

Author: Tengberg, M. et al.

The quality of instruction in Swedish lower secondary language arts, mathematics and social science.

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Your full name: Marie Nilsberth

Affiliated authors with institutions: Michael Tengberg, Jorryt van Bommel, Marie Nilsberth, Anna Nissen, Michael Walkert, Karlstad University

Affiliation: Karlstad University

Current position: Associate professor

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## Abstract

Instructional quality is a research topic that has received increased attention over the past decades. However, despite evidence for its importance to student learning, few studies are designed to examine patterns of prevalent instruction. This paper presents findings from the QUINT-projects LISA-Sweden and the Swedish substudy of QUISST that has been conducted with a parallel design to previous studies in Norway. The present study aimed to enhance the understanding of instructional quality in Swedish lower secondary school by examining patterns of instruction in 7th grade language arts and mathematics and in the 9th grade in social science. 306 lessons from 81 separate classrooms were video-recorded and analyzed using the Protocol for Language Arts Teaching Observation (PLATO). Findings of the study show that lessons were largely organized through either whole-class instruction or individual seatwork. Mathematics included significantly more explicit teacher scaffolding and mathematics teachers scored higher than language arts and social science teachers on nearly all instructional dimensions. However, in all three subjects, there were substantial differences between teachers, meaning that students in different classrooms received systematically different kinds of instruction. Implications for instructional development and future research are discussed.

## Extended summary

### Introduction

The quality of instruction is one of the most important factors in predicting student achievement and has been found to be more significant than teacher qualifications, class size, and classroom climate (Allen et al., 2011; Hattie, 2009; Slater et al., 2012). Moreover, teachers vary considerably in their contribution to student learning (Haertel, 2013; Konstantopoulos & Chung, 2011). However, in what way teachers differ, and to what extent quality practices are employed in Nordic classrooms, is less known. While international large-scale assessments, such as PISA, PIRLS, and TIMSS, provide comparative data on national and international trends of student achievement they provide information on a limited subset of all the practices employed by teachers. Therefore, detailed and systematic observations of teaching practices may provide a useful supplement to large-scale teacher survey reports and student achievement data in order to better understand the nature and quality of the instruction students receive in school.

### Theoretical background

We use the Protocol for Language Arts Teaching Observation (PLATO) as an observational lens to analyze video recorded classroom instruction. PLATO was developed by Grossman et al. ([2013](#)) to

capture the quality of English language arts (ELA) instruction, which for the purpose of this study has been adjusted to become applicable also for mathematics and social science. According to Bell et al. (2019, p. 18), PLATO “privileges socioconstructivist approaches to learning but combines this with more cognitive approaches.” The composition of features captured in PLATO builds on research on practices proven critical to student learning in ELA, including strategy instruction (Palincsar & Brown, 1984), dialogic discourse (Nystrand et al., 1997), and cognitively activating tasks (Lipowsky et al., 2009). The instrument is organized into four broader domains: *Instructional Scaffolding*, *Disciplinary Demand*, *Representations and Use of Content*, and *Classroom Environment*, which are in turn divided into sub-elements, 12 elements in total. Recorded lessons are divided into 15-minute segments and scored on each element using a four-point scale. The theoretical assumption underlying its use in previous observation studies is that a high teacher average on PLATO will predict a higher student achievement average.

## Aims

The study aims to provide empirically-based knowledge of prevalent patterns of instruction in Swedish lower secondary language arts and mathematics. With “patterns of instruction”, we refer both to instructional formats and research-based critical features of instructional quality. By doing so, the study wishes to contribute to enhanced understanding of instructional quality in Swedish schools and a new angle from which to assess the need for future educational research and instructional development. More specifically, this research addresses the following research questions:

1. To what extent are different instructional formats used by teachers in Swedish language arts, mathematics and social science?
2. To what extent are features of instructional quality present in Swedish in Swedish language arts, mathematics and social science?
3. How do features of instructional quality differ between individual teachers in Swedish language arts, mathematics and social science?
4. In what way are teacher characteristics (age, gender, teaching experience, and subject-specific qualifications) related to features of instructional quality?

## Methods

The present study examines patterns of instruction in 7th grade language arts and mathematics and in the 9th grade in social science. 306 lessons from 81 separate classrooms were video-recorded and analyzed using PLATO. Video-recordings were supplemented by photos from the classrooms and background data of teacher characteristics, such as age, gender, length of teaching experience, and extent of education, was also collected. Recorded lessons ( $N_{LA} = 141$ ,  $N_{MA} = 133$ ,  $N_{SS} = 32$ ) were divided into 15-minute segments ( $N_{LA} = 458$ ,  $N_{MA} = 403$ ,  $N_{SS} = 96$ ) and scored using PLATO for instructional quality, and instructional format and content coverage. All raters were trained and certified to use PLATO. To monitor reliability, regular meetings were held to score videos jointly and decide on critical issues and scoring rules. About 40% of all lesson segments were scored by two raters and disagreements settled through discussion.

## Results

The findings of the study show that whole-class and individual seatwork activities were the dominant instructional formats in all three subjects. Mathematics instruction appeared to be more explicit than language arts instruction, marked, for instance, by a higher rate of scaffolding activities such as MOD, SUI, and FB, and by a higher PLATO mean score. In all three subjects, however, the quality of instruction according to PLATO differed considerably between classrooms. Some of these differences were significantly related to teachers' gender, age, and length of education, but the relationships were inconsistent between subjects, and the study does not provide a clear explanation to these findings. The most important finding of the study is perhaps that teachers in different classrooms vary substantially and systematically on high-inference variables known from previous research to be vital for supporting student achievement gains over time. In other words, the instruction in different classrooms, sometimes neighboring classrooms in the same school, is of systematically different quality. This offers a key implication for future planning of instructional improvement and professional development initiatives.

## Theoretical and education significance

The results of the study provide an overview of the nature and quality of teaching in Swedish lower secondary language arts, mathematics and social science that may inform educational debate and serve as a point of reference for future research for comparative purposes and for mapping trends of instructional change. In addition to the light cast on teachers' scaffolding activities, the study directs attention to the low level of high-quality and content-related classroom dialogue (low scores on CD), often referred to in previous research as an important feature of high-quality instruction (Murphy et al., 2009; Webb et al., 2019). Contrary to what is often assumed about Swedish classrooms, extended classroom dialogue appeared to be scarce according to the findings of this study. Similarly, the findings highlight the need for discussion about the cognitive activation and intellectual challenge offered by daily classroom activities.

## Relevance to the QUINT ambition

The project LISA-Sweden reproduces parallel studies in the other Nordic countries in QUINT, and as such it is at the core of the QUINT ambition. The study reproduced a research design employed by Klette et al. (2017), focusing on instructional quality in Norwegian lower secondary classrooms.

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