



## Observed lesson structure during the first year of secondary education: Exploration of change and link with academic engagement

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### ABSTRACT

This study investigates whether lesson structure (LS) matters and which components are important for academic engagement during the first grade of secondary education. Data from videotaped lessons of 10 Dutch and 12 Indonesian teachers analyzed using an observation protocol show that six LS components are found, that between class and over measurement variability in LS is evident, and that on average LS change is not a linear function of time. Class differences over time do exist and several personal and contextual characteristics affect LS. Links between LS (student work time, reviewing and introducing new content) and academic engagement are evident.

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### 1. Introduction

Current research recognizes that elements of classroom practice, like interpersonal and instructional issues, are important predictors of school success (e.g., Newberry & Davis, 2008; Opdenakker & Maulana, 2011; Wubbels & Brekelmans, 2005). Evidence has indicated that student engagement is particularly facilitated by high levels of structure (Opdenakker & Minnaert, 2011; Skinner & Belmont, 1993).

Although much of the literature emphasizes the importance of high classroom quality for student outcomes, studies are generally based on the results of students' and/or teachers' reports, while research involving classroom observations is limited (den Brok, Wubbels, Veldman, & Van Tartwijk, 2005). Moreover, most studies neither pay attention to the beginning nor to the developments during the school year (Maulana, Opdenakker, den Brok & Bosker, 2010). Finally, scholars usually generate data in only one country, whereas classroom practices and teaching subjects undoubtedly differ on a cross-country basis (Schmidt et al., 2002). Hence, more focus on comparative and international studies (Alexander, 1996; Crossley & Broadfoot, 1992) and cross-country

research would promote a more innovative perspective on these practices (Wilson, Andrew, & Sourikova, 2001) and facilitate teachers and educational developers in sharing knowledge all around the world.

The present study has aimed to go beyond the current research into classroom practice in a number of ways. First, we followed teachers and students via videotaped lessons throughout an entire school year. Second, we analyzed classroom practice in terms of lesson structure (LS) over time. Third, we linked LS with student reports on academic engagement in a longitudinal manner. Fourth, we compared LS between Dutch and Indonesian classrooms.<sup>1</sup> Finally, we applied multilevel growth curve models to tackle the hierarchical structure of our data.

#### 1.1. Classroom practice and lesson structure

##### 1.1.1. Structure as an integral part of classroom practice

The importance of structure in classroom practices is widely recognized in the various fields of international research. The conceptualizations of structure, however, differ among these

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<sup>1</sup> We chose these two cultures because as regards learning achievement international studies (e.g., PISA, TIMSS) generally classify Dutch students in the top five category whereas Indonesian students are ranked among the bottom five (Maulana & Azkiah, 2009).

domains, varying from instructional elements of classroom practice to organizational characteristics of the lessons (Opdenakker & Minnaert, 2011). However, since the object of interest is the same, namely classroom teaching, overlap in these conceptualizations across the research traditions is inevitable.

The classroom management literature defines structure in terms of teacher behavior aimed at creating order (Doyle, 1986), communicating procedures (Emmer, Evertson, & Anderson, 1980), providing guidelines about how to complete certain tasks (Carter & Doyle, 2006), and lessening misconduct whilst encouraging engagement (Brophy, 2006). In the motivational literature structure refers to the amount and clarity of information provided by teachers about how to attain desired educational outcomes effectively (Skinner & Belmont, 1993). Teachers whose classes are well-structured clearly define their expectations, formulate consistent rules of behavior, and help students in engaging in a task (Opdenakker & Maulana, 2010a; Skinner, 1991). They assist students in developing their perceived competence, intrinsic motivation, mastery motivation, self-efficacy, and optimistic attributional styles (Skinner, Furrer, Marchand, & Kindermann, 2008).

The teacher effectiveness literature considers structure as the observable instructional behavior of teachers in the classroom. Structure is recognized as one of the most important dimensions of classroom practice, referring to teachers' attempts to order and present the lessons in a clear and organized way (Kyriakides, Creemers, & Antoniou, 2009). Presenting teaching materials in a structured way is expected to maximize the learning outcomes. This can be done by starting the lesson by giving an overview or review of the objectives, outlining the contents to be covered, signaling the transitions between lesson parts, calling attention to the main ideas, and reviewing them at the end of the session (Brophy & Good, 1986). The time devoted to each activity is important. Specifically essential is an appropriate tempo, as it helps in maintaining momentum and retaining the students' attention. It also enables the teacher to cover more content (Case, 1993).

Although defined in different ways, all conceptions of structure in the research traditions mentioned above suggest the importance of clear expectations and directions, systematic guidance during the lesson, scheduling and demarcating the activities and signaling the transitions between them (Creemers & Kyriakides, 2008; Jang, Reeve, & Deci, 2010; Rosenshine & Stevens, 1986). This implies that in order to adopt a well-structured approach, teachers need to focus on organizing their lessons effectively.

### 1.1.2. Lesson structure

Structure is also considered as the organization of the lessons, labeled lesson structure (LS).<sup>2</sup> This term originates from the work of Herbart. He argues that in order to realize learning, four formal stages need to be completed: (1) constructing cognitive clarity of the previously learned material, (2) integrating the elements of the new knowledge by relating them to the knowledge already learned, (3) systematizing these associations, and (4) applying the new knowledge (Dunkel, 1969). His cyclical sequence of learning steps has considerably shaped the classroom practices in the US and Europe (Savola, 2008). As opposed to Herbart's structured lesson idea there is the intuitive instructional approach, which promotes a more spontaneous teaching practice (Oser & Baeriswyl, 2001).

<sup>2</sup> The concept of lesson structure originates from subject-related didactical traditions. The literature shows considerable variations in terminology with regard to lesson structure, including lesson script (Stigler, Gonzales, Kawanaka, Knoll, & Serrano, 1999), lesson pattern (Stigler, Gallimore, & Hiebert, 2000), lesson signatures (Hiebert et al., 2003), and teaching scripts (Givin et al., 2005), to name a few. For the sake of consistency we use the term 'lesson structure'.

The rise of LS research, which has gained considerable attention across the world, coincided with the introduction of video-based studies in classroom contexts. Combined with cross-national studies this approach is advantageous because it can "reveal one's own practices more clearly, discover new alternatives, stimulate discussion about choices within each country, and deepen educator's understanding of teaching" (Hiebert et al., 2003, pp. 3–4). Many of the results on LS are presented in TIMSS and Learner's Perspective Studies (LPS) studies, investigating teaching practices in several countries. The TIMSS 1995 video study, for example, reveals that American and German teachers apply an acquisition/application structure whereas Japanese teachers use a reversed approach (Hiebert et al., 1996). The TIMSS 1999 video study indicates that national patterns of LS might generally exist. However, whether or not every nation has its own distinct LS pattern remains inconclusive (Clarke, Emanuelsson, Jablonka, & Mok, 2006). Jablonka (2004) discovered that the way in which students deal with (math) classroom settings and assign meaning to distinct aspects of classroom practices is actually rather similar across cultures.

There are three dimensions of observable LS: (1) *function*, pedagogical functions of lesson components, (2) *form*, forms of social interaction, and (3) *task structure*, structure of tasks shaping the instructional practice (Savola, 2008). Furthermore, the LS levels of analysis include 'whole lesson', 'topic', and 'lesson event' (Clarke et al., 2006). The present study investigates the function dimension at the whole lesson level. The specific focus is on the proportion of time devoted to components of LS.

Focusing on the length of LS components is important because it is a basic ingredient for successful learning. The time devoted to LS components is closely related to 'students' opportunities to learn' (OTL) and 'efficient use of time for instruction' (Hiebert et al., 2003). OTL and time for learning are mentioned in the educational effectiveness literature as effectiveness-enhancing factors (Creemers & Kyriakides, 2008; Scheerens & Bosker, 1997). The amount of learning time is a significant predictor of teaching effectiveness (Karweit, 1989; Rosenshine & Berliner, 1978). In addition, review, introducing new content, and student work time (SWT) are elements that enable students to absorb (new) learning content and work with it individually. Furthermore, reviewing can be considered as a means to enhance the activation of prior knowledge, which is important for the facilitation of learning (Rinehart & Welker, 1992). Spending ample time on these components is therefore crucial.

Summarizing the above, LS can be distinguished from other conceptualizations of structure within the various research traditions<sup>3</sup> in that it specifically deals with the organizational factor of the lesson. Furthermore, it goes beyond the concept of instructional teacher behavior, as it refers not only to pedagogical functions of classroom practice, but also to the way in which teachers apply strategies to display these functions and organize the tasks that shape the instructional practice.

### 1.2. Lesson structure and academic engagement

Although some studies have indicated the importance of LS for student learning and engagement (Johnson, 2008; Mok, 2004), the

<sup>3</sup> The conceptualization of structure by the different research traditions may differ from a more organizational to a more instructional definition of classroom practice. Lesson structure emphasizes the importance of teachers' ability to manage and organize the lessons in such a way that they maximize the academic engagement levels (Creemers & Reezig, 1996; Wilks, 1996). This view can be distinguished from the structured instruction perspective that is characterized by a relatively large emphasis on structure in the form of teacher control over student learning (see Rosenshine & Stevens, 1986).

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