



Sociocultural and educational factors for reading literacy decline in the Netherlands in the past decade



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ABSTRACT

This study examined sociocultural and educational factors in explaining the reading literacy achievement of fourth-grade children (about 10 years of age) in the Netherlands during the past decade. Using 2001, 2006 and 2011 PIRLS data, a multilevel modeling analysis was conducted to examine levels and changes in reading literacy achievement over the years in relation to gender, SES, ethnicity, linguistic background and number of books in the home, and school SES as sociocultural factors, and early literacy activities and abilities, reading strategies instruction, time spent on reading and computer use as educational factors. A significant decline in reading achievement between 2001 and 2011 was evidenced with more than 80% of the variance being explained at the student level. All factors, except for early literacy abilities, reading strategy instruction and time spent on reading, showed statistically significant effects on reading literacy. All these effects applied to both literary and expository text genres, and to higher-order as well as to lower-order reading comprehension processes with two exceptions: computer use showed only an impact on expository texts and on the lower-order processing condition, and a rural school setting showed no impact on the literary text genre. Interaction effects showed that the decline in reading literacy achievement in the Netherlands in the past decade is related to the sociocultural factors of gender and student SES and to the educational factors of early literacy activities in the home and early literacy abilities established in the school.

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A great deal of research has been aimed at investigating differences in student achievement over time and between educational systems, the results of which have led to a growing concern about declining student reading performance in several countries (cf. [International Association for the Evaluation of Educational Achievement, 2001–2011](#); [Organisation for Economic Co-operation and Development \(OECD\), 2000–2010](#)), including Australia ([Thomson, De Bortoli, Nicholas, Hillman, & Buckley, 2010](#)), England ([Bradshaw, Ager, Burge, & Wheeler, 2010](#); [Jerrim, 2011](#)), Ireland ([Perkins, Moran, Cosgrove, & Shiel, 2010](#)), the United States ([Gioia, 2008](#)), as well as the Netherlands ([Scheerens, Luyten, & Van Ravens, 2011](#); [Vermeer & Van Der Steeg, 2011](#)). Although it is not clear which factors cause this decline in ability ([Bauerlein et al., 2008](#)), some research points out the link with changes in society and the literacy environment. In recent decades a reduction in reading has been observed, both a reduction in the number of readers, as well as a diminishing amount of time spent on reading ([Gioia, 2008](#); [Huysmans, De Haan, & Van den Broek, 2004](#)), due to

alternative activities and new media ([Clark, 2012](#)). It is, however, by no means clear how sociocultural and educational factors may have an impact on trends of reading literacy results over the years. Therefore, in the present study the focus was on the reading literacy achievement over the past decade of children in the Netherlands in relation to relevant sociocultural and educational factors being described in the literature.

Recent studies have shown that the individual variation in reading literacy achievement may be substantially related to various demographic subgroups that exist in the student population. To begin with, several studies have documented the existence of a ‘gender gap’ among students in the western world. The gender gap is on the one hand associated with lower achievement and interest in mathematics and science of girls ([Hyde, 2005](#); [Ma & Cartwright, 2003](#)) and suggests on the other hand a higher performance in reading compared with the reading performance of boys ([Ma, 2008](#); [Marks, 2008](#)), although some evidence suggests that this gap is shrinking ([Rutkowski, Rutkowski, & Plucker, 2012](#)). Furthermore, the achievement gap between students from ethnic or linguistic minority groups and their peers needs to be considered. Such achievement gap has been evidenced in several studies (e.g. [August & Shanahan, 2006](#); [Droop & Verhoeven, 2003](#); [Verhoeven & Van Leeuwe, 2008, 2012](#)). Next to the influences at the

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level of individual students, research has shown that the proportion of children from minority groups in a school or class, may influence reading achievement of all students in that school (Dronkers, 2010). These school characteristics, such as the school population and its location have been shown to predict children's reading literacy achievement (Portes & Macleod, 1996; Rauh, Parker, Garfinkel, Perry, & Andrews, 2003). It is important to note that the differences in achievement between students from ethnic or linguistic minority groups and their peers can largely be explained by socioeconomic factors, such as parental education, income and occupation (Lubienski & Crane, 2010; Marks, 2005). The influence of socioeconomic and sociocultural status on reading ability has indeed become evident in previous research (Caro & Lenkeit, 2012; Hoff, 2013; Lubienski & Crane, 2010; Sirin, 2005) and can be seen as an indicator of the degree of equality in education (Yang Hansen, Rosén, & Gustafsson, 2011).

Of course, the reading literacy achievement of students can also be explained from educational factors. The effects on early literacy of early literacy experiences in the home (e.g. De Jong & Leseman, 2001; Serpell, 2001), or in the school (Dickinson & Porche, 2011; Whitehurst & Lonigan, 1998) are well established. Early literacy activities that take place in the home or the school appear to be related to reading literacy achievement of children, above and beyond the influence of demographic variables (Bracken & Fischel, 2008; Sénéchal, 2006) and are important predictors of reading achievement across the primary grades (Sénéchal & LeFevre, 2002). Besides early literacy activities, several educational predictor variables of reading literacy have been mentioned. To begin with, the instructional approach that is used impacts the ability outcomes (Guthrie et al., 2009). In several studies, the focus has been on the instruction of reading strategies, such as identifying the main idea of a text and knowledge and use of story structure, which may help improve the students' reading literacy abilities (McKeown, Beck, & Blake, 2009; Oakhill & Cain, 2012; Spörer, Brunstein, & Kieschke, 2009; Van Keer, 2004). It has also been found that time spent on reading as well as variation in teaching approaches are important predictors of reading literacy outcomes. Success in reading literacy has been shown to be dependent on the number of times strategies are offered to students and the time they are given to internalize these skills (Duke & Pearson, 2002; Sonnenschein, Stapleton, & Benson, 2010), as well as the variety of reading strategies taught (Ness, 2011).

Recent literature stresses the importance of the increasing use of home media and their shifting influence on a student's life and achievement. It has been found that home media may have a differentiated effect on the achievement of girls and boys and of various demographic subgroups (Hofferth, 2010; Hofferth & Moon, 2012). During a period in which the nature of literacy experiences of students is rapidly evolving due to new technologies and social practices of literacy change (Greenhow & Robelia, 2009), the influence of these new media practices on reading ability has to be considered as well.

The aim of the present study was to yield new insights in the dynamics of reading literacy achievement by conducting in-depth analyses on the reading literacy achievement of fourth-grade children in the Netherlands during the past decade in relation to sociocultural and educational factors. First, we examined the trend in reading literacy achievement across the period from 2001 to 2011. In 2001 the IEA (*International Association for the Evaluation of Educational Achievement*) started with PIRLS (*Progress in International Reading Literacy Study*). PIRLS provides internationally comparative data about students' reading achievement and associated factors and is a study with a 5-year cycle; the first assessment was in 2001. The target population of PIRLS includes all students enrolled in the grade that represents four years of schooling, counting from the first year of ISCED level 1, by UNESCO's International Standard Classification for Education (UNESCO Institute for Statistics, 1999). The reason for this choice was that in this grade students are making the transition from *learning to read* to *reading to learn*. PIRLS focuses on three core aspects of reading literacy: purposes for reading, processes of comprehension, and reading behavior and

attitudes. The first two aspects have been integrated in the reading literacy test; information regarding students' reading behavior and attitudes as well as regarding the different components of the students' environment was gathered by four background questionnaires (School, Teacher, Student and Home). The PIRLS Reading Literacy Test consists of two types of passages that represent the two purposes for reading: reading for literary experience (literary texts) and reading to acquire and use information (expository texts). Within both text genres, each PIRLS assessment has been designed to measure two major processes of reading comprehension: lower-order processes, such as retrieval and straightforward inference processes, and higher-order processes including interpreting, examining and evaluating processes. Detailed information may be found in the PIRLS assessment framework (Mullis, Martin, Kennedy, Trong, & Sainsbury, 2009).

In the present study an attempt was made to explain the variation in reading literacy achievement over the years in relation to sociocultural factors like gender, SES, ethnicity, linguistic background, number of books in the home and school SES as well as educational factors like early literacy activities and abilities, reading strategies, time spent on reading and computer use. Multilevel modeling was used to answer the following research questions:

1. How did the level of fourth-grade reading literacy achievement in the Netherlands change during the past decade?
2. Which sociocultural and educational factors relate to the variation in Dutch reading literacy achievement?
3. How are the differences in reading literacy achievement between the three cohorts (2001, 2006 and 2011) related with sociocultural and educational factors?

The trends in reading literacy achievement were not only studied for the total literacy achievement scores, but also for the components of reading literacy: text genres and comprehension processes. This was done in order to examine whether the text type and the comprehension processes play a role in explaining the trend in reading results. In primary education there is a stronger focus on narrative text in the earlier grades with a gradual shift to expository texts in the higher grades. Also more attention is paid to higher-order comprehension processes in higher grades. This becomes already important in grade 4 in connection with reading to learn.

In order to answer the research questions, the possibilities and implications for statistical procedures using large-scale assessment data (Rutkowski, Gonzalez, Joncas, & Von Davier, 2010) and the hierarchical structure of the data (Hox, 1998; Muthén, 1991; Snijders & Bosker, 2012) have been taken into account. The current study contributes to the literature on the decline in reading achievement in two ways. First, the present study examined changes in reading literacy achievement by conducting a multilevel modeling analysis on a nation-wide dataset that contains detailed information on the reading achievement of three cohorts of ten-year-old students from respectively the years 2001, 2006 and 2011. Second, in an attempt to unravel the predictors that can help explain the trend in reading achievement over the years, the role of a broad range of sociocultural and educational factors was explored.

1. Method

1.1. Participants

A total of 12,263 grade-4 students from 412 Dutch elementary schools participated in 2001, 2006 or 2011 in PIRLS conducted by the IEA. The Dutch 2006 and 2011 data were collected by the first author. The mean age of the participants was 10; 3 years. Table 1 shows the numbers of participating students, classes and schools at the three years of measurement. Each time a different sample of schools was used to gather data.

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