaur, Low and Seah explore the roles of textbook and homework from the teacher and student perspective (*Mathematics Teaching in Two Singapore Classrooms: The deemed Role of the Textbook and Homework*). Park and Leung characterise effective practice in the Korean mathematics classroom (*Mathematics Lessons in Korea: Teaching with Systematic Variation*). Emanuelsson and Sahlström show how students and teachers in two Swedish classrooms constitute learning in interaction (*Same from the Outside, Different on the Inside: Swedish Mathematics Classrooms from Students' Point of View*).

- Characteristic of competent teaching practice from different national and cultural perspectives.

Mok presents the teacher's and the students' perception of their mathematics lessons based on the analysis of the post-lesson interviews. She integrates both views with what happens in the classroom and discusses the nature of the teacher-dominating lesson (*Teacher-Dominating Lessons in Shanghai: The Insiders' Story*). Binterová, Hošpesová and Novotná identify a sequence of several constructs from the theory of didactical situation in the Czech lesson (*Constitution of the Classroom Environment*). Mok and Real discuss some interesting patterns of similarities and differences between teachers of the same region (*A Tale of two Cities: A Comparison of Six Teachers in Hong Kong and Shanghai*).

– The relationship of the teacher's and the learner's practices.

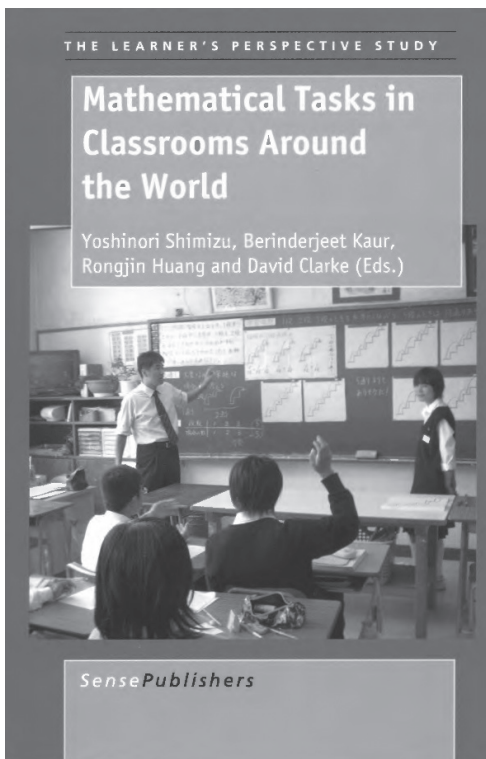
Shimizu discusses the results of the analysis of post-lesson video-stimulated interviews with the teacher and the students (*Discrepancies in Perceptions of Mathematics Lessons between the Teacher and the Students in a Japanese Classroom*). Fried and Amit describe two dichotomies, private versus public and collaboration versus authority, and show their relation (*The Israeli Classroom: A Meeting Place for Dichotomies*). Gallos (*Students' Private Discourse in a Philippine Classroom: An Alternative to the Teacher's Classroom Discourse?*) reacts to the typical situation in Philippine classrooms of a teacher doing most of talking and focuses on the alternative of students talking privately in mathematics classrooms.

– The implications for teacher education and the organisation of schools.

Ulep examines the consequences of the teacher's motivational strategy ('*Ganas*' – *A Motivational Strategy: Its Influence on Learners*). Wood, Shin and Doan (*Mathematic Education Reform in Three US Classrooms*) analyse the data collected in US classrooms for the purpose of examining how these classrooms realise the goals of the reform in school mathematics instruction.

In the end of the book, the reader can find short descriptions of the school systems in the participating countries, and Authors Index and Subject Index.

The second book with the title *Mathematical Tasks in Classrooms around the World* was edited by Yoshinori Shimizu, Berinderjeet Kaur, Rongjin Huang and David Clarke. As it



is clearly indicated in the title, it focuses on the fundamental part of school mathematics, mathematical tasks. Mathematical tasks are crucial mediators between mathematical content and the mathematics learner. "Doing" mathematics includes solving mathematical tasks as an important component of all activities. For every task, there exist pieces of knowledge that enable to solve it. Not all of them learners have at their disposal. Their learning can be seen as an extension of the repertoire of means for solving assigned tasks. The teacher's task is to create a suitable environment for such an extension.

The classroom implementation of a task is a synthesis of task, teacher, students and situation. As mentioned in the abstract of the book, "of particular interest are differences in the function of mathematically similar tasks when employed by different teachers, in different classrooms, for different instructional purposes, with different students".

The book consists of ten chapters, the Appendix describing the LPS research design, and Authors Index and Subject Index. Each chapter deals with mathematical tasks from a different perspective. The first chapter written by the book editors *The Role of Mathematical Tasks in Different Cultures* brings general theoretical perspectives concerning the role of mathematical tasks in the educational reality. It covers the centrality of tasks in mathematics classroom instructions, the relationship between mathematical tasks and LPS, the nature of mathematical tasks in classrooms, the theoretical alternatives in considering their classroom use, and cognitive demands of different tasks for different learners.

The other chapters deal with various aspects of mathematical tasks against the background of one or more countries. Five of them are based on the situation in one country, three are devoted to the comparison of the situation in two countries and the last, tenth chapter compares aspects of the theme in five different countries.

Let us first look at the chapters devoted to the situation in one country. Each chapter focuses on a different perspective.

- In the second chapter, *A Study of Mathematical Tasks from Three Classrooms in Singapore*, Kaur focuses on the source and nature of mathematical tasks used by three competent teachers in the grade eight classrooms in Singapore; she analyses and compares data from various perspectives.
- In the third chapter, *Mathematical Tasks as Catalysts for Student Talk: Analysing Discourse in a Norwegian Mathematics Classroom*, Bergem and Klette deal with their data from the perspective of communication in the ninth grade Norwegian classrooms. The sort of mathematical reasoning when talking mathematics through tasks from the everyday settings, the negotiation and stabilization of distributed expertise among learners, the nature and the scope of mathematics tasks involved and the teacher's support influence are studied.
- In the fourth chapter, *Engaging Students with Mathematical Tasks in a Large Class*, Cronberg focuses on what students from the Year 8 in the Philippine public secondary schools do during the group work in large classes and what these tasks require from students with the main attention paid to geometric proofs.

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- The fifth chapter, *A Task-Specific Analysis of Explicit Linking in the Lesson Sequences in Three Japanese Mathematics Classrooms*, written by Shimizu, is based on the important theoretical construct “linking” and analyses its influence on the mathematics teaching and learning in Japanese schools dealing with three topics: Linear equation, Plane geometry and Number and expressions.
  - In the sixth chapter, *Linking in Teaching Linear Equations – Forms and Purposes: The Case of the Czech Republic*, Novotná and Hošpesová extend the study of linking by introducing a finer classification of its types. The influence on the teacher’s and students’ behaviour is analysed; illustrations come from the eighth grade classroom episodes from two Czech schools.

Three chapters are devoted to comparative studies of various aspects of mathematical tasks in different countries. Via the comparison of the lessons between two different countries, the important properties of mathematical tasks and their implementation in mathematics lessons are highlighted.

- In the seventh chapter, *Comparison of Learning Task Lesson Events between Australian and Shanghai Lessons*, Mok concentrates on the possible contribution of learning task lesson events to the building of relationships between procedural and conceptual knowledge. It can also be seen as an example how an event-coding technique can be successfully combined with direct observations of a learning unit.
- The mathematical tasks that are dealt with by Huang and Cai in the eighth chapter *Implementing Mathematical Tasks in US and Chinese Classrooms*, are questions, problems, applications and exercises. Data from one school in China and one school in the USA are analysed and compared. Factors associated with the implementation of mathematical tasks in these schools are studied from the perspective of maintaining and reducing cognitive demands and serve as the basis for characterising cognitive demands of mathematical tasks.
- In the ninth chapter, *Student-Created Tasks Inform Conceptual Task Design*, Williams studies the types of questions students ask themselves to achieve a deep understanding. The analysis is based on the comparison of studies in Australia and in the USA. Pedagogical advantages of integrating student-formulated questions that elicit complex thinking are documented.

The last chapter, *A Functional Analysis of Mathematical Tasks in China, Japan, Sweden, Australia and the USA: Voice and Agency*, written by Mesiti and Clarke, represents an example of a comparative study including more than two countries. It focuses particularly on differences in the function of mathematically similar tasks when employed by different teachers, in different classrooms, for different instructional purposes and with different students; the significance of differences between social, cultural and curricular settings, classroom communities are taken into account.

The series of LPS books published in Sense has not finished. Further topics are in diverse stages of preparation for publication: international perspectives on the teaching and learning of algebra; competent teachers in mathematics classrooms

around the world; coherence in the mathematics classroom; difference in mathematics classrooms around the world or students' voice in mathematics classrooms around the world.

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