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EARLY CHILDHOOD CARE AND EDUCATION WORKING PAPERS SERIES 5

A Review of International and National Surveys relevant to Early Childhood Care and Education Provision and the Teaching Workforce

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A Review of International and National Surveys relevant to Early Childhood Care and Education Provision and the Teaching Workforce

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Acknowledgements

This literature review of relevant national and international surveys was commissioned by UNESCO to inform the development of the Survey of Teachers in Pre-Primary Education (STEPP) project (May 2015–December 2017). The researchers worked closely with Yoshie Kaga, UNESCO Programme Specialist, Early Childhood Care and Education. We appreciated very much her help in contacting the UNESCO field offices and National Commissions for UNESCO to obtain relevant documentation and surveys. These included people and offices responsible for: Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe; Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, the United Republic of Tanzania; Namibia; Arab States; Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates, Yemen; Asia-Pacific; Vietnam; Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Suriname, Trinida and Tobago; Kibera and Wajir.

Yoshie provided names of people with extensive experience in conducting relevant international, regional and/or national surveys in the field of early childhood, primary and secondary education particularly in low- and middle-income countries. We received useful advice from Ursula Itzlinger-Bruneforth, Federal Institute for Educational Research, Innovation & Development of the Austrian School System, who contributed a short paper that provided her insights on what worked, what did not and for what reasons in international and national surveys of relevance to STEPP. Her paper is attached as Appendix 1, on the proviso that it was not intended as a fully referenced academic paper. Presentations at the International Advisory Group by Miho Taguma on the OECD International ECEC Staff Survey, Michelle Neuman on findings from a literature review on ECEC personnel, Julie Bélanger on lessons learned from TALIS, Olivier Labe on UIS teacher survey and WEI, Phillipe Maalouf on Morocco, Gertie Steukers on Namibia and Elsa Dominguez-Brito on the Dominican Republic were highly informative.

Discussion by all participants at the International Advisory Group, Survey of Teachers in Pre-Primary Education, which met 15–17 July, 2015, provided valuable insights and information.

Executive summary

This literature review of national and international surveys of early childhood care and education (ECCE) provision and the teaching workforce was commissioned by UNESCO to inform the development of survey instrument and methodology for the *Survey of Teachers in Pre-Primary Education* (STEPP) project (May 2015–December 2017). The key tasks set by UNESCO were to:

1. Provide an analysis of the purpose, scope, content, target population/ institution, sampling procedure and sample size of relevant international and national surveys, including the kinds of constructs and indicators/variables included;
2. Identify lessons from the implementation of relevant international *a*nd national surveys, from which the project can learn;
3. Provide recommendations to the Project.

The methods to accomplish the tasks were a review of recent major international surveys of primary/secondary school and pre-primary education personnel in developed and developing countries; correspondence with Ursula Itzlinger-Bruneforth, Federal Institute for Educational Research, Innovation & Development of the Austrian School System; and attendance at the International Advisory Group of STEPP, 15–17 July 2015, which provided valuable presentations and discussion.

Purpose of the surveys

The focus on the teacher workforce in the surveys reviewed was in recognition of the value of good quality pre-primary education for children's learning and development, and of the critical role played by teachers in the child's early education. Much emphasis in the research literature is placed on structural features of quality, including teacher qualifications, professional support, staff: child ratios, and group size that are associated with the kinds of interactions in ECCE settings that support learning and development. A further rationale for the surveys was in the links made to the United Nations Convention on the Rights of the Child, and the right for children to have equitable access to good quality ECCE. Fair and equitable employment conditions for teachers was another recognised need. The main purpose of the surveys was to make visible information about the teacher workforce in order to analyse and compare policy, to highlight issues that might be supported by policy and practice and to make plans within countries to enhance the teacher workforce. Survey information can also generate theoretical understanding by enabling relationships between variables to be examined. Information about the education workforce is particularly limited in low and middle income countries.

Summary of questions, constructs and indicators

The table below summarises the proposed questions to be addressed in the STEPP survey, and the associated constructs and indicators used in surveys that were reviewed. No value is placed on the indicators—these and others need to be decided in terms of their fitness for purpose in addressing the research questions and appropriateness for participating countries. There are gaps in indicators in relation to some research questions.

Table 1. Summary of questions, constructs and indicators

Question	Construct	Indicators
Contextual information		
Who are the pre-primary education personnel, and how do their characteristics compare?	Personnel characteristics.	Age, gender, ethnicity (Teacher). Spoken languages (Teacher). Years of teaching experience in ECCE (Teacher). Stability of staff—teacher turnover, number of staff joining this year, last year, last two years (Manager). Teachers lost to ECCE profession (Country). Transfers and retirements that are replaced (Manager). Teacher absenteeism (Manager).
What settings do they work in? How do these settings compare?	Setting characteristics.	Type of ECCE setting (Manager). Public or private (Manager). Rural or urban (Country— sample selection). Instructional hours per day and per year (Manager). Instructional weeks per year (Manager). Ages of children (Manager). Enrolments, class size (Manager). Reasons for non-enrolment (Manager). Average teacher:child ratio by age (Manager). Children attend in shifts (Manager). Grade repetition (Manager). Buildings, amenities, equipment and supplies *Suggestions for less developed countries* • Teacher table, teacher chair (Teacher). • Number of toilets and condition (usable/ not usable/how often cleaned) (Manager). • Adequacy of ventilation and lighting (Manager). • Availability of water, electricity, a staffroom, school garden, a sports area, first aid kit, canteen (Manager). • Availability of a library or book area (Manager). • Sitting and writing places –primary school (Manager). *Suggestions for developed country* *Resources* ➢ outdoor equipment (e.g., balls, bikes, climbing frames, balancing bars, swings); ➢ resources for expressive play (e.g., drama, music, dance); ➢ resources for creative play (e.g., paints, collage materials, clay); ➢ blocks; resources for early literacy (e.g., books, writing materials); ➢ resources for early numeracy and mathematical and scientific thinking (e.g., puzzles, games, water, sand); ➢ parent library publications; ➢ professional publications for staff; and ➢ access to ICT resources (digital camera, laminator, computer, photocopier, email, internet, scanner, television, video equipment, and data projector). • Space and furniture ➢ children's indoor and outdoor spaces and ease of access/ flow; ➢ furniture for children; ➢ space for resource storage and preparation; ➢ office space; ➢ adults' furniture; and ➢ staffroom space

Questions	Construct	Indicators
Developing pre-primary education personnel		
How are pre-primary education personnel developed and supported in their work? Who provides training and professional development to pre-primary education personnel? What are their training and professional development needs?	Qualifications, training and professional development/ inservice training.	Highest educational qualifications (Teacher). Qualifications needed to become a pre-primary teacher (Country). Teacher qualification or meeting country qualification requirement (Teacher). Inservice training/professional development – type, duration, annual frequency, funding, provider, link to registration or appraisal, usefulness, needs (Teacher). Years of teaching experience (Teacher). Teacher registration/accreditation, induction and mentoring (Country, teacher and manager).
Ensuring quality learning environments		
What do pre-primary education personnel do (including administrative tasks)? How do they develop children and monitor their development and learning? What do they believe about children's development and learning? About quality environments? How do they work with other colleagues, parents and professionals from other sectors? How is leadership organized within the setting?	Beliefs and actual practices. Pedagogy of personnel.	Existence and nature of curriculum (Country). Understanding and implementation of curriculum, challenges (Manager and Teacher). Links between curriculum frameworks of pre-primary education levels and primary education (Manager and Teacher). Assessment practices—what is assessed (valued outcomes and processes), data gathering, data use, children's involvement in assessment, parent access to, use of, contribution to assessment, parents' participation in planning, assessment and evaluation, barriers to assessment (Teacher). Home language or school language (Manager and Teacher). Pedagogy—personal beliefs and actual practices, e.g. about active learning, rote learning, curriculum integration (Teacher). Time-use diary on pedagogic practices (Teacher). Co-operation among teachers—exchange and coordination for professional collaboration (Teacher). Parent/teacher relationships focused on educational aims—teacher information and modelling for activities at home, opportunities for parent involvement in ECEC programme, parents bring resources from and to home, parent workshops, other (Teacher). Books at home (Manager and Teacher). Relationships with other professionals (e.g., schools, health professionals) (Manager and Teacher). Leadership (Manager and Teacher).
Attracting, motivating and retaining pre-primary personnel in the profession How motivated and satisfied are they in their work? What are their perceptions on how the society values their work? What are their main challenges in being motivated and effective in their work?	Working conditions and job satisfaction.	Employment status, job categories (Teachers). Hours of work—full time, part time, weeks per year (Teacher). Salary/wages (Teacher). Leave entitlements (Teacher). Teacher housing (Teacher). Teacher appraisal (Manager and Teacher). Involvement in decision-making/social dialogue (Teacher). Levels of job satisfaction and teachers' belief in their own effectiveness, including perceptions of societal valuing (Teacher).

Lessons from the implementation of surveys

The present review identified the following main lessons regarding survey implementation:

- It is important to involve participating countries from the start of the project and throughout. Such involvement helps ensure "buy in", contextually relevant design, practical support, good response rates and productive use of findings for supporting positive policy and practice change within countries.

- A clear conceptual framework is a valuable starting point that will guide survey design. Strong survey projects developed a conceptual framework that was based on current research and theory about teaching and learning and was used as a basis for development of research questions, constructs and indicators, and for analysis.

- Statistical and survey design expertise is needed at all stages, from design of the questionnaire sampling, data collection procedures, data management and entry, analysis, and report preparation. Some countries (e.g. African countries participating in SACMEQ) used opportunities created by the survey for capacity building with country personnel working alongside international experts.

- The target population, sampling procedure and sample size need to be determined to ensure a robust design. Attention should be paid to clear definitions to enable inter-country comparisons. Sampling frames for the STEPP project should account for all pre-primary services, and for teachers and managers within these and would need to be a responsibility of participating countries. Some developing countries in surveys reviewed did not have an established list of all services; a problem that would need to be resolved by that country if encountered in the STEPP project. As an indication only of sample size, the TALIS study surveyed representative samples of 200 schools per country and a sample of 20 teachers and one school leader in each school; OECD recommended for its ECEC Staff survey, 200 services with 15 (or all for small services) personnel sampled per service.

- Careful piloting and field testing is essential to address dimensions of survey quality including validity, reliability and credibility. This includes testing reliability of data entry through double entering of a percentage of data. Cost and time need to be considerations, and ethical principles adhered to.

- Appropriate strategies for generating a high response rate have depended on the support of respected people with local knowledge. Some successful strategies in surveys reviewed were meetings with representative organisations to explain the survey, face-to-face administration, preparation of flyers targeted to specific groups, use of incentives for completion.

- Following from survey analysis and reporting, considerations should be given to how the findings might be used to engender positive change. Design-based implementation research could be useful for generating understandings about policy implementation and leading to interventions that can be scaled up.

Recommendations

The review recommends active involvement by participating countries at all stages of the survey design, including the development of the conceptual framework, scope, constructs and indicators, and in the survey administration and reporting. This will help enable the survey to be relevant in addressing issues of importance for each country, ensure cultural relevance and evoke a sense of country ownership and commitment to acting on survey findings. Values underpinning the survey design need to be transparent; those values espoused in international conventions and by UNESCO of children as rights-holders, a holistic understanding of learning and development, and children, families and communities as active participants in ECCE would offer a useful basis for survey development. It is recommended that expert advice is used to ensure robust survey design, sampling, administration, coding, analysis, and reporting so that results are valid, credible and reliable. Finally, in order to provide a depth of understanding of survey results, focus group interviews with teacher/ educators and managers, and observations of environment and interactions in ECCE settings could be useful, including documentation from very good settings to act as exemplars for others. Consideration should be given to how the findings from the survey in each country could be used to improve educational provision.

Introduction

This literature review of relevant national and international surveys was commissioned by UNESCO to inform the development of survey instrument and methodology for the *Survey of Teachers in Pre-Primary Education* (STEPP) project (May 2015–December 2017). The main aims of the STEPP project set out in a UNESCO background paper are to:

- develop and pilot a common instrument to survey pre-primary teachers and managers that can be used in low- and middle-income countries;
- generate and disseminate cross-national findings resulting from piloting the survey instrument; and
- identify lessons from pilots for further improvements of the survey instrument.

UNESCO expects that the project will contribute to developing policy measures for improving the access and quality of pre-primary education, with a focus on pre-primary education personnel development, and reinforce knowledge base on pre-primary education personnel policy and practice. A presentation at the International Advisory Group meeting for STEPP, by Gertie Steukers on Namibia, highlighted other potential benefits as including a national focus on ECCE and "strengthening capacity in data collection and survey administration, while providing relevant information to inform future practices at the same time". The survey was seen to be timely for Namibia.

The focus on the teacher workforce is in recognition of the value of good quality pre-primary education for children's learning and development, and the critical role played by teachers in the child's early education. In a literature review of outcomes of ECCE, Mitchell, Wylie and Carr (2008) concluded that the research base shows positive outcomes (cognitive, learning dispositions, and social emotional) of participation in ECCE for children in the short and long term. Participation could also benefit parents, and thereby further strengthen gains for children.

> *ECE participation can enable parents to learn more about parenting, develop social and community networks, and build greater confidence; and participate in paid employment. These gains can be thought of as empowering. They also interact with those found for children, and each contributes to family and societal functioning.*
> *(p. 5)*

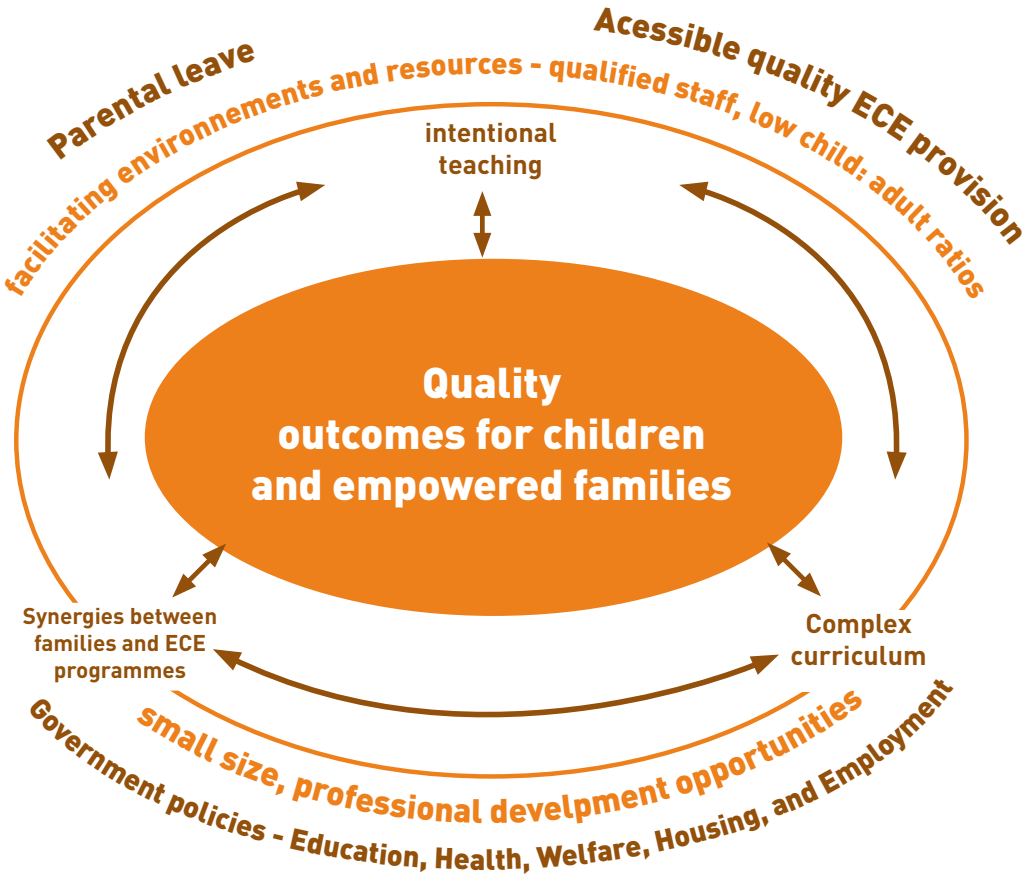
Over the past decades, research on parent/teacher collaboration has shown that when communities, parents and teachers work together as partners with shared, meaningful, educational aims in mind, the potential for improving children's learning outcomes is enhanced. The *Effective Provision of Preschool Education* study found that the quality of the home learning environment strongly promoted children's cognitive and social development (Siraj-Blatchford, 2010). In combination, these findings suggest the powerful role ECCE services might play in collaborating with

families in order to meet educational aims. And it is important to children that people whose opinion and love they value also value and support their learning.

The findings of the literature review were depicted in diagrammatic form to illustrate conditions that support the teaching and learning that in turn directly contributes to good quality outcomes for children and parents. The literature review found that "early childhood services that contribute to positive child and family outcomes are settings characterised by:

- intentional teaching;[1]
- family engagement with ECE teachers and programmes, where social/cultural capital and interests from home are included, and both family and teachers can best support the child's learning; and
- a complex curriculum involving both cognitive and non-cognitive dimensions.

Figure 1. Conditions, interactions, and outcomes for children and families



(Reprinted from Mitchell et al., 2008, p. 8)

1 Settings that provide opportunities for "sustained shared thinking", rich teacher–child interactions, engaging programmes, peers learning together, and assessments with valued outcomes in mind

Knowledge, skills and beliefs about children and teaching and learning are gained through appropriate teacher education/training and professional development; a reason why much emphasis in the literature is placed on teacher qualifications and professional support as contributing to interactions with children that support their learning and development. Development of constructs and indicators for the STEPP project and analysis of findings can usefully be informed by this framework. It conveys a holistic view of children's learning and development, children and families as active participants, emphasises the powerful role of teachers and structural features to support their pedagogy, indicates the importance of "valued outcomes", and points to a vital role for family and community as part of the curriculum.

Layout of the report

Chapter 2 gives an outline of the methodology used in the literature review.

Chapter 3 presents the *Findings* of the literature review grouped under the following task heading set by UNESCO: Analysis of the purpose, scope, content, target population/ institution, sampling procedure and sample size of relevant international and national surveys.

Chapter 4 discusses lessons from the implementation of relevant international and national surveys, from which the project can learn.

In Chapter 5, recommendations to the STEPP project are made.

Methodology

The tasks set by UNESCO were to:

1. Provide an analysis of the purpose, scope, content, target population/institution, sampling procedure and sample size of relevant international and national surveys, including the kinds of constructs and indicators/variables included.

2. Identify lessons from the implementation of relevant international and national surveys, from which the project can learn from (e.g., what has worked and what has not worked and the reasons for success/failure; factors that influenced e.g. target population/institution, sampling design, data collection mode, survey results).

3. Provide recommendations to the Project, which may include the following areas:

   - Scope, content and its cross-national adaptation.
   - Sampling procedures and strategies.
   - Survey methodology, including strategies for generating high response rates, for low- and middle-income country contexts.

The methods to accomplish the tasks were:

- **A desk review** of recent major international surveys of primary/secondary school and pre-primary education personnel as well as a selection of relevant national early childhood education surveys carried out in developed and developing countries.

- **Interviews/correspondence with individuals** with extensive experience in conducting relevant international, regional and/or national surveys in the field of early childhood, primary and secondary education particularly in low- and middle-income countries. Ursula Itzlinger-Bruneforth, Federal Institute for Educational Research, Innovation & Development of the Austrian School System provided valuable information through email correspondence and her insights are attached as Appendix 1. The International Advisory Group meeting presentations of Miho Taguma on the OECD International ECEC Staff Survey, Julie Bélanger on lessons learned from TALIS, Michelle Neuman on findings from a literature review on ECCE personnel, Olivier Labe on UIS teacher survey and WEI, Phillipe Maalouf on Morocco, Gertie Steukers on Namibia and Elsa Dominguez-Brito on the Dominican Republic were very useful.

- **Participation in the meeting of the International Advisory Group** (15–17 July 2015) to receive comments and suggestions on how to refine this review and its recommendations for the report.

The two overlapping phases of the methodology were: i) searching for and selecting evidence, and ii) analysis, synthesis, and writing.

Search strategy for desk review

UNESCO provided an initial list of references to 21 international surveys and seven national surveys as a starting point for the review and the researchers kept in close contact with UNESCO during the term of the project for additional ideas and support.

In addition, UNESCO made contact with UNESCO field offices and National Commissions for UNESCO to inquire about possible surveys. This contact resulted in provision of surveys from the Dominican Republic (ILO survey), Ghana (ILO survey), African countries (SACMEQ project), Vietnam (UNESCO survey) and Pacific region (UNICEF and others).

We searched through the University of Waikato library data base and catalogues. Our search terms included:

Early childhood terms: Early childhood education and care (ECEC), early childhood care and education (ECCE), early child and early childhood development (ECD); early childhood education (ECE), pre-primary, preschool, pre-K, kindergarten, nursery school.

Teacher terms: Pre-primary teachers, pre-primary personnel policy, pre-primary personnel practice, teacher qualifications, teacher training, teacher education, teacher remuneration, teacher pay, teacher working conditions, teacher professional development, teacher workload, teacher stability, teacher recruitment, teacher retention, teacher values.

The early childhood terms have a range of definitions depending on context. We used a broad definition "Centre-based early education and care for children from birth to school starting age" and excluded home-based care, while noting variations in definitions in different countries. The term pre-primary however is used for the 3-6 year age group, in line with UNESCO usage.

Analysis, synthesis and writing

In order to support our synthesis and analysis and address the tasks required, we summarised key relevant material from each questionnaire and associated literature in table format (see Appendix 2) under the following headings:

- Study, aim, country;
- Scope, content (including constructs, indicators);
- Target population/institution, sampling procedures and strategies, sample size;
- Methodology/Type of questionnaire, including strategies for developing high response rates for low- and middle-income contexts;
- Commentary (what worked/did not work).

This framing enabled an overall analysis for Task 1: "To provide an analysis of the purpose, scope, content, target population/institution, sampling procedure and sample size of relevant international and national surveys, including the kinds of constructs and indicators/variables included" (Task 1 of the Terms of Reference). Annotated analysis of the literature is attached to this report as Appendix 1.

Limitations

The short timeframe available for this review has limited the breadth that could be achieved, especially through the library search. However, key surveys of relevance to the STEPP project have been sourced and we have benefited from wider discussion with experts and advisory group members.

Findings

The findings are grouped under task headings set by UNESCO, namely:

1. Analysis of the purpose, scope, content, target population/institution, sampling procedure and sample size of relevant international and national surveys.

2. Lessons from the implementation of relevant international and national surveys, from which the project can learn.

Analysis of relevant national and international surveys

Purpose of surveys

Definitions and terms used in surveys vary. Using the ISCED definition, "pre-primary" is defined as "purposeful, planned educational activity for children" (Wallet, 2006) and usually for the 3–6 age groups. The global Education 2030 target calls for free and compulsory one-year pre-primary education. Other definitions, using different terms, for example ECCE, ECEC, ECD as noted above, cover a wider age range and various types of programme. The STEPP survey is explicitly for pre-primary.

The reasons for focusing on the teaching workforce link to the rights of children, and the role of teachers in ensuring quality education. Noonan (2001, 2002) and Bennett (2006) independently propose that the values and articles from the United Nations Convention on the Rights of the Child (UNCRC) are directly relevant to policy development for ECCE. The Committee on the Rights of the Child (2006) identified four principles that it argued must inform the analysis and implementation of all other rights. These are:

Article 2 —All rights must apply to all children without discrimination of any kind.

Article 3 —The best interests of the child must be a primary consideration in all actions concerning children. The principle of "best interests" appears in many of the articles. In relation to early childhood education, Article 28 states that Governments shall respect the right of the child to education. Article 29 links the right to education to children's development: [Governments] will direct the education of the child to the fullest development of the child's personality, talents and mental and physical abilities; the development of respect for human rights and fundamental freedoms; the development of respect for the child's parents, his or her own cultural identity, language and values; understanding, peace, tolerance, equality of sexes, and friendship among all peoples; and respect for the natural environment (UNCRC Article 29). The Committee on the Rights of the Child emphasised the importance of quality: quality curriculum, pedagogies, staff qualifications and access of staff to professional resources and support.

Article 6 —Children have the right to life and to survival and development to the maximum degree possible.

Article 12 —Children have the right to express their views freely on all matters of concern to them and to have those views taken seriously.

The UNCRC was emphasised in the ILO study (International Labour Organisation, 2012) as a rationale for its focus. It argued that "The CRC has helped shape ECE policies and provision around the world, but has not weighed as heavily on many governments' public spending decisions to ensure that the rights are effectively applied." Similarly, a rationale for the STEPP project is the global Education 2030 target for equitable and quality pre-primary provision. There is widespread recognition that quality pre-primary education supports learning and development at the time and in later years and that teachers "are the main determinants of quality" (STEPP paper, unpublished). On this basis, access to good quality early childhood education is a right of all children, and children should not be discriminated against in having such opportunities. These rights based considerations could be foregrounded by UNESCO in development of the survey and analysis of data.

The surveys reviewed had a purpose to make visible information about the education workforce, including the areas of interest to UNESCO (used below to order the report findings). UNESCO (2012) reports on the limited information available on the conditions and practices of pre-primary teachers especially in low and middle income countries. Similarly, a rationale of the International Labour Organisation (ILO) for its ILO study (International Labour Organisation, 2012) on the employment and working environment in early childhood education was the lack of information for this group.

An overall purpose in most surveys was to use the survey information to analyse and compare policy, to highlight issues that might be supported by policy and practice and to make plans within countries to enhance the teacher workforce. The purpose of the survey helped define parameters for what information should be collected. For example, the OECD TALIS 2013 survey highlighted the value of gathering data on both inputs and processes of teaching and learning:

> *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. (Rutkowski et al., 2013, p. 13)*

Another intention (e.g., Guerriero, 2015) was to use survey results to help explain theories of knowledge and relationships with other variables.

Scope and content

The constructs and indicators used in the surveys in this review are considered under the four headings identified in UNESCO's May 2015 STEPP proposal:

1. Personnel and setting characteristics.
2. Training and professional development of personnel.
3. Beliefs and actual practices; Pedagogy of personnel.
4. Working conditions and job satisfaction of personnel.

These four headings are used to synthesise the material from the review.

Personnel and setting characteristics

Personnel

Age: Age data can be used to profile teachers, to identify teacher supply needs, as a proxy for experience and to consider existence of teachers who can offer mentoring and advice (although older teachers may be less up-to-date in curriculum and pedagogical understanding).

Information about age was gathered through questions asking respondents to mark an age band or by directly asking participants their age, e.g., in what year were you born? (Applied Policy Analytics & Public Consulting Group, 2012). Wallet's (2006) global analysis of key education indicators identified the following age bands: less than 30; 30–39; 40–49; 50–59; 60 and over; age unknown. Marking an age band may be preferable to directly asking participants to state an age since this is sometimes sensitive; and a lower starting age would provide information about very young teachers.

Teacher ethnicity: Statistics New Zealand defines ethnicity as follows: "Ethnicity is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is a measure of cultural affiliation, as opposed to race, ancestry, nationality or citizenship. Ethnicity is self perceived and people can belong to more than one ethnic group." http://www.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/ethnicity/definition.aspx. Ethnicity information can be used to compare the profile of teachers with those of teachers in other education sectors, the general workforce, and the population. It can be analysed in relation to other demographic characteristics such as age, gender and qualifications. Under-representation of some groups could be the basis for affirmative action.

Information about ethnicity was gathered through questions asking participants to describe their ethnicity directly or to mark from a list with an option to write in a space for "Other, please specify". The list provided varied according to country and sometimes combined some categories. Some questionnaires allowed more than one response on the basis that people may identify with more than one ethnic group.

Spoken languages: Spoken languages of teachers may be particularly important for communication in centres where children's home language is different from the main language/s spoken, and where in centres where values and aspirations are to strengthen an indigenous language and culture but where this is not the main language used.

Information was gathered in one survey—participants marked from a list the languages they spoke (Applied Policy Analytics & Public Consulting Group, 2012).

Gender: In most countries ECCE is a female dominated occupation.

Information about gender was gathered in all surveys through a question asking respondents to mark their gender.

Years of teaching experience in ECCE: Years of teaching experience in ECCE may be useful in showing access to experienced staff for mentoring and support, although experience does not equate to teachers being qualified.

Information about experience was commonly gathered through asking participants to mark a band denoting years of experience. For example, McMullen et al. (2005) used three bands to describe experience as novice < 3 years; mid career 3–15 years; veteran > 15 years.

Stability of staff/teacher turnover: High teacher turnover may affect the sustainability of ECCE and disrupt staff-child relationships. Staff stability is important for young children since children's wellbeing is supported by secure relationships with adults who know them

well. Turnover rate is affected by both loss to ECCE and the appointment of new staff so needs to be interpreted within context. High or increasing turnover can be a positive indicator where it represents change due to enrolment increases, improved ratios and an expanding workforce. Alternatively, it can reflect increasing losses and show instability of staff. Schleicher et al. (1995) noted earlier reports that have cited annual turnover of ECCE educators as high as 40 per cent in Kenya and more than 30 per cent in Australia (Hein & Cassirer, 2010, p. 48)

Various indicators of stability/ turnover have been used in different studies. ***Number of staff joining this year, last year or two years ago*** was used to develop an "instability index"—number of new staff divided by total staff (Schleicher, Siniscalco, & Postlethwaite, 1995). Note: this study did not include new schools e.g., schools built in last two years. The New Zealand national census of ECE staff calculated the ECCE turnover rate as the ratio of the average of the total new staff and staff who have left in the reference year to the average of the total staff in the reference year (t) and the previous year (t-1), as represented in the formula: (Accessions + Separations)/2 *(Staff (t) + Staff (t+1))/2*. It also calculated ECCE teachers lost to the profession.

Teacher absenteeism: High levels of teacher absenteeism can be a sign of low morale and affect relationships with children.

In one survey, school heads were asked how many teachers were absent for how many days in the last week (Schleicher et al., 1995) and for reasons for absenteeism (asked to rate reasons from a list according to rare reason, occasional reason and frequent reason).

Characteristics of ECCE settings

Contextual information was obtained in all surveys, and was used to examine change over time, relationships with other variables and differences between countries.

Service type, ownership or governance arrangements and location were examined in most surveys.

Type of ECCE setting: e.g., pre-primary, playgroup, childcare, kindergarten.

Public or private: Data was gathered on the auspices of the setting (public or private) in many surveys. ILO surveys (International Labour Organisation, 2012; Kwon, 2004) and a New Zealand staffing survey (Mitchell, 2008) examined differences in staffing between public and private settings.

Rural/urban: Information about whether the setting was rural or urban was linked to access and resources.

Hours for children to attend or "instructional hours" is a useful measure of the "amount" of ECCE that is available for children, although it does not show how many hours per week an individual child attends. The analysis of Loeb, Bridges, Bassock, Fuller and Rumberger (2005) from a large nationally representative US sample of kindergarteners estimating the influence of different amounts of participation in preschool centres on cognitive and socio-emotional outcomes found, on average, that children attending centres for 15 to 30 hours per week experienced stronger cognitive gains than those attending for less than 30 hours per week. Instructional hours were measured through surveys of principals/ managers.

Instructional hours per day and per year; Instructional weeks per year: Number of instructional hours per day multiplied by number of days open per year = number of actual instructional hours per year.

Class size, teacher:child ratios in relation to child age, teaching and learning resources and environment are termed 'structural' features of quality in much literature, i.e., they provide facilitating environments that support quality outcomes for children. Common indicators were as follows.

Ages of children: Ages of children enrolled in the class (e.g., under 1-year, 1-year, 2-years, 3-years, 4-years, 5-years.

Enrolment: number of children enrolled in each class. Pupil-teacher ratios (PTRs) based on the total number of pupils divided by the total number of teachers, can demonstrate to what extent hiring policies are meeting the demands of an expanding system. At a country level a gross enrolment ratio can be calculated as the number of children enrolled/total population in age group (Wallet, 2006). Reasons for non-enrolment (asked of the head teacher) can help in understanding barriers to participation.

Average teacher*:child ratio* by age group children. Question asked of head teacher or teacher.

Shifts: Whether children attend in shifts—this practice may occur where provision does not match needs, so more than one group attends at different times.

Grade repetition: Number of children repeating a grade. Mitchell and Kelly (2013) noted in reporting on ECD in Timor Leste that this practice can encourage inappropriately low expectation by teachers and adults and influence relationships.

There were big differences between developed and less developed countries in ways in which buildings, amenities, and teaching and learning resources were categorised—an indication of differentials in resourcing between countries.

Questions were asked about the existence or adequacy of the following list of ***buildings, amenities, equipment and supplies*** in least developed countries (from Schleicher et al., 1995).

- Teacher table.
- Teacher chair.
- Number of toilets and condition (usable/not usable/how often cleaned).
- Adequacy of ventilation and lighting.
- Availability of water, electricity, a staffroom, school garden, a sports area, first aid kit, canteen.
- Availability of a library or book area.
- Sitting and writing places.
- Teaching and learning resources—existence of mother tongue books, books in the library, mathematics and reading textbooks.

In a developed country, New Zealand (Mitchell, 2008a), teachers were asked to rate teaching and learning resources under the following headings:

- Outdoor equipment (e.g., balls, bikes, climbing frames, balancing bars, swings).
- Resources for expressive play (e.g., drama, music, dance).
- Resources for creative play (e.g., paints, collage materials, clay).
- Blocks; resources for early literacy (e.g., books, writing materials).
- Resources for early numeracy and mathematical and scientific thinking (e.g., puzzles, games, water, sand).
- Parent library publications.
- Professional publications for staff.

In this New Zealand survey, children's indoor and outdoor spaces, furniture for children, space for resource storage and preparation, office space, adults' furniture, staffroom space and ease of access/flow were rated. Access to ICT resources (digital camera, laminator, computer, photocopier,

email, internet, scanner, television, video equipment, and data projector) was rated.

Qualifications, training and professional development/inservice training

All studies of teacher workforce gathered data about qualifications, teacher training and professional development/inservice training.

Qualifications: information was usually gathered through a question asking participants to mark their highest level of formal qualification from a list. The list of qualifications were relevant to the country and used terms used in that country. For example, The UNESCO (UNESCO, Undated) survey of ECE and Pre-primary education teacher development in South East Asia asked participants about level of qualification using the categories: no qualifications; 4-year college degree; 2-year college degree; teaching certification (specify); completion of upper secondary; completion of lower secondary; other (specify).

The International Standard Classification of Education (ISCED 1997; UNESCO Institute of Statistics, 2006) levels were used to analyse levels and make country comparisons in some surveys. In the TALIS survey (OECD, 2014b) of schools in 23 countries (OECD, 2014b) data on teacher qualifications was analysed using the categories: >Below ISCED Level 5 > ; <ISCED Level 5B>; <ISCED Level 5A>; <ISCED Level 6>. It noted:

> *ISCED 5 represents the first stages of tertiary education and is split between ISCED levels 5A and 5B. ISCED level 5B programmes are generally more practically oriented and shorter than programmes at ISCED level 5A. ISCED level 5A typically includes a Bachelor's degree and Master's degree from universities or equivalent institutions. ISCED level 6 represents further education at the tertiary level that leads to an advanced research qualification such as a Doctorate degree. (OECD, 2014a, p. 37)*

ICSED Level 1 (primary education), ISCED Level 2 (lower secondary) and/or ISCED Level 3 (upper secondary education) (UNESCO Institute for Statistics, 2009) could be used to analyse data about qualifications in developing countries if appropriate.

In the TALIS survey, paper questionnaires were verified by international translation verifiers, whose work was coordinated by the IEA Secretariat—a consideration for the UNESCO survey.

Teacher training or qualifications needed to become a pre-primary teacher: indicator most commonly used was the proportion of teachers who have met the minimum required teacher training for that country. This indicator has been used in a range of surveys, including in the TALIS survey of 23 countries (OECD, 2014a), ILO surveys in Ghana and the Dominican Republic, and is included in the UNESCO International Indicators database for African countries. The UIS database reports on graduates from accredited pre-service primary and secondary programmes in African countries, but has information on number of graduates in accredited pre-primary programmes in Cape Verde and Guinea in 2013 only (other countries are reported as negligible or non-applicable). The UNESCO (UNESCO, Undated) survey of ECE and Pre-primary education teacher development in South East Asia asked participants to specify "teacher certification" within its question about highest qualification using the categories: no qualifications; 4-year college degree; 2-year college degree; teaching certification (specify); completion of upper secondary; completion of lower secondary; other (specify).

Countries vary in their set requirements so this indicator is hard to compare across countries (Wallet, 2006). The indicator can show the proportion of countries meeting their own set teacher training standards, and so is useful for gauging progress within individual countries. The UNESCO (UNESCO, Undated) survey of ECE and Pre-primary education teacher development in

South East Asia asked participants to specify "teacher certification" within its question about highest qualification. The ILO survey (International Labour Organisation, 2012) in Ghana (survey received, to be referenced) asked the question: *Please indicate the initial education or training standards required for certification or employment of early education employees and the percentages of staff currently meeting those requirements*?

Some surveys asked about the content of teacher training. For example, the TALIS survey gave three options that were linked to training in subject domains—subjects, pedagogy, classroom practice.

In-service training/professional development: Information about inservice training/ professional development was gathered through questions asking participants to mark from a list the type of in service training, duration in hours and annual frequency. Further questions in some surveys were about who provided in-service teacher training, whether the training was a requirement for teacher accreditation/ registration, whether it was linked to appraisal, who paid for it and whether teachers wanted to participate in more professional development (e.g., OECD, 2012). These indicators were found to be valuable in planning. Countries may have content priorities for professional development: e.g., the ILO citing Awogepa (2010, p. 34) argued personnel in sub-Saharan Africa should be trained on good practices regarding disease control and management and awareness of the needs of HIV/AIDS-infected and affected children and teachers.

Registration, induction and mentoring: In New Zealand, which has a teacher registration system and induction and mentoring guidelines for provisionally registered teachers, a questionnaire was designed for school leaders, mentor teachers, classroom teachers and beginning teachers (Langdon, Alexander, Dinsmore, & Ryde, 2012) to measure effective induction and mentoring. The Langdon Induction and Mentoring Survey is based on "theoretically derived and psychometrically sound indicators of programme effectiveness" (p. 411). Induction and mentoring is intended to support teachers who are teaching and at the same time learning to teach. This questionnaire is focused on how beginning teachers perceive the induction and mentoring process from the outset and how perceptions of learning and mentoring change over time.

Curriculum, beliefs and actual practices

Curriculum: Information about existence of a curriculum or other guidelines should be gained from countries prior to the survey, with specific questions for teachers and mangers on understanding and implementation of the curriculum. Some countries do not have a pre-primary curriculum—it is necessary to gather country information on whether there is *a national pre-primary curriculum,* and to ask teachers whether they have *access to a copy* of it, and ask teachers about their *understanding* and whether they *follow the curriculum in practice*. The OECD (2012) asked about *links between curriculum frameworks of pre-primary education levels and primary education*. (Do early childhood education (age 0–2) and pre-primary education curriculum frameworks link seamlessly between pre-primary education levels and primary education grade curriculum?), and are there national ECE and pre-primary education policies?

Home language or school language: Language is often linked to culture and identity, particularly in the early years of a child's life (Issa & Hatt, 2013), where parental involvement in supporting diversity of cultures and identity in the early years is being given an increasing amount of importance (Siraj-Blatchford & Clarke, 2001). The value in multicultural communities of enabling first languages to be used and cultural practices to be understood and incorporated as a basis for good communication, learning and development were highlighted in a recent New Zealand study (Mitchell et al., 2015).

Books at home: Asking about books in homes is a recognition of the value of home reading activities.

Learning style: Active learning, group work, rote repetition were constructs in a UNESCO survey (UNESCO Institute for Statistics, 2008). Teachers were asked about how often different pupil learning activities occurred in their classes. Three indices were created using responses to these questions. The responses were 'never or almost never' (score of 1), 'in some lessons (score of 2) and 'in most lessons' (score of 3). Each index was derived by taking the mean of the responses to each set of questions. The first index was Learning style—active learning, which was based on responses to these questions:

- Pupils work on problems for which they cannot use a standard solution;
- Pupils explain how they have gone about solving a problem;
- Pupils prepare projects or posters to be shown to the class;
- Pupils are involved in planning what will be done in some lessons;
- Pupils explore interesting side aspects of the topic they learn; and
- Pupils work on thought-provoking issues.

Pedagogy: Beliefs about teaching and learning and actual pedagogical practices were constructs for several surveys. Kwon's (2004) survey and observations of kindergarten teachers in Korea found differences between beliefs/attitudes and actual practices, suggesting it is useful to measure both. The use of observation and survey was valuable in measuring both. Indicators of attitudes/beliefs and practices were measured through items asking about teachers' perception of education issues—developmental approach, intrinsic motivation, extrinsic motivation, child-directed play, integrated learning, separating playtime from worktime, worksheets, structured small group teaching, role of preschool teacher as facilitator; and questions asking about classroom organisation—child directed, teacher directed small class activities, child directed whole class activities, outdoor activities

McMullen et al. (2005) reported percentage of respondents reporting conceptually related beliefs about pedagogy items as very/extremely important by country. These items were: for class activities to be responsive to individual differences in interests; for class activities to be responsive to individual differences in development; for teacher-pupil interactions in the classrooms to help develop children's self-esteem and positive feelings toward learning; for children to be allowed to select many of their own activities from a variety of learning areas that the teacher has prepared; for children to learn through active exploration; for children to learn through interaction with other children; or children to participate in dramatic play; that math be integrated with other curriculum areas; in teaching health/safety, it is ... to include a variety of activities throughout the school year.

The TALIS 2008 survey (OECD, 2010) asked a range of questions to measure teachers' personal beliefs about teaching and learning. Teachers were asked to rate their level of agreement or disagreement on items related to constructivist and direct transmission beliefs related to teaching and learning. In relation to practice, the survey asked about whether teachers "adapt" to students' social and language background, grade level, achievement level, and class size, i.e., adaptation to characteristics of the class.

The UNESCO Institute for Statistics (2008) survey of primary schools—to describe and measure teaching styles, teachers were asked how often they performed each of 17 activities in their lessons—'never or almost never', 'in some lessons' or 'in most lessons'.

- At the beginning of the lesson I present a short summary of the previous lesson.
- I explain the aims of a lesson at the beginning of the lesson.

- I only start with a new topic after all previous steps have been understood by all pupils.
- I use examples to clarify the subject matter of the lesson.
- I offer the pupils opportunities to search for solutions themselves.
- I check regularly, by asking questions, whether or not the subject matter has been understood.
- I ask pupils to summarize out loud what I have explained.
- When I have finished teaching a topic I give a summary of the contents taught.
- I provide pupils with ample opportunity to practise newly taught subject matter.
- When working with the pupils when they are doing assignments, I ask them first how they think dealing with the assignment.
- I offer pupils the opportunity to compare different strategies to solve problems.
- I ask pupils to cooperate in small groups in doing assignments.
- I ask pupils to provide one another with explanations, ask each other questions and to correct each others' work. These items are not so relevant for pre-primary.

A survey of kindergarten teachers in the United Arab Emirates (Al-Momania, Ihmeidehb, & Momani, 2009) investigated kindergarten teachers' views of the curriculum, instruction, and assessment. Questions were asked about Problem solving; Storytelling; Cooperative groups; Learning centers; Play, discovery, and field trips; Lecturing and verbal discussion; Using computers; Tricks and games; Puppet theatre; Manipulatives and concrete objects.

Assessment: A recent review of literature on learning progress and outcomes in the early years (Carr, Davis, & Cowie, 2015) shows the interwoven nature of valued educational subject-based and attitudinal outcomes—abilities, knowledges and learning dispositions. Carr, Davis and Cowie raise different theoretical positions within three debates about assessment. The debates are framed in terms of questions:

1) Which educational outcomes are valued and What educational outcomes should be assessed?
2) Who does the assessing and Who is it for?
3) What are the timeframes? and What intended and unintended consequences of outcomes that have been made visible or demonstrated in assessments? These questions might be useful in developing survey questions and analysing responses.

A New Zealand survey on assessment practices (Mitchell, 2008a) asked teachers to mark from a list methods used to gather data about children's learning and development, use made of data gathered, children's involvement in their own documented assessments, parents access to, use of and contribution to assessment, parents participation in planning, assessment and evaluation and barriers to assessment.

The United Arab Emirates survey (Al-Momania et al., 2009) asked about the following assessment procedures: Children responding to teachers' questions; Children's performance on tasks; Direct observation; Questions asked by children; Children's attention; No problems; Attendance; Children's interaction; Portfolios.

Time-use diary: *(Teacher)*. Proposed for use in a new Australian study (in preparation) which asks how much time teachers spend on different tasks.

Parent/teacher relationships (*Teacher)*: An evaluation of New Zealand's ECE Participation Programme (Mitchell et al., in press) asked how teachers support parents to be engaged in their child's early learning, and provided options to tick. It used a framing that conceptualised families and community in terms of the funds of knowledge and cultural capital they possess and of valued contributions they can make to educational goals. It asked parents about their aspirations for their child; parents contributing to the development of Early Learning Plans for their child; information, ideas and modelling provided about home

activities that support learning; parents encouraged to be actively engaged in the ECE service; parents encouraged to contribute to the education programme; parent workshops or evenings on education matters are held; Parents can take educational resources, e.g. digital camera, books, home; Parents bring resources from home; Other *(Please specify).*

Relationships with other professionals (e.g., schools, health professionals).

Co-operation among teachers—exchanging ideas, team teaching. TALIS 2008 developed two scales measuring co-operation among staff - exchange and co-ordination for teaching and professional collaboration.

Leadership—TALIS 2008 identified five scales for management behaviour and style: management of school goals, instructional management, direct supervision of instruction, accountable management, and bureaucratic management.

Working conditions and job satisfaction

Employment status: Information gathered about whether teachers are in permanent employment, on a fixed term contract, volunteer at current pre-primary education setting.

Hours of work: Information gathered about hours of teaching; working hours. Wallet's (2006) analysis of education indicators for pre-primary teachers noted that some countries do not differentiate between working hours and teaching hours. However, a question to individual teachers and managers could differentiate between these hours. Indicators: *teaching hours per week; working hours per week; weeks teaching per year.*

Salary/wages: Schleicher et al. (1995) found that information about teachers' salaries and remuneration was difficult to gather and compare. There is a need to be clear about asking about gross or net salary, and to interpret salary levels within country context. Country information about how pre-primary teachers are paid and whether on negotiated employment agreement would help in devising appropriate questions, for example whether to ask about regularity of payment and payment for extra tasks as asked in Philippines survey below.

The ILO survey (Ghana and Dominican Republic) asked at a country level for the statutory or average institutional salary of early childhood educators fixed by law, collective agreement or institutional policy (as appropriate). It also asked for the payment period to be specified. The ILO reported that "in many countries in sub-Saharan Africa salaries are under US$50 a month and educators suffer from low levels and irregular payments, especially in privately based centres with little government support" (ILO, 2012, p. 48). It argued that a combination of young staff and low pay "fuel" high staff turnover.

A New Zealand survey (Mitchell, 2008b) asked teachers for rate of pay before tax, i.e. gross pay in dollars per hour (if paid a wage); gross pay in dollars per year (if paid a salary). Indicators: *average salary per month*; *whether salary received on time* (one week late, two weeks late, three weeks late, a month late over a month late—may be subjective) (Schleicher et al., 1995); *weekly/ or annual rate of pay before tax* (Mitchell, 2008b).

A Philippines survey supplied by UNESCO (Early Childhood Care and Development Council in partnership with the Department of Social Welfare and Development, 2013?) asked about payment for overtime; other tasks; payment for extra tasks; kind of service provided; use of own money for supplies; other benefits; regularity of payment.

Leave entitlements: Teachers asked days per year paid annual leave, paid sick leave, paid parental leave (Mitchell, 2008b).

Teacher housing: Whether teacher living in school housing, whether on school premises (Schleicher et al., 1995)

Teacher appraisal: Defined in 2008 TALIS survey as "when a teacher's work is reviewed by the principal, an external inspector or by his or her colleagues. This appraisal can be conducted in a range of ways from a more formal, objective approach (e.g. as part of a formal performance management system, involving set procedures and criteria) to the more informal, more subjective approach (e.g. through informal discussions with the teacher)." Feedback is defined as "the reporting of the results of a review of your work (however formal or informal that review has been) back to the teacher, often with the purpose of noting good performance or identifying areas for development. Again, the feedback may be provided formally (e.g. through a written report) or informally (e.g. through discussions with the teacher)." (OECD, 2010, p. 266). Questions were asked about the frequency of feedback, who supplied it, the importance for aspects of teaching and outcomes, the impact of feedback, e.g. for salary, professional development, role, career, the impact of feedback for pedagogy, views of fairness and helpfulness of the feedback, the impact for job satisfaction and general views.

Involvement in decision-making/social dialogue: The construct of social dialogue is based on ILO concepts, and defined as "all forms of information sharing, consultation and negotiation between representatives of governments, employers and workers on issues of common interest relating to economic and social policy (ILO, 2011 and 2012). The ILO survey asked at a country level whether information about ECE policy and practice is shared between public and private employers and staff; whether consultation take place between ECE employers and staff or their collective representatives regarding ECE policies or practices; and whether negotiation or collective bargaining take place between public and private employers and trade unions or other collective representatives of ECE staff on terms and conditions of employment.

Levels of job satisfaction and teachers' belief in their own effectiveness: Levels of job satisfaction were measured in TALIS surveys separately for principals and teachers on two scales each—satisfaction with current work environment (4 items) and satisfaction with profession, including views of the valuing in society (3 items). All items in the scales were measured on a four-point scale. Response categories were 1 for "strongly disagree", 2 for "disagree", 3 for "agree", and 4 for "strongly agree". Self-efficacy was measured in relation to classroom management, instruction and student engagement.

Methodology

Participation by countries

A main lesson from the review of surveys is the necessity and value of involving participating countries/stakeholders from the beginning. Involvement is needed to ensure the survey is relevant in its focus, constructs, and indicators for that country context, to ensure that country participants gain from their involvement, and so that countries have a sense of ownership of the survey and support its implementation. "Buy-in" was emphasised by Julie Bélanger in her presentation on "Lessons learned from TALIS" at the first meeting of the International Advisory Group. Such involvement links to survey quality—the idea of credibility, that the survey constructs and analysis make sense to participants in that country.

Stakeholder involvement varied in the surveys reviewed; involvement was usually at the level of determining policy priorities and key constructs. Expert knowledge was needed around survey design, validation of instruments, sampling, and interpretation. Stakeholders were sometimes involved in implementing the survey. Different types of involvement are illustrated in the examples below.

In the pilot *"Conditions of primary schools"* study, the selection of indicators was decided by UNESCO and UNICEF staff. An expert group—the education survey group at the University of Hamburg, designed the survey questionnaire, drew probability samples, developed data collection procedures, and undertook data analysis data management and preparation of the report. One of the key recommendations was that small regional groups should decide on indicators and policy issues; then the questionnaire should be developed and piloted by experts.

The *WEI Survey of primary schools,* (Zang, Postlethwaite, & Grisay, 2008) in 11 countries (Argentina, Brazil, Chile, India, Malaysia, Paraguay, Peru, the Philippines, Sri Lanka, Tunisia and Uruguay) described the study as the result of "a collaborative effort amongst participating countries, the UNESCO Institute for Statistics (UIS) and leading international experts" (p. 3). WEI national coordinators worked together with OECD and UIS staff and international experts to develop three questionnaires for the WEI-SPS study: one for school heads; one for Grade 4 reading/mathematics teachers; and one on the 'opportunity' for Grade 4 pupils to learn reading and mathematics.

In a *New Zealand* survey of teachers, managers and parents (Mitchell, 2008a, 2008), national representative organisation representatives were involved in selecting the policy issues of most relevance to them. They were asked to advertise the survey with their membership groups and encourage participation. Special reports were prepared for sector groups to address their issues.

The SACMEQ project started with discussion between the SACMEQ National Research Coordinators and key decision-makers in Ministries of Education in the eight countries. This resulted in "high priority" policy issues that were then reviewed by the co-ordinators in search of common themes. The project contributed to capacity building within the countries (Ministries of Education and universities) especially with regard to technical skills and report writing. It was notable that each report, written by country coordinators, resulted in recommendations relevant to the policy concerns in that country.

Conceptual framework

Some projects started with a clear conceptual framework as a basis for questionnaire development. Bélanger, speaking about TALIS, advocated the need for a strong conceptual framework as a basis for questionnaire development, and for establishing an expert group early and ensuring their continued involvement from the development of the framework to the analytic work.

The OECD report, *TALIS 2013 Conceptual Framework* (Rutkowski et al., 2013), argued that a well-developed conceptual framework was important to meet the multiple aims of the TALIS; this consideration would equally apply to the UNESCO STEPP survey. The TALIS survey had as a main aim to monitor and compare education systems in terms of teaching and learning conditions. The 2008 TALIS conceptual framework 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). The updated 2013 conceptual framework made reference to important and current theories and research on teaching and learning environments, making it theoretically sound. This 2013 TALIS conceptual framework represents two dimensions: students, teachers/ classrooms, schools, and countries as different levels of educational actors; and the educational context in terms of inputs, processes and outcomes. The framework was used to develop the dimensions, themes and indicators that were chosen (through a prioritisation exercise) by participating countries as being highly policy-relevant and which provided the organisational and conceptual underpinning of TALIS. At the same time as including new items in the survey, it was ensured that some indicators

were the same as the 2008 TALIS and could be compared across cycles.

The *Conditions of primary schools* study gave the overall goal of education as to "provide children with the values, knowledge, skills and behaviour, to live well as children, as adults and as citizens." (p. 21). It used research then to justify two of its emphases being on literacy and numeracy. It then grouped factors that are "malleable" and can be changed into three groups: contexts, inputs and policies and processes.

1. Contexts are the environments in which schools operate—these include pupil intake and management
2. Inputs are the materials and human resources available to schools—ranging from budget allocations to teacher qualifications and experiences.
3. Policies and processes were describes as the most readily changed variables—these are processes associated in the literature with effective schooling, e.g., leadership, evaluation, co-operative planning, teacher expectations, atmosphere.

This was its conceptual framework.

Target population/institution, sampling procedure and sample size

The target institutions are pre-primary and comprise all pre-primary settings in a country. Pre-primary needs to be defined clearly for all countries and a register obtained with names and contact details of pre-primary education services and information about service type in each country. These may not be available for all countries and decisions may be needed on how a list might be generated. In surveys reported it was the responsibility of each country to ensure their sampling frames accounted for all schools.

The target populations for the STEPP survey are managers and teachers at a pre-primary institutional level i.e., ISCED 0.2. Clear definitions about who counts as a "teacher" are necessary to ensure national and international comparability.

The institutions and then the individuals within the institutions will need to be sampled. Decisions about who should draw the sample need to be made dependent on level of sampling expertise. For example, given the lack of sampling expertise in some countries, the study *Conditions of primary schools* recommended samples be drawn by an experienced educational sampling statistician, but as expertise increased, countries should do it according to pre-set criteria. Countries should adhere to sampling guidelines in order to select pre-primary settings, and managers and teachers, i.e., service-level sampling and within-service sampling.

The TALIS study surveyed representative samples of 200 schools per country and a sample of 20 teachers and one school leader in each school. Target response rates were 75 percent of schools and 75 percent of sampled teachers in the country. A school was considered to have responded if 50% of sampled teachers respond. Separate questionnaires were provided for teachers and principals, each requiring between 45 and 60 minutes to complete. The mode of data collection was through questionnaires filled in on paper or on line.

OECD (2014) recommends for its International ECEC Staff Survey, 200 services with 15 (or all, for small services) personnel sampled per service, i.e., about 3,000 personnel (paper for International Advisory Group meeting).

Advice on the range of response rates and size of services should be discussed when the participating countries are known and advice on minimum sample size and response rate sought.

Lessons for the STEPP project from the implementation of surveys

In this section, we suggest main lessons that have emerged from the implementation of surveys.

Construction of a conceptual framework provides a base for development of constructs, indicators and questionnaires. The OECD (TALIS) categorised one framework dimension as the levels of educational actors; and the educational context in terms of inputs, processes and outcomes as another. The second dimension had elements in common with the framework of UNESCO and UNICEF (pilot study on Conditions of primary schools). The conceptual framework links to values, and should be informed by research and involve stakeholders from each country in its development. The linkage with values is particularly evident in consideration of what outcomes are valued and therefore what should be measured. The emphasis in UNESCO's writings on UNCROC, empowerment and a holistic view of learning and development with children, families and communities as active participants suggests a rights-based framing may be a useful place to start. Such a framing would have implications for conceptualising the study, what questions are asked about pedagogy, and how family and community partnerships are envisaged and measured.

Involvement of stakeholders from participating countries from the beginning is vitally important. Involvement enables development of the survey to ensure key country policy issues are addressed, and for questionnaires to be designed that are appropriate for each country context. This links to credibility—will the questions and data make sense to country participants? Involvement enables sound advice on considerations for sampling and practical support for implementation—to ensure survey administration works. Countries want surveys to be relevant and useful to them; ideally input from country stakeholders will contribute to capacity building where necessary, and action on policy and practice issues emerging from analysis of the data (in which they have been involved). When participants are not involved, survey relevance, response rates and engagement are likely to be lower.

All the surveys made use of expert advice for survey design, sampling, survey administration, coding and analysis, and reporting. Dimensions of survey quality need to be addressed. These include robust design that addresses issues of item validity and reliability and whether items are comparable across countries. However, while items need to be comparable across countries, there may be value in having some country specific items to address particular issues. Credibility is another quality issue—discussed above. Translations into local languages need to be verified to ensure comparability, e.g., by UIS. Careful piloting and then field testing is essential. In the SACMEQ project, "trial testing" (of literacy) was in one whole class in five schools throughout each country. The TALIS survey used 20 schools, with 20 teacher participants in each school in each country. Validation and verification of psychometric properties of individual items occurred at time of field trial for the TALIS survey. Appropriate training and project management, and attention to ethical considerations throughout are necessary. Training manuals and code books were found to be valuable for the TALIS survey and code books are used in the annual New Zealand staffing census.

Cost and time are two factors that need to be considered. Decisions about survey administration will impact on these factors. In some countries, questionnaires needed to be administered face-to-face (e.g., SECAQ surveys), necessitating travel time (some locations involve lengthy travel time), and capacity to cope with unforeseen circumstances e.g., (a participant is not available; weather prevents travel). These may make for inter-country differences in what is practically feasible to do. Use of

knowledgeable people from the country will support understanding of contextual factors that influence survey administration.

Appropriate strategies for generating a high response rate have depended largely on advice and support from national/local people from the country. Consultation with and participation by these people lead to commitment to the project and a willingness to promote its value with potential participants. Employment of local project managers enables networks and established relationships to be utilised. Specific strategies to encourage high participation rates include: meetings with representative organisations/stakeholders; face-to-face administration (Nigeria General household Survey, SECAQ surveys, New Zealand priority families survey); preparation of specific information flyers and reports for particular groups; incentives for participation (e.g., New Zealand has used draw for grocery vouchers, payment of reliever/ teacher release for ECCE settings).

Following from survey results: From monitoring to implementation

One of the valuable outcomes of a survey is for the findings to be analysed and used by each participating country to improve its educational provision. This was a strong desire and motivating factor for participants in several surveys and for prospective participants in the STEPP survey. One type of research useful for generating understandings about the implementation of policy and leading to interventions that can be 'scaled up' is design based implementation research. This differs from much longitudinal research in focusing on implementation and seeking to improve implementation while researching it.

Design based implementation research

Design based implementation research, a term used by Penuel and Fishman (2012), "is a form of design-based research that is aimed simultaneously at developing interventions and at improving their implementation" (p. 287). It has several characteristics that make it well equipped to investigate problems of practice in implementing policy and how these link to other variables, and to research and address these problems in context and then bring improvements to scale at the level of practice and educational systems.

The primary research question is "What works when, how, and for whom?" Penuel, Fishman, Cheng, and Sabelli (2011) identify other primary questions as "How do we improve this strategy to make it more sustainable?" and "What capacities does the system need to continue to improve?" Many sub-questions follow from these.

Multiple stakeholders are involved in identifying and defining the problem and shaping the research. In this case the "problem" would be defined by country stakeholders involved in the survey. Involvement of stakeholders is crucial because implementation is not just about translating best research into best practice. Different stakeholders often contest the goals and conclusions of researchers, strategies and goals for education. Since this is about implementation, it is ultimately those at the local level—on the ground teachers, leaders, parents, managers, umbrella organisations and local government officials who determine its success. While some stakeholders may be open to change, others may be less open or resist change. Successful scaling up depends on these stakeholders being part of the solution.

The first task is to translate identified "problems" from the survey findings for that country into interventions. Interventions would draw on what we know from the many international studies about that issue—we do not need to reinvent this understanding. These interventions would be shaped into new materials (e.g., resources) and activities (e.g., professional development) through an iterative and collaborative process of design.

Interventions would be trialled and research undertaken with a sample of settings. The research would analyse pre and post data (e.g., gained through observation, survey, child learning data, interview) as a strategy to evaluate improvements, inform design and improve impact.

Through this iterative and collaborative process, interventions developed for these settings would be translated into interventions that are able to be scaled up for many settings. Further iterative research would take place in these other settings.

Recommendations to the Survey of Pre-Primary Education (STEPP) project

1. Representatives from participating countries should be invited to actively participate from the beginning and consideration be given to the structure of the personnel to oversee the project and to appointment of a national research manager in each country. Consistency of personnel is desirable.
2. The conceptual framework and scope of the STEPP project needs to be determined with the involvement of participating countries. Consistent with UNESCO's emphasis, a rights-based framing incorporating a holistic view of learning and development, and children, families and communities as active participants in ECCE would be a useful basis. The framework needs to be based on research findings.
3. Participating countries could be asked to prioritise policy issues, so that these are relevant and appropriate for these countries, and a moderation process followed to finalise these and enable inter-country comparison. Countries may also be able to suggest country-specific issues as an addition to their own survey.
4. The constructs and indicators will relate to the research topics proposed by UNESCO and the conceptual frame. Research evidence and country cultural values need to be considerations in determining indicators and their appropriateness. The list generated through this review is a useful starting point without closing off opportunities for new indicators to be designed. The list could be evaluated by country representatives and indicators decided that suit the country context. Some constructs, such as structural features of quality, are relatively easy to determine, but the topic "ensuring quality learning environments" is a contested domain, where the conceptual frame will offer guidance. This review and consideration of UNESCO values suggests questions relating to the image of the child as powerful, family and community partnership with teachers, the role of the teacher, the purpose and processes of assessment will be valuable.
5. Expert advice for survey design, sampling, survey administration, coding and analysis, and reporting needs to be obtained. Dimensions of survey quality, including validity, reliability and credibility need to be addressed.
6. Strategies for generating high response rates should be decided by each country representative, who understands the country context. Strategies used in low and middle income countries are: involvement of stakeholders in design from the start; meetings with representative organisations/stakeholders to explain the project and gain support; face-to-face administration; preparation of specific information flyers and reports for particular groups; incentives for participation.
7. Possible complementary research methods to consider are focus group interviews of teachers and managers to probe further into issues raised in the survey; and observations in ECCE settings of environment and interactions. Consideration could be given to selecting "very good" settings

for observation to be documented and to act as an inspiration for other settings.

8. Ways need to be found for the findings of the survey to be used by each participating country to improve its educational provision. One option, useful for generating understandings about the implementation of policy and leading to interventions that can be 'scaled up', is design based implementation research. This differs from much longitudinal research in focusing on implementation and seeking to improve implementation while researching it. The option could be explored.

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Appendix 1: 'Reflections on what worked and what did not in past survey experiences'

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Introduction

In summer 2015, Dr. Mitchell (University of Waikato) contacted me to get some thoughts on issues like sampling, survey methodology, and content for international surveys as an input for a review which in turn should inform design and methodology of a proposed survey of teachers and managers in pre-primary education (STEPP-project). I agreed to write "something", but never thought this might appear in a printed version. Since the time frame for this reflection was very short, this paper cannot claim to be a research paper; it is more of an essay on lessons learned over the years and in different surveys.

National and international surveys exist in a complex environment. Specifically for international surveys, what works in one country is not necessarily feasible or even useful in another. I draw my conclusions on my experience working on both national and international surveys, though the list of dos and don'ts I provide in this essay is by no means meant to be exhaustive.

As a caveat, I should mention that some of the surveys I write about took place some time ago, and the political systems and governance of institutional education, educational systems or simply society in general in the countries I write about may since have changed. Working in Austria, I can conclude that the first surveys I worked on (COMPED[1] 1989; TIMSS[2] 1995) took place in a totally different environment than surveys today. To name but a few important changes: educational research back then was of no interest to politics, media and society; while this meant that funds were sparse and schools had to be convinced to participate (sometimes this took several letters, memos and long phone calls to grumpy school principals), it also meant academic freedom. Data privacy was not a topic of interest to any of the school principals or teachers, let alone parents (maybe also because the surveys were perceived as purely of academic interest). Teacher unions were not interested in our work. Last but not least, we were innocent: there was no prior research, so there was no pressure to keep findings comparable. While this sounds somewhat arbitrary, all these changes have had huge consequences resulting in the way we conduct surveys today, and put limitations on our work and therefore on educational research.

On the other hand, without the increase in public interest in education over the last few years, the introduction of national educational standards and their assessment would not have been possible in Austria. In 2008, these standards ("Bildungsstandards") were introduced in Austria, and since 2012, they have been assessed nation-wide every year. This depicts nothing less than a shift of paradigms: backing away from solely input-oriented school politics (how many hours of teaching does a student get? How many hours do teachers teach? In short, how much does a student cost?) towards a more output-oriented view: what competencies do students have after 4 or 8 years of schooling? Are there schools which manage to get all their students up to a satisfactory

1 Computers in Education Study, see http://www.iea.nl/comped.html

2 Third International Mathematics and Science Study, see http://www.iea.nl/timss_1995.html

level of competencies, or are there groups of students who are left behind?

In short, a lot has changed in the years since I worked on my first international study (1989), and this needs to be taken into consideration.

Stages of Studies

Find the questions

The first phase, which sometimes does not get enough emphasis, is the stage of finding the research question. Between the first research question (e.g., how well can students read) and the actual assessment lie a number of decisions which will shape the survey, and as a consequence, the results. Reading, for example, could be tested on lower grades in schools, where decoding is still an issue and texts have to be simple (e.g. PIRLS), or later, when reading is a means of getting information (e.g. PISA). One could simply assess how well students can read, or one could try to find factors that foster reading competencies (such as access to school libraries, level of parental education, etc.) (Postlethwaite, 1992).

The international studies PISA[3] , PIRLS[4] , and TIMSS[5] work with well-formulated frameworks which enable MoEs to decide whether participation is useful for their country or not, but not all studies are as well organized. LAMP[6] took a long time to get started, and on the way, a lot of additional questionnaires were suggested (regarding economic issues, health, etc.). While all these issues form interesting research questions, it is not fair to burden participants with hundreds of questions. Also, to the best of my knowledge, publication of the results to date only concentrates on very few variables (age, gender, education).

A strong point of WEI-SPS[7] was that the group of countries conducting this survey had collaborated before (WEI-programme). This made the initial phase of identifying the big questions quick and smooth. When it came to designing the questionnaires however, a certain pattern emerged ("wouldn't it be also interesting to ask ..."). Fortunately, the UIS had employed a dynamic and headstrong expert, Neville Postlethwaite, who always requested to see the planned analysis before the questionnaires were expanded ("where are the dummy tables?"). This simple technique kept the group focused and the questionnaires short, and did not overburden participants. The strategy in IEA studies is similar – questions or scales in questionnaires are only expanded if their use is clear.

Two very interesting studies have been taking place in African countries: SACMEQ in countries with English as a medium of instruction, and PASEC in francophone countries. While both studies emerged after the Jomtien World Conference on Education for All (EFA) in 1990 (SACMEQ, 1995), where it was noted that 100 million children were without access to basic education, their setup was quite different: while SACMEQ was set up by education researchers, PASEC was dominantly set up by economists. The research foci and publications of both surveys today show this distinction, despite both studies being about education outreach and education quality.

Although this difference in foci is mostly not considered a sampling issue, it can be perceived as relating to sampling: from a universe of possible questions, the ones

3 Programme for International Student Assessment, see http://www.oecd.org/pisa/aboutpisa/
4 Progress in International Reading Literacy Study, see http://www.iea.nl/pirls_2016.html
5 Trends in International Mathematics and Science Study, see http://www.iea.nl/timss_2015.html
6 Literacy Assessment and Monitoring Programme, see http://www.uis.unesco.org/literacy/Pages/lamp-literacy-assessment.aspx
7 World Education Indicators - Survey of Primary Schools, see http://www.uis.unesco.org/Education/Pages/world-education-indicators.aspx

which best represent the content/construct have to be identified. And of course, although this is not the sole source of validity, content validity is an important factor (Kane, 2006).

Sampling

Undoubtedly, sampling is a critical phase in the life of a survey. Errors made here cannot be 'fixed', no matter the sophistication of data analyses that are used. The very first question – and this is sometimes overlooked – is: 'what is my unit of analysis?'. If we look at WEI-SPS, the primary unit of analysis was schools – not students. This makes a difference in the sampling approach and consequently in the precision of analysis afterwards.

Example: we want to know how many schools have a school library. A hypothesis might be that schools in remote areas or very small schools tend to be less well equipped than schools in cities or other regions (islands, valleys ...). In this case, we must sample schools from these areas, even if they are hard to reach (no reliable post service, which results in long transit times for questionnaires, etc.). If, in another case, we want to know how many students have access to a school library, we might not have to sample these remote schools: if their coverage in terms of students is very small, we might – for economic reasons – decide to exclude them from the sampling frame ('non-coverage', in comparison to exclusion). Even if the percentage of schools in the region might represent nearly 10 % of all schools in the country, the students in these schools might represent less than 1% of the student population. For example, in Austria, there are a number of very small primary schools (less than 6 students in the tested grade) in remote areas. These schools represent 9% of schools – but only 1.2% of students. For economic reasons, we exclude them from most pilot studies.

Once the unit of analysis has been established, the sampling size has to be determined. Foy (2004) provides an excellent overview over all sampling issues; Kish (1965) is less easy to read but offers the formulas for calculating sample sizes and precision.

For WEI-SPS, the sampling was supported by international experts (Pierre Foy, Owen Power, see also UNESCO, 2009). A difficulty in some countries was the availability of a good school sampling frame. This first part – getting a complete and up-to-date list of schools – can be very time-consuming.

Sampling for LAMP was much more difficult, since the unit of analysis was not schools but individuals. In countries with no official records, techniques such as 'random walks' might be necessary. SACMEQ, putting a lot of emphasis on capacity building, made use of a regional centre (Harare) but also employed international sampling experts to ensure sound sampling techniques. PASEC documentation was incomplete when I last tried to use the data (2009), which meant users were forced to perform analysis with unweighted data. This might be of no consequence if the sample is drawn to be self-weighting, but if documentation is not available, a lack of weights is an issue of concern: the representativeness of results is questionable. Depending on the sampling design, unweighted data might come up with basically the 'correct' results – if the sample design reflects the education system. If some parts are over- or under-sampled (which might make perfect sense in order to get the same precision for – for example – small regions or other, rather smaller parts of the education system), weighted results may differ enormously from unweighted results. Of course, only the weighted results are the 'true' results.

Sampling for PISA is – apart from the stage where the sampling frame has to be produced – easy for participating countries, although the design is complex, since main steps are undertaken by the international consultants. However, it is costly, specifically if a country's educational system differs greatly from the 'PISA standard' (as is the

case in a few European countries). The capacity-building aspect of participation in international surveys has been reduced in recent years; the early IEA sampling manuals were a lot more exhaustive and thus enabled participants to do the sampling themselves. Unfortunately, the PISA approach seems to have become standard (countries pay to have their samples drawn). While this of course results in excellent samples, the capacity-building aspect in participating countries is greatly diminished. Specifically if education systems differ from the 'standard' system it is crucially important to have at least a good idea about the corner stones of sampling as well as the system one wants to study (Foy, 2004).

Stratification can be used to heighten representativeness and precision of the sample (George, Itzlinger-Bruneforth & Trendtel, 2015). If variance in a desired variable (e.g., reading competence) is smaller within strata than between strata, and/or the means of the desired variable are notably different between strata, estimates based on stratified samples can be more precise than those of unstratified samples (given the same sample size) (OECD, 2012).

Sampling errors can be calculated once the data has been collected. Since surveys in education mostly use school data, and students within one school are more similar to each other than students of all schools, specific methods for nested data have to be used in order to correctly estimate the sampling error. Methods designed to calculate sampling errors for simple random samples, which is the standard in most statistical software, underestimate errors drastically and cannot be used. A package which contains tools for datasets with replication designs (jack-knife, bootstrap, replicate weights) is BIFIEsurvey (https://cran.r-project.org/web/packages/BIFIEsurvey/index.html). It is a free tool that can be used in R. The advantages are as follows: firstly, R and all the packages are free software; secondly, the international community using R in educational surveys is rather big and any errors in functions are quickly found and amended. In terms of capacity-building, R is certainly preferable in comparison to "black box" software where the source code is not available to users (e.g., HLM, Mplus). For details on R, see https://www.r-project.org/.

Survey Methodology

Administration

In my opinion, survey administration is an overlooked topic in some surveys. Since there are many pitfalls which may jeopardize the whole survey, I would like to make this an explicit point.

Schmeiser & Welch (2006) give a very good and complete overview of the issue, but I would like to emphasize even more the importance of the often unglamorous tasks related to survey administration. Sampling is a hot topic; analysis is sexy. Researchers often like to think of administration, however, as the black box: things just happen – but if not steered properly, they don't happen properly. International surveys like PIRLS, TIMSS and PISA do have extensive manuals covering the issue, but note that these manuals may need country-specific adaptation: contacting schools might be a sensitive issue in one country, while in another, just sending the materials on time might suffice. Buy-in of teacher unions and parents associations might be crucial. International organisations are not able to foresee all of these issues and hence are unable to advise on how best to deal with them. The countries' representatives must be aware of their important role as stakeholders of the survey in their countries, and international organisations should support this awareness. This might be easy when education researchers and the MoE in a particular country work together on a survey, or more difficult if only one player supports the survey. It seems that not much can be done in the latter case except hope that things will work out as the survey gets underway (sometimes this turns out).

WEI-SPS, leaning on IEA-manuals, had very strict rules regarding administrative procedures. Since the personnel at UIS is also well trained in recognising the differences in national education systems, timely and efficient discussions took place in the case of countries which reported having had experienced difficulties with the stated rules.

I cannot comment on other international surveys as I have not seen this side of the surveys myself (at least not recently) and can only rely on documentation – where this exists.

Even in Austria, documentation of this part of the national survey is weak – something I regret deeply, because the colleagues concerned do sterling work and the quality of the data we get could never be so high without their efforts. I will describe some of their efforts below, in the section National Surveys. Just to summarize here, we do not use incentives even for the optional surveys or pilot studies, respectively but rely solely on the professionalism of the colleagues contacting schools. Incentives are tricky in our national context, since the same ministry funds schools and surveys. Incentives like book vouchers and similar sometimes lead to the reaction that "the MoE should not pour so much of the funds into surveys but fund the schools better to start with". This seems to be a lot simpler in other countries. On the other hand, conducting the national surveys is quite straightforward, since participation is mandatory. Obviously, this brings response rates up to extremely high levels.

Data entry & quality control

Data entry (DE) for many surveys is still done manually. The cost of high-speed scanners, which are able to read and interpret the data of questionnaires and selected response test items, is very high. Specifically if they are not used year-round (the software licenses have to be paid on a yearly basis) or at least with a high number of questionnaires, it is probably not worth investing in the machinery. If scanners are available in other ministries or departments, borrowing the equipment could make sense. Other scanners, which can only read a few pages per minute, are not worth buying since they necessitate the use of answer sheets – which in turn can be an obstacle for weak readers. (Results of a comparison survey in Austria found weak correlation overall, but indicated that answer sheets create an additional burden for weaker students).

If data entry has to be done manually, it pays to set up an easy-to-use system beforehand. For some international surveys, data entry tools are available (see IEA studies; PISA is now administered online). Setting up one's own system is possible – but time consuming and certainly mostly not without costs (licenses for software like ACCESS or similar). Setting up a data entry system totally from scratch is not recommended, since it will require quite some time and experienced personnel. Even in countries with low labour costs, the results will most likely not be convincing. As a midway solution, online tools for questionnaires might be used. Some of them are free, but one has to consider that free versions may have limitations for the number of variables or cases. One free tool which offers a fair amount of flexibility is limesurvey (https://www.limesurvey.org/en/).

Setting up the system is just the beginning; countries need dedicated personnel to enter the data (I should know since data entry was my first student job. It was learning by doing). It is often underestimated how much time this costs; a certain percentage of data should be double-entered to ensure high quality of data entry (calculate reliability coefficients and aim for very high rates – 95% is suggested). If there are any constructed responses where DE personnel would have to think before keying the answers or look answers up in lists, make sure the answers are coded first. DE personnel should not take decisions; this would slow them down and disturb the consistency of DE. As with survey administration, this is a very unglamorous

but important part of any survey and should receive the attention it deserves.

Scoring and scaling

It should be assumed that scoring and scaling is always considered a crucial point, but surprisingly often these aspects are not discussed before the survey is under way. The international experts of an unnamed international survey wanted to report percent correct (sometime in the late nineties), because this is easy to understand for policy makers. While this argument is undoubtedly true, the standards for reporting results had long been enhanced and not using IRT was not really an option any more. Specifically the use of Plausible Values is strongly recommended, since they give a more smooth distribution of the abilities in the test population. PVs also have the advantage of giving a very robust estimate of the ability, even if the test is off target, and also estimate the variance of ability accurately. For a more detailed discussion on PVs, see Wu (2005). In addition, a number of statistical packages exist to calculate PVs; this in turn fosters capacity-building and helps make results more comparable. BIFIE has used ConQuest but has now implemented most of the functions available in a package running in R (Test analysis modules, TAM). The package covering IRT models, latent regression models and imputation of PVs is described here: https://cran.r-project.org/web/packages/TAM/TAM.pdf.

Whether 1-, 2- or 3-parameter IRT models should be used is a question requiring an answer of some length. In a nutshell, the main question beforehand has to be whether results will be reported back to students or whether results will be used at system-level only: for individual feedback, anything but a 1-parameter model will raise questions of test fairness and will be almost impossible to communicate; only scores obtained using a 1-parameter model will not alter the ranking of testees' raw scores (Wu & Adams, 2007). For reports on an aggregate level such as countries or provinces and in international surveys, the 2- and 3-parameter IRT models are more widely used (albeit not in PISA).

National educational standards and their assessment in Austria

Standards are formulated and decreed for the following subjects: German (this is the medium of instruction in Austria and mother tongue for most children), assessed in grade 4 and 8; mathematics (grade 4 and 8) and English as a second language (grade 8). In addition to these mandatory assessments, optional assessment tools and instruments exist for all three subjects for grades 3, 6, 7 and 9. Standards are also formulated for science, but their assessment is optional. The only areas where sampling is involved are pilot studies, assessment of speaking competencies and sub-samples of students for the procedure of linking over time. The sampling procedures are described in detail here: https://www.bifie.at/node/3108 (unfortunately, the report exists in German only to date. An English translation is pending).

Education is highly centralized in Austria: there is one central curriculum which is the basis for the national standards; cross-national adaptions are therefore not available. Since the MoE decreed that participation in national standards tests is mandatory, the institute implementing the survey gets the school frame data directly from the MoE, and participation is extremely close to 100%. There are sometimes discussions regarding whether a school belongs to the school frame, but this is more or less resolved by the MoE. Some denial happens on class- or individual level (parents keeping their children at home); the rates are however, so far, very low and not of concern for national or regional level.

Interestingly, for optional assessments, participation is also very high (the test is administered to up to 50% of students, depending on grade and subject). The high

interest in these optional assessments may be explained by the following reasons:

- The main reason seems to be that teachers want to get a bird's-eye view of the status of competencies in their class. Until now, teachers have had no possibility to compare their classes' learning status to that of other classes. The optional assessment is computer-based, so interested teachers have to organize the school's computer lab for their class, but, apart from having to code a few constructed-response items (mostly selected-response items are used in the test) this is almost the only effort teachers need to make. The feedback generated for teachers is instantaneous, easy to read and provides not only individual feedback but also feedback grouped on class-level and grouped in terms of content (such as topic-areas in mathematics, or skills in reading).

- Teachers are curious and want to see what standardized assessment looks like. Note that this is quite a new development in Austria.

- Teachers want to use the informal assessment as preparation for the mandatory assessment (which is not the goal of the informal assessment but some teachers use it like that anyway).

- Teachers want an 'objective' test for grading their students. This is not a supported way of using the assessment, but we hear from teachers that they still use it this way.

To increase willingness for participation in pilot studies, we have trained persons responsible for school contact. Their results are outstanding; so far, we have never had participation rates lower than 95% (when participation is optional). They circulate information about surveys in a timely manner, respond to queries from schools (via email or phone) and maintain a data base listing all irregularities. The latter does not help with response rates but may be very useful in data analysis (for example, a CD did not work and students could not take the listening test → these students and schools will get different feedback).

Although the participation rates are very high, the institute is considering incentives for participation in optional studies, in the form of unpublished material or practice items for teachers to use in class, or extra reports, which are not available for other schools and teachers. Materials could be distributed from a secure part of our website (which already exists, so no extra cost would be attached). The downside of this approach is that producing extra material is costly and schools which are not sampled might complain about not having access to materials. So far, no decision has been taken regarding this point.

Besides timeliness, clarity and friendliness of communication, control is a second factor contributing to high response rates. All school packages, class packages and individual materials (students' test booklets and questionnaires, teacher and school principal questionnaires) are marked with barcodes, and incoming packages are immediately scanned for control. Schools returning incomplete materials are followed up. Last but not least, for mandatory surveys, school authorities get a report about participating and non-participating schools, which is quite likely the major reason why most materials are returned on time and in good order.

Complimentary research methods

My experience of other research methods is limited. Most surveys I have worked on or collaborated on are assessments of students' achievements, or assessment using paper-and-pencil tests or computer-based tests.

In all surveys I worked on so far, questionnaires were added to collect relevant background information, for example, gender, age, education so far, parental education and so forth. Questionnaires were delivered on student level and on school principal level, and were sometimes also generated for teachers (TIMSS, PIRLS, some national surveys) and for parents (PIRLS, some national surveys).

While we know more and more about 'what works', we still have a lot of ground to cover regarding the 'why'. Questionnaires might not be the most adequate instrument; observation might be a better choice. Unfortunately, for data privacy reasons, permission to video-tape students is extremely hard to get in many countries, Austria being one of them. Observing classes or student groups using trained assessors, as Austria does for the speaking test, is very expensive and the interrater reliability is of course much lower if assessors have to rate in real-time. This might be easier in other countries such as Switzerland, where researchers are allowed to use videos for research.

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Appendix 2: Literature Table

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Al-Momania, Ihmeidehb, & Momani, 2009) Investigation of kindergarten teachers' views of the curriculum, instruction, and assessment. Research questions: 1.To what extent is the content of the kindergarten curriculum appropriate for the children in UAE, as perceived by kindergarten teachers? 2.What are the teaching strategies used by kindergarten teachers? 3.What are the assessment procedures used by kindergarten teachers? United Arab Emirates	Kindergarten in transition from old curriculum to the new policy, as articulated by the introduction of the developed curriculum. Confusion traditional beliefs and management practices with implementation of developed curriculum. Focus on transition to new system. Issues addressed by the questions were assigned to a primary set of three categories concerning kindergarten instruction that reflected the research questions: views of content appropriateness; instructional strategies used; and assessment methods. Reasons for views sought.	Data were collected by an open-ended questionnaire, interviews, and observations. Forty-four kindergarten teachers in the United Arab Emirates responded to the questionnaire; six teachers were later interviewed. Respondents had a minimum of three years of teaching experience and were from different kindergartens located in different regions of the UAE. Analysis refined until all responses mutually exclusive categories. Instructional strategies categorised as : Problem solving; Storytelling; Cooperative groups; Learning centers; Play, discovery, and field trips; Lecturing and verbal discussion; Using computers; Tricks and games; Puppet theatre; Manipulatives and concrete objects Assessment procedures: Children responding to teachers' questions ; Children's performance on tasks; Direct observation; Questions asked by children; Children's attention; No behavioral problems; Attendance; Children's interaction; Portfolios	After analysis of questionnaire responses, follow-up interviews were conducted with six interviewees. These semi-structured interviews were conducted to clarify issues that were revealed after analyzing the data collected by the questionnaire to get more in-depth understanding of teachers' views of the kindergarten education. The researchers tried to maximize the validity of the results through the following procedures: • Listening vigilantly to the participants, with the intention of giving them the opportunity to reveal their own perspectives without imposing any opinions or interpretations. • Collecting data from a diverse range of teachers, with different qualification levels and different geographic areas, and using two methods of data collection. • Including enough quotes to support the interpretations.	Usefulness of interview to clarify and probe.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Applied Policy Analytics & Public Consulting Group, 2012) Massachusetts Early Childhood Educator Survey. Aimed to gather a better understanding of the early childhood workforce in the state and help to define and strengthen quality of early childhood education. State of Massachusetts, USA.	Targeted early childhood and out of school time educators in both centres and family child care settings. Two main questions 1. How prepared is the workforce to provide effective education and care for all? How stable is the workforce? What supports are available to educators to become more reflective practitioners? 2. How does the workforce define and fully understand quality in EEC programs? Area, type of care, ages of children served, race/ethnicity of educator, age, highest level of educational attainment (per setting type). Job satisfaction, professional skills and attributes. Special needs and English language learners.	Sample of 873 randomly selected educators plus and public version of survey with 1868 responses. Educator sample made up of 415 selected licenced centre based educators (no selection criteria) and 1300 selected family child care providers. Allocated samples by county in proportion to capacity by programme type. Public announcement of survey made to 25000 educators in Professional Qualifications registry excluding those already approached . Survey was the same as used in representative sample survey.	Department of Early Education and Care worked with Wellesley College Centre for Women to develop framework including logic models, sampling plan and survey content. Questions for survey drawn from several sources then reviewed, rephrased and remodelled to ensure consistency and relevance. Online survey announced by email and post. Also included a phone number to allow completion by phone. Approved questionnaire translated into Spanish and Portuguese. Pilot tested by 20 educators who received follow up re understanding of question, ease of online completion and instruction clarity.	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Dalli, 2008) *Pedagogy, knowledge and collaboration: towards a ground-up perspective on professionalism.* National survey on teachers views of ethics and professionalism. New Zealand	Two sections. 1. Situations that posed ethical difficulty for early childhood teachers, and ways they responded to them. 2. Featured three questions that asked respondents to: (i) list the qualities they would expect to find in an early childhood teacher whom they would describe as 'professional'; (ii) describe how they would recognise professionalism in early childhood teachers' interactions across a range of workplace relationships; and (iii) make any other comment they wished about the issue of professionalism in early childhood practice.	Postal questionnaire to random stratified sample of licensed early childhood services. Response rate 55%. Survey sent to one in every six centres.	Questions developed to extract qualitative data. Thematic coding from responses.	Many dimensions and interpretations.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/ did not work)
(Early Childhood Care and Development Council in partnership with the Department of Social Welfare and Development, 2013?) A state of the art review of day care services in the Philippines. A survey research. Aim to come up with a comprehensive profile on day care workers, day care worker supervisors, and day care centres in the Philippines and establish a database. To be used for policy formulation and strategizing. Copy of survey only provided by UNESCO. Phillipines	Background info (ethnicity, religion, civil status), family background. Educational/academic profile—elementary grad, high school grad, college undergrad, college grad, degree, post grad, special course. Eligibility (e.g. Licensure for teachers). Computer literacy- access, internet access, computer operating system, software using. Training, seminars workshops, conferences related to ECCD—open (title, topic, provider, source of funding, duration in days). Training needs or capacity/capability enhancements—prioritise 1 to 3. Employment status and salary grade; regularity of salary; of honorarium; terms of employment; years as day care worker; other work experience; other benefits (leave, salary increments, various allowances; parental benefits. Working conditions: number sessions/number children by age; no hours; payment for overtime; other tasks; payment for extra tasks; kind of service provided; associated day care services (e.g. supervised neighbourhood play); number day care centres serving; accreditation details; type of centre; questions about day care aide, volunteer help, supplemental feeding and type; use of own money for supplies; child protection; supervision; how often; meetings with others; curriculum being used; challenges (rate—list given); happiness in job (list to rate); open questions about understandings; suggested improvement; comments and suggestions. Partners and linkages—named orgs; parent committee.	This survey instrument attached was used to gather data on the profile of day care workers and day care centers in the country, covering a total of 49,865 day care workers and 49,712 day care centers (from UNESCO).	Questionnaire	N/A

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/ did not work)
(Federal Republic of Nigeria & National Bureau of Statistics, 2012) *Nigeria General household Survey—Panel*. First round of long term project to collect data on households.	Household agricultural, human capital, effect of education on earnings, government policy, programs on policy. This survey had a focus on agriculture, which has an effect on income, poverty and other social factors such as education. Utilised three surveys. Household questionnaire, agriculture questionnaire and community questionnaire. Household questionnaire provides information on demographics, education, health plus other household information such as earnings. Education component is for individuals five years and above.	Cross sectional survey of 22,000 households. 5000 household for panel survey. Sampling was two stage. 500 numeration areas were selected the 10 household randomly selected within these (p. 15). No replacements, final sample for interview was 4986.	Follows same households over time. Main questionnaire with a "panel survey" of 5000 to look at the specific topic of agriculture Households were visited for administering of the survey. For the agriculture, this was twice, post-planting and post harvest. Data collected by teams. 1 supervisor, 2-4 interviewers, 1 data entry. Monitoring of data collection undertaken at three levels (p. 18). Data cleaning done in stages. Fieldwork level, out of range data and final overall review by the head office. Data was weighted to reflect entire country population.	Data cleaning was challenging, as head office did not have raw data to hand when possible errors were identified.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Guerriero, 2015) *Innovative teaching for effective learning—phase ii. A survey to profile the pedagogical knowledge in the teaching profession. Proposal and project plan.* Phase two of OECD's Innovative Teaching for Effective Learning (ITEL) which profiles pedagogical knowledge of teachers. Survey had two purposes 1) address policy issues of concern to countries. 2) Test underlying theories of teacher knowledge—with purpose of defining and developing conceptual understanding of the factors that underlie competent teaching.	To be further defined but will include general pedagogical knowledge, learning opportunities and professional competence. The three research objectives are: *What is the nature of teachers' pedagogical knowledge and what are the knowledge dynamics in the teaching profession?* *How does teachers' pedagogical knowledge relate to learning opportunities?* *How does teachers' pedagogical knowledge relate to professional competence?* These objectives will form the basis of the conceptual and analytical framework. The conceptual framework is currently under development and is based on peer reviewed theoretical and empirical literature.	Initial implementation small scale to develop and test validity in a few institutions in participating country. Future rounds to be larger scale. This is to use resources effectively and keep costs down while still developing a robust, reliable measure. Targeted participants: lower secondary level pre-service teacher candidates, in-service teachers, teacher educators. Convenience sampling at sub-regional or regional level. Ideal minimum sample of 100 teachers in each category per country.	Online survey to keep costs low. Some institutional level data collection may be supplemented by telephone interviews. Countries to nominate a researcher with the intention of facilitating country review and adaptation of instruments. Countries can contribute at various levels.	N/A

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(International Labour Organisation, 2012) *Right beginnings: Early childhood education and educators.* Antigua and Barbuda; Argentina; Austria; Belgium (Wallonia-Brussels Federation); Bhutan; Burkina Faso; Denmark; Dominican Republic; Finland; Jamaica; Kazakhstan; Lebanon; Luxemburg; Republic of Maldives; Montenegro; Nepal; New Zealand; Norway; Pakistan; Philippines; Saint Lucia; Slovakia; Sri Lanka; Saint Kitts and Nevis; Saint Vincent and the Grenadines; Suriname; and Yemen. Teachers' unions from Ghana, New Zealand and Norway also provided information. Reviews evidence that ECE is a cost effective strategy with long-term educational benefits.	Examines EC provision, policies, structures and human resources. Different terms: early childhood care and education (ECCE); early childhood education and care (ECEC); early child and early childhood development (ECD); and early childhood education (ECE). Refers to services for the whole age range of children under 6 years, with a focus on education rather than care. When discussing 3-6 year age group, the report uses the term "pre-primary" education in line with UNESCO usage. Looks at rationale for ECE, public/private provision, funding and governance, access and quality, trends and policy challenges in teacher education and PD. Status and conditions of educators, social dialogue within sector. Includes all education before compulsory primary. Looks at trends in percentage of pre-primary trained teachers and levels of 'trained' teachers. Professional development of ECE educators/teachers.	Literature based report		Tried to be an international comparison but recognises that information gathering is better and easier from more socio-economically developed countries. Although not a survey has some good country information breakdowns. Surveys supplied for Ghana, Dominican Republic. Interesting concept of "social dialogue" "Based on ILO concepts, social dialogue is defined as all forms of information sharing, consultation and negotiation between representatives of governments, employers and workers on issues of common interest relating to economic and social policy (ILO, 2011a)" (p. 60).

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Kwon, 2004). *Early childhood education in Korea: discrepancy between national kindergarten curriculum and practices.* Examine influence of curriculum on pre-school practices in Korea. Teacher perceptions, daily practice and curriculum content. Study conducted in Seoul rather than nationwide.	Literature, questionnaire, interview and observation based. Questionnaire used for examining curriculum and pedagogy including attitudes and beliefs, perception of education issues—developmental approach, intrinsic motivation, extrinsic motivation, child-directed play, integrated learning, separating playtime from worktime, worksheets, structured small group teaching, role of preschool teacher as facilitator; classroom organisation—child directed, teacher directed small class activities, child directed whole class activities, outdoor activities; planning influences (curriculum, guidelines, school policy, parents), emphasis on integrated and subject teaching. Questionnaire backed up with observations to ensure validity.	Piloted with 10 questionnaires and critiques by early childhood education specialists. All kindergartens in Seoul surveyed (15 public and 106 private) 84 returned (69%).	Structured and unstructured observations done in six preschools with variety in location and type. Interviews of teachers also done from these setting to expand the information gathered from questionnaires.	Usefulness of examining beliefs and practice and including observations and questionnaire. Differences between attitudes and beliefs and actual practice.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology including strategies for developing high response rates for low and middle income contexts	Commentary (what worked/ did not work)
School quality survey (no reference) Kenya	Survey covers basic school information and infrastructure review. Type of school: Rural/urban, public/private, National/extra county/county, single sex/co-ed, day/boarding/both Current pupils, how many are repeating, special needs, gender. Previous years exam results (KCSE) Staff; number of teachers and qualifications, gender, non teaching staff and qualifications, labourers. Resources: Number of textbooks and in what subject, blackboards, teacher's desk, desks and chairs for pupils. Infrastructure such as type and quality of buildings, type and number of toilets, electricity, water source. Administration: What type of register and whether completed. Organisation within school.	Completed by school administrators in Kibera, Kenya	Based on EMIS tool.	N/A

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology including strategies for developing high response rates for low and middle income contexts	Commentary (what worked/ did not work)
(Langdon, Alexander, Dinsmore, & Ryde, 2012) Development of questionnaire teachers to measure effective induction and mentoring. New Zealand	New Zealand has a teacher registration system and induction and mentoring guidelines for provisionally registered teachers. A questionnaire was designed for school leaders, mentor teachers, classroom teachers and beginning teachers to measure effective induction and mentoring. The Langdon Induction and Mentoring Survey is based on "theoretically derived and psychometrically sound indicators of programme effectiveness" (p. 411). Induction and mentoring is intended to support teachers who are teaching and at the same time learning to teach. This questionnaire is focused on how beginning teachers perceive the induction and mentoring process from the outset and how perceptions of learning and mentoring change over time.	Pilot study to validate measure—273 beginning, mentor, classroom teachers and school leaders	Used observation and questionnaire Factor analyses Resulted in 58 item questionnaire Differences found in perceptions of programme quality between groups.	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(McMullen et al., 2005). *Comparing beliefs about appropriate practice among early childhood education and care professionals from the U.S, China, Taiwan, Korea and Turkey.* U.S, China, Taiwan, Korea and Turkey. Exploring commonality of teacher beliefs and practices across included countries.	Understanding how to maintain uniqueness in curricular beliefs and culture. Understanding what developmentally appropriate practice (DAP) looks like in various countries and cultures. Level of education, major field of study, age, point in career. Teacher belief scale (TBS) and Instructional activities scale (IAS) developed by Charlesworth, Hart, Burts and Hernandez (1991).	US—Random sample of 3000 member of National association for the education of young children. Final sample n=412. China—Distributed at Annual meeting of Jiangsu Provincial Association of EC. Poor response rate so further copies (221) sent to member not at the meeting. Taiwan—459 over two years (2 sample groups) in urban and suburban. All returned but only 222 identified clearly as teachers or caregivers. Korea—1600 invited (approx. ½ from Seoul) n = 574. Turkey—n = 221 randomly selected from a list of professionals obtained from Ministry of Education.	Contributors met regularly over 2-year period to develop, implement, and analyse. TBS and IAS use a likert scales for statement agreement reverse coded. Correlation and ANOVA used to compare means.	No satisfactory uniform sampling method across countries.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology including strategies for developing high response rates for low and middle income contexts	Commentary (what worked/ did not work)
(Mitchell, 2008a, 2008b) National survey of teachers/educators, managers and parents following from survey held in 2003—reported in two reports: Assessment practices and curriculum resources in ECE; Provision of ECE services and parental perceptions New Zealand	Teachers/ educators and managers asked about gender, ethnicity/ies, teaching quals, educational quals, years working in EC, EC position held. Educators' assessment practices, data gathering, use made of data, issues; delivery, uptake and value of professional development from educators' perspective; usefulness of advice and support for working with children with special educational needs; ICT resources and use of these; perceived quality of teaching and learning resources; relationships among EC services when children attend more than one; relationships between EC services and schools; educators' views of achievements in last 3 years; views of parent satisfaction. Info about type, size, ownership, funding, location from manager. Opening hours per day, per week, per year; enrolments by service type and family incomes; regularity of attendance; parent needs/ views of hours and attendance; parent paid employment; views of funding and affordability; staff: child ratios, staff turnover; reasons for staff moving; salary/wages, leave conditions, non-contact time. Frequency of staff meetings; teacher morale and workload; roles, responsibilities and training of committee members.	Random sample stratified by type and educational region. Management questionnaire to be completed by person knowledgeable about management issues. Teachers to be chosen at random by management—explanations provided on how this was to be done.	Consulted with sector organisations and MOE about what issues to survey. Each service was sent a flyer highlighting "hot topics" for its service type to be addressed in survey. Reminder notes and thank you sent out. Low response rates from homebased (managers did not think questions suitable) and kĐhanga reo (MĐori language nests)—needed more contact with national organisations. Under representation also from private EC services and over-representation from community EC services.	Challenge to cater for diverse service with common questionnaire—recommendation to consider specific surveys for different types.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology including strategies for developing high response rates for low and middle income contexts	Commentary (what worked/did not work)
(Mitchell et al., 2014; Mitchell et al., 2013) Survey of providers Survey of parents New Zealand	Provider surveys asked providers about barriers to participation in ECE, views of affordability for low income families. Information provided families about ECE, strategies to encourage participation, information provided to parents about transition to school, how providers support parents to be engaged in child's learning, processes to identify family needs and responsiveness to language and culture, nature of community involvement, suggestions for change. Survey of parents asked about needs and aspirations for children, barriers to participation, involvement in learning, views of initiatives. Different surveys in each year covering topics above.	In 2012, all 38 participation initiative providers surveyed. Response rate 76 percent. Purposive sample for interview selected by MOE and University of Waikato so as to gain the greatest possible coverage of each of the six different participation initiatives, the different target groups (MĐori, Pasifika and low socioeconomic) and localities within large urban settings, suburban settings and rural areas. The sample included organisations which had responsibility for multiple initiatives of a different type and those with responsibility for a single type of initiative. In 2012, 86 parents responded, 14.7 percent of all parents. In 2013, 310 parents responded, 33 percent of all parents.	Provider survey sent out electronically to providers. MOE and University of Waikato encouraged responding. Parent surveys were distributed by providers and completed by the main caregiver. If language assistance was needed, the provider was asked to assist and provide support for completion.	Some partial completion of online survey

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Ministry of Education, 2014) *Staffing.* Information gathered from national annual census of ECE staffing. New Zealand	*Demographic data obtained from* national annual census of teachers in all ECE services. Age, ethnicity, gender, income, hours worked, qualifications, registration status. Other information (for cross tabs) gathered on type of service, operating structure, ownership, deprivation index, funding band and location.	Uses national census data	This is a compulsory annual return for ECEC services in New Zealand	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Morton, Atatoa Carr, & Grant, 2014) *Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Now we are Two: Describing our first 1000 days.* Longitudinal study following child development in New Zealand to provide a robust evidence base and inform policy in NZ.	Follows children and their families. Does not have a negative approach towards things that "aren't working" but focuses on the child, their interactions with people and the environment and their development. Basic demographic information. Interactions with others. Heath. Early childhood education and care. Development. The Early childhood education focus is on how many children are attending and what type of provision. The reasons for parents having their children enrolled in ECE and care.	6822 pregnant women recruited (no information on how) 4401 of their partners. Additional 200 'Leading light' group.	Longitudinal. Main cohort plus additional group (leading lights) who run six months earlier than main cohort. This is to allow piloting and adjustment of the questionnaires.	High retention rates. Women and children remain in cohort even if they miss a stage. They can participate in the next round.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Morton et al., 2012) *How do you Recruit and Retain a Prebirth Cohort? Lessons Learnt from Growing Up in New Zealand.* As above. This paper outlines the recruitment and retention techniques of the study.	*To obtain a sample in a cost effective manner which provided and accurate representation of the NZ public.* Study was open to all pregnant women who fell within the study region, were pregnant and expected birth date fell between a certain time frame.	Identified and then sampled from a discrete region. Used three regions covered by district health boards, the three regions account for 33% of all live births in NZ. Data was examined to ensure the areas were representative for both ethnicity and socioeconomic levels. Census data and the socioeconomic deprivation index was used.	Consultation with district health boards and primary health organisations. Used both direct and indirect recruitment methods in multiple languages. This was done with lead maternity carers (LMC), presence in shopping malls, community events, and television. Used free phone and free text for those interested. Many used SMS then were contacted by the study. Auditing process used for interviews. Interviews managed by an independent research company the follow up phone calls from Growing up ensured accuracy. Feedback cards also used to provide info about interviews. 95% of mothers recruited completed the nine month survey.	Consultation not only gained information but built relationships to help support project longevity. Many participants were exposed to more than one source of information about the study.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Nzomo, Kariuki, & Guantai, 2001) *The quality of primary education in Kenya: Some policy suggestions based on a survey of schools.* Collections of baseline data re conditions of schooling and effects of input variables on achievement. This is in response to policy concerns identified in a 1998 study. Kenya http://www.sacmeq.org/reports?project=All&report=112&author=All&=Apply	SACMEQ policy questions 1) What are the baseline data for selected inputs to primary schools? 2) How do the conditions of primary schooling compare with the Ministries own benchmark standards? 3) Have educations inputs to primary schools been allocated in an equitable fashion among and within educational provinces? 4) What is the level of reading achievement for Grade 6 pupils? 5) Which educational inputs to primary schools have most impact upon reading achievement of Grade 6 pupils?	Target class is standard 6 (last or second to last class of primary). Pupil test on reading literacy, pupil questionnaire, teacher questionnaire and school head questionnaire. Sampling software was used to select sample of 185 schools. From selected schools, a random sample of 20 pupils was drawn to ensure sampling accuracy.	SACMEQ initial project had National research coordinators working with ministries in 8 countries of Southern Africa sub region which developed policy related questions. Developed a standard definition for reading literacy to be used across all countries. Trial testing on one whole class in five schools per country. Data entry contracted to an international NGO due to a lack of capacity (equipment and personnel). Double entry to guard against errors.	Cooperative project across countries (Kenya, Malawi, Mauritius, Namibia, Tanzania, Zambia, Zimbabwe) which allowed for comparison and national learning. No computerised data for school enrolments for grade level for sampling. Country report for each.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(OECD, 2012) *A survey approach to obtaining comparative data on the teacher workforce and learning environment—the OECD teaching and learning international survey (TALIS).* to develop policy guidance on monitoring quality in ECEC. OECD wide. Document outlines results from TALIS 2008 and additional scope for the 2013 survey.	To provide data and analysis on conditions needed for effective teaching and learning. 2008—secondary teachers; 2013- also primary teachers. 2008 TALIS examined School leadership. Teachers' ongoing professional development. Appraisal of and feedback to teachers. Teaching practices, attitudes and beliefs. 2013 TALIS added new areas, distributed leadership in schools, teachers' initial teacher training and student assessment practices.	Target population is teachers of lower secondary education but options to survey others. Sample size: 20 teachers in 200 schools.	Questionnaires for both teacher and principal. Completed online and paper. Contributing countries develop objectives and standards for survey. National project managers implement at national level, international level is managed by appointed contractor.	From framework initiation to first results reporting = 3.5 years approx. (p. 4).

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(OECD, 2013*) Survey on monitoring quality and learning outcomes. (ANNEX 1 and 2)* To examine the monitoring practices of ECE provision across countries. The collection of information will provide information about international practices, experiences, challenges and lessons learned. OECD countries.	Investigation of differences between public and private ECEC that are within the regulatory framework (Ann 1, p. 4). Covers both centre and home-based provision. Five parts to survey which cover collects contextual information, information on monitoring in early learning and development in general, Service, Staff Quality and Curriculum Implementation, Child Development/Outcomes monitoring results and challenges (Ann 1, p. 4).	Survey to be completed by country jurisdictions using official docs issued but central level authorities. Data from school year starting 2012 (Ann 1, p. 4).	For comparability data collection is on "mainstream" provision so does not include special needs, hospitals, orphanages or similar. Also does not include things such as after school or holiday care. (Ann 1, p. 4)	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Rutkowski et al., 2013) TALIS 2013. Conceptual framework Aim of TALIS to provide 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).	Ways in which teachers' work is recognised, appraised, and rewarded; assessment of the degree to which teachers' professional development needs are being met; insights into the beliefs and attitudes about teaching that teachers bring to the classroom and the pedagogical practices that they adopt; role of school leadership and the support that they give their teachers; extent to which factors are related to teachers' feelings of job satisfaction and self-efficacy.	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). The updated conceptual framework (2013 TALIS) drew on the previous framework and outlined the purpose and goals of the study. Made theoretically sound by surveying important and current theories about research on teaching and learning environments. Used to develop indicators that were chosen by participating countries as being highly policy-relevant and which provide the organisational and conceptual underpinning of TALIS.	Guiding principles of TALIS: Policy relevance; Value added Indicator oriented Validity, reliability, comparability, rigour Interpretability Efficiency and cost effectiveness	Each country did priority rating of their policies—overall objective of guiding the content of TALIS 2013.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(OECD, 2014a) *New insights from TALIS.* To learn about teaching conditions and learning environments. Primary a new inclusion and conducted in six countries. Denmark, Finland, Mexico, Norway, Poland and Flanders (Belgium). 10 in upper secondary Australia, Denmark, Finland, Iceland, Italy, Mexico, Norway, Poland, Singapore and Abu Dhabi (United Arab Emirates).	Demographic profile of teachers: Education and experience. School profile: Type of school, resources available, what classrooms are like. Management and leadership profile: Characteristics of principals, education and experience. Primary teachers support and professional development including appraisal and feedback. Pedagogical beliefs and practices, student assessment and teacher cooperation and collaboration. Self-efficacy, job satisfaction as a whole and also in relation to background and school and classroom environment. As above for upper secondary teachers. Cross level comparisons between the two.	200 schools surveyed, with a sample of 20 teachers in each. One school leader in each school. Details in tech report.	Online and paper surveys. School considered to have responded if 50% of surveys returned.	Cross sectional survey cannot measure causality so highlights perspective as purely theoretical.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(OECD, 2014b) *TALIS 2013 technical report.* Abu Dhabi (United Arab Emirates), Alberta (Canada), Australia, Belgium (Flanders), Brazil, Bulgaria, Chile, Croatia, Cyprus, 2 Czech Republic, Denmark, England (United Kingdom), Estonia, Finland, France, Iceland, Israel, Italy, Japan, Republic of Korea, Latvia, Malaysia, Mexico, Netherlands, Norway, Poland. Portugal, Romania, Serbia, Singapore, Slovak Republic, Spain, Sweden and the United States.	All participating countries required to complete survey at lower secondary level of education. Themes developed by participating countries. School leadership; teacher training and in-service professional development/initial teacher education; teacher appraisal and feedback; school climate and ethos; teachers' pedagogical beliefs; teachers' pedagogical practices.	200 schools in each country, 20 teachers and one principal. Two stage probability sampling design. Teachers randomly selected from list of those in scope teachers within selected schools. Restriction to 'ordinary' teachers in 'ordinary' schools. Small rural schools excluded but exclusions needed to be documented by project manager. Classifications created a 'national survey population' that was different to national target population (good figure on p. 75). Nominal international sample of 4000 teachers. National sampling frame provided to statistics Canada (responsible for sampling). Countries could have adaptations or changes to the suggested international. No stratification anticipated but some counties did choose to and this was discussed to develop appropriate strategy.	Two questionnaires. One for principals and one for teachers. Online or paper based. OECD secretariat responsible for overall management of project with national project and data managers in each country. Had a sampling team responsible for design, implementation, weighting and adjudication. (p. 23) Weighting of data occurred before data scaling and analysis. IEA managed finances and quality control. OECD documented standards that were used globally for implementation. Design had three components, pilot study, field trial and main survey. All countries rated themes and voted with allocated points then asked to highlight indicators they preferred. National centres responsible for transcribing data into computer files in line with TALIS guidelines. Carried out verification before submitting data.	Quality control systems were effective and issues were generally resolved using appropriate manuals and project management.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(OECD Network on Early Childhood and Care, 2014) *Draft quick survey: ECEC pedagogical practices* To provide information on pedagogical models and approaches in OECD countries.	Areas covered are: Curriculum implementation and adaptation. Curriculum model/approach. Pedagogical approaches including initiation, organisation, planning and types of activities. Also differing approaches for age. Transition. Alignment of approaches to the first years of primary school. Inspection of approaches. Evidence of approach. National level research undertaken. Policy levers.	N/A	N/A	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
UNICEF *Pacific Guidelines for the Development of National Quality Frameworks for ECCE* The Guidelines are available online at: http://www.unicef.org/pacificislands/Pacific_Guidelines_for_the_Development_of_National_Quality_Frameworks_for_ECCE(1).pdf For more information on PRC4ECCE, please see http://www.unicef.org/pacificislands/overview_23305.html	Net Enrolment Ratio. Gross Enrolment Ratio. Teacher Qualification. Student: Teacher Ratio. % New Entrants into Primary With Some ECCE Experience. % ECCE Centers Meeting National Minimum Quality Service Standards. Public Expenditure on ECCE as % of Total Public Expenditure on Education. Existence of Quality ECCE Curriculum. Existence of National ECCE Policy and Planning Framework. EMIS System Inclusive of ECCE data.	Not available until October.	The 10 ECE indicators were developed in partnership with the Pacific Islands Forum Secretariat (PIFS) through a long consultation with the Pacific Heads of Education Systems (PHES) and endorsement by the Forum Education Ministers Meeting (FEdMM). The indicators were included into the region's Pacific Education Development Framework (PEDF) M&E plan last year upon FEdMM endorsement (PEDF is the regional oversight system for all of education, primary, secondary, tertiary, TVET), and the organization which monitors country EMIS systems, Secretariat of the Pacific Community (SPC), is including the ECE indicators as part of monitoring how they are incorporated into EMIS (very rudimentary at the moment, as this is something new).	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Schleicher, Sinascolo, & Postlethwaite, 1995). *The conditions of primary schools.* Pilot study on conditions of primary schools in least developed countries Bangladesh, Benin, Bhutan, Burking Faso, Cape Verde, Equatorial Guinea, Ethiopia, Madagascar, Maldives, Nepal, Tanzania, Togo, Uganda, Zambia. To examine to what extent survey methodology could be used to complement data based on admin records. To provide set of tentative indicators.	Pilot study on conditions of primary schools in least developed countries. Indicators included: buildings, amenities, equipment, supplies, enrolment, class size, crowdedness, grade repetition, instructional hours per day and per year, number of teaching staff, teacher qualifications, teacher absence, teacher housing, degree of stability of teaching staff, number toilets and conditions, principal perceptions change conditions and needs. Number teaching staff: part-time, full time; number left, number replaced. Teacher quals: school quals and teacher quals (categories provided and asked to complete numbers in each). Teacher salaries: Average salary per month; received on time (data subjective). Teacher absence: number absent in average week, reasons. Actual teaching hours: hours per average school day.	Wanted 40 countries, but achieved only 14. Encouraged to have 100–150 schools in each country to allow national picture; but agreed 30 schools for pilot. Principles: Survey admin costs to be limited, especially travel. Therefore minimum of four administrative regions in each country.	Designed by UNESCO and UNICEF group. Calculated means because no serious outliers or skewed distribution. *Recommendations:* Apply measures for quality control. More carefully selected set of policy issues. Small regional groups should decide on indicators and policy issues; then questionnaire developed and piloted by experts. Probability samples to have standard error of not more than +-5 per cent. Ministries of Education in charge of survey operations, data collection to international standards. Data cleaning, weighting, analysis international level.	Wanted 40 countries/ achieved only 14. Intended to report aggregate of countries—could not do this. In some countries sample size too small for national reporting on anything but tentative indicators. Possible to use advanced survey sampling measures efficiently and effectively. Quick publication of results within six months (admin data often out of date). Uniform data collection procedures across countries.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(The World Bank, 2013) *What matters most for Early Childhood Development: A Framework Paper.* To provide a framework around development of diagnostic tools to assess national policy development and allow for cross country comparison in a number of domains. Systems Approach for Better Education Results (SABER) has identified policy domains to cover a whole of a country's education system and allow it to be systematically examined. Early childhood development is one of these domains.	SABER-ECD collects, synthesizes, and disseminates comprehensive information on ECD to enable policymakers, World Bank staff, and development partners to learn how countries address similar policy challenges related to ECD. Focuses on three policy goals for all ECD systems: *Establishing an Enabling Environment; Implementing Widely; and, Monitoring and Assuring Quality. For each policy goal, a series of policy lever*s are identified through which countries can act to influence each goal (p. 5). Document provides evidence base and framework for being able to analyse and compare policy. This will help understanding of how a country's ECD system affect child development and opportunities (p. 14). Scope is at policy design level for participating countries (no info on who these are) not implementation of said policies. Primary focus on children prior to school entry, secondary on transition to school.	No information.	Uses 1) Program Typology which is flexible and allows information to be grouped in various ways which are helpful to the country being examined. 2) Policy classification rubric to determine adequacy in policy which has indicators for each of the three policy goals.	Recognises the differences between policy and implementation. Recognises importance of both survey and administrative data. Tried to find a balance between data collected about policy and data reflecting outcomes.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/ did not work)
(The World Bank, n.d) *SABER preliminary report.* Viet Nam.	Preliminary data presentation to Viet Nam along with other countries for comparison as part of the SABER project. Provides data on use of tools, corresponding budgets and teaching programmes. Key teacher policies that affect education quality. School autonomy and accountability. Regulation of private schools Vocational training and student tracking. Population and spending on tertiary degrees. Autonomy for universities.	N/A	N/A	

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/ did not work)
(UNESCO Education Policy and Reform Unit & UNESCO Institute for Statistics, n.d) *Report on assessment of teachers of state owned preschools and schools* Viet Nam	Report on assessment of employees in state owned preschools and schools. Currently assessed on performance of job, ethics, attitude and behaviour, code of ethics/conduct. Looks at limitations and difficulties of current assessment.		Used four categories. Excellent performance, good performance, fair performance, poor performance.	Identifies several assessments and an overlap between them. Impractical and not connected to teacher performance. Review of current assessment of teachers and development of new assessment tools.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
Questionnaire supplied by UNESCO. Ghana (recommended to participate). ILO survey. Dominican Republica same template (in Spanish)—confirmed for pilot. Report of survey exercise discussed in Right beginnings—an international study on early childhood education (ECE) in 2011 with a focus on the employment and working environment in early childhood education. Noting the lack of international data in this area, members of the Advisory Body recommended that the ILO study should focus on numbers employed in this sector, their diversified profile (including gender), training and qualifications, recruitment and deployment, salaries and conditions of work, including comparisons between public and private services and with other levels of education.	Information about number and percentage of enrolments in ECCE, spending as proportion of GDP, private funding, fees, policy and governance, reforms. Teacher conditions: the initial education or training standards required for certification or employment of early education employees and the percentages of staff currently meeting those requirements; other education or training requirements; content of training (provision for curricula and learning goals, provision for education authority objectives, provision for educational autonomy, provision for special education needs); provision for continual professional development/in-service training (number of days, principal provider, percentage of education budget); number of educators by public or private institution and gender; policies and programmes to recruit men (open); statutory or average institutional salary of early childhood educators fixed by law, collective agreement or institutional policy; hours of work (Contact hours, estimated overall hours (all tasks in school and out); child:staff ratios; sharing of information on policies and practices between employers and staff, consultation re policies and practices, staff negotiation on collective bargaining; laws, mechanisms and institutions that govern information sharing, consultation and negotiation; number/percentage staff members of trade union; the number/percentage of staff who are covered by a collective bargaining agreement.	Not specified—see Right beginnings report	Not specified	Hours of work—contact hours and overall hours good idea to differentiate. Questions about say in decision making, collective bargaining

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/ did not work)
(UNESCO, Undated) *Early Children Education and Pre-Primary Education Teacher Development in Southeast Asia.* UNESCO Bangkok-SEAMEO project. Vietnam	Pre-primary terms: asked to tick what used—Early childhood care and education (ECCE); Early childhood development (ECD); Early childhood care and development (ECCD); Pre-primary education; Other (please list the term used). Includes questions to provide; 1. overview; 2. indicators—population, enrolments, chn entering Grade 1 with pre-primary etc. experience, info about hours, days per week, financing costs, percent of teachers by gender by type, total number auxiliary staff; 3. Government regulations, licensing, accreditation; 4. pre-primary teacher quals, training, working conditions: level of education required to serve as a *teacher* in public ECCE, pre-primary (no quals, 4-year college degree, 2-year college degree, teaching certification—specify, completion upper secondary, completion lower secondary, other–specify) by type; (same question private); number certified or licensed by type/rural and urban; organisation responsible for certifying and licensing; additional requirements beyond completed education; average monthly salary by position; pre-service teacher training (hours of classwork, certification, practicum), in-service teacher training (duration, institution, credits, provided by govt., requirements for accreditation); who responsible for recruitment; employment status—full time/part-time/public servant; starting base salary; factors in determining salary; other benefits or incentives; policies to attract and retain; incentives to work at hardship locations; average working hours per week (not including planning etc.); maximum working hours per week; whether non-class time included in working hours; who finances PD; types of PD; teacher performance evaluations; teacher voicing concerns; teacher voice in policy. Some additional questions.	Not specified	Not specified	Not specified

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(UNESCO Institute for Statistics, 2008) *A View Inside Primary Schools. A world education indicators (WEI) cross national study.* Report from the World Education Indicators Survey of Primary Schools aiming to help understand the role of schools across different education systems and assist in developing policy. Looks at issues and input shaping primary school in the following countries; Argentina, Brazil, Chile, India, Malaysia, Paraguay, Peru, Philippines, Sri Lanka, Tunisia, Uruguay. To be used to evaluate strengths and weaknesses of educational systems.	Aimed to address questions around; Context of primary schools across countries. How well resourced including finance, staff and other resources, as well as equitable distribution of resource within countries. Characteristics of pupil populations and transition patterns between primary and lower secondary. Variation between countries in schooling structure i.e. school days and leadership Variation between countries in the ways reading and maths were taught and value placed on these. Climate of teaching and learning including teaching strategies	Target population was all schools in participating countries that had full time grade 4 pupils. Stratified sample design. All but one country used this method. India used a two stage method.	Survey had two phases. Instrument development and data collection. National coordinators working with international experts to develop questionnaires. Converted expenditure into Purchasing Power Parities to enable cross country comparison	Highlights self-reporting as a challenge particularly because of cross cultural.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(UNESCO Institute for Statistics, 2009) *World Education Indicators (WEI) Survey of Primary Schools Technical Report.* Technical report behind the WEI-SPS study aimed at gathering cross national data. Countries included were Argentina, Brazil, Chile, India, Malaysia, Paraguay, Peru, Philippines, Sri Lanka, Tunisia, Uruguay. Outlines framework, methodology, design and administration of the survey implemented jointly by the OECD and UIS which provide a cross country comparison of education quality.	Questionnaire designed to enable international comparison of effectiveness of school systems in providing high quality education. It included four questionnaires at different levels of education system in each country. Curriculum level, school management level, and teacher level (2 questionnaires, grade 4 level). School questionnaire examined pupils' school engagement, pupils' positive behaviour, teacher behavioural problems, school head instructional leadership, school heads admin support, social advantage of school intake, school autonomy, school autonomy on school budget, school autonomy on student affairs, school autonomy on instructional content. Teacher questionnaire examined social advantage of classroom intake, teacher complaints, emphasis on academic achievement, professional satisfaction, perceived pupil motivation, perceived teacher status, staff vision of school objectives, learning style (pupils)—active learning, learning style (pupils)—group work, learning style (pupils)—rote repetition, teacher-centred teaching practices, strongly structured teaching practices, pupil centred teaching practices, difficulty of reading materials, variety of reading materials, emphasis on types of reading activities, emphasis on creative activities, emphasis on grammar and other formal exercises, emphasis on locating information, emphasis on interpreting the meaning of the text, difficulty of reading activities.	Required each participating country to achieve a sample size of at least 400 schools which meant approx. 95% confidence limit for sample estimates could be achieved. Recommended to countries to use a single stage stratified sampling design for selecting schools. For those who used a two-stage design a sampling error was introduced. Teachers selected using a stratified multi-stage design. Report details stratification techniques by country and weighting calculations if used.	School survey allowed for national questions to be added to increase country relevance. After consultation, countries rated potential indicators to finalise framework. Questionnaires were distributed in English to each country to translate (to allow for local language) and pilot from which main questionnaires were developed. Translation verified by UIS. Each country had a national programme manager responsible for national implementation following UIS guidelines. Steering committees made up of country reps guided survey development, methodology, design. Data entered at national level with UIS training and manuals along with code books they had adapted from the international version. UIS also required a level of error testing to ensure accuracy. International variables managed by UIS, national variables returned to national level. International data testing undertaken by UIS.	All participating countries exceeded sample size of 400 schools with the exception of Uruguay. Teacher sample was in excess of 1000 in all countries except Uruguay and Sri Lanka. Expected school participation rate was 85%, achieved in all countries except India and Sri Lanka. All countries exceeded 85% teacher participation rate. Countries were allowed to exclude small schools but also allowed to define a small school so varied across countries.

Study, aim, country	Scope, content (including constructs, indicators)	Sampling procedures and strategies	Methodology (including strategies for developing high response rates for low and middle income contexts)	Commentary (what worked/did not work)
(Wallet, 2006). *Pre-Primary teachers: A global analysis of several key education indicators.* Data review to provide background information and indicators on Global ECE profiles. Many countries including Togo.	Indicators discussed: Gross enrolment ratio, Gross enrolment by country (regional differences), changes in enrolment (by changes in GER). Pupil teacher ratios based on total number of pupils divided by the total number of teachers. Teachers: Who is a teacher, age (less than 30; 30-39; 40–49; 50–59; 60 and over; age unknown), gender profile, teaching constraints, teacher qualifications (e.g. post-secondary programme of three years; completion of regular higher secondary; completion of regular lower secondary education ISCED categories; OR total years of formal schooling) and training (proportion of teachers who have met minimum required teacher training—refers to training not min qual), comparison of salaries pre-primary and primary, teaching hours. Country differences in teacher training min standards and education levels required. Content of teacher training. Private provision, rates and salary impact. Pre-primary defined as "purposeful, planned educational activity for children".	Gross enrolment by country = number of children enrolled/ total population in age range. Made comparisons between countries and with primary education. Outliers examined to find regional variations.	None, data review.	Comparisons are made difficult by variety of terms used for pre-primary; countries not always clear about what services are provided; lack of systematic collection and analysis of data because not public sector. PTR—can demonstrate to what extent employment keeping up with demands. Age data—can use age data to consider future supply; evidence of +ve correlation gender profile teachers and gender parity pupils Teacher training data—countries vary regarding minimum statute, e.g. in Niger, Togo and Senegal most of the new recruits to primary education are given little training (often only 2–3 weeks).

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