



Organisation for Economic Co-operation and Development (OECD)

**Teaching and Learning International
Survey
TALIS 2013**

Conceptual Framework

FINAL

February 2013



International Association for the Evaluation of Educational Achievement (IEA, Amsterdam, The Netherlands)

IEA Data Processing and Research Center
(IEA DPC, Hamburg, Germany)

Statistics Canada (Ottawa, Canada)

Organisation for Economic Co-operation and Development (OECD,
Paris)

THE TALIS 2013 CONCEPTUAL FRAMEWORK

Drafted by

David Rutkowski, Leslie Rutkowski, Julie Bélanger, Steffen Knoll, Kristen Weatherby, and
Ellen Prusinski

With contributions from (listed alphabetically)

Mara Westling Allodi,
Ralph Carstens
Jean Dumais
Ben Jensen,
Eckhard Klieme,
Peter Kloosterman,
Paulína Koršňáková
Mareike Kunter
Tadakazu Miki
Sang-Wan Park
Svenja Vieluf
Eva Wiren

TABLE OF CONTENTS

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD).....	1
TEACHING AND LEARNING INTERNATIONAL SURVEY TALIS 2013	1
CONCEPTUAL FRAMEWORK.....	1
THE TALIS 2013 CONCEPTUAL FRAMEWORK.....	2
TABLE OF CONTENTS	3
LISTS OF TABLES, FIGURES AND BOXES	4
INTRODUCTION.....	5
SECTION I – GENERAL PURPOSE AND POLICY RELEVANCE OF TALIS.....	7
Indicators for system monitoring	9
Priority rating exercise	9
Themes and indicators for possible inclusion	12
Understanding patterns and conditions of teaching and learning	13
Building a sustainable database for policy relevant research.....	15
SECTION II – KNOWLEDGE SURROUNDING THEMES AND MAIN INDICATORS.....	16
Teachers in TALIS.....	19
Background information (Teacher, Principal and School)	22
TALIS Themes and indicators	23
Theme: Teacher education, from initial education through induction to in-service professional development.....	23
Professional development and teachers’ practices	24
Professional development and teacher retention	26
Professional development and teachers’ self-efficacy and job satisfaction	27
Theme: School leadership.....	27
Characteristics and distribution of principals	28
Distributed Leadership	29
School leadership and school climate	29
Theme: Teacher appraisal and feedback.....	30
Theme: School climate and ethos	32
Theme: Teachers’ pedagogical beliefs and practices.....	34
<i>Teachers’ pedagogical practices</i>	35
Conclusion	37
SECTION III – DESIGN OF TALIS 2013	38
Introduction.....	38
Brief overview of the sample design.....	38
Brief overview of survey instruments.....	41
Results and lessons learned from the TALIS 2008	42
Areas for improvement in current and future cycles	43
Survey operations in brief.....	44
REFERENCES	47

LISTS OF TABLES, FIGURES AND BOXES

Table 1: Possible TALIS 2013 themes with rating points	12
Table 3: A classification of the core parts of TALIS 2013 questionnaires.....	41
Figure 1: International and national target and survey populations	39
Box 1: Definition of a “teacher”	19
Box 2: The responsibilities of today’s teachers	22
Box 3: The TALIS design in brief.....	38

INTRODUCTION¹

In 2008, the initial cycle of the OECD's Teaching and Learning International Survey (TALIS 2008) established, for the first time, an international, large-scale survey of the teaching workforce, the conditions of teaching, and the learning environments of schools in participating countries. The second cycle of TALIS (TALIS 2013) aims to continue the tradition of providing timely, comparable, and useful policy information regarding the conditions of teaching and learning environments to participating OECD countries, non-Member economies and sub-national entities (TALIS participants).

Understanding that recruiting, retaining, and developing teachers is a priority in all school systems worldwide, TALIS examines the ways in which teachers' work is recognised, appraised, and rewarded. In addition, TALIS assesses the degree to which teachers' professional development needs are being met. Finally, the study provides insights into the beliefs and attitudes about teaching that teachers bring to the classroom and the pedagogical practices that they adopt. Recognising the important role that school leadership plays in fostering an effective teaching and learning environment, TALIS describes the role of school leaders and examines the support that they give their teachers. Finally TALIS examines the extent to which factors are related to teachers' feelings of job satisfaction and self-efficacy.

While the design and analytic framework of TALIS should continue to evolve and adapt to changes in society and education, the Framework is also intended to establish a stable foundation for future cycles of TALIS. The Framework, then, should balance stability with innovation, as well as cycle-specific questions with more general issues.

In an effort to continue to improve TALIS while simultaneously maintaining consistency, new directions for the study have been adopted for the second cycle. At the same time, many of the TALIS 2008 themes, scales, and indicators have been preserved. This approach serves the dual purpose of allowing for the analysis of trends and permitting the investigation of contemporary issues in teaching and learning.

To achieve the multiple aims of TALIS, a well-developed conceptual framework is important. The original conceptual framework for the TALIS program was developed by a joint taskforce comprised of experts from the Indicators of Education Systems (INES) Network A (learning outcomes) and Network C (learning environment and school organisation). With the second cycle of TALIS, further development and extension of the conceptual framework are warranted. The updated conceptual framework draws on the previous framework and outlines the purpose and goals of the study. To put TALIS on theoretically sound footing, the conceptual framework also surveys important and current theories and research on teaching and learning environments. These are used to develop the dimensions, themes and indicators that were chosen by participating countries as being highly policy-relevant and which provide the organisational and conceptual underpinning of TALIS.

The document is organised into five main sections:

- **Section I** elaborates on the general purpose and policy goals of TALIS and explains and justifies the type of context information needed to meet these goals. Given the specific emphases and goals of the survey, discussed subsequently, TALIS must address various factors at the system, school, and teacher levels. In the current educational policy climate, which emphasises improvement and

¹ The structure of this framework document generally follows the structure used for the PISA 2012 Context Questionnaire Framework document (EDU/PISA/GB(2010)23). Although there are some similarities in content, the document was designed with the TALIS context in mind.

accountability, teaching and learning environments warrant particular attention within the TALIS conceptual framework and survey.

- **Section II** examines the conditions of teaching and learning that have been selected by the participating countries in a way that is relevant to the evaluation of the main policy goals, and themes. The TALIS questionnaires are designed to allow for some trend analysis between TALIS 2008, TALIS 2013 and further cycles of TALIS, while permitting for additional inquiry into areas identified as high priority by participating OECD countries, partner economies and sub-national entities.
- **Section III** describes the design of TALIS 2013. As part of this description, the overarching design of the main study is discussed. The addition of ISCED (International Standard Classification of Education)² 1 and 3 teachers is detailed, as is the necessity of ISCED-level specific instruments. In support of the goal of establishing trend information and effectively using information from TALIS 2008, the measures used in TALIS 2008 are revisited and measures of proven quality and relevance are identified. In this section, the implementation of new measures and the abandonment of low quality or less relevant measures are also discussed.

² ISCED was designed by UNESCO in the early 1970's to serve 'as an instrument suitable for assembling, compiling and presenting statistics of education both within individual countries and internationally' (UNESCO, 1997, p. 1). In 1997, the latest classification was approved by UNESCO. For more information see: International Standard Classification of Education: ISCED 1997. Paris, UNESCO. Additionally, Annex A provides an overview of the ISCED classification. UNESCO, in collaboration with the OECD, is currently in the process of reforming the ISCED classification. The new classification will be approved by UNESCO in autumn 2011. The OECD will start implementing the new ISCED classification in data collection in 2014.

SECTION I – GENERAL PURPOSE AND POLICY RELEVANCE OF TALIS

TALIS is an international survey of teachers, teaching, and learning based on questionnaire responses by individual teachers and their school principals. Since its inception as a component of the INES program, the main goal of the TALIS program has been to increase the international information available to OECD countries and partner countries and economies on teachers, teaching, and the impact that teachers can have on student learning. TALIS 2008 succeeded in fulfilling this goal, especially as it pertains to filling gaps in the international (and national) evidence base on the teaching workforce and the conditions of teaching. TALIS 2008 also provided unique insight into teachers' beliefs, attitudes, and practices. The overall objective of TALIS is to provide, in a timely and cost-effective manner, robust international indicators and policy-relevant analysis on teachers and teaching in order to help countries review and develop policies in their efforts to promote conditions for effective teaching and learning. Following the success of TALIS 2008, which resulted in the publication of *Creating Effective Teaching and Learning Environments: First Results from TALIS* in 2009, the second cycle of TALIS (2013) was launched.

The guiding principles underlying the survey strategy are as follows:

- *Policy relevance.* Clarity about key policy issues and a focus on the questions that are most relevant for participating countries are both essential.
- *Value added.* International comparisons should be a significant source of the study's benefits.
- *Indicator-oriented.* The results should yield information that can be used to develop indicators.
- *Validity, reliability, comparability and rigor.* Based on a rigorous review of the knowledge base, the survey should yield information that is valid, reliable, and comparable across participating countries.
- *Interpretability.* Participating countries should be able to interpret the results in a meaningful way.
- *Efficiency and cost-effectiveness.* The work should be carried out in a timely and cost-effective way.

The themes and indicators for the second cycle of the survey will provide the opportunity to answer policy and research questions such as:

- How are the different leadership approaches related to teachers' reported teaching practices (including student assessment practices), beliefs and professional practices? Are leadership approaches related to the extent to which teachers engage in collaborative professional practices?
- What are teachers' pedagogical beliefs and preferred teaching strategies? To what extent do teachers' beliefs and preferred teaching strategies differ depending on students' special education needs? How do student assessment practices differ between and within countries?
- What is the frequency and type of training and professional development across schools and countries? What are perceived impacts of teacher professional development? To what degree do professional development activities relate to teachers' profile of teaching, self-efficacy and job-satisfaction? Are teachers' professional development activities related to schools' climate?

- What are the factors associated with a positive or negative school climate and how do these factors vary between schools? What are the profiles of collaboration with families and communities? How are these profiles related to teachers' and principals' perceptions of the community's view of the teaching profession and to teachers' and principals' job satisfaction?
- What are the policies for recognising, rewarding and evaluating teachers and how do these differ between countries? What types of interventions are used to address underperformance among teachers and how do these differ between schools and between countries?
- How is teachers' working time distributed and how does it vary between schools and countries?

TALIS serves an array of policy and research purposes. The views endorsed by different stakeholders in participating OECD countries, partner economies and sub-national entities (TALIS participants) may be organised into the following areas:

- TALIS is a monitoring structure that provides reliable comparative information on teachers and schools in participating educational systems. TALIS serves as a means of describing the conditions of teaching and learning, as well as the functioning of educational structures, thus offering a means of comparing approaches to teaching and school leadership.
- TALIS is an international study contributing to our knowledge base on conditions of teaching and learning and thus, it helps to contextualise the ways in which educational outcomes at multiple levels are produced and provides a valid tool for comparing these contexts cross-culturally. Large, carefully selected, representative samples and state-of-the-art quantitative methods allow for broad population inferences and the generalisation of findings both within and across countries.
- TALIS provides a data source for the study of educational contexts in general (e.g. how school leadership practices relate to teachers' pedagogical approaches and attitudes toward teaching and learning) and the study of educational variables in other contexts (e.g. the relationship between system-level policies, economic wealth, and the composition of the teaching workforce). With the addition of new indicators, discussed subsequently, and the creation of trend information, TALIS 2013 will build upon TALIS 2008 to become more informative to policy makers and to provide more utility to researchers.

Given multiple views of the value of TALIS, it is reasonable to propose that TALIS produces three types of policy- and research-relevant products:

- *Indicators* that monitor educational systems at the levels of teachers and principals.
- *Information* on factors representing teaching and learning environments nationally and internationally.
- A reliable, comparative *database* that allows researchers worldwide to study a variety of basic and policy-oriented lines of inquiry at the national and international levels.

The purpose and importance of each of these products are discussed in subsequent sections.

Indicators for system monitoring

A central goal of TALIS is to monitor and compare education systems in terms of the conditions of teaching and learning. Underlying this system monitoring is a model that views education as an input/process/output system. As such, TALIS measures components of this system model with high quality, reliable, and valid scales and items with the intent of understanding the context and correlates of teaching and learning environments. In this way, TALIS provides indicators on school context variables, management variables, teacher professional development, appraisal and feedback systems, and pedagogical approaches, among other elements. Most importantly, TALIS results provide a source of information for OECD's education indicators program, which in turn provides the substance for public debate, shapes public policy internationally, and informs decision making at multiple levels of participating education systems.

Two examples of indicators based on TALIS data can be found in recent editions of the OECD's Education at a Glance reports (OECD, 2009a):

- How much appraisal and feedback do teachers receive, and what is the self-reported impact of this feedback? (D5); and
- How do teacher practices, beliefs and attitudes measure up? (D6)

An important challenge and stated priority of study participants is to develop a survey that ensures that some indicators can be compared across cycles, while at the same time allowing for new indicators to be introduced. As TALIS moves into its second cycle, this framework serves to structure and order the constructs and instruments so that decisions regarding construct and measure inclusion can be streamlined.

The policy relevance of this system monitoring enterprise is based on the following:

- Using well-established research to define and operationalise the relevant constructs of interest. These constructs are based on the priorities and educational goals of participating countries.
- Examining and reporting factors that may be subject to control by policy and professional practice. These factors are considered *malleable*.
- Providing international benchmarks that allow policy makers to ascertain what they may learn about teaching and learning environments from other countries that participate in TALIS.

The selection of TALIS indicators is generally guided by policy demands. As such, indicators are chosen by study participants via a priority rating exercise. The details surrounding the TALIS 2013 priority rating exercise are discussed below.

Priority rating exercise

In order to guide the policy focus of the second round of TALIS, all OECD countries (whether previous TALIS participants or not) were invited to complete a rating exercise prior to the development of this framework. The exercise was conducted during March and April 2010, with 25 OECD countries.³ Once

³ OECD countries and economies that completed the priority rating included Australia, Austria, Belgium (Fl.), Belgium (Fr.), Canada, Korea, Czech Republic, Denmark, Estonia Finland, France, Iceland, Ireland, Italy, Luxembourg, Mexico, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Turkey, United Kingdom and United States.

completed, ratings were sent to the OECD Secretariat to compile the overall results. The results of the exercise and the policy content proposals that arose are documented here.

The priority rating exercise has the overall objective of guiding the content of TALIS 2013 by providing a more focused survey reflective of countries' policy priorities. This consequently determines the outputs of the deliverables and analysis. Countries were asked to provide a rating that would help determine:

- The themes and indicators to be included in the second cycle of the survey; and
- The repeated indicators from the first cycle of the survey to be included in the second cycle of the survey.

Countries were also able to provide comments for each theme and indicator if it was considered appropriate. Other relevant parameters that were determined to define the survey specification include:

- Respondents to the TALIS 2013 survey are the school principal and a sample of teachers from within each school.
- Both the principal questionnaire and the teacher questionnaire can be administered either as a pen and paper survey or as an online survey with each of the questionnaires taking approximately 45-60 minutes to complete.
- The survey contains the following content:
 - A set of individual and job characteristics of teachers and principals; and
 - School characteristics that provide the necessary background information for analysis of the policy issues. (These were not included in the priority exercise and are repeated from TALIS 2008.)

The priority rating exercise required countries to make choices that would determine the content of the TALIS 2013 survey and was composed of three main parts. First, countries were asked to allocate 200 rating points amongst the proposed 20 themes, with higher points representing a higher priority. The Secretariat compiled the results through an aggregation of the points allocated by countries to each theme. Second, countries were asked to indicate, for those themes that had been assigned points, which indicators were considered most important to include in the second round of the survey. A total of 94 indicators were divided amongst the 20 themes. Finally, countries were asked to indicate which of 25 indicators used in the analyses of the first cycle of the survey should be maintained in the second cycle of the survey to permit analysis of change between the first and second cycles of TALIS.

Twenty-five OECD countries provided their ratings by the deadline. These ratings are summarised here. Three participants (Belgium (French Community), France, and the United Kingdom) did not provide ratings for repeated indicators. In all three cases, the country had not participated in the TALIS 2008.

The results of the thematic priority rating exercise are included in

Table 1. From this table, it is clear that some themes were held as very high priorities (e.g. *school leadership* and *teachers' instructional practices and beliefs*), while other themes were considered to be of less importance (e.g. *support and guidance for the most experienced teachers* and *effectiveness of recruitment and selection procedures and incentives*).

Table 1: Possible TALIS 2013 themes with rating points

No.	Theme	Rating points
14	School leadership	393
16	Teachers' instructional practices and beliefs	374
6	Profile of teachers' in-service education and training	318
15	School climate and ethos	312
2	Initial teacher education	307
8	Satisfaction and effectiveness of in-service education and training	295
11	Recognition, reward and evaluation of teachers	294
18	Teachers' professional practices	287
5	Motivations and early career experience of teachers	264
1	Attracting good students into teaching	259
19	Twenty-first century skills: ICT in teaching	249
10	Job satisfaction and teacher human resource measures	237
17	Education and qualifications of teachers	229
7	Frequency of in-service education and training	216
20	Innovation and creativity	209
13	Division of teachers' working time	209
9	Teacher attrition and turnover rates	164
3	Adequacy of teacher supply and teacher shortages	151
12	Support and guidance for the most experienced teachers	142
4	Effectiveness of recruitment and selection procedures and incentives	86

Themes and indicators for possible inclusion

Based on the rating exercise, the following themes and associated indicators were carried forward for possible inclusion in TALIS 2013. The final inclusion of these indicators in the TALIS 2013 Main Study questionnaires ultimately depended on the length of the questionnaires and results of the pilot phase and the Field Trial.

- School leadership
 - Repeat and/or improved indicators on the profile of school leadership and management styles (including indicators on the roles and functions of school leaders).
 - New indicators on distributed/team leadership.
- Teacher training and in-service professional development/initial teacher education
 - Repeat indicators on the profile of in-service professional development (types of activities, participation rates, intensity of participation, mentoring and induction programmes).
 - Repeat indicators on the needs and demands for in-service professional development.
 - Repeat indicators on barriers preventing participation in in-service professional development.
 - Repeat indicators on the perceived impact of in-service professional development.

- New indicators on initial teacher education.
- Teacher appraisal and feedback
 - Repeat and/or improved indicators on the profile of teacher appraisal and feedback (frequency, criteria, outcomes).
 - Repeat and/or improved indicators on the perceptions of the effectiveness and impact of teacher appraisal and feedback (focusing on the impact on pedagogical aspects of teachers' work).
 - The development of new indicators is not expected for this theme, though improvement of existing indicators will be considered.
- School climate and ethos
 - Repeat indicators on disciplinary climate.
 - Repeat indicators on teacher-student relations.
 - Repeat but improved indicator on the profile of teachers' working time.
 - New indicators on parent-teacher and parent-school relations.
- Teachers' pedagogical beliefs
 - Repeat or improved indicators on the profile of teachers' beliefs about teaching.
- Teachers' pedagogical practices
 - Repeat or improved indicators on teaching practices.
 - Repeat indicators on the profile of co-operation among teaching staff.
 - New indicators on the profile of student assessment practices.

Understanding patterns and conditions of teaching and learning

Indicators serve to direct our attention to facts, occurrences, or trends of interest. Thus, an important goal of a high-quality indicator is to provide information that can help guide priority-setting and decision-making in educational policy. In addition to *descriptions* about the state of educational systems and the condition of teaching and learning environments, policy makers are also interested in the conditions that explain variability in teaching and learning environments within and across educational systems. Therefore, the TALIS instruments should cover the most important inputs and processes of teaching and learning at the teacher and school levels. Using statistical models that account for the inherent multilevel structure of the TALIS data is a useful means of understanding and explaining differences within and across schools and within and across countries.

TALIS has a relatively short history and the first data were only publicly released in 2009, thus the secondary research based on TALIS data is limited. However, if PISA can be used as a gauge, it is

reasonable to expect that forthcoming research based on TALIS results has the potential to further illuminate implications of the survey for teaching practice and policy.

Although the analysis of TALIS data has the potential to make important contributions to the knowledge base for educational policy and practice, a number of limitations must be considered. First, TALIS is a cross-sectional study that examines the context and conditions of teaching and learning environments. TALIS does not examine changes in conditions over time, and therefore results from the study cannot be used to make inferences about the accumulation over time of teaching skills, knowledge, *etc.*, within a cohort. These sorts of inferences would require a longitudinal or panel component wherein the same group of teachers would be followed over time to track changes in variables of interest. In addition, because TALIS, at present, does not connect directly with student outcomes, teacher quality and its relationship to student performance cannot be judged. Finally, because TALIS is a self-report survey and does not engage in direct observation of teaching practices, inferences are also limited to the degree that teacher responses may vary from what would be observed in practice. To analyse the relationship between teacher characteristics and student outcomes, it would be necessary that TALIS link with student outcomes at the classroom level.

Because the target population for the main study is ISCED level 2 teachers (see Annex A for definitions of ISCED levels 1, 2 and 3), inferences beyond this population are also not warranted. That is, it is not appropriate to use TALIS 2013 results to draw inferences about the population of teachers within a country. Instead, it is only possible to generalise to the population of ISCED level 2 teachers. To make generalisations beyond the population of ISCED level 2 teachers in participating countries, it would be necessary to add additional ISCED levels to the target population, which is an international option. Specifically, there are currently international options to add to the target population ISCED level 1 and ISCED level 3 teachers and principals, thereby allowing for broader inferences in countries that choose these options.

Finally, the limitation to drawing causal inferences from TALIS data should be noted. In considering the design of any research project, the core research questions are of critical interest and drive the study design. In randomised controlled experiments, the core question is whether a *treatment* has an effect on some outcome. That is, can the treatment be considered to be the *cause* of the outcome? We can only infer that some treatment *A* causes some outcome *Y* when (1) *A* precedes *Y* (temporal precedence of *A*); (2) whenever *A* is present, *Y* occurs (sufficiency of *A*); and (3) *A* must be present for *Y* to occur (necessity of *A*) (Kirk, 1995). Holland (1986) also argues that additional criteria for making causal inferences include *causal relativity* (that an effect of a cause should be evaluated relative to another cause); *causal manipulation* (that each study participant must be *potentially* exposable to both the treatment and the control); and *elimination of alternative explanations*. Unfortunately, even under the best of circumstances, eliminating all other competing explanations and isolating a particular *treatment A* as the cause is unlikely (Shadish, Cook and Campbell, 2002). Instead, we are limited to untestable assumptions and estimating the probability that an effect will occur in the presence of some *treatment A* (Holland, 1986; Schneider, Carnoy, Kilpatrick, Schmidt and Shavelson, 2007). The limitations around inferring causality are especially severe in cross-sectional, observational data since there is no explicitly temporally precedent manipulation (*A*) and because we often observe situations where *Y* happens in the absence of *A* or situations where *A* is present but *Y* does not occur. For example, assume a researcher hypothesises that a particular pedagogical approach is *caused* by teaching in a public school. But since teachers have some control over the school in which they teach, the *treatment* (public versus private school) is contaminated by the influence of the teacher, who had a predilection for a particular pedagogical approach prior to working in a given public school. Since teachers and principals are not randomly assigned to schools, it is unknown whether unobserved explanations exist for some observed behaviour or outcome.

Numerous resources exist for implementing quasi-experimental methods (see for example Schneider, Carnoy, Kilpatrick, Schmidt and Shavelson, 2007; Shadish, Cook and Campbell, 2002), which attempt to account for unobserved factors. It remains that untestable assumptions are a limitation to drawing strong conclusions, even with quasi-experimental methods. As such, it is the responsibility of the researcher to be aware of the limits of cross-sectional, observational data and to clearly state any assumptions that were used to draw inferences.

Despite these limitations, replicable findings add to the knowledge base of a given issue. As such, TALIS serves as a resource for establishing the plausibility of theories for rigorous replication elsewhere or as a large-scale resource for accumulating evidence in response to some hypotheses. No work stands in isolation and research resulting from analysis of TALIS data can add, in a meaningful way, to the body of information on teaching and learning internationally.

Building a sustainable database for policy relevant research

OECD studies have far reaching influences outside the sphere of educational policy, practice, and research. For example, studies such as PISA are used increasingly by researchers from a broad spectrum of the social sciences, including economics, psychology, and sociology. Further, thematic reports commissioned by the OECD that use TALIS 2008 data have been published (e.g. Jensen, Sandoval-Hernández, Knoll and Gonzalez, 2012; Vieluf, Kaplan, Klieme and Bayer, 2012). These reports foster the increased use of TALIS data and yield in-depth analyses that add to the body of research on the cross-cultural conditions of teaching and learning.

Broadening the scope of TALIS as a database for policy relevant research in the area of teaching and learning requires that general constructs such as teacher professional development needs or pedagogical approaches are operationalised in a highly sophisticated way. To that end, TALIS architects are committed to drawing on current and well-established literature as well as empirical evidence from the past cycle of TALIS to ensure that the constructs are conceptualised in a way that researchers will find useful in and of themselves or in a way that provides a basis for further development by researchers. In line with this approach to establishing a sustainable and useful database, TALIS will also evolve to meet the policy and research needs of study participants.

As TALIS moves into its second cycle, an emergent value of this study is the power to examine trends over time within and across educational systems. Patterns of teaching and learning can only in a limited way be understood from cross-sectional data. Therefore, preserving the integrity of a set of variables from cycle to cycle is important for ensuring that changes in inputs and processes can be related in a substantive way to changes in outcomes over time. Admittedly, this is a particularly challenging goal as new methods for reliably and validly measuring the constructs of interest are continually developed. It is thus important that the value of trend preservation is weighed against the value of incorporating cutting-edge methods for instrument development and measurement.

SECTION II – KNOWLEDGE SURROUNDING THEMES AND MAIN INDICATORS

As described in Section I, the TALIS 2013 development team worked with experts from participating countries to rate the most important themes and indicators for their respective country. The questionnaires were edited and some items were removed or changed based on the results of the pilot and the data analysis after the Field Trial in all countries. Some items were also deleted in order to shorten the questionnaires for the Main Study. The TALIS Instrument Development Expert Group (IDEG), the International Consortium, the Secretariat and country representatives were involved in shaping the final questionnaires before the Main Study. The TALIS Board of Participating Countries (BPC) approved the final questionnaires and the themes and indicators included in advance of the Main Study.

This section describes the conceptual framework which informs the TALIS 2013 questionnaires and provides an overview of supporting research that suggests selected TALIS 2013 themes are important for understanding teaching and learning at the international, national, and local levels. Each subsection includes the TALIS content theme, indicators (existing or new), and a short literature review that provides evidence in support of the indicators as important to both educational policy and research.

The TALIS 2013 framework is based on the concept of effective teaching and learning conditions. According to the OECD, effectiveness refers to the extent to which a given activity’s stated objectives are met (OECD, 2007). Thus, the concept of effectiveness is simultaneously broad and context dependent. In the case of TALIS, effective teaching and learning environments are environments that contribute to positive student learning. The factors, practices, and conditions identified by participants in the priority-rating exercise, such as teacher appraisal and feedback systems, represent the elements that participants agree contribute to positive student learning. TALIS is meant to gather information on specific aspects of the teaching and learning environment that research suggests and country representatives believe contribute to positive student learning. Of course, “effective” teaching and learning may include many other factors that cannot be examined through TALIS or any self-reported instrument.

The conceptual framework adopted for TALIS 2013 is based on a model for contextualizing teaching and learning conditions originally developed by the International Association for the Evaluation of Educational Achievement (IEA) (Purves, 1987). The basic structure of the model measures the schooling context in terms of inputs, processes, and outcomes. A version of this model was developed for the PISA 2012 school context questionnaire, which expanded the input/processes/outcomes model to develop a two-dimensional taxonomy. The TALIS 2013 framework is a modification of the PISA 2012 framework (shown in Table 2). The left-hand column represents one dimension which identifies students, teachers/classrooms, schools, and countries as different levels of educational actors (OECD, 2010a). The remaining three columns represent a second dimension based on Purves’s model of inputs, processes, and outcomes. Each cell within the taxonomy represents an example of a construct as it relates to a particular part of the model that is either covered by the OECD studies PISA or TALIS. For example, classroom-level processes include quality of instruction and the implemented curriculum. Those parts of the model in bold are measured in TALIS.

Table 2: A Simplified Two dimensional framework of schooling

Level	Input	Process	Outcome
Student	Gender, grade level, socio-economic status	Attendance/truancy	Academic achievement, content-related attitudes, beliefs, and motivation

Level	Input	Process	Outcome
	Immigration background, family structure, environment, and support	Extra-curricular activities (sports, after school programs) Learning and thinking strategies Time spent learning (homework private tutoring)	General learning motivation, educational aspirations
Teacher/Classrooms	Class size, socioeconomic status, and ethnic composition Teacher subject knowledge, education, and expertise Teacher professional development	Quality of instruction: structure support and challenge; teacher expectations Opportunity to learn: implemented curriculum, assigned tasks, content related activities Instructional time, student assessment and feedback Teacher pedagogical beliefs and practices Teacher-student relationships	Aggregated student outcomes Teacher efficacy and satisfaction Classroom climate and behaviour
Schools	School size, socioeconomic background and ethnic composition Community affluence, school funding and management (public or private) Perceived parental and community involvement and support	Achievement orientation, shared norms and values Leadership, teacher morale and co-operation Professional development opportunities and support Availability of extra-curricular activities	Aggregated student outcomes Aggregated class and teacher outcomes Promotion/retention policies and graduation rates Climate and ethos Attendance rates and policies

Level	Input	Process	Outcome
	Student mobility	Teacher and school self-evaluation Admission and recruitment policies, tracking/grouping, curriculum	
Countries (Systems)	Economic wealth, social (in)equality Immigration policy Educational standards	School funding, tracking and allocation, support for special needs students, support for language minority students Professional development policies and support Hiring and certification policies Accountability and evaluation policies, locus of decision making	Aggregated student outcomes Aggregated class and teacher outcomes Aggregated school outcomes System level graduation rates

Source: A modification of Table 1 EDU/PISA/GB(2010)23 (OECD, 2010a). NOTE: Bold text indicates constructs that are measured in TALIS 2013. Shaded cells indicate constructs that are measured in PISA 2012.

This model is helpful in that it aids in the international contextualisation of TALIS. However, it is not exhaustive and only works as a simplification of a very complicated system. Fortunately, the model does bring to light a number of noteworthy points. For example, some input factors are stable (e.g. gender), fairly stable (e.g. socio-economic status) or somewhat malleable (e.g. teacher attitudes or school climate). In general, variables that fall under process categories (e.g. teacher morale) tend to be more malleable and allow for teachers, principals and policy makers to influence the system and enact change. However, each part of the model represents some malleable factors. A drawback of using such a linear model to understand educational systems becomes apparent when we examine outcomes, since outcomes can both feed and are fed by inputs and processes. For example, meeting teacher professional development needs can have a positive impact on teacher satisfaction, which in turn influences the tendencies of teachers to engage in desirable pedagogical approaches, which can be seen as a process at another level (e.g. as a process that influences student achievement). Nonetheless, this model (even though greatly simplified) can serve as a useful basis for understanding the mechanism by which educational outcomes arise. Further, many of these variables are available at the system level through the INES Network for System-Level Descriptive Information on Educational Structures, Policies and Practices (NESLI) and will be available for inclusion in subsequent TALIS analyses. Note that the constructs that appear in Table 2 are example constructs only. There is a wide variety of additional constructs that could appear in this table but that have been omitted for ease of reading.

School effectiveness research often utilises models in which outcomes re-enter the model as inputs. Scheerens (2000) provides an extensive overview of school effectiveness models. More recently, Creemers and Kyriakides (2008) expanded on these models by showing how the same factor can often be both an

input and output of schooling. For instance, OECD (2010a) suggests that “mathematics anxiety, for example, can be an outcome of schooling as well as an input, impacting, for instance, upon students’ homework activities” (p.13). Moreover, the OECD (2010a) goes on to state that inputs can have reciprocal effects upon each other. For example, in many education systems, a school’s socio-economic composition is correlated with funding, parental involvement or even teacher quality (p. 13). As such, these inputs can be so closely related to one another that they become difficult to disentangle. This demonstrates that creating and understanding existing school effectiveness models is complex. Yet such models serve a key role in allowing researchers to examine the process of schooling and suggest possible levers that can be manipulated to improve student achievement.

Teachers in TALIS

Before a meaningful discussion of each theme and indicator can be had, it is important to have a common definition of a person that is referred to as a *teacher*. TALIS uses a definition of a teacher that is in line with the formal definition given by the OECD’s Indicators of Education Systems (INES) project. Box 1 is a description of the definition of a teacher. For TALIS 2013, a teacher is defined as a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated to students enrolled in an educational program. This definition does not depend on the qualification held by the teacher nor on the delivery mechanism. It is based on three concepts:

- *Activity*, excluding those without active teaching duties;
- *Profession*, excluding people who work occasionally or in a voluntary capacity in educational institutions, as well as people who serve in support roles (teacher aides and other paraprofessional personnel); and
- *Educational program*, excluding people who provide services other than formal instruction to students (e.g. supervisors, activity organisers, etc.) whether the program is established at the national or school level. School principals without teaching responsibilities are not counted as teachers.

Box 1: Definition of a “teacher”

Unless indicated otherwise, the term “teacher” as used in this framework is based on the definition adopted by the OECD’s Indicators of Education Systems (INES) project in its data collections.

A teacher is defined as a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated to students enrolled in an educational program. This definition does not depend on the qualification held by the teacher nor on the delivery mechanism. It is based on three concepts:

- *Activity*, thus excluding teachers without active teaching duties – although teachers temporarily not at work (e.g. for reasons of illness or injury, maternity or parental leave, holiday or vacation) are included.
- *Profession*, thus excluding people who work occasionally or in a voluntary capacity in educational institutions.
- *Educational program*, thus excluding people who provide services other than formal instruction to students (e.g. supervisors, activity organisers, etc.).

Teaching staff refers to professional personnel directly involved in teaching students, including classroom teachers; special education teachers; and teachers who work with students as a whole class in a classroom, in small groups in a resource room, or in one-to-one teaching inside or outside a regular classroom. Teaching staff also includes chairpersons of departments whose duties include teaching, but it does not include non-professional personnel who support teachers in providing instruction to students, such as teachers' aides or other paraprofessional personnel.

Also, in general, school principals, vice principals and other administrators without teaching responsibilities in educational institutions, as well as teachers without active teaching responsibilities for students in educational institutions, are not classified as teachers.

In vocational and technical education, teachers of the "school element" of apprenticeships in a dual system are included in the definition. Trainers in the "in-company element" of a dual system are excluded.

Full-time and part-time teachers

The classification of educational personnel as "full-time" and "part-time" is based on a concept of working time. The stipulation of full-time employment is usually based on "statutory hours" or "normal or statutory working hours" (as opposed to actual or total working time or actual teaching time). Part-time employment refers to individuals who have been employed to perform less than the amount of statutory working hours required for a full-time employee.

A teacher who is employed for at least 90% of the normal or statutory number of hours of work for a full-time teacher over the period of a complete school year is classified as a full-time teacher. A teacher who is employed for less than 90% of the normal or statutory number of hours of work for a full-time teacher over the period of a complete school year is classified as a part-time teacher.

More detailed information on these general definitions and conventions is provided in *Education at a Glance, OECD Indicators 2010*. (See also <http://www.oecd.org/edu/eag2010>)

Source: A modification of Box 2.1 in *Teachers Matter* (OECD, 2005b).

The role that teachers play in the learning environment has a complex history and can vary across cultures, ISCED levels, and disciplines; however, even a generalisation of the changing roles teachers play in the 21st century demonstrates the complexity of their work. Table 2 shows that teaching and teacher effectiveness largely falls under "processes" in the two-dimensional framework of schooling. However, it is difficult to pinpoint all processes teachers perform within education. Recognising the complexity of teachers' roles is important because an improved understanding of teacher processes allows for an informed conceptualisation of the construct and, subsequently, better measurement.

Box 2 shows some of the responsibilities teachers now face in a globalised environment.

Box 2: The responsibilities of today's teachers

At the individual student level

- Initiating and managing learning processes
- Responding effectively to the learning needs of individual learners
- Integrating formative and summative assessment

At the classroom level

- Teaching in multi-cultural classrooms
- New cross-curricular emphases
- Integrating students with special needs

At the school level

- Working and planning in teams
- Evaluation and systematic improvement planning
- ICT use in teaching and administration
- Management and shared leadership

At the level of parents and the wider community

- Providing professional advice to parents
- Building community partnerships for learning

Source: *Teachers Matter* (OECD, 2005b; p. 2).

In many cases, these changes add to the complexity of the work that teachers perform. Defining these complexities allows for the creation of indicators that better inform policy makers of the complexities of teaching.

Background information (Teacher, Principal and School)

Based on this definition of a teacher, TALIS collects key elements about teachers' background. It asks about teachers' personal attributes (e.g. gender, age, employment status, work experience, initial education and teaching program) as well as characteristics of the classrooms (e.g. the student composition of the class). In addition, TALIS collects principal and school background information. It asks about principals' personal attributes, education and experience as well as about school characteristics (e.g. location, school size, school type and funding model and student composition). This personal, classroom and school contextual information is important to consider in examining teachers' work and to critically examine the working conditions that teachers' perceive enable them to function effectively in their role. The background information will reveal basic characteristics which are of interest in their own right and as a context for the following themes for policy makers and researchers.

TALIS Themes and indicators

As mentioned before, the TALIS 2013 themes and indicators were chosen through participating countries' collaborative rating exercise. The following list of themes will be discussed in more detail in this section by drawing on the evidence stemming from current research in teaching and schooling. In addition to the following themes, TALIS also examines teacher self-efficacy and job satisfaction. These themes relate to the other themes more widely and are included in the discussion throughout the section and in the conclusion.

- Teacher education (initial education, induction and in-service professional development)
- School leadership
- Teacher appraisal and feedback
- School climate and ethos
- Teachers' pedagogical beliefs and practices

Theme: Teacher education, from initial education through induction to in-service professional development

Given the extensive research suggesting that teacher quality can have significant implications for student success (Darling-Hammond, 1999; Heyneman & Loxley, 1983; Luschei & Carnoy, 2010), it is appropriate that the TALIS BPC rated the theme *Teacher education, from initial education through induction to in-service professional development* as a very high priority. This theme maintains TALIS 2008 indicators on the profile of in-service professional development (including types of activities, participation rates, intensity of participation, mentoring and induction programs), the needs and demand for professional development, barriers preventing participation in professional development, and the perceived impact of the activities. Additionally, to permit an examination of how pre-service teacher education, induction phase, and in-service training are connected with each other, new indicators on initial teacher education are included. Since some indicators are retained across cycles, the investigation of trends in these variables will also be possible.

In many countries, there are multiple ways in which teachers may enter the profession, though often the path to becoming a teacher is through initial teacher education. The structure, content and emphasis of initial teacher education all vary greatly across countries (OECD 2005b), but initial teacher education usually includes opportunities for the development of practical experience alongside subject-matter training and pedagogical training.

Research on the impact of initial education on teachers' beliefs and practices and teacher effectiveness (as measured by student achievement) is relatively limited and offers inconsistent findings. A number of studies and reviews, however, have shown positive relationships between initial education and teaching effectiveness (Darling-Hammond, Holtzman, Gatlin & Heilig, 2005; Goldhaber & Brewer, 2000; Monk, 1994; Wilson, Floden & Ferrini-Mundy, 2001; Boyd, Grossman, Lankford, Loeb & Wyckoff, 2009). Furthermore, Cochran-Smith & Zeichner (2005) reviewed a number of studies that showed that the practical components of teacher education programmes can have positive impacts on pre-service teachers' self-confidence and motivation for teaching, their beliefs about teaching and learning, and their teaching practices. Kelchtermans and Ballet (2002) also mentioned the importance of the development of micro-political literacy in the induction phase as a practical issue. New items in TALIS 2013 will allow for an

examination of the type of initial education and experience of teachers as well as their perceptions of how well their initial teacher education prepared them for the profession.

Although initial teacher education might be a vitally important element of teacher training, initial teacher education alone might be insufficient in supporting all of teachers' knowledge needs. In particular, the development of procedural knowledge or the "how-to" knowledge developed in and by practice is not well supported by initial education absent of other professional development (Knight, 2002). In an educational climate that emphasises accountability, continuous change and development, and increased diversity, teachers experience a continuous need for new knowledge and skills to help them meet classroom challenges (Saha & Dworkin, 2009; OECD, 2010b).

Teachers' professional development activities might be thought of as having two levels of effect: an effect on teaching practices and an effect on teachers' levels of self-efficacy and job satisfaction. The extent to which professional development has an effect on these two levels of teachers' professional lives might depend both on how teachers evaluate the quality and usefulness of the activities in which they participate and how the school environment works in support of teachers' professional development, including providing appraisal and feedback systems. Professional development for teachers might help produce a positive school climate and ethos, but it might also be the case that a specific school climate and ethos is what helps produce teachers' professional development. Ultimately, the particular school context might determine the precise relationship between school climate, teachers' professional needs, and the form and content of professional development offered (Newmann, King & Youngs, 2000). Country level factors that are predictive of professional development include economic wealth, the level of equity in the educational system, and educational standards. At the school level, school autonomy versus central standards also has an impact on the resources provided for professional development. Critically, TALIS 2013 provides the opportunity to analyse variation in the aforementioned relationships between factors and effects from the point of view of teachers.

In many countries, schools and/or school authorities attempt to support professional development by allowing professional development activities to be organised during work hours and permitting teachers to obtain a leave of absence and/or research grants to undertake study (European Commission, 2010; OECD, 2012). At the same time, in TALIS 2008, many teachers noted that they have persistently unmet professional development needs, particularly in the areas of teaching special needs students, teaching with technology, and student discipline. Although most teachers surveyed engaged in some form of professional development, the majority of these teachers engaged in professional development activities for slightly less than one day per month. Teachers listed work schedule conflicts and a lack of opportunity as common barriers to pursuing professional development. TALIS 2013 will further examine the relationship between perceived professional development needs and the activities actually undertaken. This section will examine the following three areas of professional development: professional development and teachers' practices; professional development and teacher retention; and professional development and teachers' perceived self-efficacy and job satisfaction.

Professional development and teachers' practices

The impact of professional development on classroom practices appears varied, with evidence to suggest that professional development may not directly support teachers with developing important instructional skills (Snow-Renner & Lauer, 2005; Desimone et al, 2002). According to Hattie (2009), teacher professional development appears to have the strongest impact on changes in teacher learning, followed by changes in actual teacher behaviour, while less of an impact was found on student learning (p. 120). Thus, important goals for TALIS 2013 are to examine how schools are implementing professional development for teachers and to examine specific characteristics of professional development.

Professional development that focuses on helping teachers develop specific content knowledge has been identified by some researchers as a particularly effective form of professional development (Garet, Porter, Desimone, Birman & Yoon, 2001; Desimone et al, 2002) and studies have highlighted the importance of development activities that are attuned to the specific content needs of teachers (Hofman & Dijkstra, 2010). TALIS 2013 includes questions on the specific content of teachers' professional development activities, as well as questions teachers' needs for professional development. The inclusion of such questions creates the opportunity to investigate more specifically the relationship between professional development needs and professional development activities actually offered. To investigate further how to best utilise resources for teachers' professional development, TALIS 2013 investigates possible differences in the professional development needs of different categories of teachers. This is a particularly important goal of TALIS since research has indicated that teachers' subject areas and grades are related to their views on, and needs for, professional development (e.g. Torff & Byrnes, 2011).

Four types of professional development found to have the most impact on teacher knowledge and behaviour include "observation of actual classroom methods; microteaching; video/audio feedback; and practice" (Hattie, 2009, p. 120). Further, the three core features of teacher professional development that have a positive association with teachers' self-reported increases in knowledge and skills and changes in classroom practices are: collaboration and active learning; continuity across time and activities; and differentiation (Garet et al, 2001).

Collaboration and active learning

A range of studies conducted in the previous ten years have emphasised the importance of including a collaborative element in teachers' professional development (Darling-Hammond & McLaughlin, 1995; Youngs & King, 2002; Wei et al, 2009). Collaborative activities can be variously formal or informal, planned or incidental. Studies focusing on collaboration between teachers and teacher educators from the education faculties of universities have pointed out that such collaboration can help teachers develop a more purposeful professional knowledge base (Erickson, Brandes, Mitchell, & Mitchell, 2005). Furthermore, given that several studies, noted subsequently, on the topic suggest that a school's collective efficacy might be an important contextual factor in individual teachers' efficacy and student achievement, as well as teachers' level of job satisfaction and stress, professional development should promote collaboration (Goddard & Goddard, 2001; Caprara et al, 2003; Klassen & Chiu, 2010). Collaboration is also important because it is thought to encourage the participatory (or active) learning that supports changes in teaching practices. Indeed, as Fullan (2007) emphasises, teacher learning must be a process of personalisation, precision and professional learning. Activities that are linked to teachers' other experiences and encourage professional communication and sharing among teachers appear to be particularly valuable for supporting changes in teaching practice (Garet et al., 2001). Further, Desimone et al, (2002) point to stronger effects on teachers' practices from professional development activities that involved collective participation of teachers, from the same school, grade or department, and for activities that involved active learning opportunities, such as reviewing students work or feedback on teaching.

Continuity across time and activities

A body of research provides evidence that professional development that occurs in a continuous fashion and at regular intervals is most effective for supporting changes in teachers' practices (Abdal-Haqq, 1996; Ball, 1996; Lieberman, 1996; Garet et al., 2001; Kennedy, 2011). Moreover, a number of studies have questioned the effectiveness of a professional development model in which activities are primarily one-time workshops, conferences, or similar events. To this end, research has found that when professional development is ongoing, it is more likely to lead to changes in teacher practices and attitudes (Wei et al., 2009; Miles, 2009; Supovitz, Mayer & Kahle, 2000).

Across many countries, educators often find it difficult to regularly dedicate the necessary amount of time to professional development activities (e.g. Abdal-Haqq, 1996). Finding time for professional development may be particularly challenging for traditionally low-performing schools in which teachers, principals, and district officials spend more of their working time for student guidance and may feel burdened by increased reporting and testing requirements. Furthermore, a lack of qualified substitute teachers, as well as the costs associated with providing substitute teachers, may discourage teachers from participating in professional development activities that are scheduled during the school day (European Commission, 2010). In order to find the time necessary for professional development, Miles (2009) suggests that schools might consider creating double planning periods, combining planning periods with other non-instructional time such as lunch, and reducing teachers' administrative assignments. Ellis (1996) argues that, by sanctioning professional development and providing release time, the school district can play a critical role in ensuring that teachers have sufficient time for professional development. In TALIS 2013, we ask teachers questions about the barriers they experience that prevent them from participating in professional development.

Differentiation

Of course, as mentioned above, there is tremendous diversity in teachers' specialisations, locations in the educational system, and levels of experience, all of which might affect teachers' professional development needs and attitudes. Differences in teachers' level in the school system, in particular, have been found to impact their attitudes toward professional development (Torff & Byrnes, 2011; Taylor, Yates, Meyer, & Kinsella, 2011). Professional development should also be differentiated to help meet the individual needs of teachers. Offering teachers the option of choosing between different types of professionalisation networks has proved to be effective in terms of increasing self-efficacy and affecting perceptions of the working environment (Hofman & Dijkstra, 2010). Yet the European Commission (2010) has found that in most OECD countries, development plans contain compulsory training modules that are linked to the introduction of curricular or other reforms. TALIS 2013 includes indicators that can assist policy makers in understanding if teachers are being presented with professional development options that help with their individual needs. Further, the optional inclusion of teachers from ISCED levels 1 and 3 provides another opportunity to understand differences across grade levels with respect to teachers' professional development needs and attitudes.

Professional development and teacher retention

Various elements within teacher professional development might play a role in the retention of teachers, the evidence for which is discussed subsequently. In particular, studies have demonstrated potential benefits from induction activities as well mentoring (Smith and Ingersoll, 2004, Strong, Villar, & Fletcher, 2008). Further, working conditions including professional development are related with teacher attrition (Ladd, 2009). Traditionally, teaching has been an occupation characterised by high levels of attrition, particularly among beginning teachers. Several studies note that attrition does not appear to be a country specific issue but rather spans across a range of countries (Smith & Ingersoll, 2004; Bennell, 2004; Dove, 2004; MacDonald, 1999). In fact, the OECD (2005b) states that "although attrition rates are highest in the first few years of teaching, and decline with age, in most countries there are still reasonably large numbers of experienced teachers who leave before retirement" (p. 29). Indicators related to teachers' professional development and job satisfaction resulting from TALIS 2013 have the potential to assist policy makers and researchers with examining links between different types of professional development and attrition.

High-quality professional development, particularly in the form of mentoring or induction, may be key to increasing the likelihood that teachers will remain in the profession. In TALIS, induction refers specifically to the period of introducing beginning teachers into the profession, a practice which might also include mentoring. Although many studies argue for the importance of mentoring, evidence on the direct impact of

mentoring is limited and inconclusive. A few studies suggest that mentoring appears to affect teachers' classroom management skills, as well as their ability to manage their time and workloads (Evertson & Smithey, 2000). In an extensive literature review, Hobson et al (2009) observed that an increasing number of studies suggest that mentoring may contribute to increased retention and stability in schools. However, as the authors caution, the evidence is not strong. Many of the reviewed studies were qualitative and/or based on small samples. Further, a cost-benefit perspective study that considered the five-year rate of return for a comprehensive model of new teacher induction indicated that returns extended far beyond retention questions to include changes in teaching practices (Strong, Villar, & Fletcher, 2008). TALIS 2013 will provide information on teachers' experiences with induction, mentoring and professional development activities and principals' reports on programmes for induction and professional development across the range of participating countries.

Professional development and teachers' self-efficacy and job satisfaction

Professional development may also have an impact on teachers' level of job satisfaction and provide teachers with the means necessary to adapt to a continuously changing environment. Research suggests that teachers who develop a sense of professional growth through participation in ongoing professional development may have a stronger sense of professional competence and higher job satisfaction (Ma & MacMillan, 1999). In particular, professional development that includes a collaborative element can be a source of support and empowerment for teachers in schools undergoing change (Harris, 2002). TALIS 2013 offers the opportunity to more closely study the connection between professional development for teachers and teachers' perception of the "strength" of their professional identity, as well as the connection between professional development and teachers' perception of their capabilities as teachers as well as their general ability to effectively manage their classroom.

TALIS 2013 also includes information on teachers' ability to obtain feedback on their work in school. The inclusion of questions focused on appraisal and feedback adds an important dimension to the study of teachers' self-efficacy and job satisfaction and helps to further elucidate the relationship between professional development and school climate. Indeed, it is important to view teachers' work in the overall school context and to critically examine the working conditions that enable teachers to function effectively in their role as teachers. TALIS 2013 allows researchers to consider what schools provide to teachers, both in terms of possibilities for teachers' professional development and for adequate feedback on teachers' work.

Theme: School leadership

Unsurprisingly, school leadership remains a very high priority for countries participating in TALIS 2013. Results from TALIS 2008 and other research suggest that principals exert an indirect but measurable influence on school outcomes through their key role in shaping teachers' working lives (Marzano, Waters & McNulty, 2005; OECD, 2009b; Pont et al, 2008; Ladd, 2009). For example, in their study of how job satisfaction is linked to job commitment, teaching competence, organizational culture, and administrative control, Ma & MacMillan (1999) found that administrative control was the most important workplace factor related to teacher satisfaction, followed by teaching competence and organisational culture. Similarly, a study that examined administrative support along the four dimensions (building a school vision; developing specific goals and priorities; offering individualised support; and developing a collaborative school culture) found that administrative support was a significant predictor of teachers' job satisfaction and intent to stay in teaching (Tickle, Chang, & Kim, 2011). Improvements in organisational conditions contribute to lower rates of staff turnover, diminish school staffing problems and ultimately aid the performance of schools (Ingersoll, 2001). Further, administrative support was found to mediate teachers' satisfaction with their salary, as well as the impact of student behaviour on teachers' level of job satisfaction (Tickle, Chang, & Kim). It therefore seems to be of policy relevance to look more closely at

what characterises school leaders and school leadership, and how school leadership styles are associated with management of teachers, teachers' professional development, teachers' practices, beliefs and attitudes, and teachers' appraisal and feedbacks.

Principals have traditionally taken a central role in providing leadership at the school level. Broadly, the two core elements of a principal's role or styles of leadership are instructional leadership and administrative management (Sergiovanni, Kelleher, McCarthy, & Fowler, 2009). As seen in TALIS 2008, principals can simultaneously take on both roles (OECD, 2009b). Instructional leadership has been defined as the actions that a principal takes to promote growth in student learning (Flath, 1989). Principals who take a strong role in instructional leadership emphasise high-quality instruction and develop policies that support student achievement, such as supporting the development of learning communities, giving instructional feedback to teachers, modelling effective instruction, and supporting the use of assessment data in the classroom (Blase & Blase, 2000; National Association of Elementary School Principals, 2001; Kerr et al, 2006). In addition to playing an important role in encouraging a general school culture of learning and development, principals in most systems play an important role in ensuring that teachers have access to professional development programmes that respond to their needs. In schools where strong instructional leadership is present, TALIS 2008 showed that school principals are more likely to use professional development to address teachers' weaknesses as identified in appraisals (OECD, 2009b).

TALIS 2013 will once again examine the role of school leadership in fostering perceived effective teaching and learning environments. In addition to repeating indicators on the profile of schools, principals, and school leadership and management from TALIS 2008, a more nuanced approach is warranted and new indicators on distributed and team leadership will be incorporated. TALIS 2013 will provide evidence on the practices of school principals, focusing in particular on how school leaders are perceived to be successful in improving school environments, including working with teachers, fostering teachers' collective engagement, and offering professional development focused on student and school progress. In addition, information on principals' experience and training will be gathered. This will allow for an examination of the alignment between the professional development of teachers and of principals.

Characteristics and distribution of principals

TALIS 2013 additionally provides data to examine the distribution of principals across schools in participating countries. A number of studies suggest that teachers with weaker qualifications tend to be more likely to teach in disadvantaged schools, leading to potential disparities in educational opportunities for students attending these schools (Boyd et al. 2008; Betts, Reuben & Danenberg, 2000; Lankford, Loeb & Wyckoff, 2002). Few studies have investigated this issue for principals, but a similar pattern has been found in a study investigating the distribution of principals in North Carolina, USA (Clotfelter, Ladd, Vigdor & Wheeler, 2007). Furthermore, principal turnover also tends to be more frequent in disadvantaged or low-performing schools (Gates et al. 2006; Papa, 2007).

Any investigation of the perceived impact principals have on the teaching and learning environments of their schools must take into account the contextual factors related to the school and the principal (Zheng, 1996). One factor that has been shown to predict principals' effectiveness, measured in terms of student achievement in maths and student absences, is years of experience as a principal (Clark, Martorell & Rockoff, 2009). At the same time, the effects of principals' previous experience as a teacher and educational attainment are less supported. TALIS 2013 will gather information on principals' characteristics, including age, gender, and previous experience and training, which will allow for analysis of the profile of principals across countries and how these profiles relate to leadership styles and teaching and learning environments.

Distributed Leadership

Although leadership has traditionally referred primarily to school principals, research increasingly suggests school leadership is a broader concept in which leadership roles are not confined to one person, but are shared among many people (Pont, Nusche & Moorman, 2008; OECD, 2010; Sergiovanni et al., 2009; Ogawa & Bossert, 1995; Bennett, Wise, Woods, & Harvey, 2003). Distributed leadership focuses on leadership practices, including interactions with other leaders, teachers, staff, parents, and students, rather than formal leaders' traits, roles, functions or organisational structures (Spillane, 2006; Grubb & Flessa, 2006). Three specific aspects of distributed leadership include making collaborative decisions, emphasising school governance that empowers staff and students, shared accountability for student learning, and emphasising school-wide participation in efforts to evaluate the school's academic development (Hallinger & Heck, 2010).

A shift to an increased focus on distributed leadership in schools may also be useful because of widespread organisational changes resulting in flatter management structures, increased school autonomy, an emphasis on continuous improvement, and the view that distributed leadership can be a more effective way of coping with a complex, information-rich society (Pont, Nusche & Moorman, 2008; Harris 2008, 2009; Hallinger & Heck, 2009).

At the same time, it should be emphasised that distributed leadership does not diminish the importance of the principal's role in providing leadership (Hallinger & Heck, 2009; Leithwood et al, 2009). In fact, Elmore (2000) suggests that the principal plays a critical role in guiding and directing teachers throughout the process of distributive leadership and Gronn (2009) emphasises that both individual-focused and distributed leadership patterns can co-exist in the same location at the same time. Accordingly, it might be most useful to consider the concepts of individual or traditional leadership and distributed leadership as working in tandem to support student learning.

School leadership and school climate

Although empirical evidence on the impact of principals on student learning has been inconsistent (e.g. Hallinger & Heck, 1998), research increasingly suggests that school leaders can contribute to improved student learning by shaping the conditions and climate in which teaching and learning occur through supporting teachers' motivation, satisfaction, and working conditions (Pont, Nusche & Moorman, 2008). In response to increased school autonomy, accountability, and student and community diversity, the role of leaders in building a collaborative school culture and learning community has been emphasised. Furthermore, recent research in the United States suggests that teachers' perceptions of their working conditions in general, and school leadership in particular, are important factors in teacher retention (Boyd et al. 2009; Ladd, 2009). As the PISA 2009 report summarises, "the quality of an education system cannot exceed the quality of its teachers and principals" (OECD, 2010b).

In addition to assuming leadership in the area of instruction, principals in many systems also take a leadership role in the administration and management of the school community. Rather than simply

imposing goals, successful leaders are believed to develop the organisation by strengthening the school's collaborative culture and creating a more flexible organisational structure by demonstrating participatory leadership (Barker, 2007; Daly, 2009). As evidenced subsequently, it is clear that principals may support student achievement not only through instructional leadership, but also through administrative management that fosters a supportive school climate. For example, a recent study suggests that by improving key dimensions of the school climate, including the disciplinary, emotional, and organisational climates, leaders play a key role in student learning (Leithwood, Patten, & Jantzi, 2010). Furthermore, Griffith (2006) found that teachers' perceptions of support from the principal were also associated with decreased disparity in performance between minority and non-minority students

Another aspect of the school community in which principals can exert their influence is the space given to parents to be involved in school life and school decisions. The positive influence of parental involvement on student outcomes has been demonstrated, especially in the early years of a student's education (Fan & Chen, 2001; Jaynes, 2005; Jaynes, 2007). Corner and Haynes (1991) argue that "[p]arent involvement programs that are instituted in traditional bureaucratic and inflexible school environments are less likely to yield positive results than those that are part of a more collaborative organisational structure" (p. 271). Items aimed at identifying aspects of parental involvement in schools will be included in TALIS 2013, thus making it possible to examine the relationship between school leadership and certain aspects of parental involvement.

Theme: Teacher appraisal and feedback

Teacher appraisal and feedback systems, which work with individual teachers and support effective teaching practices, are a vital element of high performing schools. Because teacher appraisal and feedback can recognise, celebrate, and expand teachers' strengths while simultaneously challenging teachers to address weaknesses in their pedagogical practices, such practices can have an impact on classroom instruction and student outcomes (Santiago & Benavides, 2009; Jensen & Reichl, 2011). In fact, the information gleaned from appraisal and feedback processes can be used not just as a learning opportunity for individuals, but also as an opportunity to spread effective practices across schools. Furthermore, according to Isoré (2009), teacher evaluation is critical for aligning educational best practices with teachers' classroom practices and for increasing the attractiveness of the teaching profession. This section examines some of the key elements of appraisal and feedback systems and explores how teacher appraisal and feedback affects various elements of teachers' professional lives, including training and professional development, job satisfaction, and compensation.

As defined in TALIS 2008, teacher appraisal and feedback occurs when a teacher's work is reviewed by the school principal, an external inspector, or the teacher's colleagues (OECD, 2009b). Broadly, such evaluations provide an important, and often unique, opportunity for teachers to receive feedback on their work and serve as a means of identifying what is and is not working in the classroom and why (Behn, 2003). In addition, peer appraisal and feedback systems that provide constructive feedback aimed at improving student learning can support efforts to increase communication and collaboration amongst staff. However, despite these common general goals of teacher evaluation, the specific form of appraisal varies widely across contexts and can be formal or informal, subjective or objective, and summative or formative. Evaluation systems that are primarily summative may be particularly useful for quality assurance purposes, accountability, and teacher recognition, while evaluation systems that include a formative element can move beyond quality assurance to help teachers develop their pedagogical practices (Santiago & Benavides, 2009; Isoré, 2009). Furthermore, research suggests that it is important that appraisal and feedback systems are viewed as an integrated element of the school culture rather than as an "add-on" to existing systems (Santiago & Benavides, 2009; Marshall, 2005).

Of course, regardless of the specific form of the appraisal and feedback system, it is critical that the appraisal and feedback system be perceived as fair and accurate. To this end, it is vital to develop better instruments to be used in the evaluation process. Classroom observations are the most common assessment tool used in OECD countries, though interviews of teachers, teacher-developed portfolios, and student outcomes may also be useful depending on the context (Wertzler & Strudler, 2006; Strudler & Wertzler, 2008; Jun et al, 2007). Given the complexity of teachers' roles and responsibilities, it may be most accurate and instructive to gather multiple sources of evidence about teacher practices (Danielson, 1996, 2007; Peterson, 2000; Marshall, 2005). In fact, a recent report from Australia (Jensen & Reichl, 2011) suggests that to improve teaching and learning, schools should use at least four of the eight methods found to be most effective in assessing and developing teaching and learning, including student performance and assessments; peer observation and collaboration; direct observation of classroom teaching and learning; student surveys; parent surveys; 360-degree assessment; self-assessment and external observation. Gathering multiple sources of evidence may also help guard against the danger of performance reviews that are misaligned with ongoing assessments of teacher performance. For example, research conducted in one Australian district in 2003 estimated that although 99.85% of teachers were granted a 'satisfactory' outcome on their performance review, school principals estimated that up to 30% of teachers were either 'below average performers' or 'significant under-performers' (Department of Education & Training, 2003). The gap between official outcomes on teachers' performance reviews and principals' assessments of teachers' performance suggests that in order to become a useful tool for improving classroom practices, the accuracy and reliability of appraisal systems must be improved.

Depending on the form of teacher appraisal and feedback systems, evaluation can have a significant impact on various elements of teachers' professional lives, including training and professional development, job satisfaction, and compensation. First, research suggests that evaluation that includes a formative element in which evaluators give constructive feedback to the teacher can play an important role in teacher development (OECD, 2005b; Shinkfield & Stufflebeam, 1996; Isoré, 2009). Yet in order for such feedback to affect teaching practices, links between performance assessments and professional learning must be actively developed and cultivated (Osfer, 2006). Unfortunately, as suggested by TALIS 2008, teacher appraisal and feedback is often only weakly linked to professional learning and professional development opportunities and teachers' professional development is often not suited to their needs (OECD, 2009b). An effective system of professional learning, built around continual appraisal and feedback, would identify teachers' professional development needs, assign the appropriate professional development, and then, in time, assess the effectiveness and impact of that professional development. Importantly, the results of TALIS 2008 suggest that the specificity of appraisal and feedback influences the extent to which the feedback is able to support changes in teachers' practices (OECD, 2009b). Thus, schools that are committed to ensuring that appraisal and feedback have a meaningful impact on classroom practices may devote particular attention to ensuring that evaluation systems are designed to provide teachers with specific feedback.

Second, as researchers have observed, it can be difficult to prove a direct relationship between teacher evaluations and student achievement (Isoré, 2009; Figlio & Kenny, 2007). At the same time, when teachers receive continued feedback on their performance, it creates opportunities for teachers to improve performance and improve teaching practices, which, in turn, can have a powerful impact on student learning and outcomes (Hattie, 2009). To that end, in his meta-analysis of the various impacts on student outcomes, Hattie shows that giving constructive feedback to teachers based on appraisal of classroom teaching and learning has the largest impact of any school intervention on student performance (2009). Teacher appraisal and evaluation remains a vital element of effective educational environments. For example, in the first round of TALIS, teachers reported that appraisal and feedback increases their job satisfaction and significantly increases their development as teachers (OECD, 2009b).

In addition to being used to improve professional development opportunities for teachers, summative appraisal and feedback systems can also be used to reward performance. However, according to the results from TALIS 2008, appraisal and feedback generally appear to have a relatively minor impact on teachers' salaries and compensation. Although the impact ranged across regions, overall, only 9% of teachers reported that appraisal and feedback had a moderate or large impact on their salary and less than 11% reported that it affected a financial bonus or other type of financial reward (OECD, 2009b). The TALIS findings have been substantiated in other contexts, including Australia, where research found that although almost all Australian jurisdictions require teachers to undertake an annual performance evaluation, these evaluations rarely have any consequence for teacher salaries (Ingvarson et al., 2007). Similarly, in the most recent survey of teachers by the Australian Department of Education, Employment and Workplace Relations, only 6% of secondary classroom teachers classified themselves as receiving salary increments largely based on performance evaluations, while 78% stated they received salary increments based on years of service (McKenzie et al., 2008).

Regardless of the specific ways appraisal and feedback for teachers is used, as discussed above, it is clear that such systems hold the potential to impact teaching and learning in schools. Unfortunately, as the TALIS 2008 discovered, on average across TALIS countries, 13% of teachers have never received any appraisal or feedback in their school (OECD, 2009b). Moreover, in some countries, including Italy (55%), Portugal (26%) and Spain (46%), large proportions of teachers did not receive any appraisal or feedback at all (OECD, 2009b). Optimal appraisal and feedback systems that promote useful and timely feedback may include multiple forms of assessment. By investigating the relationship between appraisal and feedback and professional development and the links between appraisal and feedback and school development, TALIS 2013 will provide policy-relevant information on how appraisal and feedback is related to teachers' working lives.

Theme: School climate and ethos

The theme of school climate and ethos will provide indicators to further examine school contextual factors and how these differ across countries. Classroom and school climate (including teacher-student relationships, safety, a sense of community, shared values and norms, collaborative school culture, and inclusive practices and beliefs) will be among the indicators of processes occurring in the learning environment (see Table 2). Repeat indicators include measures of teacher-parent and teacher-teacher relations – factors shown to be predictive of student achievement (e.g. Cornelius-White, 2007). We use several indicators to measure school climate and ethos. We not only ask about school climate directly to teachers and principals, but also investigate it thorough working time and teaching practice. Because time spent on practice and learning is important for student outcomes (Van Gog, Ericsson, Rikers & Paas, 2005) and actual learning time sometimes comprises only around half of actual class time (Berliner, 1984; Yair, 2000), understanding how teachers spend their working time (in and out of the classroom) is an important focus of TALIS. Therefore, repeat indicators on the profiles of teacher working times are being carried forward.

Just as organisational climate has a significant impact on employees in the private sphere, so too does school climate represent a central element of the working lives, and thus the level of job satisfaction, of principals and teachers. Although the precise definition of school climate varies across studies and contexts, research has identified specific principal, teacher, and student behaviours and beliefs, as well as environmental factors that contribute to positive school climate. Among the most commonly discussed elements of school climate are teaching and learning practices, disciplinary norms, decision-making processes, organisational structures, safety, a sense of community, and interpersonal relationships (Allodi (2010); Anderson, 1982; Cohen, McCabe, Michelli & Pickeral, 2009; Battistich, Solomon, Watson & Shaps, 1997; Brophy, 1988). In addition, the classroom and school climate can be influenced by additional variables at the school level, including principal leadership and teachers' educational backgrounds, as well

as the opportunity for teachers to engage in continuous professional development, reflection, and planning. Of these issues, TALIS 2013 will focus on disciplinary issues, organisational structures, and community/interpersonal relationships.

A number of studies have demonstrated that school climate is related to the academic outcomes and emotional and social well-being of students (Battistich et al., 1997; Cohen et al., 2009; Rutter & Maughan, 2002; Engel et al., 2009). Taken as a whole, the studies suggest that the relational elements of school climate, including relationships between students and teachers, schools and parents, and principals and teachers, are important. For example, a study that focused primarily on the relationship between teacher support and students' self-concept found that perceptions of high support from teachers relate to higher student self-concept and lower levels of depressive symptoms (Reddy, Rhodes & Mulhall, 2003). When studying teacher-teacher and teacher-leadership relationships, Rutter (2000) and Rutter and Maughan (2002) found that collegial collaboration help to create a positive school climate. Finally, as Epstein and Sheldon (2002) suggest, strong school-parent relationships can play a particularly important role in improving school climate through increasing student attendance.

School organisation, including disciplinary and goal structures and professional culture, also appear to impact student achievement and well-being. Results of a recent study on how goal structures (i.e. the reward structure for teachers) prevalent in a learning situation affect student achievement indicate that positive outcomes such as academic achievement and positive peer relationships were associated with goal structures that are co-operative in nature rather than ones that were more individualistic (Roseth, Johnson & Johnson, 2008). In another study, the measurement of professional culture along three dimensions – satisfaction with leadership, professional co-operation and consensus – found that the school with the highest levels of bullying had significantly worse scores on all professional culture variables than the school with the lowest levels of bullying (Roland & Galloway, 2004). Similarly, a 2007 study found that a safe and stimulating learning environment has a positive effect on student involvement, attitudes, and educational attainment (Van de Grift, 2007).

A positive school climate in which teachers demonstrate enthusiasm for teaching and employ co-operative learning techniques may be particularly important for supporting students considered “at-risk”, students from disadvantaged or minority backgrounds, and students with special educational needs (Downer, Rimm-Kaufman & Pianta, 2007; Brophy, 1988). For example, Battistich et al. (1997) found that the potential benefits of a school community that is perceived as “caring” may be significant in schools with many disadvantaged students. Similarly, a study on the impact of teacher-student relationships on student achievement found that positive relationships appear to be important for students from immigrant backgrounds (den Brok, van Tartwijk, Wubbels & Veldman, 2010). Therefore, the presence of interaction or moderator effects of student background characteristics or school composition on the relationships between school and classroom climate and student learning environments should be investigated. By considering the interaction between student background characteristics and school climate, TALIS 2013 will contribute to our understanding of the relationship between school climate and student learning environments.

At the same time, it is not only students, but also teachers who are affected by school climate. Indeed, like the professional development discussed above, school climate is related to teachers' level of job satisfaction and sense of self-efficacy. For example, a study examining schools as caring communities found that eight dimensions of school climate, including teacher warmth and supportiveness, emphasis on pro-social values, and positive interpersonal behaviour, have the potential to lead to positive outcomes for both teachers and students (Battistich et al., 1997). Further, a sense of commitment and involvement appears to be related to organisational climates characterised by collegiality and collaboration, while climates of isolation and partition contribute to teacher dissatisfaction (Hargreaves, 1994, as cited in Ma &

MacMillan). Finally, studies suggest that a positive school climate also has a positive impact on teacher retention (Miller, Brownell, & Smith, 1999; Weiss, 1999).

Importantly, it is clear that school climate is not static, but has the potential to develop and improve through targeted support and intervention, including offering professional development opportunities for teachers or improving student-teacher ratios. To help identify elements of school climate that can be improved, researchers have developed instruments designed to help assess the educational environment, including questionnaires and frameworks for measuring teacher, student, and principal attitudes according to a variety of dimensions (Moos, 1979; National School Climate Center, n.d.; Cohen, Pickeral & McCloskey, 2008; Fraser, 1998). Furthermore, when studying the relationship between school climate and student learning environments, researchers should try to distinguish between student background variables that cannot be changed and organisational characteristics that are open to change. As TALIS 2008 demonstrated, teachers' assessment of school climate reveals that school climate varies not only across, but also within countries (OECD, 2009b).

Theme: Teachers' pedagogical beliefs and practices

The theme of teachers' instructional beliefs includes repeated indicators on the profile of teachers' beliefs about teaching. Additionally, new items on teachers' classroom practices and teachers' assessment practices are included in the questionnaires. The following literature review provides background evidence to support the collection of both existing and repeat indicators.

Teachers' pedagogical beliefs

A body of research developed over the past several decades suggests that teachers' beliefs are related to classroom practices and, ultimately, what students learn (e.g. Hoy, Davis & Pape, 2006; Leder, Pehkonen & Torner, 2003; Sacks & Mergendoller, 1996; Staub & Stern, 2002; Muijs & Reynolds, 2001). In particular, teachers' beliefs about the nature of their subject and about learning processes seem to have an impact on their instructional behaviours, as teachers who hold constructivist beliefs (i.e. see learning as a process of knowledge construction rather than a process of knowledge transmission) set more cognitively challenging tasks, thus supporting students' higher order thinking skills (Staub & Stern, 2002).

While teachers' beliefs about instructional processes are seen as one of the most closely linked with instructional practices, other types of beliefs that may shape teachers' professional behaviours, particularly those that pertain to teachers' views of themselves, should not be overlooked (Woolfolk Hoy, Davis & Pape, 2006). For instance, there is ample evidence that teachers' beliefs about their self-efficacy (i.e. their confidence in their ability to master professional tasks) is closely linked with their instructional practices, their general level of classroom engagement, and their overall well-being (Klassen et al., 2010; Tschannen-Moran, Woolfolk Hoy & Hoy, 1989). Moreover, teachers' evaluations of their own professional experiences, such as their satisfaction with their teaching performance or their well-being, are predictors of teachers' professional behaviours and their students' outcomes (e.g. Caprara et al., 2006; Van Horn et al., 2004).

The link between teachers' professional beliefs and student outcomes may not be straightforward, however, since research shows that teachers' beliefs and practices do not always overlap (Thompson, 1984; OECD 2009b). It is reasonable to assume that situational factors may constrain teachers' actions, thus leading to inconsistencies between beliefs and practices. Among these situational constraints, aspects of the school context, such as school climate and ethos or school leadership can play a significant role.

Teachers' beliefs and practices may also be significantly shaped by their formal education (Richardson, 1996). Thus, it is not surprising that teachers' beliefs often vary systematically according to the type of

training they have received (Tittle, 2006). However, teachers' beliefs are also shaped by their life experiences (Richardson, 1996) and the feedback they receive.

Triggering changes in beliefs remains a challenge (Forgasz & Leder, 2008; Hart, 2002). As Richardson (1996) points out, teachers' beliefs about learning and educational matters are often influenced by teachers' own experiences as students, their formal education and finally, their own life experiences. These influences make teachers' beliefs difficult to change unless they are targeted with explicit interventions (Feiman-Nemser, McDiarmid, Melnick, & Parker, 1989).

Evidence from TALIS 2008 suggests that significant variation in beliefs about teaching exists at the country- and teacher-level (OECD, 2009b). That is, teachers within a given school tend to hold a wide range of beliefs about teaching and there are systematic differences in teachers' beliefs across countries. The fact that meaningful differences in pedagogical beliefs were found across countries is not surprising given that language, culture, geography, and values all contribute to the school climate and thus influence the belief systems of teachers within a country. Less expected, however, is the relative heterogeneity of teachers' pedagogical beliefs within schools. One explanation for this finding is that teachers' beliefs are formed early on and remain stable over time. Thus, if schools do not explicitly provide programs that target teachers' beliefs, teachers within a given school may tend to possess a wide variety of beliefs. Therefore, TALIS will continue to examine variation in teachers' pedagogical beliefs at the country, school, and teacher levels. Further, investigating factors associated with particular beliefs might illuminate possible policy levers that can effectively modify teachers' pedagogical beliefs and promote an atmosphere more conducive to learning. TALIS 2013 will further investigate this relationship by examining how pedagogical beliefs differ by type of teacher training, certification, or employment status, professional development programs, or school-related factors such as school climate or leadership, as well as investigate interactions among these factors.

Teachers' pedagogical practices

This theme will investigate teachers' practices, including their pedagogical behaviours as well as their broader professional practices. Pedagogical practices are clearly at the core of teachers' and students' classroom experiences, yet TALIS 2008 revealed that in some countries, including Mexico, Italy, and Turkey, school leaders report that a lack of pedagogical preparation hinders the provision of instruction (OECD, 2009b). A lack of pedagogical preparation is particularly troubling because research on the effectiveness of schools has suggested that, in contrast to student background variables such as socio-economic status and cultural capital, the learning environment is the factor affecting student learning that is most readily modified (Scheerens and Bosker, 1997; Harris & Chrispeels, 2006). This section describes research findings on pedagogical practices, focusing in particular on key areas that are explored in TALIS. In addition, given the demonstrated interest in providing additional pedagogical training for teachers, this section explores the connections between pedagogical and professional practices, focusing on the impact of professional development and co-operation among teaching staff.

Research shows that teaching practices that clearly convey learning goals, maximise time spent learning, focus on meaningful interactions with the learning content, and provide students with sufficient support are powerful tools that enhance student learning (Hattie, 2009; Seidel & Shavelson, 2007). Following this evidence, TALIS broadly identifies structure, student orientation, and enhanced activities as basic dimensions of teaching practices (OECD, 2009b). According to Harris (2002), when teachers have opportunities to expand and develop their own teaching repertoires, they are more likely to provide an increased range of learning opportunities for students. Similarly, in a study of special education teachers recognised for excellence in teaching, teachers who are effectively able to promote literacy development appear to have experience with a variety of instructional approaches and have extensive background knowledge about instructional practices (Rankin-Erickson & Pressley, 2000). More specifically, a

systematic review of studies of literacy teaching found that teachers who are effective in improving students' literacy are characterised by a balance of constructivist and direct instructional practices (Hall & Harding, 2003).

Student assessment also remains an element of pedagogical practices which warrants attention. In a review of characteristics of effective assessment, Astin et al. (2003) suggest that assessment is most effective when it involves a diverse array of methods including those that require performance and when it is ongoing rather than episodic. Research specifically into assessment in mathematics found that regular use of formative assessments improves students' learning, especially if teachers have additional guidance on using the assessment results to design and individualise instruction (National Mathematics Advisory Panel, 2008)

It is important to acknowledge that although effective pedagogical practices clearly overlap across subjects and student populations, some practices may be specific to particular subjects or student populations. For example, for mathematics teachers, research into the benefits of teacher-directed and student-centred instruction remains largely inconclusive, though there is evidence that well designed and effectively implemented tutorials can have a positive impact on mathematics performance, particularly at the middle and high school levels (National Mathematics Advisory Panel, 2008).

Teachers' professional practices

Teacher practices are not only what happens in the classroom, but include professional practices in general. In fact, many contemporary studies of teachers focus not only on what happens in the classroom, but also on the professional activities in which teachers are involved, including the ways in which teachers interact with one another (Darling-Hammond et al., 2005; Clandinin & Connelly, 1996; Danielson & McGreal, 2000). Co-operation and collaboration among teachers has repeatedly been found to be a particularly important element of professional practice and can include the exchange of instructional materials, developing curricula, meeting to discuss student progress, and collective learning activities (Ying, 2007; Goddard, Goddard & Tschannen-Moran, 2007; Wei et al., 2009). Furthermore, collaboration has been shown to support teacher reflection, which is an essential aspect of pedagogical practice (Tse, 2007; Harris, 2002). Goodson and Hargreaves (1996) observe that it is vital that co-operation stems from a commitment to working with colleagues in order to share expertise surrounding ongoing problems of professional practice as opposed to an external mandate.

Factors of teachers' professional lives that have been found to hinder teacher success include a heavy workload that limits the amount of time teachers have for preparation, ineffective school management, and insufficient school resources (Hung, Oi, Chee & Man, 2007). Professional practices are also affected by culture. For example, in Oman, there is an increasing recognition of the need for teachers to feel more like professionals (Al-Hinai, 2007).

Given the impact of teacher practices on student achievement, it is important to note that training and professional development have been shown to have an effect on teachers' pedagogical practices (Tittle, 2006). For example, a four-year action research project in Hong Kong resulted in teachers becoming better at using project-based instruction (Yip, 2007). Some researchers have argued that the importance of pedagogical practices for student achievement warrants a shift in initial teacher education from a focus on what teachers know and believe to focus on what teachers do (Ball & Forzani, 2009). At the same time, it is important to recognise that teachers' practices and beliefs are intimately intertwined (Aguirre & Speer, 2000; Cohen, 1990; Thompson, 1992). TALIS 2013 will continue to investigate the link between effective pedagogical practices, teacher beliefs, and student achievement.

Conclusion

TALIS 2013 aims to gather quality indicators on each of the above themes in order to provide participating countries with comparable data on the conditions of teaching and learning in their lower secondary schools (and for some countries, primary and upper secondary schools). As mentioned previously, TALIS does not measure how these themes impact or relate to teacher effectiveness or student learning. It does, however, measure an important related indicator, teachers' feelings of **self-efficacy**, which can provide a window into the potential impact teachers' can have on student learning. Self-efficacy has been a focus in developmental psychology and educational research, particularly since the seminal work of Albert Bandura on social cognitive theory, which stipulates that behaviour is affected by outcome expectations and by efficacy expectations (Bandura, 1977, 1978). Analyses of TALIS 2008 data demonstrated a relationship between a number of school leadership and teacher level factors with higher levels of teacher self-efficacy, including for example, teachers' participation in collaborative forms of professional development, teachers' appraisal and feedback on their work, and teachers' use of a greater variety of teaching practices in the classroom (e.g. Vieluf et al., 2012).

These findings are consistent with research which suggests that teachers who develop a sense of professional growth through participation in ongoing professional development may have a stronger sense of professional competence and higher job satisfaction (Ma & MacMillan, 1999). In particular, professional development that includes a collaborative element can be a source of support and empowerment for teachers in schools undergoing change (Harris, 2002). TALIS 2013 maintains the focus on teacher self-efficacy and includes expanded indicators on different aspects of teacher self-efficacy (including pedagogy, classroom management, and student engagement), which will allow for a closer look at the relationship between the various themes and indicators presented in this section and different aspects of teacher self-efficacy.

The breadth of academic and policy research in education is extensive. The sample of literature included in this section includes country-specific and international research and provides a foundation for the development of common indicators that appear to be relevant to an international survey such as TALIS. The priority rating by TALIS participating countries and the literature review in this section aimed to provide an overview that helped guide the creation of the TALIS 2013 survey. Each subsection provided educational policy and research evidence in support of the indicators. This section shows that the themes requested by the TALIS participating countries are important aspects of educational processes and may serve as potential avenues for educational improvement.

Section III will take a turn away from a discussion of TALIS 2013 themes and indicators and focus on design issues and survey operations.

SECTION III – DESIGN OF TALIS 2013

Introduction

The following section introduces the TALIS design as well as an overview of survey operations. In particular, the target population, instruments, and other details are included. To ensure a process of continuous improvement from cycle to cycle, a discussion of what was learned from TALIS 2008 is also presented. Areas for improvement are noted and the process for scale and item improvement and refinement are discussed.

Brief overview of the sample design

TALIS investigates the learning environment and working conditions of teachers in schools. Information is gathered via paper-and-pencil or on-line questionnaires that are administered to a sample of teachers and their principals. The representative samples consist of approximately 200 schools per country⁴ and 20 teachers within each school. The nominal international sample size was set at a minimum of 4,000 teachers and the minimum school participation rate was set at 75% after replacement. The international sampling and operational parameters applied in TALIS are shown in Box 3.

Box 3: The TALIS design in brief

- **International target population (Core):** lower secondary education (ISCED 2) teachers and the principals of their schools
- **International options:** primary (ISCED level 1) and/or upper secondary (ISCED level 3) education teachers and the principals of their schools; school-level link to PISA 2012 (aiming at teachers who will be teaching 15-year olds in 2013 in schools that took part in PISA 2012)
- **Sample size⁵:** 200 schools per country, 20 teachers in each school
- **Sampling:** probability samples of schools and of teachers within schools
- **Target response rates:** 75% of the sampled schools (school considered responding if 50% of sampled teachers respond), aiming for a 75% response from all sampled teachers in the country
- **Questionnaires:** separate, adaptable questionnaires for teachers and principals, each requiring around 45 minutes to complete
- **Modes of data collection:** self-administered paper and pencil or on-line completion
- **Phases:** a pilot study (focus group pretesting), a field trial and the main data collection

⁴ The term “country” is used here and to refer to any TALIS “Participant”, which may be a country, an OECD partner economy, an educational system, a region/jurisdiction or a likewise sub-national entity.

⁵ The ‘Sample Size’, ‘Sampling’, and ‘Target response rates’ apply for each specific target population (*i.e.* Core, ISCED level 1, ISCED level 3 and school-level link to PISA 2012).

- **Main data collection windows:** three months period towards the end of the 2012-2013 school year

The participating countries determined that the main focus of TALIS 2013 should be teachers of lower secondary education (Level 2 of the 1997 revision of the International Standard Classification of Education, ISCED 97⁶) and their school principals.

Countries that participated in TALIS 2008 successfully managed to keep the proportion of excluded teachers to less than 5%⁷ (OECD, 2010c, Table 5.1), thus a 5% threshold has been adopted for the future rounds of TALIS as an upper limit for the exclusion of teachers from the survey population. Schools entirely devoted to students with special needs, and schools offering exclusively adult education have been considered out of scope for TALIS 2013 to keep consistency with the TALIS 2008 sampling. Moreover, substitute and other emergency teachers are excluded from the international TALIS 2013 target population, as depicted in Figure 1.

Figure 1: International and national target and survey populations

TALIS (ISCED Level 2)				
TALIS out of scope	TALIS international target population = TALIS international survey population			
<ul style="list-style-type: none"> • Adult education • Schools for students with special needs • Substitute or emergency teachers 	NATIONAL out of scope	NATIONAL target population		
	Entire province, state, or sub-population	NATIONAL exclusions	NATIONAL survey population	
		<ul style="list-style-type: none"> • Remote, small schools • Adult education 	Not Sampled	<i>In Sample</i>
	not more than 5% of teachers		at least 95% of teachers	

For TALIS 2013 countries have expressed their interest in pursuing international options, *i.e.* surveying ISCED levels 1, 3 and implementing a school-level link to PISA 2012. There are consequently four target populations for the survey:

- Core: ISCED Level 2 teachers and school principals.
- International option: Primary school (ISCED Level 1) teachers and school principals.
- International option: Upper secondary (ISCED Level 3) teachers and school principals.
- International option: School-level link to PISA 2012 (aiming at teachers who will be teaching 15-year-olds in 2013 in schools that took part in PISA 2012).

⁶ This classification will still be valid for TALIS 2013.

⁷ There are two exceptions: Estonia excluded 5.7% of the targeted teachers; however, the size of their base population was not quite 9,000 individuals. Turkey excluded 5.5% of their targeted teachers from a population of nearly 158,000. If a threshold had been set at 5%, say, Estonia would have missed that mark by 65 teachers and Turkey by about 770.

As it is the objective of the survey to obtain a representative sample of each of these four target populations, a sampling framework is required that reflects this objective. The target populations must yield sufficient data and indicators for policy makers at the classroom, school, and labour market/professional and system levels. The sample must be sufficiently broad so that labour market and system-wide indicators can be used to draw valid inferences used for policy analysis. The resultant data should also contain the necessary detail so that school-level data and indicators would facilitate policy discussion. This is required for both the school principal and teacher questionnaires and for each target population.

A sampling strategy cannot be developed in isolation: it must work in symbiosis with the manner in which, and to whom, the survey instruments are expected to be distributed, accounting as much as possible for response burden and practical field considerations. For example, the advantages and disadvantages of using a universal instrument (i.e. an instrument not specific to any ISCED level) across all three ISCED levels have been carefully discussed. Although it might have been advantageous to use a universal instrument, it appeared that adaptations were required to fully address the specificities of the optional ISCED levels, and especially those of the vocational tracks. Furthermore, the use of specific references to condition teachers' answers (e.g. the use of a "reference" or "target" class to focus attention in regards to teaching practices) compelled the development of level-specific instruments, which have substantial implications for the sample design and the overall sample size.

In countries opting to survey more than the Core population, one might find schools that cover more than one ISCED level and where the teachers themselves might teach at more than one ISCED level. Using schools sampled for one ISCED level to obtain a sample of teachers for a second ISCED level is a tempting strategy. Details of the within-school sampling procedures under this scenario were developed and proved to be too demanding from the points of view of computer programming, of automating the school coordinator interventions, of the remaining manual labour in participating schools, and of the burden on selected teachers and principals. Hence, the Board of Participating Countries adopted the position (EDU/INES/TALIS/M(2011)2, p. 7-8) that, as much as possible, samples of schools for each ISCED level should be distinct from one another (minimised sample overlap). Since it is expected that the estimates for each population will be of similar statistical quality or precision, samples from each population should be of similar sizes.

The "nominal" sampling plan for TALIS 2013 is a two-stage design, with schools as primary sampling units and teachers as secondary sampling units. School principals are asked to respond on behalf of their school. Based on response rates and design effects obtained by TALIS 2008, the sample sizes for TALIS 2013 have been set at 200 schools and 20 teachers per school, for each population (or ISCED level) in which a country participates. In a country opting to survey all three ISCED levels and where each school offers education at only one ISCED level, as many as 600 schools and 12,000 teachers would be asked to participate in TALIS 2013.

Acceptable participation rates have been fixed at 75% of schools (after replacement of non-responding schools) and 75% of teachers from participating schools, understanding that a school is deemed to have participated if at least 50% of its sampled teachers have participated. This requirement is similar to that of TALIS 2008, which has proved quite manageable by almost all participating countries.

Requirements for the school-level link to PISA 2012 cannot be set in the same manner: the sample of PISA schools represents a universe somewhat different from the TALIS 2013 universe; the sample of schools and the set of participating schools will be determined by the PISA 2012 main collection campaign; the nominal sample size for PISA 2012 is 150 schools. However, the within-school sample size for the school-level link to PISA 2012 is set at 20 teachers, oversampling math teachers.

Brief overview of survey instruments

In general, the TALIS 2013 instruments cover selected antecedents, school inputs, processes and a limited set of outcomes, as discussed in Section II. All variables presented in the Table are in line with the policy objectives for the survey set by the Board of Participating Countries (BPC) and has been translated into questionnaires by the Instrument Development Expert Group (IDEG).

Table 2: A classification of the core parts of TALIS 2013 questionnaires

	Teacher Questionnaire	Principal Questionnaire
<i>Antecedents</i>	Teacher background characteristics	Principal background characteristics
<i>School input</i>	Student characteristics as perceived by the teacher	School background characteristics
	Teacher continuous professional development	Continuous professional development for the principal
<i>Processes</i>	School leadership and management	School leadership and management
	Teacher feedback	Teacher formal appraisal
	Teachers' instructional beliefs	Teachers' instructional beliefs
	Teachers' pedagogical practices	and pedagogical practices
<i>School output</i>	School climate and school management	School climate
	Teacher efficacy (aggregated to school level)	
	Teacher satisfaction (aggregated to school level)	Principal satisfaction

The TALIS questionnaires are based on:

- A review of the proposed themes and indicators for the survey to ensure that the variables, indicators and themes provide a logical basis for instrument development, giving consideration to completeness and coherence;
- A review of the catalogue of existing questions compiled from the TALIS 2008 survey, as well as other national and international studies in order to assess their suitability for measuring the variables within the TALIS 2013 analytic framework and to identify other possible sources of exemplary questions;
- Newly developed questions for the development of the identified indicators and research questions; and
- A thorough review and revision of the questionnaires in the light of the pilot and Field Trial results.

As discussed above for the sampling strategy, the advantages and disadvantages of using a universal instrument across all three ISCED levels have been discussed. The Instrument Development Expert Group (IDEG) reached the conclusion that adaptations were required to fully address the specificities of the optional ISCED levels as well as to maintain the instrument's design for the Core population (ISCED level 2) comparable between 2008 and 2013. Likewise, the use of specific references to condition teachers' answers, i.e. the use of a "target class" to focus attention in regards to teaching practices, necessitated the

development of level-specific instruments yet starting out from a common, adaptable template that maximises the data overlap and potential for comparison between levels.

Results and lessons learned from the TALIS 2008

TALIS 2008 generated a number of important outputs. For example, TALIS 2008 resulted in an international database and database user guide that are available publicly and internationally; the TALIS international report, which contains detailed analyses of each of the themes; numerous national reports (for example Korsnakova, & Kovacova, 2010); and a detailed account of the methods and procedures, as described in the TALIS 2008 Technical Report (OECD, 2010e). Deeper, more nuanced analyses are contained in thematic reports (European Commission, 2010; Jensen, B et al., 2012 and Vieluf, S, et al., 2012).

In each case, these materials provide meaningful contributions to the knowledge base surrounding teachers and their environments as well as to the field of survey methodology. From these outputs, it is expected that further research into the content and methods of TALIS will be undertaken.

Already, the analytical work underlying the existing reports provided an important background against which the overall design and instrument development for the current TALIS cycle could be shaped. Items on both the 2008 Principal and Teacher instruments generally worked well and analytical objectives were achieved. This was especially true with respect to the areas of professional development needs, teachers' impressions of appraisal and feedback in their school, teachers' beliefs and practices, self-efficacy and classroom climate, and school climate and teacher behaviours. However, analyses of the TALIS 2008 data pointed out several areas that can be improved.

Specific issues that required attention were related to item wording, item taxonomy, the issue of social desirability and stylistic responding in general (see Vieluf, 2008; OECD, 2009b). The results of the cross-cultural validity analyses indicated that the influence of stylistic responding and variations in how constructs were understood was relatively consequential and that country means on almost all indices, especially those measuring teaching beliefs, classroom teaching practices and co-operation among teaching staff indices, are not directly comparable between countries. In other cases, the item wording has affected item clarity so that they were interpreted in unintended ways. For example, Scheerens & Steen (2010) discuss the contents and analytical potentials for the set of questions in TALIS 2008 that tap into the professional development theme, yet they also point towards issues relating to the psychometric quality of specific items. Predominantly, such issues relate to the way certain terms or concepts were understood and interpreted by teachers, especially with respect to formal vs. informal professional development, as well as how, again, stylistic responding – in this case socially desirable responding – is likely to have affected the measurement properties of items and introduced bias.

Finally, it became evident that specific design aspects of the 2008 cycle, like the triangulation of system, principal and teacher perspectives on, say, appraisal and feedback were not utilised fully, indicating a lower analytical and policy priority. In a few other instances, analyses indicated that the response process and the cognitive burden required to retrieve, estimate and/or accumulate certain information and then record it should be looked into more closely and re-considered where needed in future rounds.

These and similar inputs have been carefully considered during the design stage, for example with respect to planning focus group reviews of the instrument drafts at the national level, but more importantly during the instrument development work.

Areas for improvement in current and future cycles

The aim of TALIS is to compare teacher characteristics, beliefs and attitudes as well as the associated school-level factors and effects across a relatively large number of diverse countries. Establishing comparability in cross-national research, however, entails methodological challenges as it needs to deal with the issue of equivalence and bias. In light of the way the instruments seemed to have functioned cross-culturally in 2008, also due to the frequent use of 4-point Likert-type response categories for self-assessments, it would be reasonable to consider and implement measures and/or modifications that are intended to either ameliorate the influence of stylistic responding or at least yield a better measure of such styles across and within countries to estimate the influence or “leverage” of response style.

Several measures can be implemented. Clearly, it would be important and most beneficial to define specific terms and constructs, along with straightforward instructions about their scope where needed, in clearer and simpler ways in order to allow for better, semantically more equivalent translations. Secondly, response categories that leave relatively large room for interpretation (as indicated by words such as “some” or “a little”) or that tap into endorsement or agreement could be rephrased to capture more observable, invariant measures of magnitude (such as “weekly” or “at least in half of the lessons”). With respect to acquiescence (blind agreement), items designed to form a scale could be “balanced” such that they include both positively as well as negatively phrased statements, using bi-polar response categories, for the same latent construct, making acquiescent responding less likely and somewhat detectable. For the issue of extreme responding, a larger number of response categories for agreement (say, 6 rather than 4) might be considered to ameliorate the tendency for (or against) extreme category use by offering another, more modest, choice. However, there are also practical considerations (e.g. time series or challenges related to the translation of subtle nuances in response category wordings) that may argue against such changes.

TALIS might also draw on the emerging literature and evidence in relation to vignettes (descriptions of practical situations, personas, traits and behaviours) to anchor self-assessments or use so-called situational judgements test, where respondents are provided with a verbal description and then asked how they might typically deal with such a situation. A variety of additional, innovative item formats exist and are currently being trialled and analysed in PISA (Buckly, 2009; OECD, 2010; OECD 2011). These may also serve to address issues of response style and social desirability but the results and practical possibilities are either not clear yet, expected to pose challenges with respect to interpretation, or criticised on conceptual terms. In this context, it is important to note that the TALIS questionnaires should have a limited response burden of no more than 45 minutes. Then, introducing additional items to measure or ameliorate response bias and, consequently, increasing the reading load per scale or theme needs to be done with caution, if at all. Further, alternative item types such as vignettes or forced choices tend to increase the amount of text (and, hence, translation work) required to yield a comparable number of data points. With a fixed questionnaire length, such measures would inevitably reduce the breadth and/or depth available for other themes and indicators. The analysis of PISA 2012, which retained a small number of forced-choice items and situational judgement tests and vignettes, is expected to yield important insights into the possibilities and limitations of these item types for future rounds of TALIS.

In discussions about the interpretations of the cross-cultural differences in TALIS, the issue of response styles (mostly social desirability, acquiescence, and extremity scoring) was mentioned repeatedly. TALIS 2008 was able to examine acquiescence and extremity scoring (Vieluf, 2008), but could not adequately address the issue of social desirability as it did not include a corresponding measure. In an effort to ameliorate social desirability bias and to address the criticism in relation to this, it would be reasonable to investigate the effect of styled responding again but also include specially designed scales and items in the instruments that are worded to detect socially desirable responding. The most important reason to include such a measure is the expected increase in the quality of the survey. By including a measure of social

desirability, it would be statistically possible to investigate to what extent cross-cultural differences in scores on TALIS constructs are a consequence of or can be attributed to response styles. If cross-cultural differences in response styles are not considered, all observed cross-cultural differences would need to be taken at face value. For example, if two countries differ in teachers' job satisfaction, it is reasonable to expect that cross-cultural differences in scores on this scale are influenced by higher social desirability scores among teachers of the country where job satisfaction is more desirable. There should be no intention to use or report these data for other reasons than the stated statistical and methodological purposes. Analysis using the 2013 Field Trial data indicated socially desirable responding in line with expectations and previous research.⁸

Finally, questionnaire length and continuity are also primary considerations when developing new indicators. That is, it is often necessary that items selected for possible retention in a TALIS cycle are omitted to allow for the introduction of new indicators. At the same time, consideration must be given to minimising loss and avoiding to compromise the study's analytic value over time. In more general terms, with further developments, TALIS might consider a mid- to long-term framework that more clearly identifies core topics, themes and indicators and those that are of interest at one point of time only.

Survey operations in brief

Each cycle of TALIS includes three major components of a large-scale international comparative survey: a pilot study, a Field Trial and the Main Survey. In order to validate the quality and the content of the questionnaires, especially for new materials, a pilot study is conducted in as many countries as possible. For 2013, a qualitative pilot study approach was adopted. Following this approach, feedback and comments from teachers and principals of all ISCED levels was requested as a result of guided focus group discussions carried out in all pilot study countries. Field trial instruments based on the results and feedback collected in the pilot study were prepared.

The objective of the field trial (FT) is to test the survey instruments and operational procedures in all participating countries in preparation for the main survey (MS). The field trial sample size per country is 400 teachers and 20 principals out of 20 schools for the ISCED level 2 core and international options (as applicable). Each country is required to run this field trial according to the standardised procedures before the main study. Technical standards and corresponding quality control measures are in place to ensure that the study is implemented in ways that can yield comparable data.

The main survey (MS) data collection is conducted in two waves, each towards the end of the school year, taking into account the different timing of the school year in northern and southern hemisphere countries. A sample of 4,000 teachers and their principals working in 200 sampled schools is selected for the ISCED level 2 core and each international options. National study centres prepare individualised national survey operation schedules within the given international timeline. The field trial and main survey are carried out according to the technical standards, manuals and guidelines to ensure high response rates and high quality data.

All questionnaires are made available to countries in English and French. For the field trial and the main survey, questionnaires are adapted and translated at the national study centres and submitted for international translation verification.

An optional on-line mode of questionnaire delivery was provided to countries during TALIS 2008, and proved to be a successful experience. This option offered a number of operational benefits, including a

⁸ Van de Vijver (2012). *Results for Social Desirability Scale*. Brief expert report provided to OECD Secretariat following analyses of the TALIS 2013 Field Trial data.

significant reduction of paper handling and data capture costs for national centres. On-line data collection helps improving administration of questionnaires. It allows for more flexibility, adaptivity, and efficiency in administering questionnaires. For example, filter questions can guide respondents through the questionnaire, inconsistencies in responses can be checked online, and no manual data entry has to occur. On-line data collection is also an option for countries in TALIS 2013.

TALIS 2013 requires detailed attention regarding all aspects of survey quality and quality control measures. Quality control measures will be implemented in the following areas of activities:

- standards, manuals, guidelines;
- sampling plan implementation;
- instrument preparations including national adaptations, translation and translation verification;
- survey implementation and data collection (paper-and-pencil and on-line);
- international and national quality control monitoring of data collection;
- data entry, processing and products;
- weighting;
- adjudication; and
- report production.

Standards, manuals and guidelines define the rules national centres are asked to follow when preparing and implementing TALIS 2013 in the countries. Special attention is provided to the training of National Project Managers (NPMs) and their staff to enable them to fulfil all required tasks and activities in the highest quality possible.

In international comparative surveys like TALIS, it is of importance to apply instruments in many different countries and languages that are identical in meaning, wording and style. Several quality control steps have been developed to ensure the comparability of the instruments. First, National Adaptation Forms are prepared by national centres and approved by the International Study Centre (ISC). Second, instruments are translated by national centres by following the provided translation manual and guidelines. Third, all translated instruments have to pass the translation verification procedure that flags any deviation of the translated instruments from the source versions. Intensive communication during the translation/verification process guarantees high quality survey instruments. All adaptations and acceptable deviations from the source versions of the questionnaires are documented and considered during data processing and adjudication. A similar strict approach is applied for countries that choose the online data collection option.

International quality control monitoring is a central part of the quality control measures of TALIS 2013. An International Quality Control Programme is implemented and trained Quality Control Monitors (QCMs) conduct this programme in each country. In addition, a National Quality Control Manual as well as training and guidelines for NPMs will be provided to prepare and implement national quality control measures.

After the data collection is completed in each country, NPMs are obliged to follow the standards and guidelines in the Data Management Manual and to attend the respective Data Management Trainings. Any codebook adaptations are documented by NPMs and submitted to the ISC for approval. Data entry software together with codebooks support standardised data entry procedures and data processing. Double data entry of paper versions of the questionnaires by two key-entry operators is an effective measure to

detect and reduce systematic or incidental data entry errors. Here, the advantage of the online data collection option becomes evident because data entry is already predefined in terms of value ranges and variable types. Data submission of the national centres is monitored closely by the ISC to verify the completeness and quality of the data received.

Finally, a fully documented international database containing the teacher and school principal responses, together with the survey weights to allow published estimates to be reproduced and original analyses to be conducted, will be made available free of charge on the web. Further, a technical report documenting the methods and procedures used in developing and implementing TALIS 2013 will be prepared and published.

REFERENCES

- Abdal-Haqq, I. (1996), *Making time for teacher professional development* (Digest 95-4). Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education, www.ericdigests.org/1997-2/time.htm.
- Aguirre, J. and N.M. Speer (2000), "Examining the relationship between beliefs and goals in teacher practice", *Journal of Mathematical Behavior*, No. 18, pp. 327-356.
- Al-Hinai, A.M. (2007), "The interplay between culture, teacher professionalism, and teacher professional development in times of change", in T. Townsend and R. Bates (eds.), *Handbook of teacher education: Globalization, standards, and professionalism in times of change*, Dordrecht, The Netherlands: Springer, pp. 40 - 52.
- Allodi, M. (2010). Goals and values in school: a model developed for describing, evaluating and changing the social climate of learning environments. *Social Psychology of Education* No. 13, pp.207-235.
- Anderson, C.S. (1982), "A search for school climate: A review of the research", *Review of Educational Research*, No. 52, p. 368.
- Astin, A.W., et al. (2003), *Nine principles of good practice for assessing student learning*, AAHE Assessment Forum, Seattle, WA, June 2003.
- Ball, D.L. (1996), "Teacher learning and the mathematics reforms: What do we think we know and what do we need to learn?", *Phi Delta Kappan*, No. 77, pp. 500-508, www.pdkintl.org/index.htm. Ball, D.L. and F.M. Forzani (2009), "The work of teaching and challenge for teacher education", *Journal of Teacher Education*, No. 60(5), pp. 497-511.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, 84, pp. 191-215.
- Bandura, A. (1978). Reflections on self-efficacy. *Advances in Behavioral Research and Therapy*, 1, pp. 237-269
- Barker, B. (2007), "The leadership paradox: Can school leaders transform student outcomes?" *School Effectiveness and School Improvement*, No. 18(1), pp. 21-43.
- Battistich, V., et al. (1997), "Caring School Communities", *Educational psychologist*, No. 32(3), pp. 137-151.
- Behn, R.D. (2003), "Why Measure Performance? Different Purposes Require Different Measures", *Public Administration Review*, 63: 586-606.
- Bennell, P. (2004), *Teacher motivation and incentives in Sub-Saharan Africa and Asia*, Brighton, UK: Knowledge and Skills for Development.
- Bennett, N., C. et al. (2003), *Distributed leadership: A review of literature*, London: National College for School Leadership.

- Berliner, D. (1984), The half-full glass: A review of research on teaching, in P.L. Hosford (ed.), *Using what we know about teaching* (pp. 51-84), Alexandria, VA: Association for Supervision and Curriculum Development.
- Betts, J.R., K.S. Rueben and A. Danenberg, (2000), *Equal resources, equal outcomes? The distribution of school resources and student achievement in California*, San Francisco, Public Policy Institute of California, www.ppic.org/main/publication.asp?I=64.
- Blase, J. and Jo. Blase (2000), "Effective instructional leadership: Teachers' perspectives on how principals promote teaching and learning in schools", *Journal of Educational Administration*, No. 38(2), pp. 130-41.
- Boyd, D., et al. (2008), "Who Leaves? Teacher Attrition and Student Achievement", *NBER Working Paper*, No. 14022, May 2008.
- Boyd, D., et al. (2009), "The influence of school administrators on teacher retention decisions", *CLADER Working Paper*, No. 25, Washington, DC: The Urban Institute.
- den Brok, P., et al. (2010), "The differential effect of the teacher-student interpersonal relationship on student outcomes for students with different ethnic backgrounds", *British Journal of Educational Psychology*, No. 80(2), pp. 199-221.
- Brophy, J. (1988), "Research linking teacher behavior to student achievement: potential implication for instruction of Chapter I students", *Educational Psychologist*, No. 23(3), pp. 235-286.
- Buckley, J. (2009), *Cross-National Response Styles in International Educational Assessments: Evidence from PISA 2006*, Department of Humanities and Social Sciences in the Professions, Steinhardt School of Culture, Education, and Human Development, New York University, New York.
- Caprara, G. V., C. Barbaranelli, L. Borgogni and P. Steca (2003), "Efficacy Beliefs as Determinants of Teachers' job Satisfaction", *Journal of Educational Psychology*, No. 95(4), pp. 821-832.
- Caprara, G.V., et al. (2006), "Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level", *Journal of School Psychology*, No. 44(6), pp. 473-490.
- Clandinin, D. J. and F. M. Connelly (1996), "Teachers' professional knowledge landscapes: Teacher stories- stories of teachers- school stories- stories of schools", *Educational Researcher*, No. 25(3), pp. 24-30.
- Clark, D., P. Martonrell and J.E. Rockoff (2009), "School principals and school performance", *CALDER Working Paper 38*, Washington, DC: The Urban Institute.
- Clotfelter, C.T., et al. (2007), "High poverty schools and the distribution of principals and teachers", *CALDER Working Paper 1*, Washington, DC: CALDER Urban Institute, National Center for Analysis of Longitudinal Data in Education Research.
- Cochran-Smith, Marilyn and Ken Zeichner (eds.) (2005), *Studying Teacher Education: The Report of the AERA Panel on Research and Teacher Education*, Mahweh, N.J.: Lawrence Erlbaum Publishers.
- Cohen, D. (1990), "A revolution in one classroom: The case of Mrs. Oublier", *Education Evaluation and Policy Analysis*, No. 12(3), pp. 311-329.

- Cohen, J., *et al.* (2009), "School climate: Research, policy, practice, and teacher education", *Teachers College Record*, No. 111(1), pp. 180-213.
- Cohen, J., T. Pickeral and M. McCloskey (2008), "The challenge of assessing school climate", *Educational Leadership*, No. 66(4), www.ascd.org/publications/educational_leadership.
- Cornelius-White, J. (2007), "Learner-centered teacher-student relationships are effective: A meta analysis", *Review of Educational Research*, No. 77(1), pp. 113-143.
- Corner, J. P. and N. M. Haynes (1991), "Parent involvement in schools: An ecological approach", *The Elementary School Journal*, No. 91(3), pp. 271-277.
- Creemers, B.P.M. and L. Kyriakides (2008), *The dynamics of educational effectiveness: A contribution to policy, practice, and theory in contemporary schools*, Routledge, London.
- Daly, A. (2009), "Rigid response in an age of accountability: The potential of leadership and trust", *Educational Administration Quarterly*, No. 45, p.168.
- Danielson, C. (1996, 2007), *Enhancing Professional Practice: A Framework for Teaching, 1st and 2nd editions*, Alexandria, Virginia: Association for Supervision and Curriculum Development (ASCD).
- Danielson, C. and T.L. McGreal (2000), *Teacher evaluation to enhance professional practice*, Princeton, NJ: Educational Testing Service.
- Darling-Hammond, L. (1999), *Teacher quality and student achievement: A review of state policy evidence*, Seattle, WA: University of Washington, Center for the Study of Teaching and Policy.
- Darling-Hammond, L., *et al.* (2005), "Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness", *Education Policy Analysis Archives*, No. 13(42).
- Darling-Hammond, L. and M.W. McLaughlin (1995), "Policies that support professional development in an era of reform", *Phi Delta Kappan*, No. 76, pp. 597-604, www.pdkintl.org/index.htm.
- Department of Education and Training (2003), *Schools Strategy Workforce Development*, Melbourne, www.eduweb.vic.gov.au/edulibrary/public/teachlearn/innovation/widerworkforce/bcgreport.pdf.
- Desimone, L.M., *et al.* (2002), "Effects of professional development on teachers' instruction: Results from a three-year longitudinal study", *Educational Evaluation and Policy Analysis*, No. 24(2), pp. 81-112.
- Dimitrov, D. (2010), "Testing for factorial invariance in the context of construct validation", *Measurement and Evaluation in Counseling and Development*, No. 43, pp. 121-149.
- Dove, M.K. (2004), "Teacher attrition: A critical American and international education issue", *Delta Kappa Gamma Bulletin*, No. 71(1), pp. 8-30.
- Downer, J.T., S.E. Rimm-Kaufman and R.C. Pianta (2007), "How do classroom conditions and children's risk for school problems contribute to children's behavioral engagement in learning?", *School Psychology review*, No. 36(3), pp. 413-432.

- Ellis, J.D. (1996), "Fostering change in science education", in *Innovating and evaluating science education: NSF evaluation forums, 1992-94* (pp. 47-66), Arlington, VA: The National Science Foundation www.nsf.gov/pubs/1995/nsf95162/nsf_ef.pdf.
- Elmore, R. (2000), *Building a new structure for school leadership*, Washington, DC: The Albert Shanker Institute.
- Engel, L., D. Rutkowski and L. Rutkowski (2009), "The harsher side of globalization: Violent conflict and academic achievement", *Globalisation, Societies and Education*, No. 7(4), pp. 433-456.
- Epstein, J.L. and S.B. Sheldon (2002), "Present and accounted for: Improving student attendance through family and community involvement", *The Journal of Educational Research*, No. 95(5), pp. 308-318.
- Erickson, G. *et al.* (2005), "Collaborative teacher learning: Finding from two professional development projects", *Teaching and Teacher Education*, No. 21, pp. 787-798.
- European Commission (2010), *Teachers' professional development: Europe in international comparison: An analysis of teachers' professional development based on the OECD's teaching and learning international survey (TALIS)*, Luxembourg: Office for Official Publications of the European Union, 2010.
- Evertson, C.M. and M. Smithey (2000), "Mentoring effects on protégés' classroom practice: An experimental field study", *The Journal of Educational Research*, No. 93(5), pp. 294-304.
- Fan, X. and M. Chen (2001), "Parental involvement and students' academic achievement: A meta-analysis", *Educational Psychology Review*, No. 13(1), pp. 1-22.
- Feiman-Nemser, S., *et al.* (1989), *Changing beginning teachers' conceptions: A description of an introductory teacher education course*, Michigan: The National Center for Research on Teacher Education.
- Figlio, D. and L. Kenny (2007), "Individual teacher incentives and student performance", *Journal of Public Economics*, Vol. 91, No. 5-6, pp. 901-914.
- Flath, B. (1989), "The principal as instructional leader", *ATA Magazines*, No. 69(3), pp. 19-22, pp. 47-49.
- Forgasz, H.J. and G.C. Leder (2008), "Beliefs about mathematics and mathematics teaching", P. Sullivan and T. Wood (eds.), *The international handbook of mathematics teacher education, Volume 1: Knowledge and beliefs in mathematics teaching and teaching development* (pp. 173-192). Rotterdam: Sense Publishers.
- Fraser, B.J. (1998), "Classroom environment instruments: Development, validity and applications", *Learning Environment Research*, No. 1, pp. 7-33.
- Fullan, M. (2007), "Change the terms for teacher learning", *Journal of staff development*, No. 28(3), pp. 35-36.
- Garet, M.S., *et al.* (2001), "What makes professional development effective? Results from a national sample of teachers", *American Educational Research Journal*, No. 38, pp. 915-945, www.jstor.org/stable/3202507.
- Gates, Susan M., *et al.* (2006), "Mobility and turnover among school principals", *Economics of Education Review*, No. 25 (3), pp. 289-302.

- Goddard, R.D. and Y.L. Goddard (2001), "A multilevel analysis of the relationship between teacher and collective efficacy in urban schools", *Teaching and Teacher Education*, No. 17, pp. 807-818.
- Goddard, Y. L., R.D. Goddard and M. Tschannen-Moran (2007), "A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools", *Teachers College Record*, No. 109(4), pp. 877-896.
- Goldhaber, D.D. and D.J. Brewer (2000), "Does teacher certification matter? High school teacher certification status and student achievement", *Educational Evaluation and Policy Analysis*, No. 22(2), pp. 129-146.
- Goodson, I. and A. Hargreaves (1996), "Teachers' professional lives: Aspirations and actualities", Goodson, I. and A. Hargreaves (eds), *Teachers' professional lives*, London: Falmer Press.
- van Gog, T., et al. (2005), "Instructional design for advanced learners: Establishing connections between the theoretical frameworks of cognitive load and deliberate practice", *Educational Technology, Research, and Development*, No. 53(3), pp. 73-81.
- Griffith, J. (2006), "A Compositional Analysis of the Organizational Climate-Performance Relation: Public Schools as Organizations", *Journal of Applied Social Psychology*, No. 36(8), pp. 1848-1880.
- Gronn, P. (2009), "Hybrid leadership", in K. Leithwood, B. Mascall, and T. Strauss (eds.), *Distributed leadership according to the evidence*, (pp.17-40). New York: Routledge.
- Grubb, W.N. and J.J Flessa (2006), "A job too big for one: Multiple principals and other non-traditional approaches to school leadership", *Educational Administration Quarterly*, No. 42(4), pp. 518-550.
- Hall, K., A. Harding (2003), "A systematic review of effective literacy teaching in the 4 to 14 age range of mainstream schooling", in: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education.
- Hallinger, P. and R. Heck (1998), "Exploring the principal's contribution to school effectiveness: 1980-1995", *School Effectiveness and School Improvement*, No. 9(2), pp. 157-191.
- Hallinger, P., and R.H. Heck (2009), "Distributed leadership in schools: Does system policy make a difference?", in A. Harris (Ed.), *Distributed leadership: Different perspectives* (pp.101-117). Netherlands: Springer.
- Hallinger, P., and R. H. Heck (2010), "Leadership for learning: Does collaborative leadership make a difference in school improvement?" *Educational Management Administration and Leadership*, No. 38(6), pp. 654-678.
- Harris, A. (2002), *School improvement: What's in it for schools?* London: RoutledgeFalmer.
- Harris, A. (2008), "Distributed leadership according to the evidence", *Journal of Educational administration*, No. 46(2), pp. 172-188.
- Harris, A. (2009), Distributed leadership and knowledge creation, in K. Leithwood, B. Mascall, and T. Strauss (eds.), *Distributed leadership according to the evidence* (pp. 253-267). New York: Routledge.
- Harris, A. and J. Chrispeels (2006), *Improving schools and educational systems: International perspectives*, New York, NY: Routledge.

- Hart, L.C. (2002), "A four year follow-up study of teachers' beliefs after participating in a teacher enhancement project", in G.C. Leder, E. Pehkonen and G. Torner (eds.), *Beliefs: A hidden variable in mathematics education?* (pp. 161-176). Dordrecht, The Netherlands: Kluwer.
- Hattie, J. (2009), *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*, New York: Routledge.
- Heyneman, S.P. and W. Loxley (1983), "The distribution of primary school quality within high and low-income countries", *Comparative Education Review*, No. 27, pp. 108-118.
- Hobson, A. J., et al. (2009), "Mentoring beginning teachers: What we know and what we don't", *Teaching and Teacher Education*, No. 25, pp. 207-216.
- Hofman, R., and B. Dijkstra (2010), "Effective teacher professionalization networks?" *Teaching and Teacher Education*, No. 26, pp. 1031-1040.
- Holland, P.W. (1986), "Statistics and causal inference", *Journal of the American Statistics Association*, No. 81, pp. 945-970.
- Hoy, A.W., H. Davis and S.J. Pape (2006), "Teacher knowledge and beliefs", in P. A. Alexander and P. H. Winne (eds.), *Handbook of educational psychology* (2nd ed) (pp. 715-737). Mahwah, NJ: Earlbaum.
- Hung, C.M., A.K Oi, P.K. Chee and C.L. Man (2007), Defining the meaning of teacher success in Hong Kong, in T. Townsend and R. Bates (eds.), *Handbook of teacher education: Globalization, standards, and professionalism in times of change* (pp. 415-430). Dordrecht, The Netherlands: Springer.
- Ingersoll, R-M. (2001). "Teacher Turnover and Teacher Shortages: An Organizational Analysis", *American Educational Research Journal*, Fall 2001, Volume 38, Issue 3, pages 499–534.
- Ingvarson, L., et al. (2007), *Research on Performance Pay for Teachers*, Camberwell, Victoria, Australian Council for Educational Research.
- Isoré (2009), "[Teacher Evaluation: Current Practices in OECD Countries and a Literature Review](#)", *EDU Working Paper*.
- Jeynes, W.H. (2005), "A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement", *Urban Education*, No. 40(3), pp. 237-296.
- Jeynes, W.H. (2007), "The relationship between parental involvement and urban secondary school student academic achievement: A meta-analysis", *Urban Education*, No. 42, pp. 82-110.
- Jensen, B. and J. Reichl (2011), *Better teacher appraisal and feedback: Improving performance*, Grattan Institute, Melbourne.
- Jensen, B. and A. Sandoval-Hernandez, S. Knoll and E. J. Gonzalez (2012), "The experience of new teachers: results from TALIS 2008", OECD, Paris.
- Jun, M.-K., et al. (2007), "Using ePortfolio for the Assessment and Professional Development of Newly Hired Teachers", *TechTrends*, Vol. 51, No. 4, pp. 45-50.
- Kaplan, D. (2009), *Structural equation modeling: Foundations and extensions*, Sage, Los Angeles.

- Kelchtermans, G and K. Ballet (2002), “The micropolitics of teacher induction. A narrative-biographical study on teacher socialization”, *Teaching and Teacher Education*, No. 18, pp. 105-120.
- Kennedy, A. (2011), “Collaborative continuing professional development (CPD) for teachers in Scotland: Aspirations, opportunities and barriers”, *European Journal of Teacher Education*, No. 34(1), pp. 25-41.
- Kerr, K.A., *et al.* (2006), “Strategies to promote data use for instructional improvement: Actions, outcomes, and lessons from three urban districts”, *American Journal of Education*, No. 112, pp. 496-520.
- Kirk, R.E. (1995), *Experimental design: Procedures for the behavioral sciences*, Pacific Grove, CA: Brooks/Cole.
- Klassen, R.M. and M.M. Chiu (2010), “Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress”, *Journal of Educational Psychology*, No. 102(3), pp. 741-756.
- Klassen, R., *et al.* (2010), “Teacher Efficacy Research 1998–2009: Signs of Progress or Unfulfilled Promise?” *Educational Psychology Review*, pp. 1-23.
- Knight, P. (2002), “A systemic approach to professional development: Learning as practice”, *Teaching and Teacher Education*, No. 18, pp. 229-241.
- Korsnakova, P. and Kovacova, J. (2010), *Prax učiteľov slovenských škôl na nižšom sekundárnom stupni z pohľadu medzinárodného výskumu OECD TALIS 2008. NÁRODNÁ SPRÁVA* Bratislava: NUCEM.
- Ladd, H.F. (2009), “Teachers’ Perceptions of Their Working Conditions: How Predictive of Policy-Relevant Outcomes?”, *CALDER Working Paper 33*, Washington, DC: The Urban Institute.
- Lankford, H., S. Loeb, and J. Wyckoff (2002), “Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis”, *Educational Evaluation and Policy Analysis*, No. 24, pp. 37-62.
- Leder, G.C., E. Pehkonen and G. Torner (eds.) (2003), *Beliefs: A hidden variable in mathematics education?* Dordrecht, the Netherlands: Kluwer.
- Leithwood, K., *et al.* (2009), “Distributing leadership to make schools smarter: Taking the ego out of the system”, in K. Leithwood, B. Mascall, and T. Strauss (eds.), *Distributed leadership according to the evidence* (pp. 223-251). New York: Routledge.
- Leithwood, K., S. Patten and D. Jantzi (2010), “Testing a conception of how school leadership influences student learning”, *Educational Administration Quarterly*, No. 46(5), pp. 671-706.
- Lieberman, A. (1996), “Practices that support teacher development: Transforming conceptions of professional learning”, in *Innovating and evaluating science education: NSF evaluation forums, 1992-94* (67-78). Arlington, VA: The National Science Foundation, http://128.150.4.107/pubs/1995/nsf95162/nsf_ef.pdf#page=58.
- Luschei, T.F., and M. Carnoy (2010), “Educational production and the distribution of teachers in Uruguay”, *International Journal of Educational Development*, No. 30(2010), pp. 169-181.

- Ma, X. and R.B. MacMillan (1999), "Influences of workplace conditions on teachers' job satisfaction", *The Journal of Educational Research*, No. 93(1), pp. 39-47.
- Macdonald, D. (1999), "Teacher attrition: A review of literature", *Teaching and Teacher education*, No. 15(8), pp. 835-848.
- Marshall, K. (2005), "It's Time to Rethink Teacher Supervision and Evaluation", *Phi Delta Kappan*, Vol. 86, No. 10, pp. 727-735
- Marzano, R., T. Waters and B. McNulty (2005), *School leadership that works: From research to results*, Alexandria, VA: Association for Supervision and Curriculum Development..
- McKenzie, P., *et al.* (2008), *Staff in Australia's Schools 2007*, Canberra, ACT, Department of Education, Employment and Workplace Relations.
- Michaelowa, K. (2002), *Teacher Job Satisfaction, Student Achievement, and the Cost of Primary Education in Francophone Sub-Saharan Africa*, Hamburg Institute of International Economics.
- Miles, K. H. (2009), *Rethinking school resources*, Arlington, VA: New American Schools.
- Miller, M.D., M.T. Brownell and S.W. Smith (1999), "Factors that predict teachers staying in, leaving, or transferring from the special education classroom", *Exceptional Children*, No. 65(2), pp. 201-18.
- Monk, D.H. (1994), "Subject area preparation of secondary mathematics and science teachers and student achievement", *Economics of Education Review*, No. 13(2), pp. 125-145.
- Moos, R.H. (1979), *Evaluating educational environments*, San Francisco, CA: Jossey-Bass.
- Muijs, D. and D. Reynolds (2001), "Teacher beliefs and behavior: What really matters", *Journal of Classroom Interaction*, No. 37, pp. 3-15.
- National Association of Elementary School Principals (2001), *Leading learning communities: Standards for what principals should know and be able to do*, Alexandria, Virginia.
- National Mathematics Advisory Panel (2008), *Foundations for success: Final report of the National Mathematics Advisory Panel*, Washington, DC: U.S. Department of Education.
- National School Climate Center (n.d.) *National school climate standards: Benchmarks to promote effective teaching, learning, and comprehensive school improvement*, New York, NY: Center for Social and Emotional Education.
- Newmann, F.M., M.B. King and P. Youngs (2000), "Professional development that addresses school capacity: Lessons from urban elementary schools", *American Journal of Education*, No. 108(4), pp. 259-299.
- OECD (2001), *What works in Innovation in Education*, Centre for Educational Research and Innovation, OECD, Paris.
- OECD (2005a), *Formative assessment, Improving learning in secondary classrooms*, OECD, Paris
- OECD (2005b), *Teachers matter: Attracting, developing and retaining effective teachers*, OECD, Paris.

- OECD (2005c), *School factors related to quality and equity: Results from PISA 2000*, OECD, Paris.
- OECD (2007), *Glossary of Statistical Terms*. Paris: OECD, Retrieved from:
<http://stats.oecd.org/glossary/index.htm>
- OECD (2008, January), *Ten steps to equity in education: OECD policy brief*, OECD, Paris
- OECD (2009a), *Education at a Glance 2009: OECD Indicators*, OECD, Paris
- OECD (2009b), *Creating effective teaching and learning environments: First results from TALIS*, OECD, Paris.
- OECD (2010), *Cross-cultural comparative questionnaire issues*, PISA 2012 Questionnaire Expert Group internal document QEG(1002)4, OECD, Paris
- OECD (2010a), *Designing PISA as a sustainable database for educational policy and research: The PISA 2012 context questionnaire framework*, OECD, Paris.
- OECD (2010b), *PISA 2009 Results: What Makes a School Successful? Resources, Policies and Practices (Volume IV)*, OECD, Paris.
- OECD (2010c), *PISA 2009 results: Learning to learn, Student engagement, strategies and practices*, OECD, Paris.
- OECD (2010d), *Improving schools: Strategies for action in Mexico*, OECD, Paris.
- OECD (2010e), *TALIS 2008 Technical Report*, OECD, Paris.
- OECD (2011), *PISA 2012 Questionnaires: Field Trial Findings and Main Survey Recommendations*, PISA Governing Board document EDU/PISA/GB(2011)25, OECD, Paris
- OECD (2012), *Education at a Glance 2012: OECD Indicators*, OECD, Paris
- OECD (2013), *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*, OECD, Paris.
- Ofsted (2006), *The initial training of further education teachers: findings from 2004/05 inspections of courses leading to national awarding body qualifications*.
- Ogawa, R. and S. Bossert (1995), "Leadership as an organizational quality", in Fullan (Ed.), *The Jossey-Bass reader on educational leadership* (pp. 38-58). San Francisco: Jossey-Bass.
- Papa, F.J. (2007), "Why do principals change school? A multivariate analysis of principal retention", *Leadership and Policy in Schools*, No. 6(3), pp. 267-290.
- Peterson, K. (2000), *Teacher Evaluation: A Comprehensive Guide to New Directions and Practices*, 2nd edition, Thousand Oaks", CA: Corwin Press.
- Pont, B., D. Nusche and H. Moorman (2008), *Improving school leadership*, OECD, Paris.
- Purves, A.C. (1987), "The evolution of the IEA: A Memoir", *Comparative Education Review*, No. 31(1), pp. 10-28.
- Rankin-Erickson, J. and M. Pressley (2000), "A survey of instructional practices of special education teachers nominated as effective teachers of literacy", *Learning disabilities research and practice*, No. 15(4), pp. 206-225.

- Reddy, R., J.E. Rhodes and P. Mulhall (2003), "The influence of teacher support on student adjustment in the middle school years: a latent growth curve study", *Development and psychology*, No. 15(1), pp. 119-138.
- Richardson, V. (1996), "The role of attitudes and beliefs in learning to teach", Sikula J., T. Buttery and E. Guyton (eds.), *Handbook of research on teacher education* (2nd ed., pp. 102–106). New York: Macmillan.
- Roland, E., and D. Galloway (2004), "Professional cultures in schools with high and low rates of bullying", *School effectiveness and school improvement*, No. 15(3-4), pp. 241-260.
- Roseth, C.J., D.W. Johnson and R.T. Johnson (2008), "Promoting early adolescents' achievement and peer relationships: The effect of cooperative, competitive and individualistic goal structures", *Psychological Bulletin*, No. 134(2), pp. 223-246.
- Rutter, M. (2000), "School effects on pupil progress. Research findings and policy implication", in P.K. Smith and A.D. Pellegrini (eds.), *Psychology of education: Major themes* (Vol. 1, pp. 3-50). London: Falmer Press.
- Rutter, M., and B. Maughan (2002), "School effectiveness findings 1979-2002", *Journal of School Psychology*, No. 40(6), pp. 451-475.
- Sacks, C. and J. Mergendoller (1996), "The relationship between teachers' theoretical orientation toward reading and student outcomes in kindergarten children with different initial reading abilities", *American Educational Research Journal*, No. 34, pp. 721-739.
- Saha, L. J. and G.A. Dworkin, G. A. (2009), "Introduction: New perspectives on teachers and teaching", in L. J. Saha and A. G. Dworkin (eds.), *International handbook of research on teachers and teaching* (pp. 3-11). New York: Springer.
- Santiago, P. and F. Benavides (2009), *Teacher Evaluation: A Conceptual Framework and Examples of Country Practices*, OECD, <http://www.oecd.org/dataoecd/16/24/44568106.pdf>.
- Scheerens, J. (2000), *Improving school effectiveness*, Fundamentals of educational planning series, IIEP, UNESCO, Paris, Vol. 68.
- Scheerens, J. and R.J. Bosker (1997), *The foundations of educational effectiveness*, Oxford: Pergamon Press.
- Scheerens, J. and R. Steen (2010), *Reflections on the Current TALIS Data Regarding Teachers' Professional Development* (internal document No. 4, IDEG Meeting 1).
- Schneider, B., et al. (2007), *Estimating causal effects using experimental and observational designs* (report from the Governing Board of the American Educational Research Association Grants Program), Washington, DC: American Educational Research Association.
- Seidel, T. and R.J. Shavelson (2007), "Teaching effectiveness research in the past decade: The role of theory and research design in disentangling meta-analysis results", *Review of Educational Research*, No. 77(4), pp. 454-499.
- Sergiovanni, T.J., et al. (2009), *Educational governance and administration* (6th ed.), Boston: Allyn and Bacon.

- Shadish, W., T. Cook and D. Campbell (2002), *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.
- Shinkfield, A. J. and D.L. Stufflebeam (1996), *Teacher evaluation: Guide to effective practice*, Norwell, MA: Kluwer Academic Publishers.
- Smith, T. M. and R.M. Ingersoll, (2004), “What are the effects of induction and mentoring on beginning teacher turnover?” *American Educational Research Journal*, No. 41(3), pp. 681-714.
- Snow-Renner, R. and P. Lauer (2005), *Professional development analysis*, McREL 2005 Research Synthesis.
- Spillane, J. (2006), *Distributed leadership*, San Francisco: Jossey-Bass.
- Staub, E., and E. Stern (2002), “The nature of teachers’ pedagogical content beliefs matters for students’ achievement gains: Quasi-experimental evidence for elementary mathematics”, *Journal of Educational Psychology*, No. 94, pp. 344-355.
- Strong, M., A. Villar and S. Fletcher (2008), “An investigation of the effects of variations in mentor-based induction on the performance of students in California”, *Teachers College Record*, No. 110(10), pp. 2271-2289.
- Strudler, N. and K. Wertz (2008), “Costs and Benefits of Electronic Portfolios in Teacher Education: Faculty Perspectives”, *Journal of Computing in Teacher Education*, Vol. 24, No. 4, pp. 135-142.
- Supovitz, J., D.P. Mayer and J.B. Kahle (2000), “Promoting inquiry-based instructional practice: The longitudinal impact of professional development in the context of systemic reform”, *Educational Policy*, No. 14, pp. 331-356.
- Taylor, M., *et al.* (2011), “Teacher professional leadership in support of teacher professional development”, *Teaching and Teacher Education*, No. 27, pp. 85-94.
- Thompson, A. (1992), “Teachers’ beliefs and conceptions: A synthesis of the research”, in D. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 127-146). New York: Macmillan.
- Thompson, A.G. (1984), “The relationship of teachers’ conceptions of mathematics and mathematics teaching to instructional practice”, *Educational Studies in Mathematics*, No. 15(2), pp. 105–127.
- Tickle, B. R., M. Chang and S. Kim (2011), “Administrative support and its mediating effect on US public school teachers”, *Teaching and Teacher Education*, No. 27(2), pp. 342-349. Tittle, C.K. (2006), “Assessment of teacher learning and development”, in P. A. Alexander and P. H. Winne (eds.), *Handbook of Educational Psychology* (2nd ed., Vol. 41, pp. 953–980). Mahwah, NJ: Lawrence Erlbaum Associates.
- Torff, B. and K. Byrnes (2011), “Differences across academic subjects in teachers’ attitudes about professional development”, *The Educational Forum*, No. 75(26-36), 2011.
- Seite: 57 Tschannen-Moran, M., A. Woolfolk Hoy and W.K. Hoy (1998), “Teacher efficacy: Its meaning and measure”, *Review of Educational Research*, No. 68(2), pp. 202-248.

- Tse, H. (2007), "Professional development through transformation: Linking two assessment models of teacher's reflective thinking and practice", in T. Townsend and R. Bates (eds.), *Handbook of teacher education: Globalization, standards, and professionalism in times of change* (pp. 495 - 505). Dordrecht, The Netherlands: Springer.
- van de Grift, W. (2007), "Quality of teaching in four European countries: A review of the literature and application of an assessment instrument", *Educational Research*, No. 49(2), pp. 127-152.
- van Horn, *et al.* (2004), "The structure of occupational well-being: A study among Dutch teachers", *Journal of Occupational and Organizational Psychology*, No. 77(3), pp. 365-375.
- Vieluf, S., D. Kaplan, E. Klieme and S. Bayer (2012), "Teaching practices and pedagogical innovations: evidence from TALIS", OECD, Paris.
- Vieluf, S. (2008), Results of the analysis of method bias for TALIS scales (internal IDEG document).
- Wei, R. C., *et al.* (2009), *Professional learning in the learning profession: A status report on teacher development in the U.S. and abroad*, Dallas, TX: National Staff Development Council, <http://www.nsd.org/news/NSDCstudytechnicalreport2009.pdf>.
- Weiss, E.M. (1999), "Perceived workplace conditions and first-year teachers' morale, career choice commitment, and planned retention: A secondary analysis", *Teaching and Teacher Education*, No. 15(8), pp. 861-879.
- Wertz, K. and N. Strudler (2006), "Costs and Benefits of Electronic Portfolios in Teacher Education: Student Voices", *Journal of Computing in Teacher Education*, Vol. 22, No. 3, pp. 69-78.
- Wilson, S.M., R. Floden and J. Ferrini-Mundy (2001), *Teacher preparation research: Current knowledge, gaps, and recommendations*, A research report prepared for the U.S. Department of Education, Seattle: Center for the Study of Teaching and Policy, University of Washington.
- Woolfolk Hoy, A., H. Davis and S.J. Pape (2006), "Teacher knowledge and beliefs", in P. A. Alexander and P.H. Winne (eds.), *Handbook of educational psychology* (2nd ed., pp. 715-737). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ying, D. (2007), "Teacher educators' collaborative inquiry in a context of educational innovation in China – A case study of RICH as a learning community", in T. Townsend and R. Bates (eds.), *Handbook of teacher education: Globalization, standards, and professionalism in times of change* (pp. 539 - 554). Dordrecht, The Netherlands: Springer.
- Yair, G. (2000), "Educational battlefields in America: The tug-of-war over students' engagement with instruction", *Sociology of Education*, No. 73, pp. 247-269.
- Yip, A.A.M. (2007), "Action research and tacit knowledge: A case of the project approach", in T. Townsend and R. Bates (eds.), *Handbook of teacher education: Globalization, standards, and professionalism in times of change* (pp. 506 - 522). Dordrecht, The Netherlands: Springer.
- Youngs, P., and M.B. King (2002), "Principal leadership for professional development to build school capacity", *Educational Administration Quarterly*, No. 38, pp. 643-670.

Zheng, H.Y. (1996), "School contexts, principal characteristics, and instructional leadership effectiveness: A statistical analysis", *Paper presented at the Annual Meeting of the American Education Research Association*, New-York, 8-12 April 1996.

ANNEX A – ISCED LEVELS

The OECD (2007) Glossary of Statistical Terms provides the following overview of ISCED levels 1, 2, and 3.

- **ISCED**

The International Standard Classification of Education (ISCED 1997) is the revised version of the International Standard Classification of Education which was adopted by UNESCO's General Conference in replacement of the former version. Since 1998, the new classification has been used in the international collection of education statistics. It is accompanied by the ISCED Operational Manual.

- **Primary education (ISCED 1)**

Primary education (ISCED 1) usually begins at ages five, six or seven and lasts for four to six years (the mode of the OECD countries being six years). Programmes at the primary level generally require no previous formal education, although it is becoming increasingly common for children to have attended a pre-primary programme before entering primary education.

The boundary between pre-primary and primary education is typically the beginning of systematic studies characteristic of primary education, e.g., reading, writing and mathematics. It is common, however, for children to begin learning basic literacy and numeracy skills at the pre-primary level.

- **Lower secondary education (ISCED 2)**

Lower secondary education (ISCED 2) generally continues the basic programmes of the primary level, although teaching is typically more subject-focused, often employing more specialised teachers who conduct classes in their field of specialisation.

Lower secondary education may either be “terminal” (i.e., preparing students for entry directly into working life) and/or “preparatory” (i.e., preparing students for upper secondary education). This level usually consists of two to six years of schooling (the mode of OECD countries is three years).

- **Upper secondary education (ISCED 3)**

Upper secondary education (ISCED 3) corresponds to the final stage of secondary education in most OECD countries.

Instruction is often more organised along subject-matter lines than at ISCED level 2 and teachers typically need to have a higher level, or more subject-specific, qualifications than at ISCED 2. The entrance age to this level is typically 15 or 16 years.