Studies in Educational Evaluation xxx (2014) xxx–xxx

Contents lists available at ScienceDirect

Studies in Educational Evaluation

journal homepage: www.elsevier.com/stueduc

Measuring teacher regulating activities concerning student learning in secondary education classrooms: Reliability and validity of student perceptions

J.A. van Beek [a,*], F.P.C.M. de Jong [b], Th. Wubbels [c], A.E.M.G. Minnaert [d]

[a] Stoas Wageningen Vilentum University of Applied Sciences and Teacher Education, P.O. Box 80, 6700 AB Wageningen, The Netherlands
[b] Stoas Wageningen Vilentum University of Applied Sciences and Teacher Education, P.O. Box 80, 6700 AB Wageningen, The Netherlands
[c] Utrecht University, Faculty of Behavioural and Social Sciences, Department of Education, P.O. Box 80.140, 3508 TC Utrecht, The Netherlands
[d] University of Groningen, Faculty of Behavioural and Social Sciences, Orthopedagogy & Clinical Educational Science, Department Orthopedagogy Grote Rozenstraat 38, 9712 TJ Groningen, The Netherlands

ARTICLE INFO

Article history:
Received 30 November 2013
Received in revised form 4 July 2014
Accepted 5 July 2014
Available online xxx

Keywords:
Student perceptions
Teacher regulating activities
Inventory reliability and validity
Secondary education

ABSTRACT

.This article describes the use and validation of the Pedagogical Practices Inventory, which uses student perceptions arranged into five subscales to measure teacher activities concerning the regulation of student learning in secondary education. To determine the reliability and validity of the instrument, an inventory study ($N = 2128$) and a study in which observational data ($N = 11$) and inventory data ($N = 201$) were combined, were carried out. Analysis of the inventory data showed internal subscale reliabilities between .83 and .90, indicating consistency of the PPI subscale scores. Correlations between inventory and observational data showed significant relations for three of the five subscales, indicating that the PPI is suitable to tap teacher regulating activities in classroom contexts.

Introduction

The role of the teacher is of major importance in education. Research has shown that between 7% and 15% of the variance in student outcomes is related to differences between schools, teachers and classes in education. Most of this variance is between teachers (Reynolds, 1995 in Den Brok, Brekelmans, & Wubbels, 2004). There are systematic relationships between the way teachers teach and the quality of their student learning. According to Hattie (2009), one of the aspects that is likely to have above average effects on student achievement is the use of particular teaching methods. Teachers can choose various ways to arrange the educational environment to facilitate student experiences of different kinds of learning (Bolhuis & Voeten, 2001).

In the current secondary education in the Netherlands and elsewhere, the development of student self-regulated learning skills is considered a major factor in developing life-long learning skills (Zimmerman, 2002). Hence, we are interested in the way that teachers stimulate and facilitate student self-regulated learning within their classroom practices, or more specifically, within their regulating activities in classroom contexts. There are different ways to gain insight into teacher regulating activities; however, they need to be measured in a reliable and valid way. This article, therefore, focusses on the reliability and validity of a student perceptions inventory to measure teacher regulating activities in secondary education classrooms.

Different ways to gain insight into teacher practices

There are different ways to gain insight into teacher classroom practices. Research in schools initially focussed on the observable behaviours of teachers, but subsequently also began to use questionnaires to measure both teacher and student perceptions of teacher practices (Den Brok, Bergen, Stahl, & Brekelmans, 2004; Kunter & Baumert, 2006; Kunter, Tsai, Klusmann, Brunner, Krauss, et al., 2008). Below, some examples are presented and the advantages and disadvantages of research using classroom observations, teacher perception and student perception questionnaires are discussed.

* Corresponding author. Tel.: +31 6 23995934.
E-mail addresses: j.van.beek@stoasvilentum.nl (J.A. van Beek), f.de.jong@stoasvilentum.nl (F.P.C.M. de Jong), t.wubbels@uu.nl (T. Wubbels), a.e.m.g.minnaert@rug.nl (A.E.M.G. Minnaert).

http://dx.doi.org/10.1016/j.stueduc.2014.07.001
0191-491X/

One way to investigate teacher practices is through observations. Observations can provide a detailed description and may therefore be a good way to gain insight into teacher classroom practices. Bolhuis and Voeten (2001), for example, aimed to provide a detailed description of what teachers do to facilitate self-directed learning. Newmann, Marks, and Gamoran (1996) observed mathematics lessons to determine the extent to which they conformed to criteria of 'authentic pedagogy' (Newmann et al., 1996). Observing, however, is a time-consuming and intensive way of gathering data, as is the analysis of the data. Therefore, observation studies often rely on only a small sample of schools and teachers as well as a small number of lessons per teacher. It can be concluded therefore, that observations are useful in constructing a detailed description of teacher practices, but because of the intensive method of data collection and analysis, this method will generally involve a small sample, meaning that the insights gained concern a non-representative sample of teachers.

A second way to investigate teacher practices is by using the perceptions of teachers themselves. Trigwell and Prosser (2004), for example, used the Approaches to Teaching Inventory (ATI) to measure the key aspects of variation in approaches to teaching at university. Wubbels, Brekelmans, and Hooymayers (1992) used the Questionnaire on Teacher Interaction (QTI), to gather data about interpersonal teacher behaviour. While the above-mentioned examples concern paper and pencil inventories, more recently, Meirink, Meijer, Verloop, and Bergen (2009) asked teachers to keep a digital log describing what was learned and how it was learned every six weeks, in order to examine their learning activities.

Using teacher perceptions implies measuring teacher *self*-perceptions. These self-perceptions are not necessarily in accordance with student perceptions or classroom observations, with discrepancies between teacher perceptions and their actual classroom practices possible. Kunter et al. (2008) actually found a low to moderate agreement between teacher and student ratings. Wubbels et al. (1992) investigated the relationship between teacher ideals, self-reports and student perceptions, and found that for most teachers the self-reported scores on ideal global interpersonal behaviour characteristics were higher than the student scores of the same teacher's behaviour. In other words, most teachers considered their behaviour to be more like their ideal than did the students. As the study by Wubbels et al. (1992) only concerned interpersonal behaviour in the classroom and cognitions about that kind of behaviour, some care should be taken when interpreting the results. Nevertheless, we can conclude that teacher self-reports about their behaviours are partly shaped by their ideals and are therefore not necessarily actual representations of teacher classroom practices.

A third way to gain insight into teacher practices is the use of student perceptions. Pintrich, Roeser, and De Groot (1994), for example, expanded the self-report questionnaire Motivated Strategies for Learning Questionnaire (MSLQ), with items that asked students about class work, their teacher and the opportunities to work with other students in class.

An important reason to use student perceptions is that they construct their own knowledge and perceptions of teacher practices (Den Brok, Bergen, et al., 2004; Fraser, 1998). Student perceptions of the learning environment constitute a mental representation of learning activities and affect their conscious and unconscious choices in the classroom (Boekaerts & Cascallar, 2006). The way in which students perceive, interpret and process information in the instructional situation, including teacher practices, is an important determinant of what the student learns (Shuell, 1993). Nevertheless, it is the teacher who arranges the educational environment to allow the students to gain experience of different learning skills. Therefore, it is relevant to gain insight into teacher practices as perceived by students because of the influence of these perceptions on student learning (Opdenakker & Minnaert, 2011).

Several studies demonstrate that the perceptions of students provide valuable insight into aspects of teacher practices that may in turn affect student behaviour (Fraser, 1998; Marsh, 1982; Wubbels & Brekelmans, 2005), and that students are able to provide ratings of teacher practices that are sufficiently stable, reliable, valid and predictable for teacher evaluation and research purposes (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004). The results of a study on the relationship between teacher practices and student outcomes showed that student perceptions mediate the influence of the learning environment on student outcomes (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004; Trigwell & Prosser, 2004; Van Tartwijk, Brekelmans, & Wubbels, 1998).

There are also more practical reasons to use student perceptions of teacher practices. Firstly, student perceptions are relatively easy to obtain and it is a cheap and practical manner to gather information (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004). In other words, it is much easier to carry out large-scale studies of teacher practices using student perceptions than using observation studies (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004). Secondly, student perceptions combine many different individual perceptions in a classroom, which means that they provide a more complete overview of teacher practices than, for example, observations by one or two persons (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004). Thirdly, student experiences are often based on a large number of lessons. Students often have experience of several situations and contexts with one teacher, which assists in developing a representation of teacher practices which is as differentiated as possible (Fraser, 1998). Thirdly, using student perceptions is a simple and efficient research method that allows different aspects of the learning environment to be assessed on the basis of the individual student, as well as at the classroom level (Ludtke, Trautwein, Kunter, & Baumert, 2006).

Although student perceptions have some advantages over teacher perceptions and classroom observations, we also realise that student perceptions are nothing more and nothing less than that: personal assessment and views of practices (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004), which might for example be affected by students' general study orientations (Parpala, Lindblom-Ylänne, Komulainen, & Entwistle, 2013). Furthermore, student perceptions do not inform us about actual intentions of teachers, the frequency, function or the effectiveness of teacher practices (Den Brok, Brekelmans, et al., 2004; Den Brok, Bergen, et al., 2004). It is therefore that, in addition to student perceptions, we used observational data to investigate teacher regulating activities, and also investigate the relationship between student perceptions and observational data.

Teacher regulating activities and student self-regulated learning

Taking into consideration the advantages and disadvantages of observations, teacher self-perceptions and student perceptions, in the present study we have chosen to develop and use a student perceptions inventory to measure teacher classroom practices—specifically, teacher regulating activities facilitating student self-regulated learning.

Self-regulated learning is of growing importance in Dutch educational policy and practice because the ability to self-regulate is viewed as a key to successful learning in school and beyond (Boekaerts, 1997, 1999; Bolhuis, 2003; Jossberger, Brand-Gruwel, Boshuizen, & van de Wiel, 2010; Kuo, 2010). Self-regulated learning is viewed as a process in which students actively and

Please cite this article in press as: J.A. van Beek, et al.. Measuring teacher regulating activities concerning student learning in secondary education classrooms: Reliability and validity of student perceptions. *Studies in Educational Evaluation* (2014), http://dx.doi.org/10.1016/j.stueduc.2014.07.001