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Annex A1

Technical Notes on Survey Procedures and Analysis

[Annex A1.1](#) Construction of indices and other derived measures

[Annex A1.2](#) TALIS sampling procedures and response rates

[Annex A1.3](#) Quality assurance

[Annex A1.4](#) Technical notes on multiple regression analyses

Annex A1.1

CONSTRUCTION OF INDICES AND OTHER DERIVED MEASURES

This annex explains the indices (or scales) and other measures derived from the TALIS teacher and principal questionnaires. Terms enclosed in brackets < > in the descriptions were replaced in the national versions of the questionnaires by the appropriate national equivalent term.

For a detailed description of the methods used to construct and test the reliability of these indices, see the *TALIS Technical Report* (forthcoming).

Cross-cultural validity of the indices

TALIS measures teachers' and school principals' self-reported beliefs, attitudes and practices across a range of topics in 23 countries. The development of these beliefs, attitudes and practices is influenced by individual characteristics, but also by the cultural background and the school system. Furthermore, cultural factors affect the interpretation of questions and the ways in which responses are given (Van de Vijver and Leung, 1997). These influences may produce differences in levels of endorsement or frequency in survey responses, but they may also affect the index structure used to compile responses and thus limit the comparability of the resulting scores. As a consequence, cross-cultural studies entail special methodological challenges. TALIS uses items from indices which are well-established in national and, where possible, cross-national research. When developing the questionnaire care was taken to ensure that items were compatible with the culture and school system of each TALIS country and that the indices had high-quality translation and verification. Furthermore, the cross-cultural comparability – or “invariance” – of the indices measuring beliefs, attitudes and practices in Chapters 4 and 6 was tested by means of confirmatory factor analysis.

Cross-cultural survey methods often differentiate among three levels of invariance: configural, metric and scalar.

- **Configural invariance** is established when the same items are associated with the same underlying factors in all participating countries. This implies an acceptable fit of confirmatory factor analysis models using the same factor structure for all countries.
- **Metric invariance** is achieved when the strength of the associations between each of the items and the underlying factor is also equivalent across countries
- **Scalar invariance** is the most rigorous form. It implies that cross-country differences in the means of the observed items are a result of differences in the means of their corresponding factors. At least partial scalar invariance is needed to make meaningful comparisons of mean scores across countries (e.g. Baumgartner and Steenkamp, 2001).

The *TALIS Technical Report* (forthcoming) discusses the construction of the indices reported in Chapter 4 and Chapter 6 and the results from the invariance analysis in greater detail.

Indices derived from TALIS data

Teachers' beliefs about teaching

To assess beliefs about teaching and learning, TALIS asked teachers (and principals) to indicate how strongly they agreed with various statements on a 4-point likert scale, ranging from 1 = “strongly disagree” to 4 = “strongly agree”. A statistical factor analysis of the results revealed that responses to groups of these statements were correlated in each country so that it was possible to summarise teachers' beliefs about teaching across two indices: Direct transmission beliefs and Constructivist beliefs.

In short, constructivist beliefs are characterised by a view of the teacher as the facilitator of learning with more autonomy given to students whereas a direct transmission view sees the teacher as the instructor, providing information and demonstrating solutions.

In the analysis to test the cross-cultural validity of these indices, configural and metric invariance was achieved but scalar invariance was not. Country means on the index are therefore not directly comparable. The analysis therefore focuses more on the pattern of cross-cultural differences than on specific country-by-country comparisons of the index scores.

The questionnaire items comprising these indices are as follows:

Index of 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.

Index of 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.

Each index was calculated with an international mean of zero and a standard deviation of one.

Teachers' teaching practices

To assess teachers' classroom teaching practices, TALIS asked teachers to indicate the frequency – on a 5-point scale ranging from "never or hardly ever" to "in almost every lesson" – with which specified activities happened in a certain "target class" that they taught. In order to randomise the choice of the class, the "target class" was defined as the first ISCED level 2 class that the teacher (typically) taught in the school after 11 am on Tuesdays.

A statistical factor analysis of the results revealed that responses to groups of these activities were correlated in each country so that it was possible to summarise teachers' classroom practices across three indices: Structuring practices; Student-oriented practices and Enhanced activities.

In the analysis to test the cross-cultural validity of these indices, configural and metric invariance was achieved but scalar invariance was not. Country means on the index are therefore not directly comparable. The analysis therefore focuses more on the pattern of cross-cultural differences than on specific country-by-country comparisons of the index scores.

The questionnaire items comprising these indices are as follows:

Index of structuring practices

- I explicitly state learning goals.
- I review with the students the homework they have prepared.



- At the beginning of the lesson I present a short summary of the previous lesson.
- I check my students' exercise books.
- I check, by asking questions, whether or not the subject matter has been understood.

Index of student oriented practices

- Students work in small groups to come up with a joint solution to a problem or task.
- I give different work to the students that have difficulties learning and/or to those who can advance faster.
- I ask my students to suggest or to help plan classroom activities or topics.
- Students work in groups based upon their abilities.

Index of enhanced activities

- Students work on projects that require at least one week to complete.
- Students make a product that will be used by someone else.
- I ask my students to write an essay in which they are expected to explain their thinking or reasoning at some length.
- Students hold a debate and argue for a particular point of view which may not be their own.

Each index was calculated with an international mean of zero and a standard deviation of one.

Co-operation among teaching staff

To assess the co-operation among teaching staff, TALIS asked teachers to indicate the frequency – on a 6-point scale ranging from “never” to “weekly” – with which they undertook specified activities.

A statistical factor analysis of the results revealed that responses to groups of these activities were correlated in each country so that it was possible to summarise teachers' co-operative practices across two indices: Exchange and co-ordination for teaching and Professional collaboration.

In the analysis to test the cross-cultural validity of these indices, configural and metric invariance was achieved but scalar invariance was not. Country means on the index are therefore not directly comparable. The analysis therefore focuses more on the pattern of cross-cultural differences than on specific country-by-country comparisons of the index scores.

The questionnaire items comprising these indices are as follows:

Index of exchange and co-ordination for teaching

- Discuss and decide on the selection of instructional media (e.g. textbooks, exercise books).
- Exchange teaching materials with colleagues.
- Attend team conferences for the age group I teach.
- Ensure common standards in evaluations for assessing student progress.
- Engage in discussion about the learning development of specific students.

Index of professional collaboration

- Teach jointly as a team in the same class.
- Take part in professional learning activities (e.g. team supervision).

- Observe other teachers' classes and provide feedback.
- Engage in joint activities across different classes and age groups (e.g. projects).
- Discuss and co-ordinate homework practice across subjects.

Each index was calculated with an international mean of zero and a standard deviation of one.

Classroom disciplinary climate

To assess the classroom disciplinary climate, TALIS asked teachers to indicate how strongly they agreed – on a 4-point scale ranging from “strongly disagree” to “strongly agree” – with a number of statements about a “target class” that they taught. This “target class” was defined as the first ISCED level 2 class that the teacher (typically) taught in the school s/he works in after 11 am on Tuesdays.

A statistical factor analysis of the results revealed that responses to these statements were correlated in each country so that it was possible to summarise the classroom disciplinary climate in a single index.

In the analysis to test the cross-cultural validity of this index, configural and metric invariance was achieved. Although full scalar invariance was not established, the fit of the models for testing this was sufficiently close to justify an examination of the global picture of mean score differences, though direct comparisons of country means should be avoided.

The questionnaire items comprising this index are as follows:

Index of classroom disciplinary climate

- When the lesson begins, I have to wait quite a long time for students to <quieten down>.
- Students in this class take care to create a pleasant learning atmosphere.
- I lose quite a lot of time because of students interrupting the lesson.
- There is much noise in this classroom.

The index was calculated with an international mean of zero and a standard deviation of one.

Teacher-student relations

To assess teacher-student relations, TALIS asked teachers to indicate how strongly they agreed – on a 4-point scale ranging from “strongly disagree” to “strongly agree” – with a number of statements about how they relate to students in the school.

A statistical factor analysis of the results revealed that responses to these statements were correlated in each country so that it was possible to summarise teacher-student relations in a single index.

In the analysis to test the cross-cultural validity of this index, configural and metric invariance was achieved. Although full scalar invariance was not established, the fit of the models for testing this was sufficiently close to justify an examination of the global picture of mean score differences, though direct comparisons of country means should be avoided.

The questionnaire items comprising this index are as follows:

Index of teacher-student relations

- In this school, teachers and students usually get on well with each other.
- Most teachers in this school believe that students' well-being is important.

- Most teachers in this school are interested in what students have to say.
- If a student from this school needs extra assistance, the school provides it.

The index was calculated with an international mean of zero and a standard deviation of one.

Teachers' self-efficacy

To assess teachers' self-efficacy, TALIS asked teachers to indicate how strongly they agreed – on a 4-point scale ranging from “strongly disagree” to “strongly agree” – with a number of statements about their work in the school.

In the analysis to test the cross-cultural validity of this index, configural and metric invariance was achieved. Although full scalar invariance was not established, the fit of the models for testing this was sufficiently close to justify an examination of the global picture of mean score differences, though direct comparisons of country means should be avoided.

A statistical factor analysis of the results revealed that responses to these statements were correlated in each country so that it was possible to summarise teachers' self-efficacy in a single index.

The questionnaire items comprising this index are as follows:

Index of teachers' self-efficacy

- I feel that I am making a significant educational difference in the lives of my students.
- If I try really hard, I can make progress with even the most difficult and unmotivated students.
- I am successful with the students in my class.
- I usually know how to get through to students.

The index was calculated with an international mean of zero and a standard deviation of one.

School leadership

To assess school leadership behaviours, TALIS asked school principals to indicate the frequency – on a 4-point scale ranging from “never” to “very often” – with which they undertook specified activities in the school. A statistical factor analysis of the results revealed that responses to groups of these activities were correlated in each country so that it was possible to summarise school leadership behaviours across five indices: Management-school goals; Instructional management; Direct supervision of instruction; Accountable management; Bureaucratic management.

In the analysis to test the cross-cultural validity of these indices, configural and metric invariance was achieved but scalar invariance was not. Country means on the index are therefore not directly comparable. The analysis therefore focuses more on the pattern of cross-cultural differences than on specific country-by-country comparisons of the index scores.

The questionnaire items comprising these indices are as follows:

Index of management of school goals

- I make sure that the professional development activities of teachers are in accordance with the teaching goals of the school.
- I ensure that teachers work according to the school's educational goals.
- I use student performance results to develop the school's educational goals.
- I take exam results into account in decisions regarding curriculum development.

- I ensure that there is clarity concerning the responsibility for co-ordinating the curriculum.
- In this school, we work on goals and/or a school development plan.

Index of instructional management

- When a teacher has problems in his/her classroom, I take the initiative to discuss matters.
- I inform teachers about possibilities for updating their knowledge and skills.
- When a teacher brings up a classroom problem, we solve the problem together.
- I pay attention to disruptive behaviour in classrooms.

Index of direct supervision of instruction

- I observe instruction in classrooms.
- I give teachers suggestions as to how they can improve their teaching.
- I monitor students' work.
- I check to see whether classroom activities are in keeping with our educational goals.

Index of accountable management

- An important part of my job is to ensure ministry-approved instructional approaches are explained to new teachers, and that more experienced teachers are using these approaches.
- A main part of my job is to ensure that the teaching skills of the staff are always improving.
- An important part of my job is to ensure that teachers are held accountable for the attainment of the school's goals.
- An important part of my job is to present new ideas to the parents in a convincing way.

Index of bureaucratic management

- It is important for the school that I see to it that everyone sticks to the rules.
- It is important for the school that I check for mistakes and errors in administrative procedures and reports.
- An important part of my job is to resolve problems with the timetable and/or lesson planning.
- An important part of my job is to create an orderly atmosphere in the school.
- I stimulate a task-oriented atmosphere in this school.

To summarise these five leadership behaviour indices further, two indices of leadership styles were derived by averaging the individual leadership behaviour indices as follows:

Index of instructional leadership

- Index of management of school goals.
- Index of instructional management.
- Index of direct supervision of instruction.

Index of administrative leadership

- Index of bureaucratic management.
- Index of accountable management.

Each index was calculated with an international mean of zero and a standard deviation of one.

School resources

TALIS asked school principals to indicate on a 4-point scale ranging from “not at all” to “a lot”, the extent to which the school’s capacity to provide instruction was hindered by various resource issues. A statistical factor analysis of the results revealed that responses to groups of these issues were correlated in each country so that it was possible to summarise them into two indices measuring the extent to which instruction was hindered by a lack of resources: Index of lack of personnel and Index of shortage of materials.

The questionnaire items comprising these indices are as follows:

Index of lack of personnel

The school’s capacity to provide instruction is hindered by:

- A lack of qualified teachers.
- A lack of laboratory technicians.
- A lack of instructional support personnel.

Index of shortage of materials

The school’s capacity to provide instruction is hindered by:

- Shortage or inadequacy of instructional materials (e.g. textbooks).
- Shortage or inadequacy of computers for instruction.
- Shortage or inadequacy of other equipment.
- Shortage or inadequacy of library materials.

Each index was calculated with an international mean of zero and a standard deviation of one.

School autonomy

TALIS asked school principals who, among the principal, teachers, the <school governing board>, <regional or local authority> and <national education authority>, had a considerable responsibility for a range of specified tasks. School autonomy was defined as those decisions for which a considerable responsibility lay with the principal, the teachers or the <school governing board>. A “considerable responsibility” was defined as one where an active role is played in decision making. A statistical factor analysis of the results revealed that responses to groups of these tasks were correlated in each country so that it was possible to summarise them into separate indices measuring school autonomy in four broad areas: Hiring teachers and determining salaries, Formulating and allocating the school budget, Student policy and textbook choice and Curriculum.

The questionnaire items comprising these indices are as follows:

Index of autonomy: Hiring teachers and determining salaries

- Selecting teachers for hire.
- Firing teachers.
- Establishing teachers’ starting salaries.
- Determining teachers’ salary increases.

Index of autonomy: Formulating and allocating the school budget

- Formulating the school budget.
- Deciding on budget allocations within the school.

Index of autonomy: Student policy and textbook choice

- Establishing student disciplinary policies.
- Establishing student assessment policies.
- Approving students for admission to the school.
- Choosing which textbooks are used.

Index of autonomy: Curriculum

- Determining course content.
- Deciding which courses are offered.

Each index was calculated with an international mean of zero and a standard deviation of one.

Ratios derived from TALIS data***Student-teacher ratio***

This was derived from school principals' responses to a question about the number of staff (headcounts) currently working in the school and the total number of students (headcounts) of all grades in the school. The measure is not therefore restricted to those teaching or supporting ISCED level 2 education in the school but covers education of all levels provided in the school. The ratio is derived by dividing the number of students by the number of teachers (those whose main activity is the provision of instruction to students).

Ratio of teachers to number of personnel for pedagogical support

This was derived from school principals' responses to a question about the number of staff (headcounts) currently working in the whole school and so is not restricted to only those teaching or supporting ISCED level 2 education in the school. The ratio is derived by dividing the number of teachers (those whose main activity is the provision of instruction to students) by the number of personnel for pedagogical support. Pedagogical support personnel include all teacher aides or other non-professional personnel who provide instruction or support teachers in providing instruction, professional curricular/instructional specialists and educational media specialists.

Ratio of teachers to number of school administrative or management personnel

This was derived from school principals' responses to a question about the number of staff (headcounts) currently working in the whole school and so is not restricted to only those teaching or supporting ISCED level 2 education in the school. The ratio is derived by dividing the number of teachers (those whose main activity is the provision of instruction to students) by the number of school administrative or management personnel. School administrative or management personnel include principals, assistant principals, other management staff, receptionists, secretaries and administration assistants whose main activity is administration or management.

Percentage of professional development that is compulsory

This was derived from teachers' responses to the questions "In all, how many days of professional development did you attend during the last 18 months" (rounded to whole days) and "Of these, how many were compulsory for you to attend as part of your job as a teacher". For each teacher, the percentage was calculated by dividing the number of compulsory days by the total number of days and multiplying by 100. Where this percentage is reported at the country level (Table 3.1), this is the average of the percentages calculated for the individual teachers in that country.

Average class size

In the section of the teacher questionnaire which asked teachers were asked about their classroom teaching practices, they were asked to report on a “target class” that they taught. This “target class” was defined as the first ISCED level 2 class that the teacher (typically) taught in the school after 11am on Tuesdays. Among the characteristics of the “target class”, teachers were asked to report the number of students in this class on average throughout the year. In some analyses, the class size was considered at the school level by averaging the reported numbers across the teachers in the school. Similarly, when average class size is reported at the country level (Table 2.4) this is the average of the class sizes reported by the individual teachers in that country.

Annex A1.2

TALIS SAMPLING PROCEDURES AND RESPONSE RATES

The objective of TALIS was to obtain a representative sample of ISCED level 2 teachers in each participating country. TALIS identified policy issues that encompass the classroom, the teacher, the school, and the school management so the coverage of TALIS extends to all teachers of ISCED level 2 and to the principals of the schools where they teach. The international sampling plan prepared for TALIS used a stratified two-stage probability sampling design. This means that teachers (second stage units or secondary sampling units) were to be randomly selected from the list of in-scope teachers in each of the randomly selected schools (first stage units, or primary sampling units). A more detailed description of the survey design and its implementation can be found in the *TALIS Technical Report* (forthcoming).

A teacher of ISCED level 2 is one who, as part of his or her regular duties in their school, provides instruction in programmes at the ISCED level 2. Teachers who teach a mixture of programmes at different levels including ISCED level 2 programmes in the target school are included in the TALIS universe. There is no minimum cut-off for how much ISCED level 2 teaching these teachers need to be engaged in.

The *international target population* of TALIS restricts the survey to those teachers who teach regular classes in ordinary schools and to the principals of those schools. Teachers teaching to adults and teachers working with children with special needs are not part of the international target population and are deemed “out of scope”. When schools are comprised exclusively of these teachers, the school itself is said to be “out of scope”. Teacher aides, pedagogical support staff (e.g. guidance counsellors, librarians) and health and social support staff (e.g. doctors, nurses, psychiatrists, psychologists, occupational therapists, and social workers) were not considered as teachers and thus not part of the TALIS international target population.

For national reasons, participating countries could choose to restrict the coverage of their national implementation of TALIS to parts of the country. For example, a province or state experiencing civil unrest or an area struck by a natural disaster could be removed from the international target population to create a *national target population*. Participating countries were invited to keep these exclusions to a minimum.

TALIS recognised that attempting to survey teachers in very small schools, those in schools with no more than three teachers of ISCED level 2, and those teaching in schools located in geographically remote areas could be a costly, time-consuming and statistically inefficient exercise. Therefore, participating countries were allowed to exclude those teachers for TALIS data collection, thus creating a *national survey population* different from the national target population. The National Project Manager for each country was required to document the reasons for exclusion, the size, the location, the clientele, etc. of each excluded school.

Within a selected in-scope school, some teachers were excluded from the sample:

- Teachers teaching only to special needs students.
- Teachers who also act as school principals: no teacher data collected, but school principal data collected.
- Substitute, emergency or occasional teachers.
- Teachers on long-term leave.
- Teachers teaching exclusively to adults.
- In Malta and Iceland, teachers who had taken part in the TALIS 2007 field trial.

Sample size requirements

To allow for reliable estimation and modelling, while allowing for some amount of non-response, the minimum sample size was set at 20 teachers within each participating school. A minimum sample of 200 schools was to be drawn from the population of in-scope schools. Thus, the nominal international sample size was a minimum of 4 000 teachers.

Participating countries could choose to augment their national sample by selecting more schools, or by selecting more teachers within each selected school, or by increasing both. Some countries were asked to increase the within-school sample to counterbalance the effect of selecting too many schools with fewer than 20 teachers.

The sample size requirement was reduced for some participating countries because of the smaller number of schools available for sampling. In a few cases, because the average number of teachers in the schools was less than expected in the international plan, the number of schools sampled was increased to maintain a minimum total number of participating teachers.

Participation rates

The quality requirements for TALIS translate into participation rates (response rates) for schools and for teachers. Reaching these levels of participation does not preclude that some amount of bias may be present in the results but should minimise the negative impact of non-response biases. As TALIS is one of the first large-scale international surveys of active teachers, little is known of “reasonable” response rates for this population. Hence, when compared to large-scale student-level international surveys on education (e.g. PISA, PIRLS, TIMSS), TALIS’ requirements may appear somewhat lower.

The minimum school participation rate was set at 75% after replacement. Though replacement schools could be called upon as substitutes for non-responding schools, National Project Managers were encouraged to do all they could to obtain the participation of the schools in the original sample. Responding schools that yielded at least 50% of responding teachers were considered as “participating” schools; schools that failed to meet that threshold were considered as “non-participating” even though the number of responding teachers may have been enough to contribute to some of the analyses.

The minimum teacher participation rate was 75% of the selected teachers in participating schools (original sample or replacement schools). Teacher participation was calculated over all participating schools, whether the schools were in the original sample or used as a replacement, and thus the participation rate for the teachers is a requirement at the national level but not at the school level. The overall unweighted and weighted participation rates are the product of the respective school and teacher participation rates.

Table A1.2.1 presents the unweighted school participation rates, before and after replacement of non-participating schools, the unweighted teacher participation rate, the unweighted overall participation rates by country, and a weighted estimated size of the teacher population. Nearly 74 000 teachers participated, which corresponded to 78% of all teachers sampled.

Definition of teachers

TALIS followed the INES (International Indicator of Educational System) data collection definition of a teacher for sampling and analysis:

“the formal definition of a classroom teacher is a person whose professional activity involves the planning, organising and conducting of group activities whereby students’ knowledge, skills and attitudes develop as stipulated by educational programmes. In short, it is one whose main activity is teaching” (OECD, 2004).

Table A1.2.1 Unweighted participation rates and weighted estimated size of the teacher population by country

	Number of participating schools	Responding teachers in participating schools	School participation before replacement	School participation after replacement	Teacher participation in participating schools	Overall participation	Weighted estimated size of teacher population
Australia	149	2 275	45.0	74.5	78.6	58.6	92 691
Austria	248	4 265	78.7	89.5	84.8	75.9	42 372
Belgium (Fl.)	197	3 473	61.8	76.1	83.8	63.7	19 580
Brazil	380	5 834	90.6	96.2	90.6	87.1	569 553
Bulgaria	199	3 796	97.5	99.0	95.4	94.5	29 166
Denmark	137	1 722	47.0	68.5	79.4	54.4	25 735
Estonia	195	3 154	94.9	98.5	96.3	94.8	7 567
Hungary	183	2 934	89.4	96.8	91.7	88.8	47 492
Ireland	142	2 227	63.5	71.0	76.4	54.2	22 039
Iceland	133	1 394	92.4	92.4	79.7	73.6	1 916
Italy	298	5 263	87.0	99.3	92.9	92.2	177 539
Korea	171	2 970	66.5	85.5	92.5	79.1	78 052
Lithuania	206	3 535	96.6	99.5	96.1	95.6	28 961
Mexico	192	3 368	95.5	96.0	87.5	84.0	248 197
Malta	58	1 142	100.0	100.0	97.2	97.2	2 618
Malaysia	217	4 248	98.6	99.1	98.1	97.2	81 958
Netherlands	39	484	11.4	26.2	63.7	16.7	28 316
Norway	156	2 458	49.2	78.4	75.7	59.4	18 990
Poland	172	3 184	85.0	86.0	96.3	82.8	120 604
Portugal	173	3 046	81.3	87.4	86.6	75.7	48 381
Slovak Republic	186	3 157	86.8	94.4	93.1	87.9	25 738
Slovenia	184	3 069	88.5	92.0	88.6	81.5	7 244
Spain	193	3 362	93.0	97.0	88.7	86.1	200 101
Turkey	193	3 224	93.5	96.5	90.9	87.7	148 304
TALIS average	4 401	73 584	79.3	88.2	88.4	78.0	2 073 114

Source: OECD.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Annex A1.3

QUALITY ASSURANCE

This annex provides an overview of the quality assurance procedures followed in conducting TALIS. Full details are provided in the *TALIS Technical Report* (forthcoming).

Quality control of translation and cultural adaptation of survey questionnaires

The TALIS survey instruments were developed by the Instrument Development Expert Group (IDEG) in English and translated into French, the other working language of the OECD. Although countries were free to choose which language should be their source, all participating countries solely used the international English version as source for translation and adaptations, adhering to the procedures described in the *TALIS Manual for National Project Managers* (MS-01-03). The detailed procedures helped ensure that the 31 national versions of the instruments were as close as possible to the international original, whilst allowing for appropriate adaptations to the national context.

Each version of the TALIS questionnaires was subject to a stringent independent translation and layout verification process prior to both the field trial (FT) and main survey (MS). Independent language experts compared the translated instruments side by side with the international version. The verified instruments with verifiers' comments and suggestions were then returned to the National Project Managers (NPM) for review and improvement of translation/adaptation. Questionnaires were then sent to the International Study Centre (ISC) for verification of the layout, before they were finalised for data collection.

Quality control in TALIS survey administration

For the TALIS main survey (MS) a standardised quality control programme of school visits was prepared by the Secretariat of the International Association for the Evaluation of Educational Achievement (IEA) in its role as the international contractor for TALIS. The programme consisted of an international and a national component; its major aim was to document the quality of the survey administration in each country and flag any issues that may influence the quality of comparability of the data. A secondary aim was to learn about the experiences with TALIS directly from the people administering it, so as to better understand how to improve procedures for subsequent cycles.

The materials and procedures developed for the TALIS survey administration were standardised across all participating countries and languages to ensure, as far as possible, that participants in each country received comparable survey materials under comparable survey conditions. The purpose of the TALIS quality control programme was to document the extent to which the standard operating procedures were followed in each country.

Quality control of data collection in TALIS was composed of three different parts:

- An international programme of school visits and visits at the national centres by International Quality Control Monitors (IQCM), organised and overseen by the IEA Secretariat.
- The national quality control programme of school visits, which was the responsibility of the National Project Manager (NPM) in each country. However, the IEA Secretariat supplied a manual template that could be adapted according to the individual country needs, which was used by 19 out of 21 countries that ran a national quality control programme.
- The online Survey Activities Questionnaire (SAQ) to be completed by NPMs after survey administration, which was administered by the ISC. NPMs were asked about their experiences with the TALIS survey administration. Outcomes of the national quality control programme were reported in the final section of the SAQ.

Field trial operations checklist

The full quality control programme was administered only for the MS. Quality control for the field trial at international level consisted of the Field Trial Operations Checklist, which outlined major steps in survey administration activities: sampling, preparing survey materials and data collection, data entry and data submission. This checklist asked NPMs to fill in the date each task was completed, and to list any comments or any problems they experienced. The completed checklists were used by the ISC to identify weak points in the survey administration and improve survey operation procedures for the MS.

International quality control monitoring programme

For the international programme, the IEA Secretariat, in co-operation with each national centre, identified and appointed one IQCM in each of the 24 participating countries, to visit 10% of the sampled TALIS schools and to interview the school co-ordinators (SC) about aspects of TALIS administration. Schools to be visited were randomly selected from a subset of schools that met specific criteria.

The results from these school visits are discussed in the *TALIS Technical Report* (forthcoming).

Survey Activities Questionnaire

The SAQ covered all aspects of survey administration. It was delivered on line to NPMs by the ISC after all data had arrived at the ISC. The intention of the questionnaire was to obtain information about activities, the extent to which procedures and guidelines were followed and to provide NPMs with an opportunity to give feedback about all aspects of survey administration, including procedures and manuals.

Survey anonymity

A major concern among teachers sampled for participating in TALIS was whether the completed questionnaires and results of the survey would be anonymous and confidential. Whilst confidentiality was guaranteed in the written introduction to the survey, many respondents sought further assurances. School Co-ordinators (SCs) and NPMs in around half of the participating countries reported teacher questions or concerns regarding the confidentiality of responses. Teachers' names were recorded on questionnaires and tracking forms for only one-third of these countries. The others relied on ID numbers, codes, or aliases to disguise teacher identities.

The importance of maintaining the confidentiality of respondents and the completed questionnaires was impressed upon both SCs and QCMs. Many SCs mentioned that the completed questionnaires were in sealed envelopes and/or did not have teachers' names on them. In the majority of countries, teachers' names were not used as identifiers on tracking/listing forms and questionnaire/cover letter labels so as to comply with the legal requirements in their country or to meet teachers' concerns.

Summary

Quality control for TALIS was performed at different levels throughout the survey. All important steps were monitored and documented by independent people or agencies. Analyses of the *School Visit Records* and the SAQ have revealed that the high quality of TALIS data reflects the fact that the standardised procedures for survey preparation as well as administration and data entry were followed by all participating countries.

Annex A1.4

TECHNICAL NOTES ON MULTIPLE REGRESSION ANALYSES

The statistics in this report represent estimates of national characteristics, beliefs and general reports of teachers based on samples of teachers rather than values that could be calculated if every teacher in every country had answered every question. Consequently, it is important to have measures of the degree of uncertainty of the estimates. In TALIS, each estimate has an associated degree of uncertainty, which is expressed through a standard error. The use of confidence intervals provides a way to make inferences about the population means and proportions in a manner that reflects the uncertainty associated with the sample estimates. From an observed sample statistic it can, under the assumption of a normal distribution, be inferred that the corresponding population result would lie within the confidence interval in 95 out of 100 replications of the measurement on different samples drawn from the same population.

Regression analysis enables the estimation of the effects of one or multiple dichotomous and continuous predictor variables on dichotomous or continuous predicted variables. This annex describes the regression methods used in the analysis presented in Chapters 4, 6 and 7.

Regression analysis was carried out for each country separately, as prior analysis showed noticeable differences in regression coefficients between countries.

The regressions were computed with population weights and Balanced Repeated Replicates (BRR) methodology with Fay's adjustment for variance estimation, given the complex sample design of TALIS. Standardised beta weights are available on line for Chapters 4 and 6 at www.oecd.org/edu/talis. Beta weights illustrate the relation between the respective predictor variable and the predicted variable for each country. The standardisation of the weights enables comparisons across measures that differ in their metric. For continuous variables both the variance of the predictor and of the predicted variable were used for standardisation; for dichotomous predictor variables only the variance of the predicted variable was used. Beta weights based on multiple regressions with continuous variables are interpreted as the change in the predicted variable relative to its variance per one standard deviation change in the predictor variable, controlling for the effects of the other variables included in the model. Beta weights for dichotomous variables are interpreted as the difference between, say males and females, in the predicted variable relative to its variance.

An effect has been considered statistically significant if the p -value is below 0.05 for all regression analyses presented in the TALIS report.

Multilevel regression analysis

In addition to the regression analysis on the individual level, described above, multilevel multiple regressions were also used in Chapters 4 and 6. In multilevel regressions the variance for each predicted variable is broken down into a teacher- and a school-level variance. Therefore, both teacher- and school-level variables can be used as predictor variables.

Random intercept models were used. These allow the intercepts to vary between schools, but not the slopes. Thus, the predicted value of the predicted variable is allowed to vary between schools, but not the strength of the association between predictor variables and predicted variable. All variables, including both background and predictor variables, were centred on the grand mean of each country, as models were computed for each country separately. Grand mean centering is a linear transformation of variables by subtracting the overall country mean from each individual score. Data files were weighted at the teacher level with the "final teacher weight". To deal with missing data listwise deletion was used.

In multilevel models effect sizes were additionally computed for school-level variables that use residual variances instead of simple variances. These take both the within-level and the between-level variance into account and therefore enable more realistic estimations of effect sizes at the school level (e.g. Schagen and Elliott, 2004). For their computation the following formulas are used

$$\text{For continuous variables:} \quad \Delta = 2 \times B \times SD_{\text{predictor}} / \sigma_e$$

$$\text{For dichotomous variables:} \quad \Delta = B / \sigma_e$$

The unstandardised beta weight is multiplied by the standard deviation of the predictor and divided by the residual variance at the individual level for continuous variables, while for dichotomous variables the unstandardised beta coefficient is only divided by the residual variance at the individual level. Based on standards from experimental research, and analogous to Cohen's *d*, $\Delta > .20$ can be interpreted as a small but significant effect size (Cohen, 1969).

To fully understand the meaning of these results, it is important to be aware of the methodology and the assumptions on which it is grounded. In the section above, some technical information is given. Even more important is the following aspect: regression analysis describes the effect of a set of conditions (independent, explanatory or predictor variables) on one or several predicted or dependent variables. Whereas the predicted variables have been treated separately, one by one, all the independent variables (conditions) included in a table have been entered jointly into the statistical procedure. Thus, the conditions are mutually controlled for. For example, the impact of gender on direct transmission beliefs that is estimated in Table 4.3 is the "net" effect after controlling for all the other teacher background variables that are mentioned, namely subject taught, experience and level of education. The effect can be interpreted as the "pure" gender effect that remains if only male and female teachers with similar background in terms of subject, experience, level of education are compared. "Net" effects tend to be smaller than "gross" effects which are calculated without controlling for other variables, but the net estimators come closer to the very meaning of "effect": the association of a factor with a predicted variable, when everything else that might have an influence is taken out of the equation.

Technical notes on the regression analysis presented in Chapter 4

The regression analysis in Chapter 4 largely followed the above. In this chapter on teachers' beliefs and teaching practices, regression analysis was carried out for each country separately. 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.

The teacher background variables included in the regression analyses in Chapter 4 are presented in Table A1.4.1.

Multiple regression analysis for the TALIS chapter on teachers' beliefs and teaching practices were mainly computed with the programme SPSS and a special macro using population weights and BRR methodology with Fay's adjustment for variance estimation, given the complex sample design of TALIS. In addition to the regression analysis at the individual level, described above, some multilevel multiple regressions were computed with the programme Mplus, version 5.1.

Technical notes on regression analysis presented in Chapter 6

In the TALIS chapter on school leadership styles, regression analysis was carried out for each country separately. The same background variables were included as control variables in each of the models. These differ slightly from Chapter 4 given the difference in focus, particularly on the school principal. After analysing the background model, the predictor variables considered to be relevant were added based on theoretical considerations. Thus, in each of the models net effects are reported instead of gross effects.

The teacher background variables included in the regression analyses in Chapter 6 are presented in Table A1.4.2.

Multiple regression analyses were mainly computed with the programme STATA® and the standard errors were adjusted using population weights and BRR methodology with Fay's adjustment for variance estimation, given the complex sample design of TALIS. To deal with missing data, listwise deletion was used for the regression analyses.

In addition to the regression analyses on individual level, described above, some multilevel multiple regressions were computed. Prerequisites for the use of multilevel models were: variables were included in the model that are conceptually school-level variables for which multilevel confirmatory factor analysis confirmed an adequate fit on the school level; and the proportion of variance at the school level for the predicted variable equals at least 5%.

Technical notes on regression analysis presented in Chapter 7

Analyses conducted in Chapter 7 differ from those in previous chapters in that they incorporate variables from each of the analytical chapters of the TALIS report. Given the greater scope of the modelling presented in this chapter, a greater number of variables were included in the estimations and missing values were imputed to ensure adequate sample size. These changes were made to reflect differences in the scope and purpose of the modelling while still ensuring that accurate measures were maintained.

For each of the two dependent variables – the index of classroom disciplinary climate and the index of teachers' reported self efficacy – a separate regression analysis was conducted. Cases missing a value in the dependent variables and the independent variables were imputed with a multiple imputation method. Estimations were run for each country and for each dependent variable. The sample sizes for the estimations of each model for each country are presented in Table A1.4.3.

The regression analysis described in Chapter 7 was performed using STATA® and SAS®. Most of the variation in the index of classroom climate is between teachers. Table A1.4.4 presents the between-school variance in classroom disciplinary climate and teachers' reported self-efficacy for each country. This is often reported as the intra-class correlation coefficient. Among 23 countries, the minimum *rho* (intraclass correlation coefficient) is 4%, the maximum is 19% and the median is 8%. Similarly, most of the variation in the index of teachers' self-efficacy is between teachers. Among 23 countries, the minimum *rho* (intraclass correlation coefficient) is 0%, the maximum is 11% and the median is 4%. Since the between-schools variance is very small in the index of classroom climate and the index of self-efficacy, it was decided to apply an ordinary least squares regression instead of multilevel regression analysis. This also facilitated the multiple imputation approach. Within each country, an ordinary least squares regression analysis was carried out with a set of independent variables. The index of teachers' self-efficacy (SELFEF) and the index of classroom disciplinary climate (CCLIMATE) served as the dependent variables separately.

Selecting and recoding variables

Based on both theoretical considerations and previous empirical findings, several teacher- and school-level explanatory variables were selected from Chapters 2-6 in order to examine their association with teachers' self-efficacy as well as classroom disciplinary climate. The variables were grouped into six thematic blocs:

- Bloc 1: Teachers' characteristics (mainly from Chapter 2).
- Bloc 2: Teachers' professional development (mainly from Chapter 3).
- Bloc 3: Teachers' beliefs and practices (mainly from Chapter 4).
- Bloc 4: Teachers' appraisal and feedback (mainly from Chapter 5).
- Bloc 5: School leadership (mainly from Chapter 6).
- Bloc 6: School autonomy and resources (Chapter 2).

In the selection of independent variables, indices were preferred over single-item statements whenever they were available since more information could be combined in one index and the problem of measurement error is less severe for indices than for single items (see the *TALIS Technical Report* [forthcoming] for details of indices).

Demographic and socio-economic background variables, which are less likely to be policy amenable for schools and educational systems, were selected on the basis of previous empirical findings. These background variables were included in the net models (that is, models accounting for background factors) in order to examine the net effects of the teacher- and school-level variables. The background variables used in the net model are detailed in Table A1.4.5 in the categories socio-economic background characteristics and teacher characteristics.

The selected independent variables were re-coded where necessary. The description of the independent variables is presented in Table A1.4.5. A detailed SAS® syntax for recoding variables is available on line at www.oecd.org/edu/talis.

Missing data

TALIS data include responses from both teachers and school principals. While the focus of the analysis is on teachers, missing data can be a problem if either teachers or school principals have not responded to particular items or questions included in the models presented in Chapter 7. Missing data for a variable can have an adverse effect on the results of the estimations if non-respondents have particular characteristics or circumstances that are different from those for whom there are responses in the data set and if these differences are important for the variable in the analysis. In that case, this can affect both the variance and bias in the estimations.

The assumption made regarding these data is that the missing data are “missing at random”. This is not as strong an assumption as “missing completely at random” but it still makes assumptions about the pattern of the missing and actual data that is difficult to analyse. The key assumption for cases of “missing completely at random” is that the pattern of missing data is not systematically different from the non-missing data (Little and Rubin, 1987). This may not hold, for example, if teachers who do not respond to questions about their teaching practices have particular teaching practices or if school principals who do not respond to questions about school evaluations are those who received a particularly negative evaluation.

“Missing at random” also assumes that the missing values can be predicted from other variables in the data set and therefore justifies imputing the missing data. In the Chapter 7 modelling, missing data need to be imputed in order to include the maximum number of cases in the analysis. As more than 50 variables were included in the models, a listwise deletion of all observations that have a missing value for at least one variable would have significantly reduced the sample. The proportion of missing cases for each variable by country is presented in Table A1.4.6. A multiple imputation method was therefore used based on the assumption of “missing at random” to circumvent the problem of missing data (Schafer and Graham, 2002).

Multiple imputation refers to the procedure of replacing each missing value by a vector of $D \geq 2$ imputed values. The D values are ordered in the sense that D completed data sets can be created from the vectors of imputations; replacing each missing value by the first component in its vector of imputations creates the first completed data set, replacing each missing value by the second component in its vector creates the second completed data set, and so on. Standard complete-data methods are used to analyse each data set. When the D sets of imputations are repeated random draws from the predictive distribution of the missing values under a particular model for nonresponse, the D complete-data inferences can be combined to form one inference that properly reflects uncertainty due to nonresponse under that model. (Little and Rubin, 2002, p, 85)

The advantage of multiple imputation over single imputation methods (e.g. replacing missing values with the mean or mode of the non-missing values for that variable) is that multiple imputation can take randomness into account in the imputations and incorporate uncertainty when estimating regression coefficients and standard errors.

There are three steps in conducting an analysis with multiple imputation: *i*) create multiply imputed data sets; *ii*) analyse complete data using standard procedures; and *iii*) combine complete data results to obtain the final estimates. The analysis in Chapter 7 followed the procedures below:

- i*) Five imputed data sets were prepared using STATA[®]-ice-procedure.¹ This procedure imputes missing values in the set of variables by using switching regression, an iterative multivariable regression technique (Royston, 2004). The variables used in the multiple imputation model included two dependent variables and all the independent variables listed in Table A1.4.5.²
- ii*) A linear regression analysis was conducted with 100 replicates for each of these 5 data sets in SAS[®].
- iii*) The regression results from 5 independent data sets were combined in SAS[®] to compute the final estimates based on the following formulae:

Final estimate for regression coefficients (e.g. $\bar{\beta}$)

$$\bar{\beta} = (\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5) / 5$$

Where β_1 is the regression coefficient from the first data set;

β_2 is the regression coefficient from the second data set;

β_3 is the regression coefficient from the third data set;

β_4 is the regression coefficient from the fourth data set; and

β_5 is the regression coefficient from the fifth data set.

Final estimate for standard error (e.g. $\sigma_{(error)}$)

$$\sigma_{(w)}^2 = (\sigma_{(\beta_1)}^2 + \sigma_{(\beta_2)}^2 + \sigma_{(\beta_3)}^2 + \sigma_{(\beta_4)}^2 + \sigma_{(\beta_5)}^2) / 5$$

$$\sigma_{(b)}^2 = \frac{1}{4} \sum_{i=1}^5 (\beta_i - \bar{\beta})^2$$

$$\sigma_{(error)} = \sqrt{\sigma_{(w)}^2 + (1 + \frac{1}{5}) \sigma_{(b)}^2}$$

The STATA[®] syntax for the first step and the SAS[®] syntax for the second and third steps can be found at www.oecd.org/edu/TALIS.

Teacher weights

The teacher final weights (TCHWGT) as well as the 100 replicates (TRWGT1 to TRWGT100) were used to conduct the regression analysis.

Modelling strategy

This section outlines the modelling strategy used in the regression analysis of teacher- and school-level variables related to two dependent variables—the index of teachers' self-efficacy and the index of classroom disciplinary climate. Modelling for the index of teachers' self-efficacy and modelling for the index of classroom disciplinary climate were conducted independently, but followed exactly the same procedure.

A two-step procedure was applied following the model specification suggested by Raudenbush and Bryk (2002), as well as by Snijders and Bosker (1999):

- Step 1: the effects of the variables of each of the six blocs were examined in turn, estimating separate models for each bloc.
- Step 2: for each of the separate models run in the first step, only the significant variables were selected for the final model. Throughout the regression analysis, an effect is considered statistically significant if the p-value is below 0.05.

The impact of selected teacher and school-level variables on the dependent variables was analysed before and after accounting for the demographic and socio-economic background variables. A gross model is defined as the model without accounting for the background variables, while a net model is defined as the model accounting for the background variables. In the net Bloc 1 model, socio-economic background variables listed at the top of Table A1.4.5 were introduced in addition to the independent variables listed as Bloc 1. In the net Bloc 2 to Bloc 6 models, socio-economic background variables and Bloc 1 variables listed in Table A1.4.5 were introduced in addition to the variables in each bloc.

In the end, each country has four different final models: two models for teachers' self-efficacy (gross and net) and two for classroom disciplinary climate (gross and net). The summary of these four models is presented in Box A1.4.1. The set of independent variables in the final models differ among the countries.

Box A1.4.1 Summary of four final models per country				
Dependent variables	With/without accounting for the background variables	Step 1	Step 2	Final model
Index of teachers' self-efficacy	Without background variables	Bloc-by-bloc analysis (six separate models: Bloc 1 to 6 models)	⇒ Select only significant variables	⇒ Final gross self-efficacy model
	With background variables	Bloc-by-bloc analysis (six separate models: Bloc 1 to 6 models) with background variables	⇒ Select only significant variables with background variables	⇒ Final net self-efficacy model
Index of classroom disciplinary climate	Without background variables	Bloc-by-bloc analysis (six separate models: Bloc 1 to 6 models)	⇒ Select only significant variables	⇒ Final gross classroom disciplinary climate model
	With background variables	Bloc-by-bloc analysis (six separate models: Bloc 1 to 6 models) with background variables	⇒ Select only significant variables with background variables	⇒ Final net classroom disciplinary climate model

NOTES

1. Stata[®]-ice-procedure was used instead of SAS[®] for creating multiple imputed data sets as the SAS[®] PROC multiple imputation procedure does not allow the use of fractional weights.
2. Four school-level variables (e.g. BTG39A, BTG40A, BTG40C) were created by aggregating the teacher-level variables at the school level before imputing the data.

Table A14.1 List of independent variables in the Chapter 4 regression analyses

Variable	Level	Based on variable in data set
<i>Teacher background</i>		
Teacher's gender (1=female; 0=male)	Teacher	BTG01
Subject taught: Mathematics/science (0=other, 1=mathematics or science)	Teacher	BTG34
Subject taught: Humanities (0=other, 1=reading, social studies, foreign languages or religion)	Teacher	BTG34
Number of years of teaching ¹	Teacher	BTG09
Teacher's education: high (1=ISCED5A masters or higher; 0=ISCED5A bachelor or below)	Teacher	BTG07
<i>Classroom background</i>		
Class size	Teacher	BTG38
Average ability (compared to other students in the same year/level)	Teacher	BTG39B
Percentage of students with a mother tongue different from the language of instruction	Teacher	BTG40A
<i>School background</i>		
Public school	School	PUBLIC
School location: (1= city, 0= other)	School	BCG10
School size (number of students)	School	BCG12
Percentage of students in school with at least one parent having completed an ISCED3 qualification or higher	School	BTG40B
Ability of students in class compared to the average at the same grade level	School	BTG39B
<i>Professional development</i>		
Number of days of professional development	Teacher	BTG12
Type of professional development: workshops/courses (0=no, 1=yes)	Teacher	BTG11A1
Type of professional development: Networks (0=no, 1=yes)	Teacher	BTG11E1
School providing mentor for new teachers (1=yes; 0=no)	School	BCG35
<i>Teachers' beliefs, attitudes and practices</i>		
Index of classroom climate	Teacher	CCLIMATE
Index of teacher-student relations	Teacher	TSRELAT
Index of self-efficacy	Teacher	SELFEF
Index of classroom teaching practice: structuring	Teacher	TPSTRUC
Index of classroom teaching practice: student-oriented	Teacher	TPSTUD
Index of classroom teaching practice: enhanced activities	Teacher	TPACTIV
Index of direct transmission beliefs about instruction	Teacher	TBTRAD
Index of constructivist beliefs about instruction	Teacher	TBCONS
Index of exchange and co-ordination for teaching	Teacher	TCEXCHAN
Index of professional collaboration	Teacher	TCCOLLAB
1. Continuous variables were z-standardised. Source: OECD, <i>TALIS Database</i> . StatLink  http://dx.doi.org/10.1787/608033612455		

Table A14.2 List of independent variables in the Chapter 6 regression analyses

Variable	Level	Based on variable in data set
Average class size	Teacher	BTG38
Important aspect of teacher appraisal: innovative teaching practices (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22H
Important aspect of teacher appraisal: professional development the teacher has undertaken (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22J
Important aspect of teacher appraisal: retention and pass rates of students (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22B
Important aspect of teacher appraisal: student test scores (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22A
Index of classroom climate	Teacher	CCLIMATE
Index of constructivist beliefs about instruction	Teacher	TBCONS
Index of exchange and co-ordination for teaching	Teacher	TCEXCHAN
Index of professional collaboration	Teacher	TCCOLLAB
Index of self-efficacy	Teacher	SELFEF
Index of teacher-student relations	Teacher	TSRELAT
Number of days of professional development	Teacher	BTG12
Number of years of teaching (categorised into 0-5 years and 6-15 years)	Teacher	BTG09
Teacher job satisfaction	Teacher	BCG31A
Teacher wanted more professional development	Teacher	BTG19
Teacher's contract status (1 = permanent; 0 = fixed-term contract)	Teacher	BTG06
Teacher's education: high (1 = ISCED 5A masters or higher; 0 = ISCED 5A bachelor or below)	Teacher	BTG07
Teacher's employment status (1 = full-time; 0 = part-time)	Teacher	BTG03
Teacher's gender (1 = female; 0 = male)	Teacher	BTG01
Time in class spent on actual teaching and learning	Teacher	BTG41C
Works in another school (1 = yes, 0 = no)	Teacher	BTG04
Action taken following identification of a weakness in teacher appraisal: Establish a development plan	School	BCC28C
Action taken following identification of a weakness in teacher appraisal: Impose material sanctions	School	BCC28D
Action taken following identification of a weakness in teacher appraisal: Report to another body to take action	School	BCC28E
Important aspect of school evaluation: innovative teaching practices (1 = considered of high importance; 0 = other)	School	BCC19H
Important aspect of school evaluation: student test scores (1 = considered of high importance; 0 = other)	School	BCC19A
Important aspect of school evaluation: teacher professional development (1 = considered of high importance; 0 = other)	School	BCC19J
Index of a lack of personnel (teachers, technicians, instructional support personnel, other support personnel)	School	LACKPERS
Index of school autonomy in hiring teachers, determining salaries	School	AUTHIRE
Index of school leadership: Administrative leadership	School	ADMINL
Index of school leadership: Instructional leadership	School	INSTRL
Influence of school evaluation: Appraisal of individual teachers (1 = high influence; 0 = other)	School	BCC20D
Influence of school evaluation: Appraisal of the school management (1 = high influence; 0 = other)	School	BCC20C
Number of years as school principal (categorised into 0-5 years and 6-15 years)	School	BCC05
Objective of teachers' appraisal: Inform administrative body	School	BCC26B
School autonomy (1 = school principal has responsibility for all areas, 0 = other)	School	BCC31
School being public (1 = public; 0 = private)	School	PUBLIC
School location (two variables: one = village, one = small town)	School	BCC10
School principal in another school (1 = yes, 0 = no)	School	BCC03
School principal's education: high (1 = ISCED 5A masters or higher; 0=ISCED 5A bachelor or below)	School	BCC04
School principal's gender (1 = female, 0 = male)	School	BCC01
Self-evaluation report (two variables: one = if it had been conducted, one = more than twice in 5 years)	School	BCC18A

Source: OECD, *TALIS Database*.
StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A1.4.3 Sample sizes for the Chapter 7 regression analyses

	Number of teachers
Australia	2 275
Austria	4 285
Belgium (Fl.)	3 511
Brazil	5 867
Bulgaria	3 817
Denmark	1 740
Estonia	3 155
Hungary	2 938
Iceland	1 409
Ireland	2 227
Italy	5 382
Korea	2 975
Lithuania	3 609
Malaysia	4 315
Malta	1 145
Mexico	3 409
Norway	2 458
Poland	3 209
Portugal	3 046
Slovak Republic	3 164
Slovenia	3 071
Spain	3 362
Turkey	3 224

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>**Table A1.4.4** Between-school variance in classroom disciplinary climate and teachers' reported self-efficacy for each country

	Total variance between schools expressed as a percentage of the total variance within country ¹	
	Classroom disciplinary climate (%)	Teacher self-efficacy (%)
Australia	9.31	2.59
Austria	6.52	2.25
Belgium (Fl.)	5.89	2.59
Brazil	18.83	11.48
Bulgaria	11.35	4.36
Denmark	11.13	3.83
Estonia	4.48	1.84
Hungary	10.42	4.59
Iceland	6.88	0.16
Ireland	11.93	3.64
Italy	6.60	3.93
Korea	7.18	4.42
Lithuania	5.70	4.89
Malaysia	12.74	10.10
Malta	11.71	5.28
Mexico	6.01	4.64
Norway	10.33	4.48
Poland	6.32	3.69
Portugal	8.63	2.51
Slovak Republic	5.97	2.99
Slovenia	6.64	2.45
Spain	7.53	3.21
Turkey	11.41	6.08
TALIS Average	8.85	4.17

1. This index is often referred to as the intra-class correlation (ρ).

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A1.4.5 List of independent variables in the Chapter 7 regression analyses

Blocs of independent variables	Variable name	Level	Based on variable in data set
Socio-economic background characteristics	Ability of students in class lower than the average at the same grade level (1 = lower; 0 = average or higher)	Teacher	BTG39B
	Ability of students in class higher than the average at the same grade level (1 = higher; 0 = average or lower)	Teacher	BTG39B
	Percentage of students in class speaking a different language than the language of instruction	Teacher	BTG40A
	Percentage of students in class with at least one parents completed ISCED5 qualification or higher	Teacher	BTG40C
	Percentage of students in school speaking a different language than the language of instruction	School	BTG40A
	Percentage of students in school with at least one parent having completed ISCED5 qualification or higher	School	BTG40C
	Ability of students in school lower than the average at the same grade level (1 = lower; 0 = average or higher)	School	BTG39B
Bloc 1: Teacher characteristics	Ability of students in school higher than the average at the same grade level (1 = higher; 0 = average or lower)	School	BTG39B
	Teacher's gender (1 = female; 0 = male)	Teacher	BTG01
	Teacher's employment status (1 = full-time; 0 = part-time)	Teacher	BTG03
	Teacher's contract status (1 = permanent; 0 = fixed-term contract)	Teacher	BTG06
	Teacher's education: high (1 = ISCED5A masters or higher; 0 = ISCED5A bachelor or below)	Teacher	BTG07
Bloc 2: Teacher professional development	Number of years of teaching	Teacher	BTG09
	Number of days of professional development	Teacher	BTG12
	School providing induction process for teachers (1 = yes; 0 = no)	School	BCG33
Bloc 3: Teacher beliefs and practices	School providing mentor for new teachers (1 = yes; 0 = no)	School	BCG35
	Index of teacher-student relations	Teacher	TSRELAT
	Index of classroom teaching practice: structuring	Teacher	TPSTRUC
	Index of classroom teaching practice: student-oriented	Teacher	TPSTUD
	Index of classroom teaching practice: enhanced activities	Teacher	TPACTIV
	Index of direct transmission beliefs about instruction	Teacher	TBTRAD
	Index of constructivist beliefs about instruction	Teacher	TBCONS
Bloc 4: Teacher appraisal and feedback	Index of exchange and co-ordination for teaching	Teacher	TCEXCHAN
	Index of professional collaboration	Teacher	TCCOLLAB
	Never received appraisal or feedback from any source (1 = true; 0 = false)	Teacher	NEVERAF
	School evaluation within 5 years (1 = never; 0 = at least once)	School	NEVEREVAL
	Effective teachers receive more monetary or non-monetary rewards in the school. It is a dichotomous variable (1 = strongly agree or agree, 0 = strongly disagree or disagree).	Teacher	BTG28F
	Important aspect of teacher appraisal: student test scores (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22A
	Important aspect of teacher appraisal: innovative teaching practices (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22H
	Important aspect of teacher appraisal: professional development the teacher has undertaken (1 = considered of moderate or high importance; 0 = others)	Teacher	BTG22J
	Appraisal impact: a change in salary (1 = moderate or large change; 0 = others)	Teacher	BTG23A
	Appraisal impact: opportunities for professional development activities (1 = moderate or large change; 0 = others)	Teacher	BTG23C
	Appraisal impact: public recognition from the principal and/or colleagues (1 = moderate or large change; 0 = others)	Teacher	BTG23E
	Appraisal impact: changes in the teacher's work responsibilities that make the job more attractive (1 = moderate or large change; 0 = others)	Teacher	BTG23F
Bloc 5: School leadership	School evaluation published (1 = yes; 0 = no)	School	BCG21
	Important aspect for school evaluations: student test scores (1 = considered of moderate or high importance; 0 = others)	School	BCG19A
	Index of management-school goals	School	FCSGCD
	Index of instructional management	School	PROIIPD
	Index of direct supervision of instruction in the school	School	SUPINSTR
Bloc 6: School autonomy and resources	Index of accountable management	School	ACCROLE
	Index of bureaucratic management	School	BURRULEF
	Index of school climate: student delinquency	School	SCDELINQ
	Index of school climate: teachers' working morale	School	SCTMORAL
	Index of a lack of personnel (teachers, technicians, instructional support personnel, other support personnel)	School	LACKPERS
	Index of shortage of materials (instructional materials, computers, equipment, library materials)	School	LACKMAT
	Index of school autonomy in hiring teachers, determining salaries	School	AUTHIRE
	Index of school autonomy in budgeting (formulating and allocating the school budget)	School	AUTBUDGT
	Index of school autonomy in student policy and textbooks	School	AUTSTUDP
	Index of school autonomy in curriculum (courses offered, course content)	School	AUTCURR
Average class size	School	BTG38	
School being public (1 = public; 0 = private)	School	PUBLIC	

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A14.6 The percentage of missing cases for each country for each variable included in the Chapter 7 regression analyses
(1/5)

		Climate	Self-efficacy	BTG39B	BTG39B	BTG40A
		Index of classroom climate	Index of Teacher (%)s' reported self-efficacy	Ability of students in class lower than the average at the same grade level (1=lower; 0=average or higher)	Ability of students in class higher than the average at the same grade level (1=higher; 0=average or lower)	Percentage of students in class speaking a different language than the language of instruction
	N	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)
Australia	2275	6.94	3.65	8.81	8.81	6.95
Austria	4285	6.14	3.48	8.96	8.96	6.39
Belgium (Fl.)	3511	3.87	2.45	7.27	7.27	4.25
Brazil	5867	4.61	2.02	5.90	5.90	8.13
Bulgaria	3817	5.00	1.64	8.08	8.08	10.17
Denmark	1740	4.65	3.64	7.43	7.43	5.11
Estonia	3155	1.96	0.84	4.88	4.88	6.18
Hungary	2938	4.17	1.64	3.28	3.28	4.73
Iceland	1409	14.93	9.83	19.01	19.01	14.83
Ireland	2227	2.39	0.76	5.07	5.07	3.11
Italy	5382	7.66	4.22	10.20	10.20	11.65
Korea	2975	2.02	1.85	3.75	3.75	3.93
Lithuania	3609	6.42	3.40	13.28	13.28	16.45
Malaysia	4315	2.62	2.24	2.53	2.53	2.82
Malta	1145	2.21	2.10	4.10	4.10	6.03
Mexico	3409	3.48	1.76	4.32	4.32	5.18
Norway	2458	6.73	4.94	13.65	13.65	7.12
Poland	3209	3.33	2.06	7.24	7.24	18.18
Portugal	3046	3.23	1.44	4.29	4.29	4.31
Slovak Republic	3164	3.18	1.32	8.39	8.39	6.87
Slovenia	3071	4.00	1.56	5.85	5.85	9.60
Spain	3362	2.81	1.08	5.01	5.01	5.50
Turkey	3224	3.49	3.37	4.73	4.73	100.00

	BTG40C	BTG40A	BTG40C	BTG39B	BTG39B	BTG01
	Percentage of students in class with at least one parents having completed ISCED5 or higher	Percentage of students in school speaking a different language than the language of instruction	Percentage of students in school with at least one parent having completed ISCED5 or higher	Ability of students in class lower than the average at the same grade level (1=lower; 0=average or higher)	Ability of students in class higher than the average at the same grade level (1=higher; 0=average or lower)	Teacher (%)s' gender (1=female; 0=male)
	Teacher (%)	School (%)	School (%)	School (%)	School (%)	Teacher (%)
Australia	11.26	0.00	0.00	0.00	0.00	0.00
Austria	11.57	0.00	0.00	0.00	0.00	0.42
Belgium (Fl.)	10.90	0.00	0.00	0.00	0.00	0.79
Brazil	8.49	0.00	0.00	0.00	0.00	0.53
Bulgaria	14.01	0.00	0.00	0.00	0.00	0.38
Denmark	8.25	0.00	0.00	0.00	0.00	0.76
Estonia	14.89	0.00	0.00	0.00	0.00	0.07
Hungary	8.06	0.00	0.00	0.00	0.00	0.47
Iceland	30.17	0.00	0.00	0.00	0.00	0.83
Ireland	12.37	0.00	0.00	0.00	0.00	0.00
Italy	17.28	0.00	0.00	0.00	0.00	2.11
Korea	3.69	0.00	0.00	0.00	0.00	0.15
Lithuania	13.45	0.00	0.00	0.00	0.00	2.08
Malaysia	3.18	0.00	0.00	0.00	0.00	1.65
Malta	13.68	0.00	0.00	0.00	0.00	0.36
Mexico	5.67	0.00	0.00	0.00	0.00	0.89
Norway	20.00	0.00	0.00	0.00	0.00	0.00
Poland	16.21	0.00	0.00	0.00	0.00	0.80
Portugal	6.64	0.00	0.00	0.00	0.00	0.00
Slovak Republic	7.90	0.00	0.00	0.00	0.00	0.15
Slovenia	22.53	0.00	0.00	0.00	0.00	0.08
Spain	18.43	0.00	0.00	0.00	0.00	0.00
Turkey	5.25	100.00	0.00	0.00	0.00	0.00

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A14.6 The percentage of missing cases for each country for each variable included in the Chapter 7 regression analyses
(2/5)

	BTG03	BTG06	BTG07	BTG09	BTG12	BCG33
	Teacher's employment status (1=full-time; 0=part-time)	Teacher's contract status (1=permanent; 0=fixed-term contract)	Teacher's education: high [1=ISCED5A masters or higher; 0=(No suggestion) bachelor or below]	Number of years of teaching	Number of days of professional development	School providing induction process for teachers (1=yes; 0=no)
	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	School (%)
Australia	0.43	1.67	0.53	1.22	2.01	5.30
Austria	0.81	3.84	1.99	1.82	3.91	4.71
Belgium (Fl.)	1.33	3.18	1.53	1.41	3.40	9.74
Brazil	4.84	3.91	3.79	1.35	7.69	4.18
Bulgaria	1.07	1.24	1.62	0.60	9.40	0.66
Denmark	0.97	1.82	1.11	1.32	4.73	15.36
Estonia	0.53	3.21	1.03	1.19	2.58	0.84
Hungary	0.93	1.43	1.29	0.79	7.55	0.84
Iceland	1.35	3.27	1.47	3.16	8.70	34.66
Ireland	0.39	3.60	0.27	0.54	3.15	18.27
Italy	3.55	3.52	4.21	3.08	9.76	4.31
Korea	1.56	1.57	0.47	0.59	1.57	12.19
Lithuania	3.47	3.64	3.79	3.29	4.66	2.42
Malaysia	2.04	2.13	2.01	2.19	2.66	1.18
Malta	1.23	2.15	1.49	0.36	5.23	5.77
Mexico	2.45	3.27	2.68	2.55	6.46	3.60
Norway	0.41	1.68	0.54	1.91	3.55	4.03
Poland	1.15	2.41	1.43	1.38	3.84	1.93
Portugal	0.45	1.01	0.22	0.21	5.24	9.20
Slovak Republic	0.92	1.82	0.87	0.96	3.17	2.24
Slovenia	0.70	2.62	0.77	0.74	6.41	4.38
Spain	0.56	2.89	0.76	0.64	17.63	5.81
Turkey	2.59	3.50	0.58	1.01	5.50	3.97

	BCG35	TSRELAT	TPSTRUC	TPSTUD	TPACTIV	TBTRAD
	School providing mentor for new teachers (1=yes; 0=no)	Index of teacher-student relations	Index of classroom teaching practice: structuring	Index of classroom teaching practice: student-oriented	Index of classroom teaching practice: enhanced activities	Index of direct transmission beliefs about instruction
	School (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)
Australia	6.12	3.70	7.41	7.41	7.41	2.93
Austria	3.64	3.60	6.28	6.28	6.28	3.20
Belgium (Fl.)	9.36	2.46	4.06	4.06	4.06	2.96
Brazil	4.01	1.97	4.73	4.73	4.73	1.93
Bulgaria	1.46	1.56	5.17	5.17	5.17	1.28
Denmark	17.86	3.64	4.84	4.84	4.84	3.65
Estonia	1.50	0.99	2.29	2.29	2.29	1.11
Hungary	0.84	1.52	2.48	2.48	2.48	1.24
Iceland	34.66	9.66	16.70	16.70	16.70	10.21
Ireland	16.23	0.80	2.28	2.28	2.28	0.73
Italy	3.25	4.45	7.06	7.06	7.06	4.68
Korea	14.56	1.85	2.14	2.14	2.14	1.52
Lithuania	3.59	3.30	6.60	6.60	6.60	3.48
Malaysia	0.75	2.20	2.44	2.44	2.44	2.06
Malta	0.00	2.14	2.57	2.57	2.57	2.35
Mexico	4.71	1.68	3.39	3.39	3.39	1.45
Norway	5.36	4.84	7.60	7.60	7.60	5.06
Poland	1.47	2.10	3.20	3.20	3.20	1.88
Portugal	11.08	1.40	3.12	3.12	3.12	1.24
Slovak Republic	2.05	1.35	3.34	3.34	3.34	1.32
Slovenia	4.40	1.53	3.60	3.60	3.60	1.68
Spain	5.81	1.08	3.01	3.01	3.01	1.01
Turkey	6.25	3.36	3.85	3.85	3.85	2.98

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A14.6 The percentage of missing cases for each country for each variable included in the Chapter 7 regression analyses
(3/5)

	TBCONS	TCEXCHAN	TCCOLLAB	NEVERAF	NEVEREVAL	BTG28F
	Index of constructivist beliefs about instruction	Index of exchange and co-ordination for teaching	Index of professional collaboration	Never received appraisal or feedback from any source (1=true; 0=false)	School evaluation within 5 years (1=never; 0=at least once)	Effective teachers receive more monetary or non-monetary rewards in the school. It is a dichotomous variable (1=strongly agree or agree; 0=strongly disagree or disagree).
	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	School (%)	Teacher (%)
Australia	2.93	3.33	3.33	2.83	5.51	4.76
Austria	3.20	3.66	3.66	3.56	5.90	7.20
Belgium (Fl.)	2.96	2.56	2.56	2.76	8.91	4.71
Brazil	1.93	2.05	2.05	5.63	4.52	4.75
Bulgaria	1.28	1.37	1.37	2.68	2.40	5.76
Denmark	3.65	3.95	3.95	3.67	18.65	4.91
Estonia	1.11	1.24	1.24	2.04	1.49	3.58
Hungary	1.24	1.54	1.54	2.21	1.28	7.03
Iceland	10.21	10.55	10.55	7.65	32.88	14.40
Ireland	0.73	0.69	0.69	2.84	19.44	4.37
Italy	4.68	4.77	4.77	10.22	6.36	14.67
Korea	1.52	1.67	1.67	1.69	13.97	1.56
Lithuania	3.48	3.27	3.27	3.90	3.53	4.72
Malaysia	2.06	2.15	2.15	2.04	1.06	2.66
Malta	2.35	2.40	2.40	2.35	1.84	6.19
Mexico	1.45	1.61	1.61	2.89	3.01	2.86
Norway	5.06	5.04	5.04	5.23	4.89	7.49
Poland	1.88	1.99	1.99	3.44	0.51	5.21
Portugal	1.24	1.21	1.21	2.17	8.95	4.95
Slovak Republic	1.32	1.41	1.41	1.48	1.85	3.93
Slovenia	1.68	1.54	1.54	2.35	6.02	6.58
Spain	1.01	0.93	0.93	3.43	7.45	6.06
Turkey	2.98	3.04	3.04	3.08	3.54	3.88

	BTG22A	BTG22H	BTG22J	BTG23A	BTG23C	BTG23E
	Important aspect of teacher appraisal: student test scores (1=considered of moderate or high importance; 0=others)	Important aspect of teacher appraisal: innovative teaching practices (1=considered of moderate or high importance; 0=others)	Important aspect of teacher appraisal: professional development the teacher has undertaken (1=considered of moderate or high importance; 0=others)	Appraisal impact: a change in salary (1=moderate or large change; 0=others)	Appraisal impact: opportunities for professional development activities (1=moderate or large change; 0=others)	Appraisal impact: public recognition from the principal and/or colleagues (1=moderate or large change; 0=others)
	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)	Teacher (%)
Australia	25.29	19.54	21.58	3.47	4.17	3.73
Austria	33.27	20.34	25.57	5.75	6.39	6.15
Belgium (Fl.)	31.44	23.61	22.95	3.78	4.12	4.47
Brazil	15.87	11.49	12.81	4.39	5.21	4.72
Bulgaria	13.37	18.14	12.63	5.70	6.62	6.34
Denmark	23.95	29.29	20.96	5.16	5.52	5.59
Estonia	27.40	24.45	21.19	3.79	4.97	4.18
Hungary	40.46	26.67	29.27	4.59	6.38	5.58
Iceland	36.73	34.64	37.14	9.06	10.56	10.41
Ireland	24.66	23.93	26.86	3.21	3.98	3.80
Italy	21.25	16.09	16.03	8.61	10.00	8.98
Korea	11.89	8.42	9.41	2.46	2.70	2.70
Lithuania	33.57	21.11	20.57	5.23	6.76	5.87
Malaysia	3.74	2.76	4.01	2.42	2.61	2.46
Malta	24.45	15.90	25.61	3.84	3.98	4.41
Mexico	23.64	14.16	16.12	3.06	3.75	3.32
Norway	35.84	39.22	33.36	7.50	7.90	8.39
Poland	28.96	16.68	13.39	5.58	6.53	5.12
Portugal	23.44	20.52	19.57	3.29	3.37	3.36
Slovak Republic	18.84	15.26	20.50	2.25	3.33	3.53
Slovenia	27.38	20.75	25.82	4.85	6.03	5.43
Spain	16.43	21.89	20.42	3.87	4.20	4.21
Turkey	16.60	13.51	16.50	5.04	5.51	5.82

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A14.6 The percentage of missing cases for each country for each variable included in the Chapter 7 regression analyses
(4/5)

	BTG23F	BCG21	BCG19A	FCSGCD	PROIIPD	SUPINSTR
	Appraisal impact: changes in the teacher's work responsibilities that make the job more attractive (1=moderate or large change; 0=others)	School evaluation published (1=yes; 0=no)	Important aspect for school evaluations: student test scores (1=considered of moderate or high importance; 0=others)	Index of framing and communicating the school goals and curricular development	Index of promoting instructional improvements and professional development	Index of supervision of instruction in the school
	Teacher (%)	School (%)	School (%)	School (%)	School (%)	School (%)
Australia	3.85	6.03	7.66	3.88	3.88	3.88
Austria	6.20	6.77	15.25	2.79	2.79	2.79
Belgium (Fl.)	4.17	8.91	12.39	8.08	8.40	8.08
Brazil	4.82	5.15	8.56	1.71	1.75	1.75
Bulgaria	6.57	3.07	5.00	0.43	0.43	0.43
Denmark	5.59	20.64	19.15	14.83	15.26	15.26
Estonia	4.91	2.80	5.58	0.55	0.55	0.55
Hungary	6.04	2.73	5.90	0.00	0.37	0.37
Iceland	9.97	34.43	44.72	28.94	28.94	28.94
Ireland	3.58	17.42	19.95	15.56	18.16	18.16
Italy	9.31	10.65	12.00	2.88	2.88	2.88
Korea	2.87	15.56	17.67	11.49	11.49	11.49
Lithuania	6.32	6.29	11.24	1.04	1.04	1.04
Malaysia	2.48	1.06	1.06	0.43	0.43	0.43
Malta	4.10	3.92	5.22	0.00	0.00	0.00
Mexico	2.91	3.93	5.58	1.92	3.24	3.24
Norway	8.18	7.92	11.70	2.78	2.78	2.78
Poland	5.45	1.16	7.25	0.72	0.95	0.95
Portugal	3.25	7.56	13.73	7.56	7.56	7.56
Slovak Republic	2.93	2.09	3.52	1.85	1.85	1.85
Slovenia	5.84	6.71	8.60	3.13	3.13	3.13
Spain	4.00	8.56	15.67	5.29	5.29	5.29
Turkey	5.13	4.15	8.53	3.42	3.82	3.82

	ACCROLE	BURRULEF	SCDELINQ	SCTMORAL	LACKPERS	LACKMAT
	Index of accountability role of the principal	Index of bureaucratic rule-following	Index of school climate: student delinquency	Index of school climate: teachers' working morale	Index of a lack of personnel (teachers, technicians, instructional support personnel, other support personnel)	Index of shortage of materials (instructional materials, computers, equipment, library materials)
	School (%)	School (%)	School (%)	School (%)	School (%)	School (%)
Australia	4.59	4.59	5.30	5.30	8.68	8.08
Austria	2.79	2.79	3.23	3.23	9.42	8.15
Belgium (Fl.)	8.64	8.64	9.84	9.84	13.32	10.50
Brazil	2.09	2.76	2.35	2.35	6.74	3.38
Bulgaria	0.43	0.43	1.06	1.06	7.30	2.18
Denmark	14.83	14.83	15.36	15.36	17.05	16.01
Estonia	0.55	0.55	0.55	0.55	2.30	1.54
Hungary	0.37	0.37	0.00	0.00	2.08	1.54
Iceland	29.44	30.23	34.66	34.66	34.66	35.11
Ireland	15.56	15.56	15.56	15.56	18.61	16.23
Italy	2.88	2.88	2.88	2.88	8.43	4.52
Korea	12.20	12.20	12.07	12.07	14.51	15.05
Lithuania	100.00	1.04	1.04	1.04	7.40	2.06
Malaysia	0.86	0.86	0.43	0.43	1.63	2.52
Malta	0.00	0.00	0.00	0.00	1.36	1.36
Mexico	1.92	1.92	1.92	1.92	3.85	4.30
Norway	2.78	2.78	4.03	4.03	8.31	5.54
Poland	0.72	0.72	0.23	0.23	3.32	1.27
Portugal	7.56	7.56	8.32	8.32	9.03	8.00
Slovak Republic	2.37	2.37	1.85	1.85	5.66	4.97
Slovenia	3.68	3.68	3.72	3.72	4.81	5.05
Spain	7.10	7.10	5.29	5.29	10.32	7.87
Turkey	3.63	3.96	4.99	4.99	6.01	5.85

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A14.6 The percentage of missing cases for each country for each variable included in the Chapter 7 regression analyses
(5/5)

	AUTHIRE	AUTBUDGT	AUTSTUDP	AUTCURR	BTG38	Public
	Index of school autonomy in hiring teachers, determining salaries	Index of school autonomy in budgeting (formulating and allocating the school budget)	Index of school autonomy in student policy and textbooks	Index of school autonomy in curriculum (courses offered, course content)	Average class size	Public school (1=public; 0=private)
	School (%)	School (%)	School (%)	School (%)	School (%)	School (%)
Australia	9.66	8.75	8.05	10.36	6.72	0.50
Austria	11.95	4.29	4.59	4.40	6.43	4.58
Belgium (Fl.)	11.68	10.29	11.90	10.94	3.52	8.08
Brazil	5.10	5.34	17.55	3.42	5.87	2.76
Bulgaria	3.56	1.02	4.67	0.89	6.49	0.43
Denmark	21.01	16.88	17.89	16.64	4.47	14.83
Estonia	2.75	1.41	2.39	1.74	2.67	0.55
Hungary	10.51	1.50	1.91	0.38	4.33	0.00
Iceland	43.62	35.56	37.73	36.07	13.81	24.38
Ireland	21.22	15.56	16.45	15.56	2.52	15.56
Italy	11.19	6.97	8.66	4.57	8.40	4.51
Korea	15.82	14.49	13.38	13.27	2.18	22.51
Lithuania	8.59	2.72	4.12	4.24	6.91	1.28
Malaysia	5.81	3.93	4.47	5.67	2.64	1.34
Malta	4.24	4.81	3.93	0.00	4.45	0.00
Mexico	10.48	5.17	5.22	3.41	8.93	5.06
Norway	10.08	4.33	14.94	6.73	6.32	2.50
Poland	0.94	3.18	3.63	0.87	5.58	0.23
Portugal	17.18	10.06	11.07	9.51	2.95	7.56
Slovak Republic	4.73	3.44	2.76	2.63	3.29	1.98
Slovenia	9.28	3.72	4.82	4.20	4.54	3.78
Spain	8.55	6.88	6.29	7.54	3.09	5.31
Turkey	10.19	5.68	6.36	7.76	3.41	3.57

Source: OECD, TALIS Database.

StatLink  <http://dx.doi.org/10.1787/608033612455>

Annex A2

Selected Characteristics of Data Collected from the Netherlands

The Netherlands participated in TALIS but unfortunately was unable to meet the sampling requirements agreed by the TALIS Board of Participating Countries (see *TALIS Technical Report* [forthcoming]). Therefore, data from teachers and school principals collected in the Netherlands could not be included in the main contents of this report. Instead, some selected characteristics are described here to provide some information about teachers and school principals who completed the TALIS questionnaires in the Netherlands.

The sample obtained from the Netherlands was not representative of the teacher population. Therefore, extreme caution must be taken in interpreting the data. The data are not population estimates but summaries of the responses received. The raw data relate to all of the responses received. Thus, unlike the other participating countries, all respondents in the Netherlands are covered regardless of whether the minimum participation rate of teachers within each school was reached.

In the tables provided in this annex, only selected indicators from the survey are presented, alongside the TALIS country average. The selected indicators were chosen in conjunction with the member of the TALIS Board of Participating Countries from the Netherlands. The four tables presented coincide with the main analytical chapters of the report: Table A1.1 presents data on teachers' professional development; Table A2.2 focuses on teaching practices, beliefs and attitudes; Table A2.3 presents data on school evaluation and teacher appraisal and feedback in schools; and Table A2.4 presents characteristics of school leadership.


Table A2.1 The professional development of teachers: selected data for the Netherlands

	Netherlands ¹	TALIS average
Participation in development activities		
Percentage of teachers who undertook some professional development in the previous 18 months	91.4%	88.5%
	N=613	(0.20)
Average days of professional development across all teachers	13.5	15.3
	N=613	(0.14)
Unsatisfied demand for development		
Teachers who wanted to participate in more development that they did in the previous 18 months	47.8%	54.8%
	N=646	(0.27)
Percentage of teachers who reported "lack of employer support" as a reason for not participating in more development	29.7%	15.0%
	N=300	(0.27)
Induction and mentoring		
Percentage of teachers in schools that do not operate formal induction programmes	8.2%	29.0%
	N=549	(0.62)
Percentage of teachers in schools that do not operate formal mentoring programmes	0%	25.1%
	N=549	(0.60)

1. Because the sampling standards were not achieved in the Netherlands, the results for the Netherlands cannot be directly compared with those of other participating countries.
 Note: Standard errors are presented in parentheses. Standard errors are not presented for the data from the Netherlands as the data are not population estimates.
 Source: OECD, *TALIS Database*.
 StatLink  <http://dx.doi.org/10.1787/608033612455>

Table A2.2 Teaching practices beliefs and attitudes: selected data for the Netherlands

	Netherlands ¹	TALIS average
Teaching activities		
Percentage of teachers who report that in almost every lesson students work in groups based upon their abilities	4.9%	9.5%
	N=627	(0.17)
Percentage of teachers who report that in almost every lesson they review with students the homework they have prepared	34.1%	34%
	N=624	(0.25)
Perceptions of the job and the school environment		
Percentage of teachers who agree or strongly agree that they are satisfied with their job	89%	89.6%
	N=637	(0.17)
Collaborative activities		
Percentage of teachers who observe other teachers' classes and provide feedback at least on a monthly basis	7.3%	6.6%
	N=642	(0.15)

1. Because the sampling standards were not achieved in the Netherlands, the results for the Netherlands cannot be directly compared with those of other participating countries.
 Note: Standard errors are presented in parentheses. Standard errors are not presented for the data from the Netherlands as the data are not population estimates.
 Source: OECD, *TALIS Database*.
 StatLink  <http://dx.doi.org/10.1787/608033612455>


Table A2.3 School evaluation, teacher appraisal and feedback, and the impact on schools and teachers: selected data for the Netherlands

	Netherlands ¹	TALIS average
School evaluations		
Percentage of teachers in schools that have had no school evaluation in the previous five years	2.8%	13.8%
	N=545	(0.56)
Percentage of teachers in schools where the principal reports that retention and pass rates of students are of moderate or high importance in school evaluations	100%	70.8%
	N=534	(0.77)
Percentage of teachers in schools where school evaluation results are published	90.7%	55.3%
	N=505	(0.88)
Teacher appraisal and feedback		
Percentage of teachers who have never received an appraisal or feedback in their school	8.9%	13.4%
	N=637	(0.18)
Percentage of teachers who report that retention and pass rates of students are of moderate or high importance in appraisal and feedback	42.4%	56.2%
	N=429	(0.34)
Percentage of teachers who report that teaching in a multicultural setting is of moderate or high importance in appraisal and feedback	27%	45%
	N=433	(0.36)
Outcome of appraisal and feedback		
Percentage of teachers reporting a moderate or large change in their salary	5.6%	9.1%
	N=572	(0.16)
Percentage of teachers reporting a moderate or large change in the likelihood of their career advancement	7.2%	16.2%
	N=568	(0.19)
Perceptions of system of appraisal and feedback		
Percentage of teachers who agreed or strongly agreed that sustained poor performance of a teacher would be tolerated by the rest of the staff	55.2%	33.8%
	N=623	(0.26)
Percentage of teachers who agreed or strongly agreed that the most effective teachers receive the greatest monetary or non-monetary rewards in their school	7.9%	26.2%
	N=622	(0.28)

1. Because the sampling standards were not achieved in the Netherlands, the results for the Netherlands cannot be directly compared with those of other participating countries.

Note: Standard errors are presented in parentheses. Standard errors are not presented for the data from the Netherlands as the data are not population estimates.

Source: OECD, TALIS Database.

StatLink <http://dx.doi.org/10.1787/608033612455>

Table A2.4 School leadership: selected data for the Netherlands

	Netherlands ¹	TALIS average
School leadership behaviour (percentages of teachers in schools where the principal agreed or strongly agreed) about the following statements		
A main part of my job is to ensure that the teaching skills of the staff are always improving	90.7%	90.5%
	N=538	(0.44)

1. Because the sampling standards were not achieved in the Netherlands, the results for the Netherlands cannot be directly compared with those of other participating countries.

Note: Standard errors are presented in parentheses. Standard errors are not presented for the data from the Netherlands as the data are not population estimates.

Source: OECD, TALIS Database.

StatLink <http://dx.doi.org/10.1787/608033612455>

Annex A3

List of Contributors

TALIS is a collaborative effort, bringing together expertise from participating countries that share an interest in developing a survey programme to inform their policies about teachers, teaching and learning. This report is the product of collaboration and co-operation between the member countries of the OECD and the partner countries participating in the first round of TALIS. Engagement with bodies representing teachers and regular briefings and exchanges with the Trades Union Advisory Council at the OECD have been very important in the development and implementation of TALIS. In particular, the co-operation of the teachers and principals in the participating schools has been crucial in ensuring the success of TALIS.

The TALIS Board of Participating Countries has, in the context of OECD objectives, driven the development of TALIS and has determined its policy objectives. This includes the objectives of the analysis and reports produced, the conceptual framework, and the development of the TALIS questionnaires. The Board has also overseen the implementation of the survey.

Participating countries implemented TALIS at the national level through National Project Managers (NPMs) and National Data Managers (NDMs), who were subject to rigorous technical and operational procedures. The NPMs played a crucial role in helping to secure the co-operation of schools, to validate the questionnaires, to manage the national data collection and processing and to verify the results from TALIS. The NDMs co-ordinated data processing at the national level and liaised in the cleaning of the data.

An Instrument Development Expert Group (IDEG) was established to translate the policy priorities into questionnaires to address the policy and analytical questions that had been agreed by the participating countries. Technical experts were also critical in the analytical phase of the development of the initial report.

The co-ordination and management of implementation at the international level was the responsibility of the appointed contractor, the Data Processing Centre of the International Association for the Evaluation of Educational Achievement (IEA). The IEA Secretariat was responsible for overseeing the verification of the translation and for quality control in general. Statistics Canada, as a sub-contractor of the IEA, developed the sampling plan, advised countries on its application, calculated the sampling weights and advised on the calculation of sampling errors.

The OECD Secretariat had overall responsibility for managing the programme, monitoring its implementation on a day-to-day basis and serving as the Secretariat of the Board of Participating Countries.

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