CHAPTER 4

Teaching Practices, Teachers' Beliefs and Attitudes

Highlights

- Teachers are more inclined to regard students as active participants in the process of acquiring knowledge than to see the teacher's main role as the transmission of information and demonstration of "correct solutions". This is most true in northwest Europe, Scandinavia, Australia and Korea and least true in southern Europe, Brazil and Malaysia where teachers fall between the two views.

- In the classroom, teachers in all countries put greater emphasis on ensuring that learning is well structured than on student-oriented activities which give them more autonomy. Both of these teaching practices are emphasised more than enhanced learning activities such as project work. This pattern is true in every country.

- Co-operation by teachers in all countries more commonly takes the form of exchanging and co-ordinating ideas and information than direct professional collaboration such as team teaching.

- At least half of teachers in most countries spend over 80% of their lesson time on teaching and learning. However, one in four teachers in most countries lose at least 30% of their lesson time, and some lose more than half, through disruptions and administrative tasks. This is closely associated with the classroom disciplinary climate. Country and school differences in this respect are less important than differences among teachers within schools.

- Almost all Norwegian teachers report better than average relationships between teachers and students. In other countries, teacher-student relationships vary considerably. Only part of this variation is related to differences among schools. Even though teacher-student relations are often seen as a feature of schools as a whole, different teachers within schools perceive them differently.

- The average levels of job satisfaction and of teachers' belief in their own effectiveness are fairly similar across countries, although Norwegian teachers again stand out as well above average in both respects. Most differences in these job-related attitudes entail differences among teachers within countries and within schools.

- Female teachers are less likely than male teachers to see teaching as the direct transmission of knowledge and are more likely to adopt structuring and student oriented practices as well as to co-operate more with colleagues.

- Teachers who undertake professional development undertake a wider array of teaching practices and are more likely to co-operate with other teachers.

INTRODUCTION

Teachers' beliefs, practices and attitudes are important for understanding and improving educational processes. They are closely linked to teachers' strategies for coping with challenges in their daily professional life and to their general well-being, and they shape students' learning environment and influence student motivation and achievement. Furthermore they can be expected to mediate the effects of job-related policies – such as changes in curricula for teachers' initial education or professional development – on student learning. TALIS examines a variety of beliefs, practices and attitudes which previous research has shown to be relevant to the improvement and effectiveness of schools. Using representative data from 23 countries, this chapter presents a cross-cultural comparative analysis of profiles, variations and interrelationships of these aspects as they shape teachers' working environment.

The first part of the chapter describes teachers' beliefs, practices and attitudes and shows that in all participating countries certain beliefs and practices are more prominent than others. It also highlights cross-cultural differences regarding beliefs and practices, the quality of the learning environment, the strength of teachers' beliefs in their own efficacy ("self-efficacy"), and their job satisfaction. The second part of the chapter focuses on the relations between teachers' views of learning and instruction and the school as their place of work. Some findings are remarkably consistent across countries.

THEORETICAL BACKGROUND AND ANALYTICAL FRAMEWORK

TALIS examines teachers' beliefs, attitudes and practices and compares teachers, schools and countries. Although TALIS does not seek to explain student achievement or changes in achievement, student motivation or changes in motivation, it highlights factors which have been shown to be related to student outcomes.

Many studies have described aspects of teaching practice which are related to effective classroom learning and student outcomes (Brophy and Good, 1986; Wang, Haertel and Walberg, 1993). Close monitoring, adequate pacing and classroom management as well as clarity of presentation, well-structured lessons and informative and encouraging feedback – known as key aspects of "direct instruction"– have generally been shown to have a positive impact on student achievement. This is not enough, however; while the teacher provides learning opportunities, these must be recognised and utilised by the student to be effective. Motivation, goals and outcomes have to be taken into account as well. Therefore, the framework of instructional quality is broader than the direct instruction described above. Based on results from the TIMSS video study, Klieme *et al.* (2006) proposed three basic (second-order) dimensions of instructional quality: clear and well-structured classroom management (which includes key components of direct instruction), student orientation (including a supportive climate and individualised instruction), and cognitive activation (including the use of deep content, higher order thinking tasks and other demanding activities). These dimensions are to be understood as "latent" factors which are related to, but not identical with specific instructional practices (see Lipowsky *et al.*, 2008, for a theoretical foundation and an empirical test of the model). TALIS uses a domain-general version of this triarchic model, identifying structure, student orientation, and enhanced activities as basic dimensions of teaching practices.

Instructional practices, in turn, depend on what teachers bring to the classroom. Professional competence is believed to be a crucial factor in classroom and school practices (Shulman, 1987, Campbell *et al.,* 2004; Baumert and Kunter, 2006). To study this, a number of authors have used, for example, measures of the effects of constructivist compared with "reception/direct transmission" beliefs on teaching and learning, developed by Peterson *et al.* (1989). TALIS uses a domain-general version of two teaching and learning-related indices (constructivist and direct transmission) to cover teachers' beliefs and basic understanding of the nature of teaching and learning.

Teachers' professional knowledge and actual practices may differ not only among countries but also among teachers within a country. To gain an understanding of the prevalence of certain beliefs and practices it is
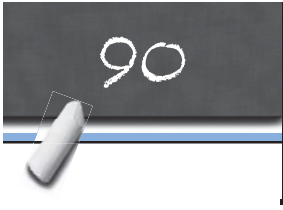
therefore important to examine how they relate to the characteristics of teachers and classrooms. For example, previous research suggests that the beliefs and practices of female and male teachers may systematically differ (*e.g.* Singer, 1996), so that TALIS must control for gender. From the perspective of education policy, however, it is even more relevant to look at the impact on teachers' beliefs, practices and attitudes of professional background factors such as type of training, certification and professional development, subject taught, employment status (part-time versus full-time) and length of tenure. It is important to note that any of these relationships can have different causal interpretations. For example, professional development activities may change beliefs and attitudes, but participation in such activities may itself be due to certain beliefs. As a cross-sectional study, TALIS can describe such relationships, but it cannot disentangle causal direction. Some of the analyses TALIS provides on these matters are merely exploratory, because so far there is little research, for example, on beliefs and practices specific to certain subjects.

Good instruction, of course, is not determined just by the teacher's background, beliefs and attitudes; it should also be responsive to students' needs and various student, classroom and school background factors. TALIS looks at whether teaching practices "adapt" to students' social and language background, grade level, achievement level, and class size. For example studies on aptitude-treatment interactions suggest that students with low intellectual abilities profit more from structured, teacher-centred instruction, while students with high intellectual abilities may gain more from less structured and more complex instruction (Snow and Lohman, 1984). TALIS does not allow for examining whether classroom practices are adapted to individual students but instead looks at macro-adaptivity (Cronbach, 1957), *i.e.* the adaptation of teaching practices to characteristics of the class.

Teachers do not act only in the classroom where they instruct students more or less in isolation from other classes and teachers. A modern view of teaching also includes professional activities on the school level, such as co-operating in teams, building professional learning communities, participating in school development, and evaluating and changing working conditions (Darling-Hammond *et al.* 2005). These activities shape the learning environment on the school level, *i.e.* the school climate, ethos and culture, and thus directly and indirectly (via classroom-level processes) affect student learning. TALIS distinguishes between two kinds of co-operation by a school's teaching staff: exchange and co-ordination for teaching (*e.g.* exchanging instructional material or discussing learning problems of individual students) versus more general and more innovative kinds of professional collaboration (*e.g.* observing other teachers' classes and giving feedback). It is assumed that both kinds of co-operative activities will be influenced by school-level context variables such as a school's teacher evaluation policies and the school's leadership, which are covered in chapters 5 and 6 respectively of this report.

As is known from research on the effectiveness of schools (Scheerens and Bosker, 1997; Hopkins, 2005; Lee and Williams, 2006; Harris and Chrispeels, 2006), the quality of the learning environment is the factor affecting student learning and outcomes that is most readily modified, given that background variables such as cognitive and motivational capacities, socio-economic background, social and cultural capital are mostly beyond the control of teachers and schools. TALIS captures students' background by asking teachers and principals about the social composition and the relative achievement level of the student population they serve. A more important task for TALIS is to assess quality, as perceived by teachers, at the classroom as well as the school level. However, as the environment generally varies between subjects and teachers, it is not easy to identify domain-general indicators. TALIS uses *time on task* – *i.e.* the proportion of lesson time that is actually used for teaching and learning – as a basic indicator for the quality of the learning environment. Also, *classroom climate* is used because of its strong impact on cognitive as well as motivational aspects of student learning in different subjects. The method used here is adapted from PISA and focuses on the disciplinary aspect. For example, the statement "When the lesson begins, I have to wait quite a long time for the students to quiet down" indicates a low level of classroom discipline. It has been shown that classroom discipline, aggregated to the school level, is a core element of instructional quality. In PISA, it is positively related to the school's mean student achievement in many participating countries (Klieme

and Rakoczy, 2003). Also, it has been shown that – unlike other features of classroom instruction – there is a high level of agreement about this indicator among teachers, students and observers (Clausen, 2002). In addition to the environment at the classroom level, *school climate* is used as an indicator for the school environment. Here, school climate is defined as the quality of social relations between students and teachers (including the quality of support teachers give to students), which is known to have a direct influence on motivational factors, such as student commitment to school, learning motivation and student satisfaction, and perhaps a more indirect influence on student achievement (see Cohen, 2006, for a review of related research). The triarchic model of instructional quality mentioned above (Klieme *et al.*, 2006; Lipowsky *et al.*, 2008; Rakoczy *et al.*, 2007) suggests specific relations between teaching practices and the two climate factors: structure-oriented teaching practices should primarily relate to high levels of classroom climate, while student-oriented practices should be linked with positive social relations.

Framework for the analysis of teaching practices and beliefs
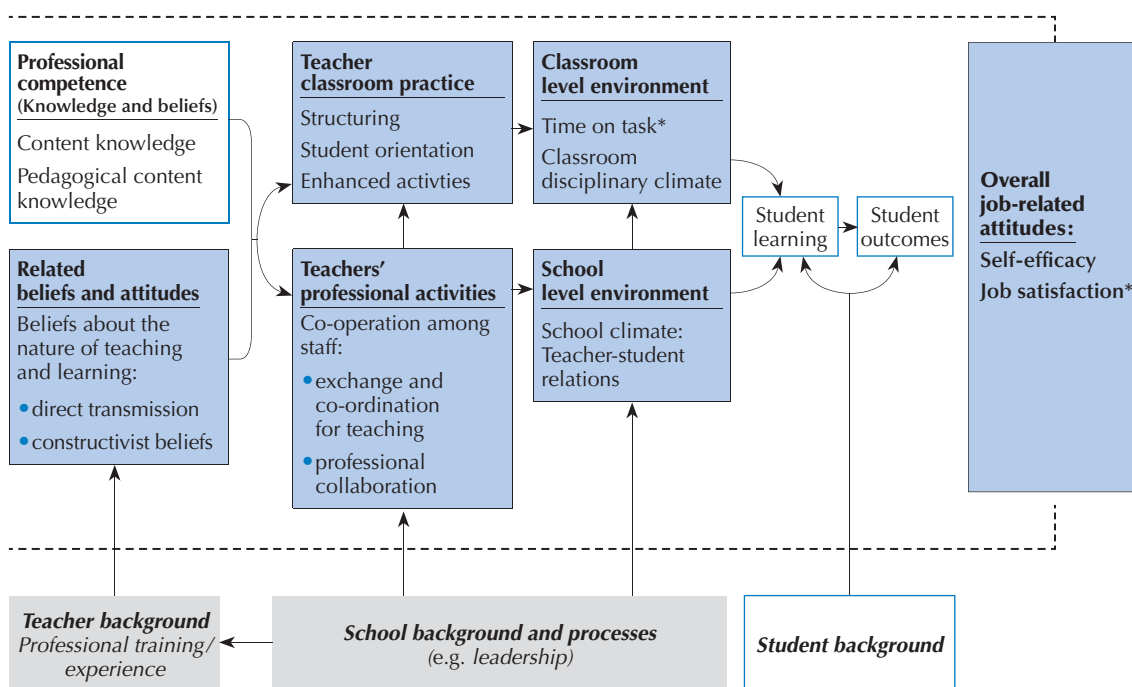
Note: Constructs that are covered by the survey are highlighted in blue; single item measures are indicated by an asterisk (*).
Source: OECD, *TALIS Database.*

TALIS does not address the ultimate effects of classroom and school-level activities and climate on student learning and outcomes. However, because TALIS studies teachers (as opposed to the effectiveness of education), teachers were asked to evaluate what they themselves do. TALIS assessed teachers' beliefs about their efficacy by adopting a construct and a related measurement that is widely used in educational research (*e.g.* Schwarzer, Schmitz and Daytner, 1999). As a second indicator, TALIS used a single item for overall job satisfaction. Research has shown that teachers' sense of their efficacy plays a crucial role in sustaining their job satisfaction

(*e.g.* Caprara *et al.*, 2006). It has also been found to be associated with constructivist goals and student orientation (Wheatley, 2005) and with successful management of classroom problems and keeping students on task (*e.g.* Chacon, 2005; Podell and Soodak, 1993). Thus, previous research suggests that there are significant relations between teachers' beliefs, attitudes and practices.

In summary, TALIS is able to cover core aspects of teachers' beliefs (general pedagogical knowledge), teachers' activities (teaching practices and teachers' co-operation) as well as quality indicators at the classroom level (classroom disciplinary climate, time on task) and at the school level (quality of social relations) and general job-related attitudes. Based on previous research, these aspects are expected to be related. Figure 4.1 illustrates the choice of constructs for this chapter and their supposed interactions.

Chapter outline

The following sections of this chapter are organised along the model described in Figure 4.1. Moving from the left (general pedagogical beliefs) to the right (overall job-related attitudes), each group (box) of variables is discussed by describing country profiles and – where appropriate – comparing country means. These results are presented in the first six sections of the chapter.

The chapter then explores the associations between background factors (such as kind of training, certification and professional development, subject taught, gender, employment status, and length of tenure) and beliefs, practices and attitudes. For teaching practices, both teacher background and classroom context are taken into account: Are teaching practices "adaptive" with regard to students' social and language background, grade level, achievement level, and class size? This section also contains a first attempt to use TALIS data to understand conditions for successful schooling and teaching within countries. This involves systematic tests of the hypotheses that are implied by the model (see Figure 4.1) and previous research. Working from left to right, the relationships between beliefs, attitudes and practices and activities are tested. Ultimately, multiple regressions and multi-level models are used to attempt to understand how job-related attitudes ("self-efficacy" and job satisfaction as proximal indicators for professional success) and the perceived quality of the learning environment (classroom and school climate) relate to teachers' professional beliefs and activities. The focus is on relations and effects that hold across or in a majority of countries. Single countries or groups of countries with specific patterns are identified when they help to understand certain profiles of beliefs, practices, and attitudes in those countries.

The final section of the chapter summarises the results of the analysis and discusses some policy implications of the findings.

BELIEFS ABOUT THE NATURE OF TEACHING AND LEARNING

The beliefs about the nature of teaching and learning which are the focus of TALIS include "direct transmission beliefs about learning and instruction" and "constructivist beliefs about learning and instruction". These dimensions of these beliefs are well established in educational research at least in Western countries and have also received support elsewhere (*e.g.* Kim, 2005).

The **direct transmission view** of student learning implies that a teachers' role is to communicate knowledge in a clear and structured way, to explain correct solutions, to give students clear and resolvable problems, and to ensure calm and concentration in the classroom. In contrast, a **constructivist view** focuses on students not as passive recipients but as active participants in the process of acquiring knowledge. Teachers holding this view emphasise facilitating student inquiry, prefer to give students the chance to develop solutions to problems on their own, and allow students to play active role in instructional activities. Here, the development of thinking and reasoning processes is stressed more than the acquisition of specific knowledge (Staub and Stern, 2002).

It is important to note the difference between beliefs on the one hand, and practices, on the other. Both practices and beliefs are shaped by pedagogical and cultural traditions. They represent different though related parts of the pedagogical context for student learning.

In TALIS, beliefs about teaching were assessed on a four-point Likert scale, ranging from 1 = "strongly disagree" to 4 = "strongly agree". Across countries, the basic dimensions for teacher beliefs about instruction – the direct transmission view and the constructivist view - were identified from the survey responses. Box 4.1 lists the questionnaire items from which the two indices for teachers' beliefs about teaching were constructed (See Annex A1.1 for full details.)

Box 4.1 Teachers' beliefs about teaching

The two indices for teachers' beliefs about teaching comprise the following questionnaire items:

Direct transmission beliefs about teaching

- Effective/good teachers demonstrate the correct way to solve a problem.
- Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly.
- How much students learn depends on how much background knowledge they have; that is why teaching facts is so necessary.
- A quiet classroom is generally needed for effective learning.

Constructivist beliefs about teaching

- My role as a teacher is to facilitate students' own inquiry.
- Students learn best by finding solutions to problems on their own.
- Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.
- Thinking and reasoning processes are more important than specific curriculum content.

Box 4.2 Cross-cultural validity of the indices for teachers' beliefs, practices and attitudes

The cross-cultural comparability – or "invariance" – of the indices for teaching practices, teachers' beliefs and attitudes, which are the feature of this chapter, was tested by means of confirmatory factor analysis (see Annex A1.1 and the *TALIS Technical Report* [forthcoming]).

For the indices measuring *teaching beliefs*, *classroom teaching practices* and *co-operation among teaching staff*, the analysis indicated that the country means on these indices are not directly comparable. The analysis of these indices therefore focuses more on the pattern of cross-cultural differences than on specific country-by-country comparisons. Within-country differences are examined through the calculation of ipsative scores (see Box 4.3).

For the indices measuring *classroom disciplinary climate*, *teacher self-efficacy* and *teacher-student relations* – the variables that best represent outcome variables in TALIS – although full cross-cultural comparability of the indices was not proven, the results were sufficiently close to allow an examination of the global picture of mean score differences.

As with the indices in Chapter 6, analysis was conducted to test for cross-cultural consistency of the indices on teaching practices, teachers' beliefs and attitudes (see Annex A1.1 and the *TALIS Technical Report* [forthcoming]). Box 4.2 summarises the outcomes of that analysis. For the indices on beliefs about teaching, the analysis indicated that countries' mean scores on these indices are not directly comparable. The analysis in this section therefore focuses on profiles within countries and in particular on the extent to which teachers endorse one belief over the other. To do this, teachers' responses are standardised and presented as *ipsative scores,* which describe the relative endorsement of the two indices (see Box 4.3).

Box 4.3 **Computation of ipsative scores**

Calculating ipsative scores is an approach to standardising individual responses to express them as preferences between two or more options and thus helps reduce the effects of response bias (Fischer, 2004). For teachers' beliefs about instruction, ipsative scores were computed by subtracting the individual mean across all of the eight items measuring teachers' beliefs from the individual mean across the four items belonging to the index *direct transmission beliefs about instruction* and also from the four items measuring *constructivist beliefs about instruction.* Thus, mean scores were calculated for both indices and corrected for the overall tendency to accept any of the belief items. The means across both indices average zero for each teacher, and therefore the country means across both indices also equal zero. The resulting score of an individual teacher is the relative endorsement of this index or the relative position of the individual on one index in relation to the other index. Positive score values indicate that one set of beliefs receives a relatively stronger support than the other.

## Country differences in profiles of beliefs about instruction

In research and practice there is an ongoing debate about the effects of direct transmission versus constructivist approaches on student achievement, and about the appropriateness of constructivist approaches in non-European countries. TALIS data make it possible to conduct exploratory comparative analysis to learn whether countries differ with regard to profiles of teachers' beliefs. Differences in national cultures and pedagogical traditions suggest the possibility of differences in the pattern and strength of endorsement of the two views among countries.

Figure 4.2 shows that in all countries but Italy the average endorsement of constructivist beliefs is stronger than that of direct transmission beliefs. In most countries, therefore, teachers believe that their task is not simply to present facts and give their students the opportunity to practice, but rather that they should support students in their active construction of knowledge.

Besides this general agreement on beliefs about instruction, countries differ in the strength of teachers' endorsement of each of the two approaches. The preference for a constructivist view is especially pronounced in Austria, Australia, Belgium (Fl.), Denmark, Estonia and Iceland. Differences in the strength of endorsement are small in Brazil, Bulgaria, Italy, Malaysia, Portugal and Spain. Hence teachers in Australia, Korea, north-western Europe and Scandinavia show a stronger preference for a constructivist view than teachers in Malaysia, South America and southern Europe. Teachers in eastern European countries lie in between.

Country profiles of beliefs about the nature of teaching and learning (2007-08)
Country mean of ipsative scores
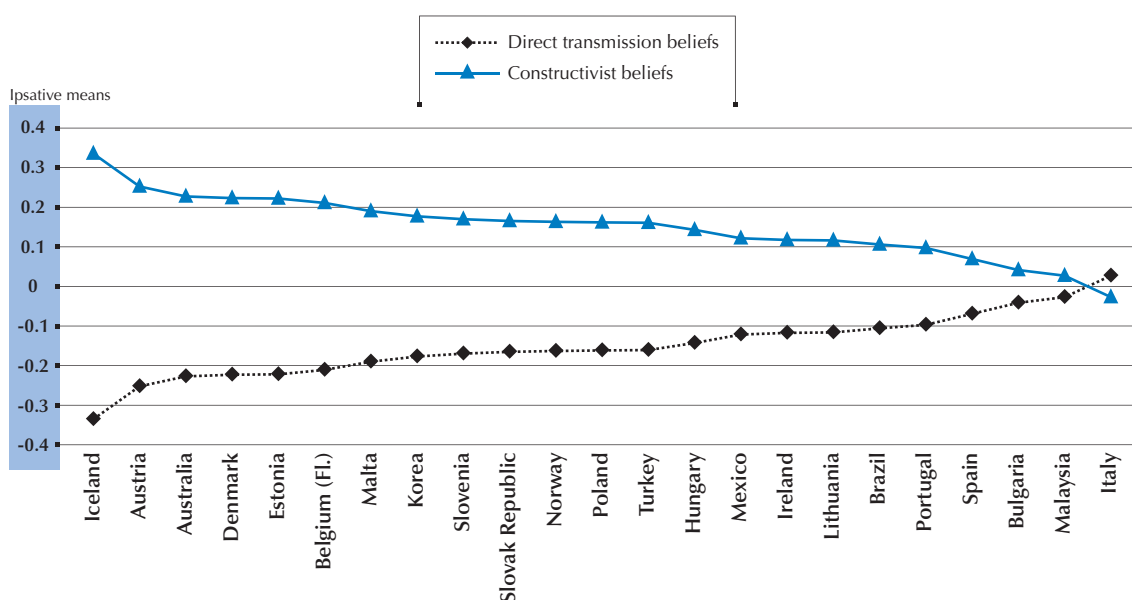
Countries are ranked by the strength of preference among teachers in each country between direct transmission beliefs about teaching and constructivist beliefs about teaching. So, teachers in Iceland show the strongest preference for constructivist beliefs, over direct transmission beliefs.
Source: OECD, *TALIS Database*.

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Correlations between direct transmission and constructivist beliefs

Are teachers who hold constructivist beliefs more or less likely also to hold direct transmission beliefs and vice versa? To examine the relation between the two at the level of individual teachers, correlations for the two indices were analysed by country. Based on previous research, it was expected that constructivist beliefs and direct transmission beliefs would show negative or at most zero correlations, since the two views are supposed to be contradictory in nature.

Table 4.1 shows that teachers in Australia, Austria and Iceland tend to take sides regarding their beliefs about instruction. Their endorsement of a constructivist view tends to be slightly higher when their endorsement of a direct transmission view is lower and vice versa. As described above, most of the teachers in these countries endorse constructivist beliefs considerably more strongly than direct transmission beliefs.

In Asian and Central and South American countries (Brazil, Korea, Malaysia and Mexico) there seems to be less opposition between the two approaches, and there are fairly strong positive correlations between them.

The two approaches are also quite commonly integrated in eastern and southern Europe (especially in Bulgaria, Lithuania, Poland, the Slovak Republic and Slovenia, and in Italy, Portugal, Spain and Turkey). These regions show a broadly equal endorsement of the two approaches or a moderate preference for the constructivist view and a moderately strong association between the two.

Variance distribution across levels

To what extent are teachers within schools and within countries similar as a result of their shared socialisation? This question was examined by analysing how much of the total variation in teachers' beliefs about teaching lies between countries, between schools and between teachers within schools. Results show that 25% of the variation in teachers' constructivist beliefs and more than 50% of the variation in teachers' direct transmission beliefs are accounted for by variance between countries (see Figure 4.3). These are exceptionally high percentages compared with other TALIS indices measuring teachers' beliefs and practices. This suggests that these variables are very strongly influenced by national school systems, culture and pedagogical traditions. Interestingly, for constructivist beliefs the percentage of variance is noticeably smaller on the country level, and higher on the individual level than for direct transmission beliefs. Thus, relative to the total variance of the constructs, pedagogical traditions and other cultural factors are of greater relevance for direct transmission beliefs, while there is greater variance within countries and schools for constructivist beliefs.

The variance that exists between schools represents only a small proportion of the total variance for both indices. Thus, beliefs about instruction seem to be relatively unaffected by socialisation within the school, the influence of colleagues and superiors, and other school-level factors. This may indicate that these beliefs are formed relatively early during initial education or before and remain stable over time. Stability of teachers' attitudes has been observed before (*e.g.* Nettle, 1998) and is coherent with general findings from psychology that attitudes can be quite resistant to change. It may also be that school-level variables have different effects on individual teachers depending on other personal characteristics. The large within-school variance also suggests that teachers with varying beliefs about instruction may well work side by side in the same school.

Figure 4.3

Distribution of total variance across the three levels of analysis for teachers' beliefs about instruction (2007-08)
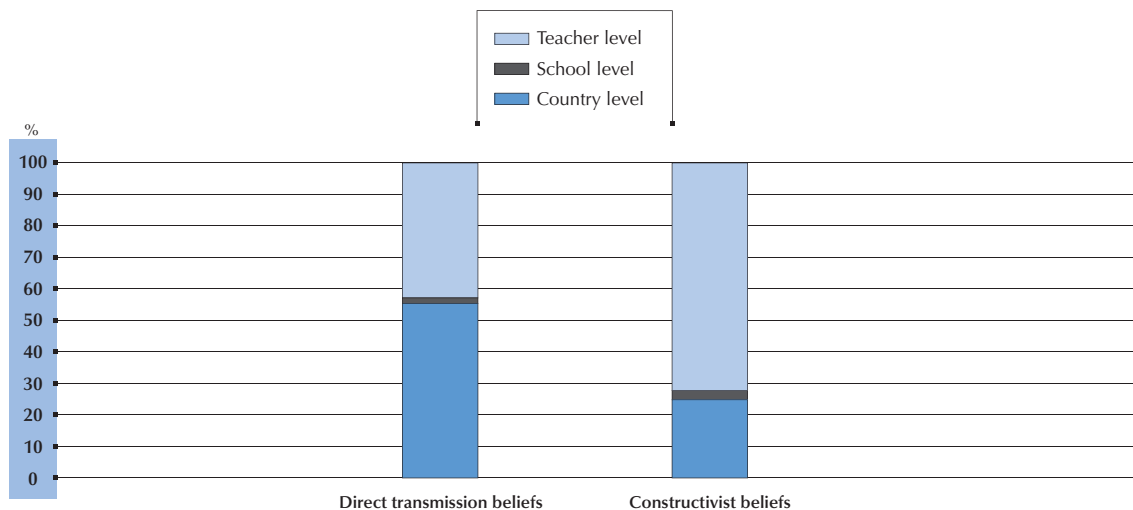
The chart analyses the variation in teachers' beliefs about instruction and indicates how much of this variation can be attributed to country characteristics (country level), school level characteristics (school level) and individual teacher characteristics (teacher level).
Source: OECD, *TALIS Database*.

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In summary, constructivist beliefs, which are "promoted" nowadays by most educational researchers and teacher educators, seem to receive rather strong support on average across most participating countries. However, individual teachers vary considerably, and there are huge between-country differences in terms of support for direct transmission beliefs and the extent to which they co-exist with constructivist beliefs.

CLASSROOM TEACHING PRACTICE

It has been demonstrated that quality of instruction is fundamental to student learning. For instance, Wang, Haertel and Warburg (1993) showed that classroom management and classroom interactions had effects similar in size to students' cognitive competencies and their home environment. Likewise, when reviewing contemporary research on school effectiveness, Scheerens and Bosker (1997) concluded that characteristics of instruction have a greater effect on student achievement than those of the school environment. However, researchers agree that there is no single, well-defined best way of teaching. The effectiveness of classroom practice is domain-specific as well as goal-specific; it depends on the cultural context and professional traditions. Thus, TALIS seeks to identify different profiles of teaching practices rather than a single "optimal" type of practice.

Classroom teaching practices were examined by teachers' frequency estimations on a 5-point scale, ranging from "never or hardly ever" to "in almost every lesson". Three indices were established (see Annex A1.1 for full details):

- "Structuring practices" were measured with five items, such as "I explicitly state learning goals." The other items include summary of earlier lessons, homework review, checking the exercise book, and checking student understanding during classroom time by questioning students.

- "Student-oriented practices" were measured with four items, such as "Students work in small groups to come up with a joint solution to a problem or task." The other items include ability grouping, student self-evaluation and student participation in classroom planning.

- "Enhanced activities" were also measured with four items, such as "Students work on projects that require at least one week to complete." The other items include making a product, writing an essay, and debating arguments.

Teachers were asked to report their teaching practices for a particular class that they teach in one of their main subjects fields. In order to randomise the choice of class, this "target class" was defined as the first ISCED level 2 class the teacher (typically) teaches after 11 a.m. on Tuesdays.

Country differences in profiles of classroom teaching practices

Do countries differ with regard to the profiles of their teaching practices? Comparative research, especially the TIMSS video studies, has proven that in mathematics and science lessons more "traditional" activities dominate in almost all countries (Hiebert *et al.,* 2003). Thus, it is to be expected that the dimension "structured practices" would dominate the other two dimensions in every country. However, according to previous research in comparative education (including TIMSS, PIRLS and PISA), countries have quite different profiles in terms of "alternative" or enhanced teaching practices. Groups of countries with similar cultural backgrounds and pedagogical traditions are likely to have similar profiles.

Figure 4.4 presents ipsative country means based on TALIS data. As the structure of the index did not prove to be completely invariant across countries (see Box 4.2), relative data are presented, *i.e.* scores that describe the relative importance of a dimension of teaching practices, compared to the overall emphasis of teaching practices within that country. Thus, instead of comparing country means, the figure illustrates country preferences. Ipsative scores were computed following the procedure outlined in Box 4.3, so that the individual mean score across all 13 items measuring classroom teaching practices was subtracted from each of the three index means.

Country profiles of classroom teaching practices (2007-08)
Country mean of ipsative scores
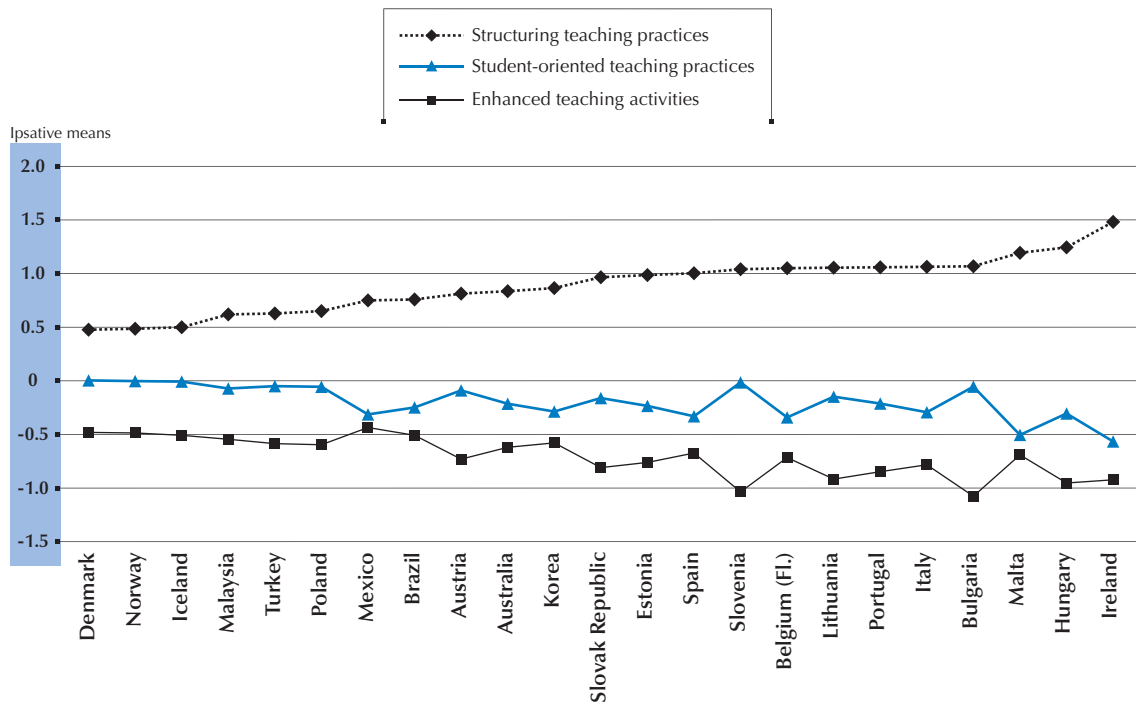
Countries are ranked by the relative frequency with which they engage in structuring teaching practices, student-oriented teaching practices and enhanced activities. So, teachers in Denmark adopt the different practices to a fairly similar degree, while teachers in Ireland use structuring teaching practices much more than they do either student-oriented practices and enhanced activities.
Source: OECD, *TALIS Database.*

Figure 4.4 shows that, in accordance with TIMSS results, structuring practices, such as stating learning goals, summarising former lessons, homework review, checking the exercise book, and checking student understanding are the most frequently employed practices across all participating countries. The relative country means for this index are higher than those for student-oriented practices and enhanced activities in all of the countries. The predominance of structuring practices is most pronounced in Hungary, Ireland and Malta, while teachers in Denmark, Iceland and Norway report using structuring practices only slightly more frequently than the other two practices.

Enhanced activities are less frequent than student-oriented practices in all participating countries. This implies that teachers in different regions of the world on average allow student co-determination of the lesson, employ ability grouping and give students individually adapted tasks more often than they assign their student projects, debates, essays and the creation of products. Again, a general pattern of relative frequencies is observed but also cross-country differences. In Brazil, Korea, Malta and Mexico the relative average frequencies of enhanced activities and student-oriented practices are very similar. Hence, in these countries the relative frequency of enhanced activities is high compared with other countries. Relatively large differences between student-oriented and enhanced activities are found in Bulgaria and Slovenia.

In summary, the dimensions of instructional practices and the patterns of relative frequencies of classroom teaching practices are similar across countries. This is an important result and confirms previous findings of culture-general categorisation for instructional practices and routines. The size of the differences in reported frequencies of the three practices varies markedly among countries. It is, however, striking that in no country on average are student-oriented practices reported to be more frequently used than structuring practices, or in which enhanced activities are reported to be more frequently used than student-oriented practices.

It should be noted that all three of these dimensions of classroom teaching practices have been shown to be related to student outcomes, even if their correlation with outcomes is not linear and if high frequency is more meaningful for some than for others. Nevertheless, the TALIS results suggest that more use might be made of student-oriented practices and enhanced activities, especially in the countries in the right half of Figure 4.4.

Domain specificity of profiles of instructional practices

In addition to examining country profiles of instructional practices across school subjects, differences among subjects were also considered. The constructs used to measure teachers' beliefs and practices were mainly developed in the context of research on mathematics and science teaching (see Peterson *et al.*, 1989; Klieme *et al.*, 2006; Lipowsky *et al.*, 2008). TALIS makes it possible to examine the extent to which basic behavioral dimensions of instruction can be generalised across subjects. It was assumed that the same three dimensions of instructional practices are relevant for all subjects, but – given differences in content, subject matter, curriculum and specific instructional goals – differences in profiles of reported frequencies of practices were also expected. The results are illustrated in Figure 4.5.

Figure 4.5

Subject profiles of classroom teaching practices (2007-08)
Mean of ipsative scores among countries
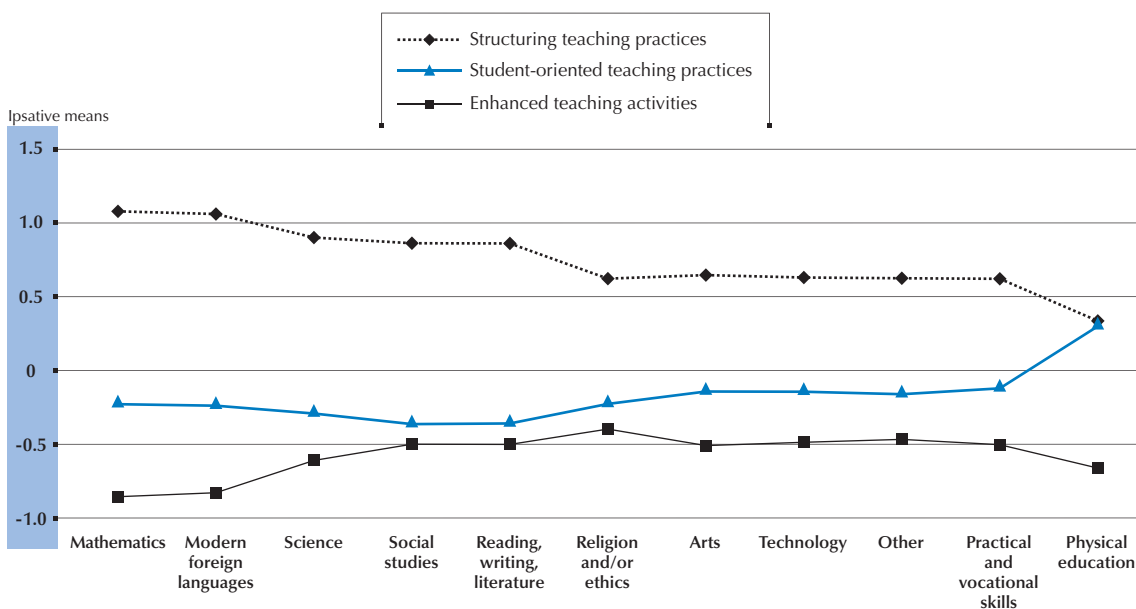
Subjects are ranked in descending order of the degree to which the use of different practices differs. Across countries, for example, mathematics teachers use structuring teaching practices much more than they do either student-oriented practices or enhanced activities.
Source: OECD, *TALIS Database*.

Analysis of the TALIS data reveals in fact that the three dimensions of instructional practices apply for all subjects (see *TALIS Technical Report* [forthcoming]). Thus, the structuring, student-oriented and enhanced activities dimensions seem appropriate to describe instruction in different domains. As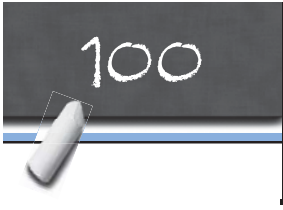 expected, however, the profile of relative frequencies of instructional practices proved to be domain-specific to a certain extent. In all subjects but physical education, structuring practices are used more often than student-oriented practices, which in turn are more common than enhanced activities. In the mathematics, the foreign languages and the science classroom the predominance of structuring practices, such as checking understanding, summarising and controlling assignments, is especially strong. In the humanities, on the other hand, it is more common to assign students debates, essays, projects and work on products. Finally, teachers teaching practical and vocational skills, arts and technology report higher frequency of student-oriented practices than the other two groups. Given the more practical nature of these subjects there seems to be more scope for student co-determination of lesson content, ability grouping and individualised instruction. This is especially true for physical education classes, where teachers report student-oriented practices as often as structuring practices.

These results emphasise the importance of the humanities and creative and practical subjects, as these seem to offer learning experiences which are less often provided in mathematics, science and foreign language classes. Student-oriented practices and enhanced activities, which are more often used in the former subjects, allow students to take responsibility and to self-organise and they help develop a broad spectrum of skills that will be helpful for students' future professional lives.

Variance distribution across levels

The variance distribution across levels of analysis (Figure 4.6) shows that teaching practices – like beliefs about instruction – represent personal strategies and habits to a great extent and vary noticeably among teachers within a school. The effect of socialisation processes and other factors to which all teachers in a school are exposed is quite small (the variance between schools is only about 5%), but it is stronger for teaching practices than it is for beliefs about the nature of teaching and learning. Cultural factors and pedagogical traditions shape teaching practices significantly (variance between countries constitutes 17 to 34% of the total variance).

Figure 4.6

Distribution of total variance across the three levels of analysis for classroom teaching practices (2007-08)
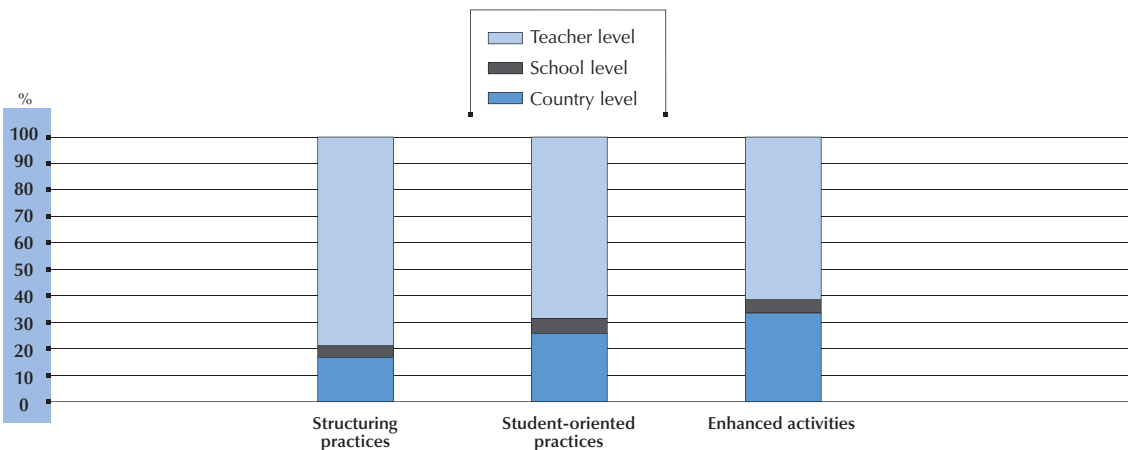
Source: OECD, *TALIS Database.*

Interestingly, countries differ especially with regard to the frequency of enhanced activities, whereas structuring activities seem to be about equally popular across countries.

Again, these results point to the significance of individual professional learning experiences and psychological processes as well as national pedagogical traditions and culture for shaping teachers' beliefs and practices, while the local context, *i.e.* professional norms and practices that are specific to schools and socialisation within a school, seems to play a relatively subordinate role.

TEACHERS' PROFESSIONAL ACTIVITIES: CO-OPERATION AMONG STAFF

The TALIS teacher questionnaire covered various aspects of *teachers' co-operation.* This co-operation implies teachers working together in groups or teams to improve educational processes and outcomes. To achieve complex objectives such as quality of education and school development requires common goals and co-operation among staff, which facilitate the co-ordination of resources and strategies of individual teachers, since no teacher can achieve such goals without at least some input from others. Furthermore, co-operation among staff creates opportunities for social and emotional support, exchange of ideas and practical advice. It can thus enhance professionalism and feelings of self-efficacy and prevent stress and "burnout" (*e.g.* Rosenholtz, 1989; Clement and Vandenberghe, 2000).

Co-operation can take various forms. It may involve administrative tasks, the teaching of students or professional development. Teachers may for example exchange instructional materials and meet regularly for discussions about individual students. More sophisticated forms of co-operation include collective learning activities such as observing others and providing feedback and engaging in professional learning activities and joint activities across classes and age groups. Steinert *et al.* (2006) showed that in Germany and Switzerland co-operative practices involving the definition of common goals and communication and co-ordination of curricula, teaching practices and marks within grades and groups of teachers of a given subject are more common than comprehensive co-ordination of instruction, didactics and diagnostics across grades and subject groups and systematic observation of instruction and the learning development of students and collaborative professional development. Furthermore, different kinds of collaboration may not have the same effects. Clement and Vandenberghe (2000) argue for example that, in order to enhance "progressive professionalism", co-operation has to encompass exchange of ideas and attitudes at a deeper level, not simply collective practical problem solving.

TALIS uses two indices to measure teachers' participation in co-operation with other staff. The index *exchange and co-ordination for teaching* consists of the following co-operative practices: exchange and discussion of teaching material, discussion of the development of individual students, attendance at team conferences, and ensuring common standards. These practices are highly correlated. Thus, teachers who exchange and discuss teaching material also engage in the other practices more often than other teachers and vice versa. Practices that form the *professional collaboration* index, like team teaching, observing other teachers to provide feedback, co-ordinating homework or activities across classes and age groups, and engaging in professional learning activities are highly correlated as well (see Annex A1.1 for full details).

Country differences in profiles of co-operation among staff

Teachers' co-operation is likely to be influenced by national pedagogical traditions, aspects of the school system and cultural dimensions, among other factors (*e.g.* Steinert *et al.*, 2006). Therefore, differences are to be expected in countries' teacher co-operation profiles. Again, relative (ipsative) scores within countries are reported (see Box 4.3).

Because of the evidence of cultural bias in the survey responses (see Box 4.2), patterns within countries are used for these indices rather than direct comparisons of country averages. Figure 4.7 shows that for all participating countries there is a considerably higher frequency of *exchange and co-ordination for teaching* than of *professional collaboration*. Thus, a majority of teachers across and within countries report exchanging and co-ordinating information and ideas on teaching and administrative issues more often than they engage jointly in professional learning activities and projects across subjects and age groups. This is in line with the research cited above by Steinert *et al.* (2006) on Germany and Switzerland, which identified different levels of co-operation, with practices summarised here as "exchange and co-ordination for teaching" being more common than those here called "professional collaboration". Interestingly, TALIS shows that these results can be generalised to a variety of countries with large cultural differences.

In addition to the general similarity of profiles, Figure 4.7 also reveals cross-country differences. In Estonia, Hungary, Korea, Lithuania, Mexico, Slovak Republic, Poland and Turkey, differences in the relative frequencies of both forms of co-operation are comparatively small. In contrast, teachers in Australia, Belgium (Fl.), Iceland, Malta, Slovenia and Spain report the basic forms of exchange and co-ordination of teaching to be noticeably more common than professional collaboration.

Figure 4.7

Country profiles for co-operation among staff (2007-08)
Country mean of ipsative scores
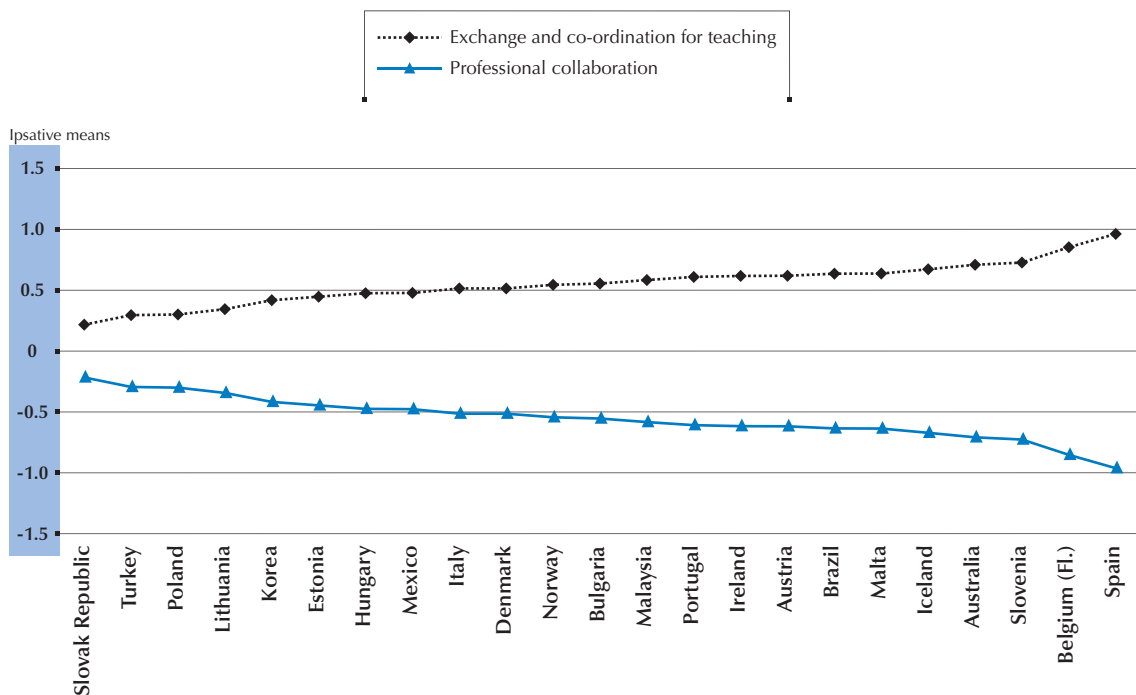
Countries are ranked in ascending order of the degree to which teachers engage in exchange and co-ordination for teaching more than professional collaboration. For example, for teachers in the Slovak Republic both types of co-operation are reported almost equally frequently, while teachers in Spain report a more common practice of exchange and co-ordination for teaching over professional collaboration.
Source: OECD, *TALIS Database*.

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Both kinds of co-operation are important practices which can enhance school development and effectiveness and ensure the professionalism and the well-being of teachers. Professional collaboration, however, is closer to the kind of co-operation that relates to more progressive forms of professionalism as discussed by Clement and Vandenberghe (2000). TALIS shows that these practices are still relatively rare compared with practices that focus on co-ordination and exchange of information and material, an indication that it may be useful to enhance and support such practices, especially in the countries depicted in the right half of Figure 4.7.

Variance distribution across levels

Do teachers within a school agree on the level of co-operation? To what extent is this actually a school-level factor, rather than a matter of individual perception and evaluation? To answer these questions the variance distribution across the three levels of analysis was examined. As one would expect, the proportion of variance at the school (and also at country) level is relatively high, compared with other indices discussed in this chapter, although teachers within the same school do not fully agree on how they co-operate. To summarise, school-level variance accounts for 9% of the total variance in *exchange and co-ordination for teaching* and for 7% of the total variance in *professional collaboration*; country-level variance accounts for 44 and 50% respectively; 47 and 43% of the total variance concerns teachers within schools (see Figure 4.8).

Figure 4.8

Distribution of total variance across the three levels of analysis for co-operation among staff (2007-08)

Source: OECD, *TALIS Database*.

StatLink ᎏᏋᏋ http://dx.doi.org/10.1787/607814526732
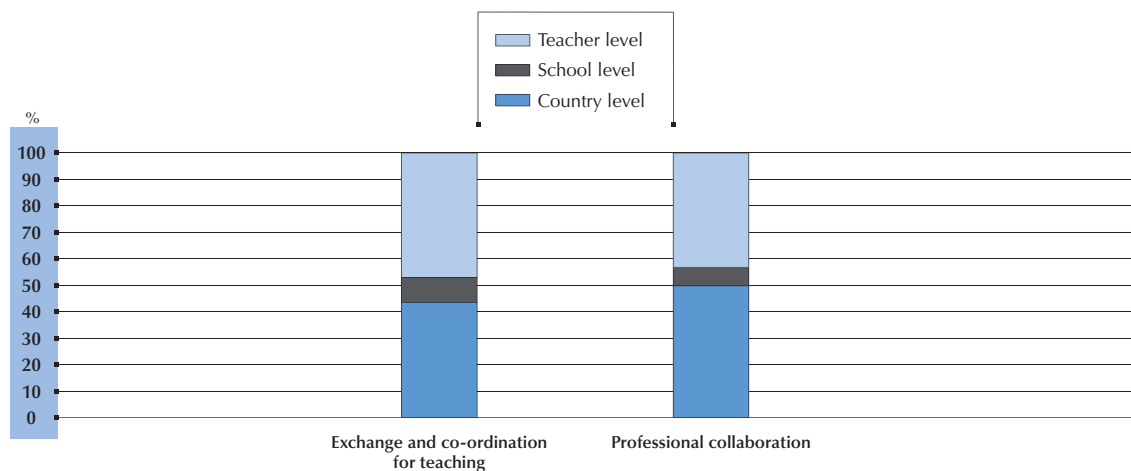
CLASSROOM ENVIRONMENT

The classroom environment is the setting in which student learning takes place. It concerns the classroom's physical environment, the social system, the atmosphere, and norms and values (Creemers and Rezigt, 1996). Studies conducted in different regions of the world have shown that classroom climate is one of the most important predictors of student achievement (*e.g.* Brophy and Good, 1986; Mortimore *et al.*, 1988; Muijs and Reynolds, 1999; Wang, Haertel and Walberg, 1997). However, as this environment often varies between subjects and teachers, it is not easy to identify domain-general indicators. TALIS focuses on the disciplinary

climate because it has a strong impact on student learning in *various* subjects (Klieme and Rakoczy, 2003; Rakoczy *et al.*, 2007), and because it has been shown that – unlike other features of classroom climate – there is a high level of agreement about this indicator among teachers, students and observers. To measure classroom disciplinary climate, TALIS asked teachers whether they had to cope with a lot of noise and interruptions during lessons and whether they find the learning atmosphere pleasant (see Annex A1.1 for full details). This measure is adapted from the PISA student questionnaire.

An additional measure of the environment at the classroom level derived from TALIS data is an index for "time on task". Teachers were asked about the percentage of time they typically spend on actual teaching and learning in the target class.[1] Time on task is a central aspect of instructional effectiveness because it provides students with a maximum opportunity to learn.

As noted in Box 4.2, country means are reported for the classroom disciplinary climate index since, although full scalar invariance was not established, the cross-country variance in the structure of the index was relatively small (see *TALIS Technical Report* [forthcoming]). Thus, small differences among countries may be due to a country-specific reporting bias, but larger differences among countries are more amenable to interpretation.

Country differences in classroom environment

As the disciplinary climate of the classroom is one of the key variables examined in Chapter 7, discussion of country comparisons at this level are deferred to that chapter. Countries' scores on the classroom disciplinary climate index are presented in Table 7.3. The index values are standardised so that the international mean is equal to zero and the international standard deviation is equal to 1. Thus a negative score indicates a less positive classroom disciplinary climate than the international average and a positive value a more positive one.

Figure 4.9

Distribution of time spent in the classroom during an average lesson (2007-08)
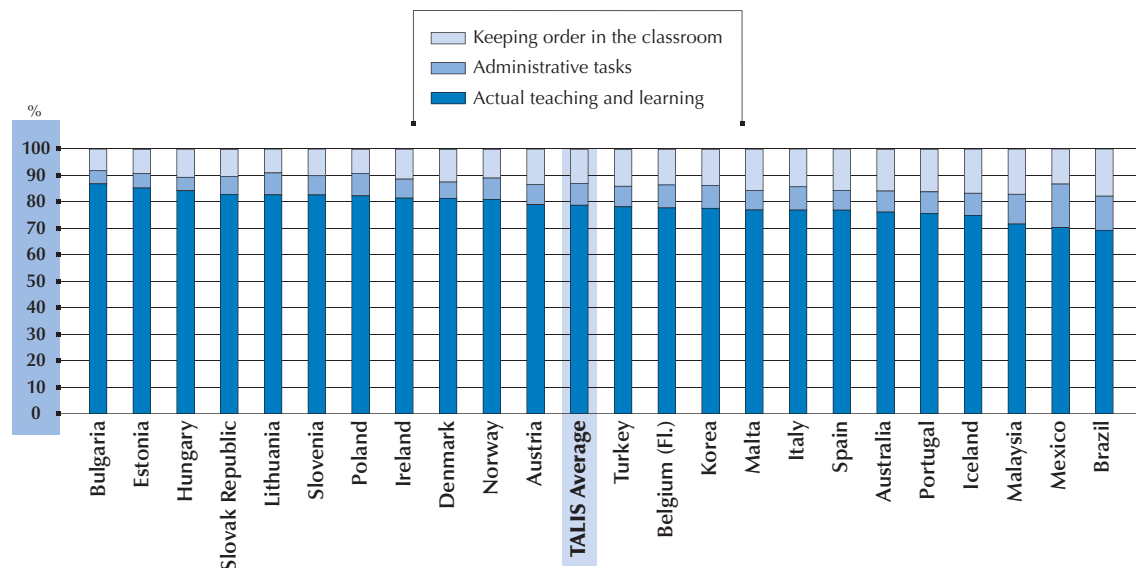
Countries are ranked in descending order of the percentage of actual teaching and learning time.
Source: OECD, *TALIS Database*.

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What proportion of lesson time is spent on actual teaching and learning in different countries? How time-consuming are administrative tasks and maintaining order in the classroom? How is the indicator for time on task distributed among teachers within countries? These questions are examined in the following section.

Figure 4.9 shows that across countries an average of 70 to 90% of lesson time is typically spent on teaching and learning. Between 5 and 17% is spent on administrative tasks and 8 to 18% on maintaining order. Country means for time on task are above 80% in Bulgaria, Denmark, Estonia, Hungary, Ireland, Lithuania, Norway, Poland, the Slovak Republic and Slovenia. Thus, relatively effective use is made of lesson time. In Brazil, Malaysia and Mexico a comparatively large proportion of time is spent on activities other than actual teaching and learning. One reason is that teachers in Brazil, Malaysia and Mexico spend more time on administrative tasks on average than teachers in other countries (13, 11 and 17%, respectively, compared to less than 9% in all other participating countries). Another important reason – at least in Brazil and Malaysia – is disruption caused by noise in the classroom. Teachers in these two countries spend on average 18 and 17%, respectively, of lesson time on maintaining order, compared to an international average of 13%. In Mexico less than 14% of lesson time is spent maintaining order in the classroom. Time spent maintaining order in the classroom is also more than 14% in Australia, Iceland, Italy, Malta, Portugal and Spain. It is less than 10% in Bulgaria, Estonia, Lithuania, and Poland.

Figure 4.10

Percentiles of time on task (2007-08)
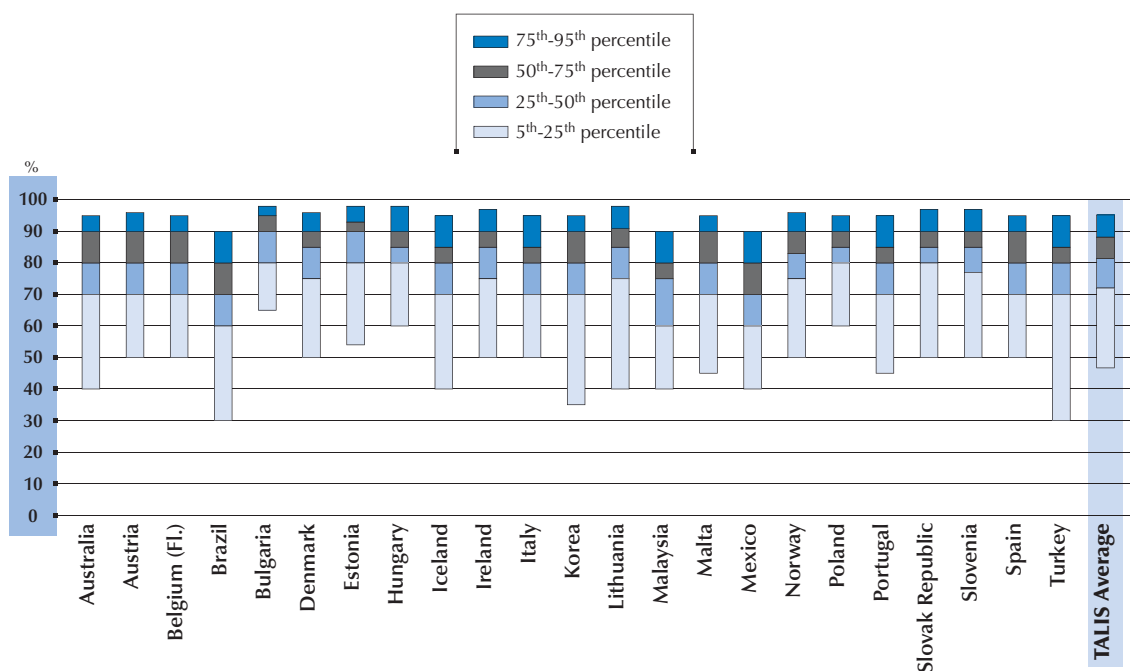
The chart shows the distribution within each country of the percentage of lesson time spent teaching and learning. So in Australia, 25% of teachers report spending at least 90% of the lesson time on teaching and learning.
Source: OECD, *TALIS Database.*

StatLink http://dx.doi.org/10.1787/607814526732

Figure 4.10 not only illustrates country differences regarding the time teachers typically spend on actual teaching and learning, it also shows the extent of within-country variation. In most participating countries, about 50% of teachers report spending at least 80% of the average lesson time on actual teaching and learning, of whom about half report spending 90% or more. Given that a certain proportion of lesson time is necessarily spent on administrative issues and maintaining order, these teachers can be said to use lesson time effectively and to maximise students' learning opportunities. Another 25% of teachers in most countries report spending at least 70% of lesson time on actual teaching and learning. For these teachers, there is some latitude for improvement, but they still reach minimum standards for effective instruction. However, in a majority of countries the self-reported time use of the remaining 25% of teachers gives cause for concern. These teachers report using less than 70% of the lesson time of an average lesson on actual teaching and learning, some even less than 50%. This indicates that in each of the participating countries, an intervention facilitating more effective use of time by about a quarter of the teachers would be advisable, to ensure that all students have an equivalent and maximum amount of learning opportunities.

Interestingly, the distribution across countries is quite similar, although there are some striking differences. On average, teachers in eastern European countries report comparatively effective use of time. Some 50% of Bulgarian and Estonian teachers report spending more than 90% of the lesson time on actual teaching and learning. In these countries, and in Hungary and Poland, few teachers report spending less than 70% of time on task. In Asian and Southern American countries, on the other hand, there is a noticeable number of outliers with a low score for this indicator. This indicates that in these countries a substantial number of teachers do not reach what may be regarded as minimum standards for undisturbed instruction.

Figure 4.11

Country means for two indicators of the quality of the classroom environment (2007-08)
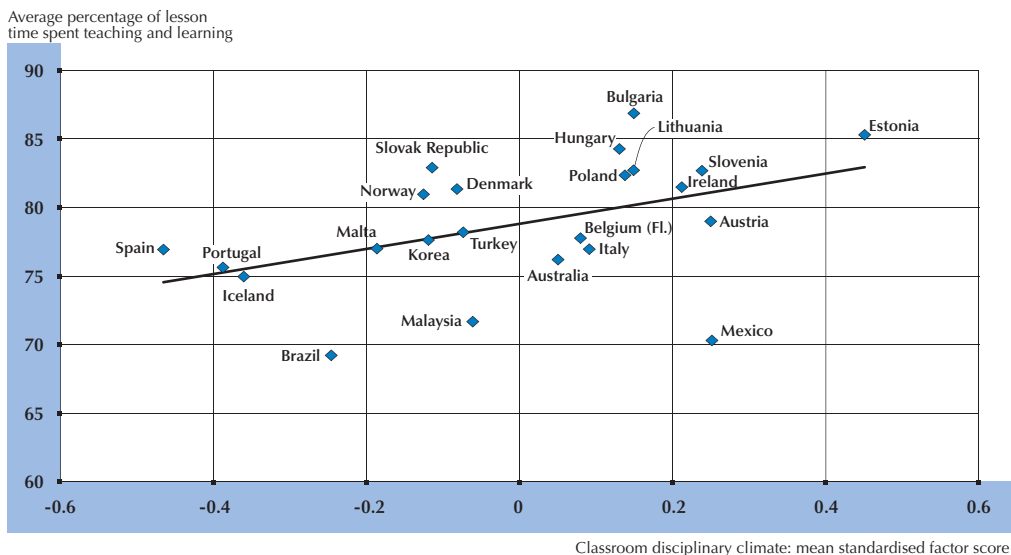
Average percentage of lesson time spent teaching and learning

Classroom disciplinary climate: mean standardised factor score

Factor scores are standardised, so that the international mean equals zero and the international standard deviation equals one (see Technical Report, forthcoming). Thus a negative score indicates a score for classroom disciplinary climate that is below the international average. This may not necessarily indicate a poor classroom disciplinary climate.
Source: OECD, *TALIS Database.*

StatLink http://dx.doi.org/10.1787/607814526732

Figure 4.11 and Table 4.2 show that, as expected, classroom disciplinary climate and time on task are related both within and between countries. The better the classroom disciplinary climate, the more time spent on actual teaching and learning. Within-country correlations between these aspects are significant in all countries, and they are 0.5 or more in most. At the country level, countries in which teachers report spending a comparatively small percentage of time on teaching and learning also have a low mean score for classroom disciplinary climate. This mainly concerns Brazil, Iceland, Korea, Malaysia, Malta, Portugal, Spain and Turkey. Likewise, countries with a high mean score for classroom disciplinary climate also have comparatively high mean scores for time on task. This is the case for Estonia and to a lesser extent for Austria, Bulgaria, Hungary, Ireland, Lithuania, Poland and Slovenia. Mexico is a notable exception in that teachers view the classroom disciplinary climate quite positively despite the low average score for time on task. As noted above, the time loss in Mexico is due less to noise and interruptions than to the fact that a large proportion of instructional time is spent on administrative activities (see Figure 4.9).

Variance distribution across levels

The variance of the constructs *classroom disciplinary climate* and *time on task* was also partitioned into three components: teacher-, school- and country-level variance. The results are illustrated in Figure 4.12. The small degree of variance among countries for these two indices is striking. For most of the other beliefs and practices discussed in this chapter, the variance between countries ranges from 20 to 60% of the total variance. For classroom disciplinary climate, it is only 4% and for time on task only 8%. Also, analysis of cross-cultural invariance demonstrates a relatively high level of cross-cultural validity for this index (see *TALIS Technical Report* [forthcoming]). Thus, classroom climate seems to be less affected by cultural and system-level influences than by beliefs about instruction and classroom teaching practices. This suggests that a positive and orderly classroom climate is a very basic aspect of instruction and school quality which is quite similar across countries.

Figure 4.12

Distribution of total variance across the three levels of analysis for indicators of classroom climate (2007-08)

Source: OECD, *TALIS Database*.

StatLink http://dx.doi.org/10.1787/607814526732
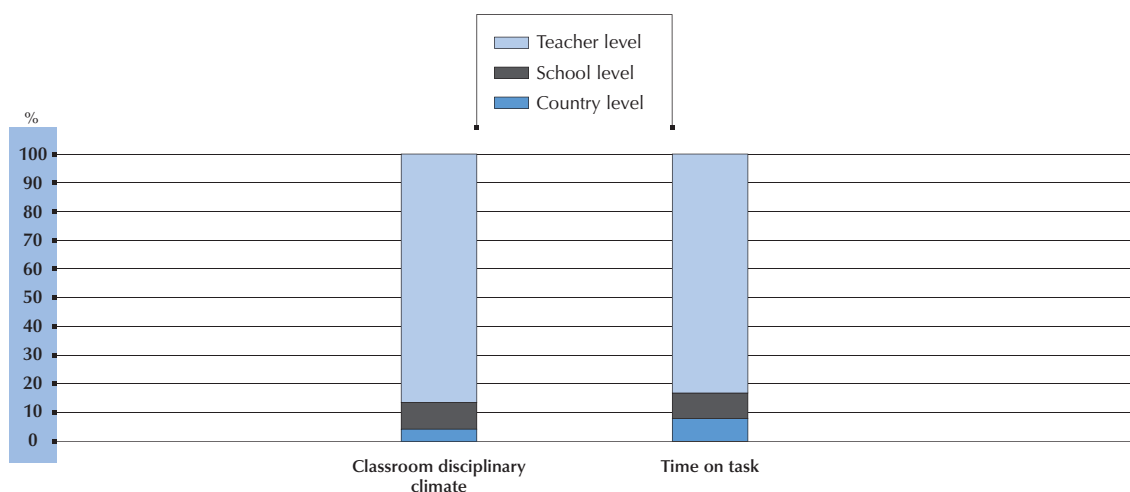
Some 9% of the variance in classroom disciplinary climate and in time on task is between schools. This suggests that school-level variables have a significant influence. Yet variance within schools is much greater, amounting to 86% of total variance for classroom disciplinary climate and 83% for time on task. Thus, individual classroom and teacher characteristics and aspects of the interaction of a specific teacher with a specific class are the main factors in classroom disciplinary climate and effective time use, followed by school-level influences.

In summary, both the time spent on actual teaching and learning and the classroom disciplinary climate are of fundamental importance for effective schooling. TALIS results show that a majority of teachers in all participating countries report using lesson time effectively. Nevertheless, a considerable percentage of teachers in each of the countries, and especially in Brazil, Malaysia and Mexico, are not able to provide their students with adequate time for learning. Generally, time loss is largely due to disciplinary problems. Especially in Mexico, administrative issues also distract from actual teaching and learning. School-level factors influence classroom climate and time on task, but teachers within schools vary strongly with regard to these indicators. This suggests that in addition to background characteristics of the school, which might not be easily open to policy interventions the characteristics and competencies of individual teachers, the features of the specific class and their interaction may play a significant role. Therefore, interventions aimed at helping individual teachers improve their classroom management skills in order to prevent and cope with noise and distraction may increase learning opportunities for students.

Chapter 7 will extend this analysis by considering the classroom disciplinary climate as a key indicator of a positive learning environment and will examine the school- and teacher-level factors associated with this.

SCHOOL-LEVEL ENVIRONMENT: SCHOOL CLIMATE

The systematic study of school climate has its roots in organisational psychology and research on school effectiveness. There are various definitions of school climate. Researchers agree that school climate essentially reflects a subjective view of the learning environment at the school level (Cohen, 2006). Relevant aspects of the school environment are the physical environment, the social system, relationships between principals, teachers and students, a sense of community, teacher and student morale, norms among peers, and safety. School climate is fundamental for the quality of schooling and instruction. A growing body of research shows that school climate affects students' academic achievement and their well-being and personal and social development (*e.g.* Blum *et al.*, 2002; Rutter *et al.*, 1979). Many important aspects of the school-level environment are addressed in Chapter 5, which focuses on school evaluation and teacher appraisal and feedback. In addition, the teacher questionnaire provides an index for *school climate*, based on four items which asked teachers the extent to which they believed that students and teachers get on well together, that teachers care for students' well-being, that they are interested in what students have to say, and that students get extra assistance from the school if they need it (see Annex A1.1).

Again, mean scores cannot be compared directly, but the influence of country-specific factors on single items is comparably weak, so that it is at least possible to interpret larger differences among countries and general tendencies (see Box 4.2).

Country differences in teacher-student relations

What is the overall level of teacher-student relations reported by teachers from different countries? Do countries differ regarding the quality of teacher-student relations as perceived by teachers? Percentile bands were used to examine this question.

Figure 4.13 indicates comparatively good teacher-student relations in Austria, Iceland and Ireland. Norwegian teachers report exceptionally good teacher-student relations. On the other hand, the medians for Bulgaria, Italy, Korea, Lithuania, Malaysia and the Slovak Republic are comparatively low. Figure 4.13 also illustrates differences

within countries. With regard to the spread, there are comparatively large differences between the country's teachers in Austria, Mexico and Turkey and – to a lesser degree – in Brazil, Lithuania, Poland and Spain. A small spread is found for Norway and Slovenia. Hence, in the latter countries, teachers' appraisals of teacher-student relations at their schools are relatively similar, while in the former there are more outliers, *i.e.* those who view the relationships as being quite bad or exceptionally good. In many countries the distribution is skewed to the right. Here, most teachers are concentrated in the lower part of the distribution, which denotes teacher-student relations of average quality. While quite a few teachers in each country report especially positive teacher-student relations, almost no teachers report exceptionally negative relations. Norway is the exception to this pattern, as a majority of teachers have a very positive view of teacher-student relations and differences among teachers are rather small.

Figure 4.13

Teacher-student relations: percentiles of the standardised factor scores (2007-08)
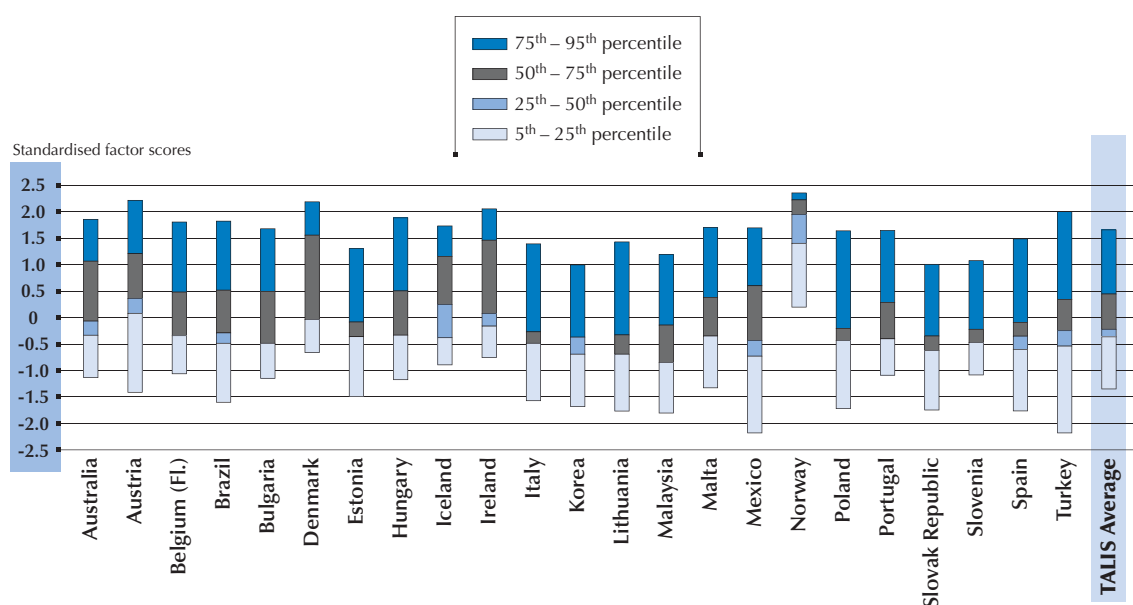
Factor scores were standardised so that the international mean equals zero and the international standard deviation equals one (see Technical Report, forthcoming). Thus a negative score indicates a score for teacher-student relations which is below the international average. This may nevertheless be indicative of positive teacher-student relations.
Source: OECD, *TALIS Database*.

StatLink http://dx.doi.org/10.1787/607814526732

The preceding section showed that classroom disciplinary climate and time on task rank relatively high in eastern European and Scandinavian countries and in Ireland. Teacher-student relations are also described comparatively positively by teachers in Scandinavian countries (Denmark, Iceland and Norway) and Ireland, but teachers in Bulgaria, Estonia, Hungary, Lithuania, the Slovak Republic and Slovenia report less positive teacher-student relations, although they report a comparatively good classroom disciplinary climate. Classroom climate and thus maintaining order in the classroom require classroom management competencies, structure and authority. Teacher-student relations on the other hand concern the quality of the relationships, which calls

for social skills, empathy and mutual respect. Both aspects of the climate within a school are important for effective student learning and development. The Scandinavian countries (Denmark, Iceland and Norway) and Ireland seem best able to prevent disruption and to encourage positive relationships at the same time.

Variance distribution across levels

Do teachers within a school agree on the quality of teacher-student relations? To what extent is this a school-level factor, rather than a matter of individual perception and evaluation? To answer these questions, the overall variance in teacher-student relations was broken down into between-country variance, between-school variance and within-school variance. Figure 4.14 shows that about 10% of the total variance is variance between schools. This is a high level compared with indices measuring teacher beliefs and practices and indicates that the quality of teacher-student relations is a school-level factor. At the same time some 65% of the total variance is within-school variance and points to significant differences in the perception of this aspect of school climate within schools. The between-country variance (25%) is of medium size compared with that of other constructs and indicates that countries differ markedly with regard to the quality of teacher-student relations as perceived by teachers.

The variance at all levels of analysis indicates that in all countries some teachers describe less favourable teacher-student relations than others. It can be assumed that these teachers' daily work is more challenging and that students at these schools may have a less favourable learning environment. These schools and teachers may need support in order to improve school climate, ensure an agreeable working climate for all teachers, and provide all students with a supportive learning environment and thus promote equity. Analysis in the next section will show that teachers working in schools with a large proportion of disadvantaged students may need special attention.

Figure 4.14

Distribution of total variance across the three levels of analysis for teacher-student relations (2007-08)
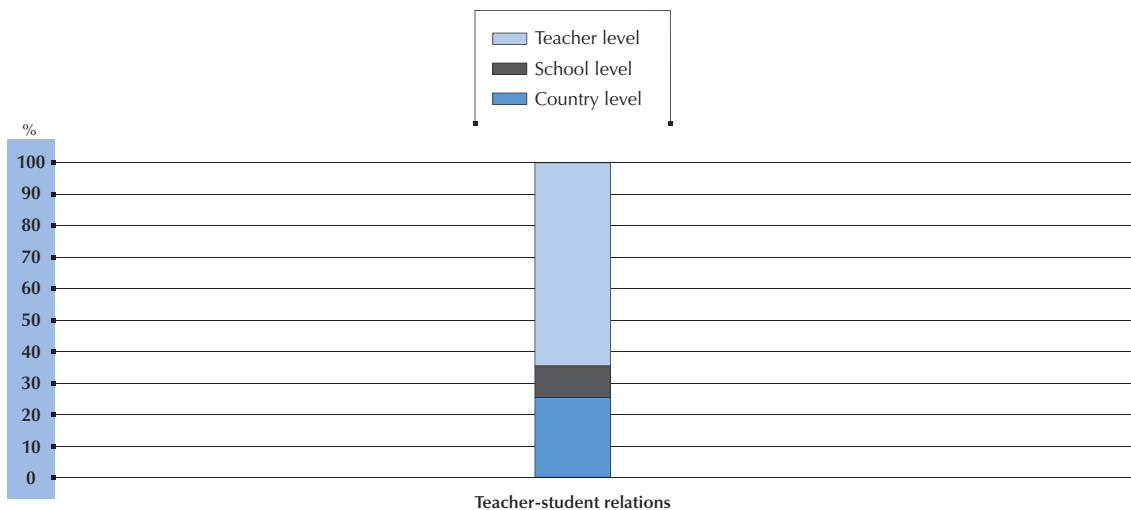
Source: OECD, *TALIS Database*.

StatLink http://dx.doi.org/10.1787/607814526732

JOB-RELATED ATTITUDES: SELF-EFFICACY AND JOB SATISFACTION

In addition to pedagogical beliefs and attitudes, the teacher questionnaire addresses job-related attitudes, namely job satisfaction (single item) and teacher "self-efficacy". Job satisfaction is a central concept in organisational and work psychology. It is assumed that job satisfaction is both affected by the work situation and influences work-related behaviour, including performance, absenteeism and turnover (Dormann and Zapf, 2001). It has been demonstrated that teachers generally have a rather positive attitude towards their job – despite the challenges of teaching – and job satisfaction usually increases with tenure, though this is partly due to the fact that dissatisfied teachers tend to drop out.

Research on self-efficacy goes back to the seminal work of Bandura, who defines self-efficacy as "a judgement of one's capability to accomplish a given level of performance" (Bandura, 1986, p. 391). In recent years it has taken a central role in educational research regarding both students and teachers. Teachers with high self-efficacy expect to succeed in teaching and to handle students well, and this influences their interpretation of successes and disappointments, the standards they set and their approaches to coping with difficult instructional situations (Bandura, 1997; Ross, 1998). Strong self-efficacy beliefs can prevent stress and burnout and teachers' self-efficacy beliefs and their job satisfaction are linked to instructional practices and student achievement (*e.g.* Ashton and Webb, 1986; Ross, 1998).

In TALIS, the teacher self-efficacy index was constructed from four items of the teacher questionnaire which asked teachers, for instance, how strongly they felt that they made an educational difference in students' lives and how well they were able to make progress with the most difficult and unmotivated students (see Annex A1.1). For this index a comparatively high level of invariance was established, but there were slight differences in the structure of the index (see Box 4.2). Thus, small differences among countries may be due to country-specific factors other than the construct of interest, but it is possible to interpret larger differences in mean scores.

Country differences in self-efficacy and job satisfaction

Country means for the self-efficacy index and for the single item measuring job satisfaction are illustrated in Figure 4.15.

Generally there are small country differences in self-efficacy and job satisfaction. Norway has an exceptionally high mean score for both self-efficacy and job satisfaction. Teachers in Austria and Belgium (Fl.) are also relatively satisfied with their job. For Hungary and the Slovak Republic, however, average job satisfaction is low compared to that of the other participating countries. Comparatively weak self-efficacy beliefs are reported by teachers in Estonia, Korea, Hungary and Spain. The distribution of country means suggests an association of both constructs on the country level. Associations between constructs on the individual teacher level are examined in the next section.

Variance distribution across levels

While self-efficacy and job satisfaction vary little at the country level, this is not the case for the school and individual teacher levels. Figure 4.16 shows that for both constructs the most variance (87 and 90%, respectively) is at the teacher level. Only 5 and 6%, respectively, of the total variance is between schools and only 8 and 4%, respectively, is variance between countries. Thus, teachers within a school vary markedly in their levels of self-efficacy and job satisfaction, while differences between schools and between countries are rather small. Furthermore, variance at the school level is relatively similar across countries. These results emphasise the psychological nature of the constructs. Across countries teachers' self-efficacy and job satisfaction mainly depend on and interact with their personality, personal experiences, competencies and attitudes. This should be considered in interventions aiming at enhancing teachers' self-efficacy. Results suggest that individualised interventions may be more effective than school or system level policies.

Figure 4.15

Country means of teacher self-efficacy and job satisfaction (2007-08)
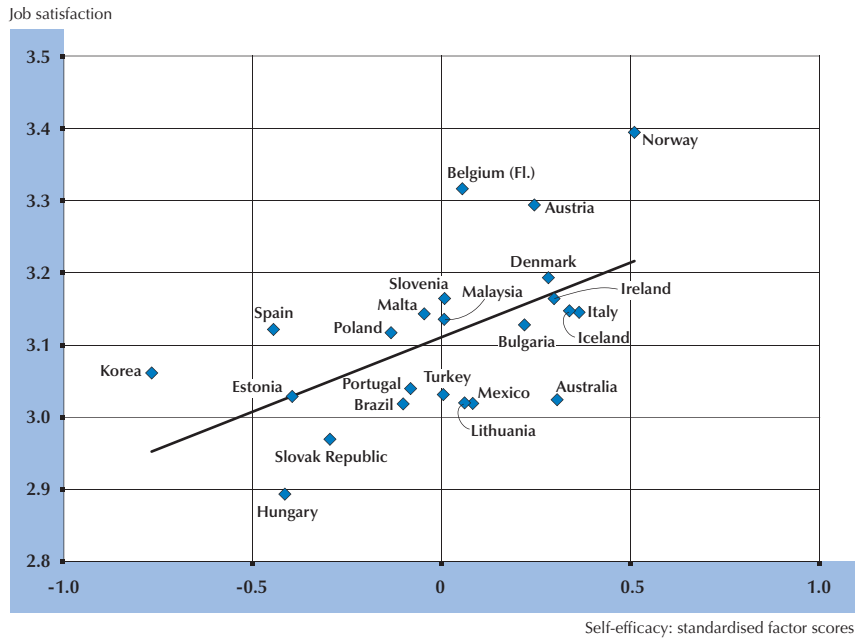
Factor scores are standardised, so that the international mean is zero and the international standard deviation equals one (see Technical Report, forthcoming). Thus a negative score indicates a score for self-efficacy that is below the international average. This may not necessarily indicate a low level of self-efficacy. The score for job satisfaction represents the extent of agreement on average with the statement "All in all I am satisfied with my job", where strongly agree = 4 points, agree = 3 points, disagree = 2 points and strongly disagree = 1 point.
Source: OECD, *TALIS Database.*

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Figure 4.16

Distribution of total variance across the three levels of analysis for self-efficacy and job satisfaction (2007-08)

Source: OECD, *TALIS Database.*

StatLink ⟨⟨⟩⟩ http://dx.doi.org/10.1787/607814526732
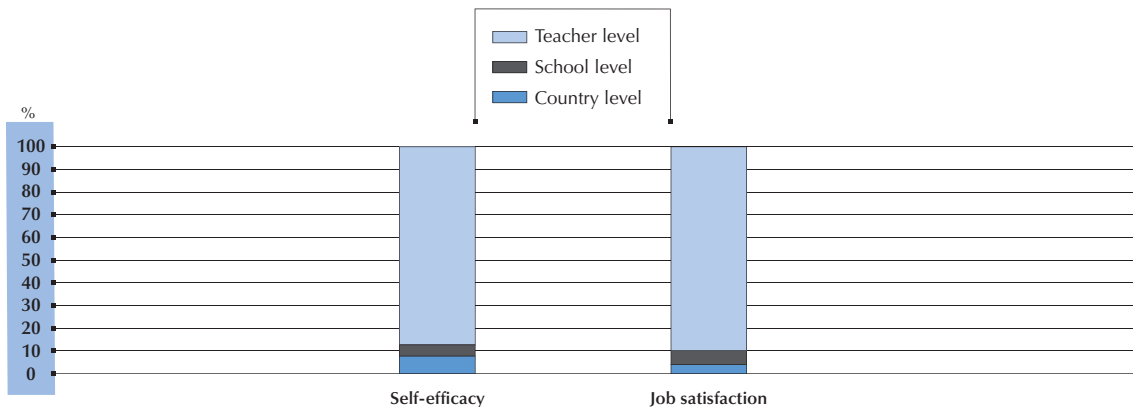
Chapter 7 will extend this analysis by considering teachers' self-efficacy together with the classroom disciplinary climate as important factors for creating a positive learning environment and will examine factors that may be helpful in fostering this.

UNDERSTANDING TEACHERS' PROFESSIONALISM: FIRST STEPS IN LINKING THE SCHOOL CONTEXT AND TEACHERS' BELIEFS AND PRACTICES TO TEACHERS' PERCEIVED EFFICACY AND THE QUALITY OF THE LEARNING ENVIRONMENT

The preceding sections have shown that teachers' beliefs and practices and the perceived learning environment vary between countries, between schools and – most notably – within schools. This section aims at explaining the variance between and within schools. It does not report cross-country comparisons but associations between the individual background, the school context, teachers' beliefs and practices and the learning environment which are consistently found in a large number of countries. Based on the theoretical framework (Figure 4.1), the analysis starts by examining the association of teachers' background variables with teachers' beliefs and practices. It then looks at associations between classroom and school background variables and the perceived learning environment and the effects of professional development on teachers' beliefs and practices. Finally it examines associations between teachers' beliefs and, practices, the learning environment, and teachers' job satisfaction. The results will help to explore the complex relations among teachers' beliefs and practices and classroom and school variables, to see some pattern in them, and to indicate further research possibilities. The great advantage of this analysis, as compared to previous research, is to have covered in parallel 23 educational systems and cultures. The fact that a number of results are the same across countries is by no means trivial; it can help identify issues that educational policy needs to deal with in all countries and internationally. Some implications for policy making are discussed in the final section.

The results presented in the remainder of this chapter are generated from a series of statistical regressions analyses (see Box 4.4). Tables 4.3 to 4.14 highlight the variables that were statistically significant in these regressions, with a plus sign indicating a significant positive relation and a minus sign indicating a significant negative relation. Where no significant relation was found, the cell in the table is blank. Tables containing the regression coefficients are available on line.

Significance of context and background variables

Effects of individual characteristics of teachers on their beliefs, attitudes and practices

As outlined earlier in the analytical framework, teachers' beliefs and practices are expected to be associated with their background characteristics, especially with their professional education. Regression analysis reported in this section examines these associations. Effects of gender, subject taught in the target class,[1] experience and level of education (a Master's degree or higher versus a lower level qualification) on beliefs, attitudes and practices are analysed. Results are listed in Table 4.3. Multiple regressions in this subsection only consider the individual level and were computed for each country separately. But, as the primary focus of this chapter is on cross-cultural effects, effects that are significant in more than half of countries are indicated in the tables.

Table 4.3 shows the presence of a few cross-culturally consistent net effects of background variables on teachers' beliefs and practices. In a majority of participating countries, female teachers endorse direct transmission beliefs less strongly than male teachers. They also report greater use of structuring and student-oriented practices than their male colleagues. Also according to their self-reports, they are more often involved in co-operative activities. This suggests female teachers' greater professionalism and motivation even controlling for the subject taught, professional experience and level of education. Differences between both groups are quite small, but they are significant and relatively consistent across countries. Thus, interventions aimed at promoting modern beliefs about instruction and modern professional practices might best explicitly target male teachers.

○
○   *Box 4.4* **Description of regression analysis**

Regression analysis enables the estimation of the effects of one or more predictor (or independent) variables on dichotomous or continuous predicted (or dependent) variables. Regression analysis was carried out for each country separately, as prior analysis showed noticeable differences in regression coefficients between countries. The same background variables were included as control variables in each of the models. These variables were the teacher's gender, years of experience, subject taught (two dummy variables were created for this: "maths/science" versus other subjects and "humanities" versus other subjects), and level of education (a Master's degree or higher versus a lower level qualification). After analysing this background model, the predictor variables considered to be relevant based on theoretical considerations were added. Thus, in each of the models net effects are reported instead of gross effects.

Notes on the interpretation of results of regression analysis with cross-sectional data

To examine relations between background variables, beliefs and practices, multiple regressions were used which take the complex sample design of TALIS into account. Note that with cross-sectional data such as the TALIS data, no direction of impact can be established. Thus, it is not possible to decide empirically between, for example, a model that describes school climate as dependent on teacher practices and a model that describes teacher practices as dependent on school climate. The perspective taken, *i.e.* the choice of predicted and predictor variables, is based on purely theoretical considerations, as laid out in the analytical framework. When the notion of "effects" is used, it is used in a technical manner: An "effect" is a statistical parameter that describes the linear relation between a "predicted" variable (*e.g.* job satisfaction) and a "predictor" variable (*e.g.* participation in professional development activities), taking effects of individual and school background as well as other "predictor" variables into account. Thus, the "effects" reported are statistical net effects which do not imply any causality. In the example, a significant effect of professional development on job satisfaction would not imply that the former is a cause for the latter; in fact, causality may work in the opposite direction, and in many cases the cross-sectional "effects" identified will be based on complex mutual dependencies among the various phenomena the model addresses.

Annex A1.4 provides a fuller technical description and specifications of the variables used.

The subject taught in the target class also has significant and cross-culturally consistent net effects, especially on teaching practices, but also on beliefs about instruction and the classroom disciplinary climate. First, constructivist beliefs are more prevalent among maths and science teachers than among teachers of other subjects. As detailed earlier in the chapter, mathematics and science teachers report more structuring practices and less student-oriented practices and enhanced activities. Humanities teachers also report more structuring and less student-oriented practices than teachers teaching creative and practical subjects or physical education. These results highlight the subject specificity of classroom teaching practices and beliefs about instruction. In a majority of countries teachers of different subjects are at least partly educated and socialised in homogeneous groups by subject. But there also appears to be a difference in the appropriateness of certain practices for different subjects. These differences might explain some of the domain specificity of beliefs and practices. The subject is also associated with classroom disciplinary climate, but these effects are not consistent across countries. However, in a majority of countries, mathematics teachers exhibit lower self-efficacy than teachers teaching creative and practical subjects. Mathematics teachers have to communicate complex concepts, and indifference to, or even fear of, mathematics is quite widespread. Thus, mathematics teachers might need

special support to develop skills for gaining students' interest in mathematics and improving their understanding of the subject. To arouse students' interest in mathematics, it might be promising to use more student-oriented techniques and enhanced activities, which teachers of this subject currently use less often than other teachers.

Years of professional experience has a significant net effect on teaching practices, both forms of co-operation and collaboration among staff, classroom disciplinary climate and self-efficacy in more than half of the countries, but most of these effects are not cross-culturally consistent. In about half of the countries, teachers with more experience report using structuring practices more often. Both indices on participation in co-operative activities are positively associated with on-the-job experience in about half of the countries. When examined at the country level, these effects are not only inconsistent across countries, they are also relatively small. However, for classroom disciplinary climate and self-efficacy, consistent effects are found. In a majority of countries experienced teachers report a better classroom climate and in about half of the countries their self-efficacy beliefs are stronger than those of less experienced teachers. Either experienced teachers develop strategies for effective classroom management or they progressively lower their standards. Either way, this finding might reassure young teachers experiencing disciplinary problems in their classrooms and insecurity regarding their competence. It might of course also be due to turnover of teachers with less effective strategies for instruction and coping with the everyday challenges of their job.

Finally, controlling for other teacher background variables, no differences were found regarding their beliefs and practices between teachers with an ISCED 5A Master's degree or a PhD and those with a lower level qualification. Thus, the length of university education and socialisation do not seem to significantly influence teachers' beliefs and practices.

Effects of classroom background variables on teaching practices

In addition to associations of teachers' beliefs and practices with teachers' background variables, effects of characteristics of the target class[1] on teaching practices were also analysed. The results, which are informative about the macro-adaptivity of instructional approaches, are summarised in Table 4.4.

Across countries there are some consistent, but rather weak effects of classroom background variables. The percentage of students with a mother tongue different from the language of instruction is positively associated with student-oriented practices. Teachers teaching a class in which more than 10% of students have a mother tongue different from the language of instruction, report using strategies such as work in small groups, ability grouping, individualised tasks and student participation in lesson planning more often than teachers teaching a class with a smaller proportion of second-language learners. This can be viewed as a kind of macro-adaptivity. Positive associations are less frequent between the language composition of the class and structuring practices or enhanced activities.

The data indicate that, in a majority of countries, teachers are also responsive to the average ability of their classes. Teachers who perceive their students to have high ability as compared with other students of the same age use more student-oriented practices and more enhanced activities than teachers with students who have low ability. Again, this can be viewed as evidence of some macro-adaptivity of instruction. High-ability classes tend to get more varied and probably more demanding learning opportunities than low-ability classes. The effects on structuring practices are rather heterogeneous and only significant in a few countries. However, considered as a whole, the results imply that the *relative* importance of structuring practices (as opposed to student-oriented practices and enhanced activities) is greater for those who are in greater need of structured instruction, as found in previous research.

Table 4.4 further shows that in about half of the countries the larger the target class the less frequently teachers employ student-oriented practices. It seems that – at least in these countries – the higher the number of students

in a class, the more difficult it becomes to respond to individual students' needs. (Note that this holds even when the effects of level of ability and proportion of second language learners are controlled for, because the results are based on multiple regression analysis.) Associations of class size with structuring practices and enhanced activities are largely non-significant.

Effects of the school context on teacher-student relations

Teacher-student relations, as one aspect of school climate, can be expected to depend not only on the individual characteristics of the different actors within a school and on the school processes, but also on the external context. Therefore, this section examines the effects of different aspects of the school context on school climate at the school level. The following context variables were considered: private versus public management of the school; whether the school is located in a city or in a town, hamlet, village or rural area; the social background of the students (the school average of teachers' estimation of the percentage of students whose parents have completed ISCED level 3 [upper secondary education] or higher in the target classes in a school); and teachers' estimation of the average ability of students compared with students of the same age at the school level. Multiple multilevel regressions were used for this analysis (see Annex A1.4 for details). All effects were examined at the school level. At the same time teacher characteristics (gender, years of experience as a teacher, level of education and subject taught in the target class) were controlled for at the individual level. It should be noted that, once again, all these conditions are entered at once into the statistical model, so that the effects reported here are pure or "net" effects.

In almost half of the countries fewer than 10% of the sampled teachers work in private schools. For these countries differences between private and public schools were not analysed. In most of the other countries teachers working for private schools report significantly better teacher-student relations than teachers working for public schools – even when controlling for the social background of the students (Table 4.5). The social background on the other hand has a significant (net) effect in Australia, Belgium (Fl.), Brazil, Denmark, Hungary, Iceland and Italy. In these countries, teacher-student relations are considered more positive by teachers working for schools with a high proportion of students whose parents have at least completed ISCED level 3 (upper secondary education). Student composition in terms of ability is also associated with teacher-student relations in about half of the countries. Teachers perceive relations between students and teachers as better when the students at their schools have higher ability. School size is another important predictor of teacher-student relations. Large schools seem to provide less opportunity for teachers and students to develop positive relationships. Significant effects are found even when the management of the school, students' social background and average ability, and the size of the community in which the school is located in are controlled for.

Finally, whether the school is located in a city or not is not an important predictor for teacher-student relations at the school level. Significant net effects are found for Estonia, Hungary, Ireland, Malaysia and the Slovak Republic. In Estonia, Hungary, Ireland and the Slovak Republic teachers working in schools located in a city report better teacher-student relations. In Malaysia the opposite is true.

These results suggest a lack of equity across countries. Teachers and students at large public schools with a high percentage of students from a disadvantaged social background and with students of low average ability have to cope with a noticeably less favourable working and learning environment. This can be challenging and stressful for teachers and hinder effective schooling, thereby widening the gap in student performance.

Effects of professional development activities

Most professional development activities are aimed at changing teachers' knowledge and beliefs and instructional practices. This subsection examines the extent to which participation in professional development

activities is associated with direct transmission and constructivist beliefs, with structuring and student-oriented practices and enhanced activities, and with co-operation among staff. Four different indicators of professional development were analysed: number of days of professional development activities during the last 18 months, participation in workshops or courses, mentoring, and networks for professional development. When interpreting any of the effects, it should be noted that all other features of professional development are controlled for. For example, the effect of days of professional development is the "net" effect that results when the *kind* of activity (as operationalised by the three dummy variables for participation in workshops or courses, mentoring, and networks for professional development) is controlled for. In addition, teacher background variables – gender, subject taught in the target class, experience and level of education – are controlled for.

Table 4.6 shows only a few significant net effects of professional development on teachers' beliefs about instruction. The direction of those effects, however, is quite consistent. If professional learning activities have any effect on teacher beliefs, it is in the direction of stronger constructivist and weaker direct transmission beliefs.

Table 4.7, which shows the relation between professional activities and teaching practices, allows for drawing some general conclusions:

- Professional development is generally associated with more (reported) use of specific instructional practices. There is not a single significantly negative cell in the table. This means that teachers who engage in professional learning tend to use specified practices more often.[2]

- The *kind* of professional development a teacher participates in is more important than the amount of time invested. The net effects of days of professional development are small and only significant in a few countries, whereas indicators of participation in networks and mentoring (and in some countries also in workshops and/or courses) have significant and stronger net associations with teaching practices in a majority of countries.

- Professional development activities that take place at regular intervals and involve teachers in a rather stable social and collaborative context (*i.e.* networks or mentoring) have a significantly stronger association with teaching practices than regular workshops and courses.

- Student-oriented practices and enhanced activities are more strongly associated with professional development than structuring practices. Net effects of indicators of attendance at professional development activities are stronger and significant in a larger number of countries for student-oriented practices and enhanced activities than for structuring practices.

It should be noted that, although teacher background variables (gender, experience, level of education and subject taught in the target class) are controlled for, the associations found here should not be interpreted as causal effects of professional development on the respective teaching practices. Rather, in every case alternate interpretations are possible and cannot be ruled out on the basis of TALIS data. Results may indicate that professional development – particularly mentoring and networks for professional development – are effective in instructing and inspiring teachers to use modern and multifaceted practices, especially student-oriented practices and enhanced activities. But it may just as well be that teachers who report using student-oriented practices and enhanced activities relatively often are generally more motivated to learn and apply innovative teaching strategies and thus engage in more professional development.

In many countries, professional development is more and more implemented at the school level, with in-house training addressing the teaching staff as a group rather than individual teachers. It is thought that – besides changing teachers' personal beliefs and individual practices directly – professional development can help foster collaboration and co-operation among teachers and have indirect effects on beliefs and practices and a more general impact on school quality. Table 4.8 provides data that help judge the realisation of this goal.

In fact, all kinds of professional development activities are positively associated with both kinds of co-operation among staff, even if teacher background variables are controlled for. The effects are noticeably strong for professional development networks and mentoring activities. Of course, these are forms of collaborative learning, but the results indicate that participation in such networks is associated with other forms of collaboration as well.

Effects of beliefs on instructional practices

Are teachers' beliefs and self-reported teaching practices associated and are the associations the same across participating countries? Based on previous research, "constructivist" beliefs were expected to be correlated with student-oriented practices and/or enhanced learning activities. This hypothesis was examined with multiple regression analysis.

In all of the participating countries except Bulgaria, Malaysia and Turkey, significant relations between beliefs and practices were observed when controlling for teacher background characteristics and other beliefs (Table 4.9). For student-oriented practices and enhanced activities, the expected predictive pattern was found in 18 and 16 countries, respectively. Both kinds of activities are related to constructivist beliefs rather than direct transmission beliefs. In some countries, however, both belief indices have the same predictive power for teaching practices, though in Korea the profile of effects is reversed. This is also evidence that the beliefs and practices indices may have slightly different meanings in different cultures.

For structuring practices as a predicted (or dependent) variable, results are mixed. In only a handful of countries are these practices tied to direct transmission beliefs rather than constructivist beliefs. In Korea and Poland it is the constructivist rather than the direct transmission view that is associated with structuring practices. It seems that, by and large, structuring practices are less strongly related to teachers' beliefs than other kinds of practices.

The importance of teachers' beliefs for teaching practices has been subject to discussion. While many authors report positive associations, others conclude that there is no direct link (*e.g.* Levitt, 2001; Wilcox-Herzog, 2002). There is an important difference between abstract and concrete beliefs, and the latter have greater relevance for action. Beliefs measured in TALIS are not domain-specific and are quite general in nature. Still, largely significant – although rather weak – correlations with teaching practices are found across countries. Constructivist beliefs are associated with more frequent use of practices that aim at creating a stimulating, challenging and individually adapted learning environment supportive of students' construction of knowledge.

Effects of instructional practices on classroom disciplinary climate

As outlined earlier, teaching practices are seen as one means of positively influencing the classroom learning environment. Structuring and student-oriented practices are expected to help maintain student discipline, student attention and collaboration. Therefore these two variables are expected to have positive effects on the classroom disciplinary climate. Enhanced activities may not need the same types of disciplinary climate to be successfully completed by students. Enhanced activities require – among other things – self-reliance, structure, time management and stamina, but a quiet and orderly classroom climate may be less important than for reception-oriented, teacher-centred instruction, which primarily involves listening to the teacher and responding to his/her questions. Furthermore, group work and the need for discussion and advice may even lead to a certain level of disruption when students are assigned enhanced activities. Thus, this variable was not expected to be associated with the disciplinary aspects of classroom climate. Again multiple regressions at the individual teacher/classroom level were used.

If all three kinds of practices are considered at the same time, teachers' structuring classroom practices turn out to be a relatively better predictor of classroom disciplinary climate, as hypothesised above. Table 4.10 shows that in about half of the participating countries, teachers who more often summarise the previous lesson, state

learning goals and check student understanding also report a better learning atmosphere in the classroom, less noise and fewer distractions. Clarity and structure seem to help maintain students' attention and a positive disciplinary climate; conversely, a poor climate might restrict the use of effective teaching practices. Net effects of student-oriented teaching practices are also significant in eleven countries. These practices, such as individualised tasks, student co-determination of the lesson and group work, also seem either to help to create a positive learning environment or to be used more often in classes with a good classroom climate. Enhanced activities were not expected to be associated with the classroom climate, and in fact significant net effects are only found for six countries, five of these being negative.

Chapter 7 will take a more extensive look at the factors that are associated with the disciplinary climate of the classroom, including aspects from the other chapters of the report alongside the indices of teaching practices that have been considered in this chapter. This will show, for instance, how teaching practices relate to the classroom disciplinary climate once a wider range of variables are taken into account.

Effects of teachers' co-operation on teacher-student relations

Associations between co-operation by teachers and teacher-student relations were examined, but only at the teacher level. The issue was whether individual teachers who participate in more co-operative professional activities involving other teachers also have a more positive perception of teacher-student relations than teachers who participate less frequently in such activities. Results are presented in Table 4.11.

Table 4.11 shows that, across countries, teachers who co-operate more often with other teachers also have a more positive view of teacher-student relations at their school. However, if the two measures of participation in co-operative activities are introduced jointly as predictors of perceived teacher-student relations, only the effects of exchange and co-ordination for teaching are positive and significant across participating countries, when controlling for a variety of teacher background and school context variables. This is in line with theoretical expectations, because exchange and co-ordination for teaching is closer to classroom interactions with students than professional collaboration, which is more related to teachers' individual development as professionals. Both kinds of judgements about the quality of relationships within a school – co-operation among staff and teacher-student relations – can be seen as important aspects of a general school quality that are shown to be interrelated, suggesting that they may also be addressed jointly in school development programmes.

Determinants of teachers' job satisfaction

As a final step in connecting the conditions and possible consequences of teachers' beliefs and practices, the focus turns to the extreme right of the model set out in Figure 4.1. Here, the analysis seeks to understand how teachers' job satisfaction is related to teachers' beliefs about instruction, their practices and professional activities, and climate factors. These are used as predictors at both the individual and school levels. As in all other regressions reported in this chapter, individual level background variables were controlled for. A similar analysis of the effects on self-efficacy, the other indicator at the far right of the theoretical model outlined in Figure 4.1, will be examined in Chapter 7.

Tables 4.12 and 4.13 show that teachers' perceptions of the classroom and school climate and their self-efficacy seem to be the most important predictors of job satisfaction. Teachers reporting higher self-efficacy also report higher job satisfaction. Significant and comparably strong net effects are found across all countries, even though teacher background variables, teachers' professional practices and the perception of the learning environment are controlled for. Moreover, across all countries, teachers who perceive their classes as having a positive disciplinary climate also feel more satisfied with their job than teachers who evaluate the classroom climate less positively. Even controlling for this factor, in a majority of countries, the second factor of school climate,

namely teacher-student relations, has a significant (net) effect at the individual level. In other words, when teachers view the relations between teachers and students more positively, their job satisfaction is greater. However, at the school level, net effects of classroom climate and teacher-student relations are only significant in a few countries (Table 4.13). This indicates that the climate at the school level does not have an additional effect on job satisfaction. It is not the more objective aggregate measure of climate that affects teachers' job satisfaction; instead, it seems that within each school teachers who get along well with their colleagues and students are also more satisfied with their job. Thus, the association seems to be mainly based on individuals' perceptions and evaluative processes.

In a majority of countries teachers' beliefs and classroom teaching practices are unrelated to job satisfaction, when all other variables are controlled for. Neither strong followers of constructivism nor those that hold a direct transmission view are more satisfied with their jobs. Job satisfaction seems neither to be affected by nor to influence the frequency with which structuring and student-oriented practices and enhanced activities are used.

CONCLUSIONS AND IMPLICATIONS FOR POLICY AND PRACTICE

Figure 4.1 illustrates the variety of teacher beliefs, attitudes and practices measured by TALIS. The postulated relations of these constructs with the perceived quality of the learning environment and teachers' job satisfaction are by and large found across countries, confirming their relevance for teachers and schooling. An important policy issue is therefore, how to further facilitate these aspects of teachers' effectiveness. TALIS provides some suggestions.

Teachers generally support modern constructivist beliefs about instruction, but there is scope for strengthening this support

Key results:

- Teachers across countries are more likely to express support for a "constructivist" view of teaching with the teacher as facilitator than to regard the teacher as a direct transmitter of knowledge (Figure 4.2).

- This is most true in northwest Europe, Scandinavia, Australia and Korea. It is least true in Italy and Malaysia, where the level of teachers' support for the two views is much closer.

Discussion

Throughout the world educationalists and teacher instructors promote constructivist views about instruction. While most teachers agree, their preferences, influenced by individual characteristics, vary greatly within each country and school. If policy seeks to support constructivist positions, a promising strategy might be to enhance the systematic construction of knowledge about teaching and instruction in teachers' initial education and professional development. Interventions may be especially important for experienced teachers and for those who teach subjects other than mathematics.

Special attention is needed in countries in which many teachers who express support for a constructivist view, which may be perceived as being in style and thus socially desirable, also accept a direct transmission view. Especially in Brazil, Korea, Malaysia and Mexico, where the two views are correlated, it may help to raise awareness of the difference between these positions in the course of teacher education. It is, therefore, a good sign – even though the correlations are rather weak – that professional development is positively associated with constructivist beliefs and negatively with direct transmission beliefs across countries.

A further argument in favour of enhancing constructivist beliefs is that they are found to be associated with more varied instructional practices. This is important as TALIS results show that modern student-oriented practices and enhanced activities, which offer students specific learning opportunities which facilitate both cognitive and non-cognitive outcomes, are generally less often used than structuring practices.

It would, however, be wrong simply to introduce constructivism. Teachers need to be convinced that they can be successful in communicating deep content and in involving students in cognitively demanding activities, thereby following constructivist principles, while maintaining a positive disciplinary climate and providing student-oriented support. None of the basic dimensions of educational quality can be dispensed with. Fostering constructivist beliefs and enhanced activities is an important goal for professional development, but care should be taken to emphasise broad teaching practices, including structured teaching and self-regulatory learning. Depending on cultural traditions, and also on the stages of the learning process, various approaches should be applied to suit the circumstances. An example is starting a lesson with more direct teaching and gradually creating more open learning situations (fading), while working in a more structured way with weaker students.

Teachers need to use a wider range of instructional strategies and techniques

Key results

- Of the three teaching practices identified in TALIS, teachers were most likely to adopt structuring of lessons, followed by student-oriented practices and finally enhanced learning activities such as project work. This order applies in every country (Figure 4.4).

- In the humanities and the more practical and creative subjects, enhanced activities are more frequent than average, and in mathematics, structuring is the most common practice (Figure 4.5).

Discussion

The aspect which most differentiates teaching styles in different countries is the use of a variety of enhanced learning activities – the least common of the three instructional approaches identified by TALIS. In particular in countries where these activities are relatively less frequently used, it seems advisable to help teachers of all subjects, but especially those teaching mathematics and science, to acquire and implement a wider variety of modern instructional strategies.

Results concerning the frequency of different teaching practices also emphasise the importance of maintaining a broad curriculum, so that in subjects where enhanced activities are more common, students experience greater participation, autonomy and responsibility.

All three of these practices have been shown to play an important role in successful teaching and learning, and each deserves support. TALIS shows that structuring and student-oriented practices tend to be associated with a pleasant, orderly classroom climate, which in turn tends to go together with teacher self-efficacy and job satisfaction.

Professional development might be one way to boost teachers' use of student-oriented practices and enhanced activities. This applies particularly to development activities involving stable professional relationships with other teachers, such as networks for teacher development and mentoring.

In many participating countries, teachers tend to adapt their instructional practices to the overall characteristics of their students. Enhanced activities are more often used in classes with students with higher average ability. In classes with a high proportion of students with a migration background or a minority status – as indicated by a first language other than the language of instruction – more student-oriented practices are used. Such adaptation may be encouraged, as it helps provide students with appropriate levels of cognitive challenge and supportive practices. However, to work towards equality of learning opportunities, teacher education and professional development need to find new ways of expanding the use of enhanced activities for all students, independent of their ability. For example, peer learning and peer tutoring can improve learning outcomes, especially for students with learning difficulties (Topping, 2005).

TALIS results also show that across countries fewer student-oriented practices are used in larger classes. This suggests that larger class sizes limit the possibility to be responsive to each individual student.

There is scope to improve teachers' effectiveness by extending teacher co-operation and linking this to an improved school climate

Key results

- Teacher co-operation more often takes the form of exchanging and co-ordinating ideas and information than direct professional collaboration such as team teaching (Figure 4.7).
- Teachers who attend more professional development, especially in a co-operative context, are more likely to be involved in co-operative teaching (Table 4.8).
- Female teachers and experienced teachers engage in such collaboration most frequently (Table 4.3).

Discussion

Research has shown teacher co-operation to be an important engine of change and quality development in schools. However, the more reflective and intense professional collaboration, which most enhances modernisation and professionalism, is the less common form of co-operation. This creates a clear case for extending such activities, although they can be very time-consuming. It might therefore be helpful to provide teachers with some scheduled time or salary supplement to encourage them to engage in them. It may also be worth focusing such incentives on men and young professionals who participate least in co-operative teaching.

TALIS shows that teachers who exchange ideas and information and co-ordinate their practices with other teachers also report more positive teacher-student relations at their school. Thus, it may be reasonable to encourage teachers' co-operation in conjunction with improving teacher-student relations, as these are two sides of a positive school culture. Positive teacher-student relations are not only a significant predictor of student achievement, they are also closely related to teachers' job satisfaction – at least at the individual teacher level. This result emphasises the role of teachers' positive evaluations of the school environment for effective education and teacher well-being. Efforts to improve school climate are particularly important in larger public schools attended by students with low average ability, since all these factors are associated with a poorer school climate.

Support of teachers' classroom management techniques and a positive attitude towards the job

Key results

- One teacher in four in most countries loses at least 30% of the lesson time, and some lose more than half, in disruptions and administrative tasks (Figure 4.10).
- This is closely associated with classroom disciplinary climate, which varies more among individual teachers than among schools (Figures 4.11, 4.12).

Discussion

Several studies have shown that the classroom disciplinary climate affects student learning and achievement. TALIS supports this view by showing that disciplinary issues in the classroom limit the amount of students' learning opportunities. The classroom climate is also associated with individual teachers' job satisfaction.

Thus a positive learning environment is not only important for students, as is often emphasised, but also for teachers. Across all participating countries it therefore seems advisable to work on enhancing teachers' classroom management techniques. The results suggest that in most schools at least some teachers need extra support, through interventions that consider teachers' individual characteristics and competences and the features of individual classes. The same holds true for policies aiming at enhancing teacher self-efficacy beliefs and job satisfaction, as these variables were also shown to be strongly influenced by teachers' individual characteristics.

ADDITIONAL MATERIAL

The following additional material relevant to this chapter is available on line at:
StatLink ⎙☞ http://dx.doi.org/10.1787/607814526732

Table 4.3a Results of multiple regressions, examining net effects of teacher characteristics on teachers' beliefs, attitudes and practices and the learning environment (2007-08)

Table 4.4a Results of multiple regressions, examining net effects of classroom context on teaching practices (2007-08)

Table 4.5a Results of multiple multi-level regressions, examining net effects of school context variables on teacher-student relations at the school level (2007-08)

Table 4.6a Results of multiple regressions, examining net effects of professional development on teachers' beliefs about instruction (2007-08)

Table 4.7a Results of multiple regressions, examining net effects of professional development on teaching practices (2007-08)

Table 4.8a Net effects of professional development on teacher co-operation (2007-08)

Table 4.9a Results of multiple regressions examining net effects of teachers' beliefs about instruction on teaching practices (2007-08)

Table 4.10a Results of multiple regressions examining net effects of classroom teaching practices on classroom disciplinary climate (2007-08)

Table 4.11a Net effects of teacher co-operation on teacher-student relations (2007-08)

Table 4.12a Results of multiple multi-level regressions examining teacher-level net effects of teachers' beliefs about instruction, classroom teaching practices, the learning environment, and self-efficacy on teachers' job satisfaction (2007-08)

Table 4.13a Results of multiple multi-level regressions, examining school-level net effects of classroom disciplinary climate and teacher-student relations on teachers' job satisfaction (2007-08)

Table 4.14 Country mean and standard deviation of, and correlation between, ipsative scores for "direct transmission beliefs on learning and instruction" and "constructivist beliefs on learning and instruction"(2007-08)

Table 4.15 Country mean and standard deviation of ipsative scores for "structuring practices", "student-oriented practices" and "enhanced activities"(2007-08)

Table 4.16 Subject mean and standard deviation of ipsative scores for "structuring practices", "student oriented practices" and "enhanced activities"(2007-08)

Table 4.17 Country mean and standard deviation of ipsative scores for "exchange and co-ordination for teaching" and "professional collaboration"(2007-08)

Table 4.18 Teachers' time spent on actual teaching and learning, administrative tasks, and keeping order in the classroom in the average lesson (2007-08)

Table 4.19 Index of teacher-student relations and teacher job satisfaction (2007-08)

NOTES

1. The target class was defined as the first ISCED level 2 class that the teacher (typically) teaches after 11 a.m. on Tuesdays.

2. Professional development might also sensitise teachers to differences between instructional practices. Therefore the significant effects of networks for professional development and mentoring might not be indicative of a higher frequency of the different practices, but rather of a higher awareness of own use of instructional strategies. But as teachers' instructional strategies are likely to be intentional and goal-oriented, this interpretation seems unlikely.

Table 4.1

Correlation between direct transmission and constructivist beliefs about teaching (2007-08)

Teachers of lower secondary education

	Correlation coefficient (r_{xy})
Australia	-0.08
Austria	-0.24
Belgium (Fl.)	0.17
Brazil	0.65
Bulgaria	0.67
Denmark	0.14
Estonia	0.03
Hungary	0.29
Iceland	-0.18
Ireland	0.20
Italy	0.44
Korea	0.67
Lithuania	0.37
Malaysia	0.98
Malta	0.28
Mexico	0.74
Norway	0.14
Poland	0.31
Portugal	0.35
Slovak Republic	0.41
Slovenia	0.39
Spain	0.39
Turkey	0.79

▨ Statistically significant at the 5% level.
Source: OECD, *TALIS Database*.
StatLink ⌨ http://dx.doi.org/10.1787/607814526732

Table 4.2

Correlation between time on task[1] and classroom disciplinary climate (2007-08)

Teachers of lower secondary education

	Correlation coefficient (r_{xy})	(S.E.)
Australia	0.63	(0.019)
Austria	0.56	(0.014)
Belgium (Fl.)	0.54	(0.018)
Brazil	0.31	(0.022)
Bulgaria	0.50	(0.021)
Denmark	0.57	(0.024)
Estonia	0.62	(0.017)
Hungary	0.61	(0.020)
Iceland	0.48	(0.029)
Ireland	0.65	(0.015)
Italy	0.46	(0.018)
Korea	0.21	(0.018)
Lithuania	0.35	(0.018)
Malaysia	0.36	(0.024)
Malta	0.58	(0.026)
Mexico	0.20	(0.027)
Norway	0.56	(0.018)
Poland	0.46	(0.024)
Portugal	0.59	(0.016)
Slovak Republic	0.49	(0.020)
Slovenia	0.51	(0.019)
Spain	0.61	(0.014)
Turkey	0.41	(0.029)

▨ Statistically significant at the 5% level.
1. Percentage of classroom time spent on teaching and learning.
Source: OECD, *TALIS Database*.
StatLink ⌨ http://dx.doi.org/10.1787/607814526732

Table 4.3

Relationship between teacher characteristics and teachers' beliefs, attitudes and practices and the learning environment (2007-08)

Significant variables in the multiple regressions of teachers' characteristics with teachers' beliefs, attitudes and practices and the learning environment, teachers of lower secondary education

Example: In more than half of the TALIS countries, female teachers are less likely than male teachers to hold direct transmission beliefs about teaching, controlling for variables listed.					

	Predictor variables:				
Predicted variables	**Female**	**Teacher of Mathematics/ Science**	**Teacher of Humanities**	**Years of experience as a teacher**	**Highest level of qualification[1]**
Direct transmission beliefs about teaching	–				
Constructivist beliefs about teaching		+			
Structuring teaching practices	+	+	+	+	
Student-oriented teaching practices	+	–	–	+	
Enhanced activities		–	–	–	
Exchange and co-ordination for teaching	+			+	
Professional collaboration	+		–	+	
Classroom disciplinary climate		+		+	
Teacher-student relations					
Self-efficacy		–		+	
Job satisfaction					

Note: Positive relationships that are significant in more than half of the countries are indicated by a "+", while negative relationships that are significant in more than half of the countries are indicated by a "–". Otherwise the cells are left blank. Significance was tested at the 5% level.
1. ISCED 5A Master degree or higher compared with lower-level qualifications.
Source: OECD, *TALIS Database*.
StatLink ⌨ http://dx.doi.org/10.1787/607814526732

Table 4.4

Relationship between classroom context and teaching practices (2007-08)[1]

Significant variables in the multiple regressions of aspects of classroom context with indices for teaching practice, teachers of lower secondary education[2]

Example: In Australia, teachers are likely to use structuring teaching practices to a greater degree in classes with higher percentages of students with a mother tongue different from the language of instruction, allowing for teacher background characteristics.

	Structuring teaching practices			Student-oriented teaching practices			Enhanced activities		
	Dependent on:			Dependent on:			Dependent on:		
	Class size	Average ability of students in the class[3]	Students with a mother tongue different from the language of instruction[4]	Class size	Average ability of students in the class[3]	Students with a mother tongue different from the language of instruction[4]	Class size	Average ability of students in the class[3]	Students with a mother tongue different from the language of instruction[4]
Australia			+			+			+
Austria				–				+	
Belgium (Fl.)	–	+		–		+	–		
Brazil		+	+		+	+		+	+
Bulgaria	–	+	+	–	+	+		+	
Denmark								+	
Estonia			+	–	+	+		+	
Hungary				–		+			+
Iceland						+			
Ireland	–			–					
Italy	–			–			–	+	
Korea		+	+	–	+	+	–	+	+
Lithuania			+	–	+	+		+	+
Malaysia		+			+			+	
Malta				–					
Mexico		+			+	+		+	+
Norway	–			–			–		
Poland	+				+	+	+	+	+
Portugal			–	–	+		–	+	
Slovak Republic			+		+	+		+	+
Slovenia					+			+	+
Spain									
Turkey			5		+	5		+	5

1. Controlling for teacher gender, years of experience, highest level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

3. Average ability estimated by the teacher relative to students of the same grade/year level generally.

4. "Less than 10%" or "10% or more".

5. In Turkey questions concerning the language of the student were not administered.

Source: OECD, *TALIS Database.*

StatLink ᵃᵗˢ᠊ http://dx.doi.org/10.1787/607814526732

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Table 4.5

Relationship between school context and teacher-student relations (2007-08)[1]

Significant variables in the multiple multi-level regressions of school context variables and the teacher-student relations index at the school level, teachers of lower secondary education[2]

Example: In Australia, teachers working in private schools report better teacher-student relations than in public schools, after controlling for other variables.

	Teacher-student relations				
	Dependent on:				
	Private school	City location of school	School size (Total pupil enrolment)	Social background of students[5]	Average ability of students: school level[6]
Australia	+			+	
Austria	+		−		+
Belgium (Fl.)			−	+	+
Brazil			−	+	+
Bulgaria	3				+
Denmark	+		−	+	
Estonia	3	+	−		+
Hungary	+	+		+	−
Iceland	3	4	−	+	
Ireland		+			
Italy	3		−	+	
Korea			−		
Lithuania	3				
Malaysia	3	−	−		+
Malta		4	−		
Mexico			−		+
Norway	3		−		
Poland	3		−		+
Portugal	+		−		+
Slovak Republic		+	−		
Slovenia	3		−		
Spain	+				+
Turkey	+		−		+

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "−". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

3. Less than 10% of teachers report to work in a private school.

4. Less than 10% of the schools are in cities or large cities.

5. Based on teachers' estimation of the education level of students' parents aggregated to the school level.

6. Teachers' estimation of the average ability of students in their class relative to students of the same grade/year level generally, aggregated to the school level.

Source: OECD, *TALIS Database*.

StatLink 🔗 http://dx.doi.org/10.1787/607814526732

Table 4.6

Relationship between teachers' professional development activities and their teaching beliefs about instruction (2007-08)[1]

Significant variables in the multiple regressions of aspects of teachers' professional development with indices for teachers' teaching beliefs about instruction, teachers of lower secondary education[2]

Example: In Australia, teachers held direct transmission beliefs about instruction less strongly, the more days of professional development they had taken part in.

	Direct transmission beliefs about instruction				Constructivist beliefs about instruction			
	Dependent on:				Dependent on:			
	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities
Australia	−	−			+	+		
Austria	−	−			+	+		
Belgium (Fl.)		−						
Brazil								
Bulgaria		−		+				
Denmark								
Estonia	−	−	+		+			+
Hungary	−					+		+
Iceland	−	−			+	+		
Ireland	−	−						
Italy			−	+	+	+		+
Korea				+	+	+		
Lithuania					+		+	
Malaysia								
Malta								
Mexico					+			
Norway	−	−	−					
Poland		−					+	
Portugal								
Slovak Republic								
Slovenia	−				+			
Spain		+				+	+	
Turkey								

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "−". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database*.

StatLink http://dx.doi.org/10.1787/607814526732

Table 4.7

Relationship between teachers' professional development activities and teaching practices (2007-08)[1]

Significant variables in the multiple regressions of aspects of teachers' professional development and teaching practice indices, teachers of lower secondary education[2]

Example: In Australia, teachers engaged more frequently in structuring teaching practices, the more days of professional development they had taken after controlling for other variables listed.

	Structuring teaching practices				Student-oriented teaching practices				Enhanced activities			
	Dependent on:				Dependent on:				Dependent on:			
	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities
Australia	+		+	+			+	+			+	+
Austria				+	+		+	+	+		+	+
Belgium (Fl.)	+	+	+	+			+	+	+		+	+
Brazil	+		+	+	+		+	+	+		+	+
Bulgaria		+		+	+		+	+				+
Denmark	+				+			+	+			+
Estonia			+	+			+	+	+		+	+
Hungary	+	+	+		+	+	+	+	+	+	+	+
Iceland	+				+			+	+			+
Ireland			+		+			+				+
Italy	+				+	+	+	+	+	+	+	+
Korea			+	+	+		+	+	+		+	+
Lithuania		+	+	+			+	+			+	+
Malaysia			+				+	+			+	+
Malta			+	+		+	+	+			+	+
Mexico			+	+			+	+			+	+
Norway							+	+			+	+
Poland			+	+	+		+		+		+	+
Portugal	+	+		+	+	+	+	+	+	+	+	+
Slovak Republic		+	+				+	+		+	+	+
Slovenia		+			+	+	+	+	+			+
Spain	+	+			+	+	+	+	+	+	+	+
Turkey	+		+	+	+		+	+	+		+	

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database.*

StatLink http://dx.doi.org/10.1787/607814526732

Table 4.8

Relationship between teachers' professional development activities and teacher co-operation (2007-08)[1]

Significant variables in the multiple regressions of aspects of teachers' professional development and indices of teacher co-operation, teachers of lower secondary education[2]

Example: In Australia, teachers engaged more frequently in exchange and co-ordination for teaching with their colleagues the more days of professional development they had taken part in, after controlling for other variables listed.

	Exchange and co-ordination for teaching				Professional collaboration			
	Dependent on:				Dependent on:			
	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities	Days of professional development taken by the teacher	Participation in workshops/ courses	Participation in networks	Participation in mentoring activities
Australia	+	+	+	+	+		+	+
Austria	+		+	+	+		+	+
Belgium (Fl.)	+	+	+	+	+	+	+	+
Brazil	+	+		+	+	+	+	+
Bulgaria			+	+	+	+	+	+
Denmark	+		+	+	+		+	+
Estonia	+	+	+	+	+	+	+	+
Hungary	+	+	+	+	+	+	+	+
Iceland	+	+	+	+	+	+	+	+
Ireland		+	+	+	+	+	+	+
Italy		+	+	+		+	+	+
Korea	+		+	+	+	+	+	+
Lithuania	+	+	+	+	+	+	+	+
Malaysia	+	+	+	+	+		+	+
Malta			+	+			+	+
Mexico		+	+	+		+	+	+
Norway		+	+	+		+	+	+
Poland		+	+	+	+	+	+	+
Portugal		+	+	+		+	+	+
Slovak Republic		+	+	+	+	+	+	+
Slovenia	+	+		+	+	+	+	+
Spain		+	+	+		+	+	+
Turkey	+		+	+	+		+	+

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database*.

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Table 4.9

Relationship between teachers' beliefs about instruction and teaching practices (2007-08)[1]

Significant variables in the multiple regressions of the indices for teachers' beliefs about instruction and the indices for teaching practices, teachers of lower secondary education[2]

	Example: In Australia, the stronger teachers' beliefs in the direct transmission approach to teaching, the more frequently they engaged in structuring teaching practices, after controlling for other variables listed.					

	Structuring teaching practices		Student-oriented teaching practices		Enhanced activities	
	Dependent on:		Dependent on:		Dependent on:	
	Direct transmission beliefs about instruction	Constructivist beliefs about instruction	Direct transmission beliefs about instruction	Constructivist beliefs about instruction	Direct transmission beliefs about instruction	Constructivist beliefs about instruction
Australia	+	+		+	+	+
Austria	+	+		+	+	+
Belgium (Fl.)	+	+	+	+	+	+
Brazil	+		+		+	
Bulgaria				+		+
Denmark	+			+		+
Estonia	+	+	+	+	+	+
Hungary	+	+		+		+
Iceland	+	+		+	+	+
Ireland	+			+		+
Italy	+	+		+	+	+
Korea		+	+	−	+	−
Lithuania	+	+	+	+	+	
Malaysia	+					
Malta	+					
Mexico	+		+	+	+	+
Norway	+	+		+		+
Poland		+		+		+
Portugal	+	+		+		+
Slovak Republic	+	+	+	+	+	
Slovenia	+	+		+		+
Spain	+	+		+	+	+
Turkey						

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database*.

StatLink http://dx.doi.org/10.1787/607814526732

Table 4.10

Relationship between teaching practices and classroom disciplinary climate (2007-08)[1]

Significant variables in the multiple regressions of the indices for teaching practices and the index for classroom disciplinary climate, teachers of lower secondary education[2]

Example: In Australia, the more frequently teachers engaged in structuring teaching practices, the better they reported the classroom disciplinary climate to be.

	Classroom disciplinary climate		
	Dependent on:	Dependent on:	Dependent on:
	Structuring teaching practices	Student-oriented teaching practices	Enhanced activities
Australia	+	+	
Austria		+	–
Belgium (Fl.)	+		
Brazil	+	+	–
Bulgaria	+		
Denmark	+		
Estonia		+	
Hungary			
Iceland			
Ireland	+		
Italy	+		+
Korea	+		
Lithuania		+	–
Malaysia	–	+	–
Malta			
Mexico	+		
Norway			
Poland		+	
Portugal	+	+	
Slovak Republic		+	
Slovenia		+	
Spain	+		
Turkey		+	–

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class, class size, average ability of the students and percentage of students with a mother tongue different from the language of instruction as estimated by the teachers.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database.*
StatLink 🔗 http://dx.doi.org/10.1787/607814526732

Table 4.11

Relationship between teacher co-operation and teacher-student relations (2007-08)[1]

Significant variables in the multiple regressions of the indices for teacher co-operation and the index for teacher-student relations, teachers of lower secondary education[2]

Example: In Australia, the more frequently teachers engaged in exchange and co-ordination for teaching with their colleagues, the better they reported the teacher-student relations to be.

	Teacher-student relations	
	Dependent on:	
	Exchange and co-ordination for teaching	Professional collaboration
Australia	+	
Austria	+	–
Belgium (Fl.)	+	
Brazil	+	+
Bulgaria	+	
Denmark		
Estonia	+	
Hungary	+	
Iceland	+	
Ireland	+	
Italy	+	
Korea	+	+
Lithuania	+	
Malaysia	+	
Malta	+	
Mexico	+	
Norway		+
Poland	+	
Portugal	+	
Slovak Republic	+	+
Slovenia	+	
Spain	+	
Turkey	+	

1. Examined at the teacher level, controlling for teacher gender, years of experience, level of education and subject taught in the target class, private versus public management of schools, size of the community in which the school is located, average social status of student and average ability of the students estimated by the teachers.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database*.

StatLink 🔗 http://dx.doi.org/10.1787/607814526732

Table 4.12

Relationship between teachers' beliefs about instruction, classroom teaching practices, the learning environment, self-efficacy, and teachers' job satisfaction (2007-08)[1]

Significant variables in the multiple multi-level regressions of the indices for teachers' beliefs about instruction, classroom teaching practices, the learning environment, self-efficacy and teachers' job satisfaction, teachers of lower secondary education[2]

	Job satisfaction							
Example: In Belgium (Fl), the more strongly teachers held direct transmission beliefs, the less positve they reported their job satisfaction.								
	Dependent on:							
	Direct transmission beliefs about teaching	Constructivist beliefs about teaching	Structuring teaching practices	Student-oriented teaching practices	Enhanced activities	Classroom disciplinary climate	Teacher-student relations	Teacher's self-efficacy
Australia						+	+	+
Austria						+	+	+
Belgium (Fl.)	–					+	+	+
Brazil		–	+			+	+	+
Bulgaria	+					+	+	+
Denmark						+	+	+
Estonia						+	+	+
Hungary	+					+	+	+
Iceland						+	+	+
Ireland						+	+	+
Italy						+	+	+
Korea		+				+	+	+
Lithuania		+		+		+	+	+
Malaysia						+	+	+
Malta						+	+	+
Mexico						+	+	+
Norway			–			+	+	+
Poland						+	+	+
Portugal	+	–	+			+	+	+
Slovak Republic	+					+	+	+
Slovenia			–			+	+	+
Spain	+		+			+	+	+
Turkey	+					+	+	+

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class and classroom disciplinary climate and student-teacher relations at the school level.

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

Source: OECD, *TALIS Database.*

StatLink http://dx.doi.org/10.1787/607814526732

Table 4.13

Relationship between school-level classroom disciplinary climate, teacher-student relations and job satisfaction (2007-08)[1]

Significant variables in the multiple multi-level regressions of the indices for classroom disciplinary climate, teacher-student relations and teachers' job satisfaction, teachers of lower secondary education[2]

	Example: In Australia, the more postive the classroom disciplinary climate reported by teachers, the more positive was teachers' reports of job satisfaction.	
	Job satisfaction	
	Dependent on:	
	Classroom disciplinary climate[3]	**Teacher-student relations[3]**
Australia	+	
Austria		+
Belgium (Fl.)		
Brazil	+	
Bulgaria		
Denmark	+	
Estonia	+	
Hungary		
Iceland		
Ireland		
Italy		
Korea		
Lithuania		
Malaysia		–
Malta	+	
Mexico		
Norway		
Poland		+
Portugal		
Slovak Republic		
Slovenia	+	
Spain		
Turkey		

1. Controlling for teacher gender, years of experience, level of education and subject taught in the target class and teachers' beliefs about instruction, classroom teaching practices, the learning environment, and self-efficacy at the individual teacher level .

2. Variables where a significant positive relationship was found are indicated by a "+" while those where a significant negative relationship was found are shown with a "–". Cells are blank where no significant relationship was found. Significance was tested at the 5% level.

3. Measured at the school level.

Source: OECD, *TALIS Database.*

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