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**TECHNICAL REVIEW OF THE ANALYTICAL BENEFITS TO BE GAINED FROM COLLECTING
STAFF-LEVEL DATA ON ECEC**

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This paper was prepared by Dr Thomas Böhmer of the University of Bamberg

Miho Taguma, Project Leader; Tel + 33 1 45 24 92 65; Email: miho.taguma@oecd.org

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DR. THOMAS BÄUMER

Introduction and Overview

1. This paper aims to clarify what insights could be gained through a staff-level survey about the *teaching, learning and well-being environment* in ECEC settings. It can be shown that the proposed analytical framework of the OECD Network on ECEC [[EDU/EDPC/ECEC\(2013\)1/ANN2](#)] is used also in the German National Educational Panel Study (NEPS) which will serve as an example of staff-level surveys.

2. Given the example of NEPS ECEC staff survey and its implementation process items and indicators best suited to answer the research questions of the Network will be selected and evaluated.

3. After that the questions raised in the terms of reference for this review will be addressed. These relate to statistically defensible insights, constraining features, other research questions, scope of the survey and operational constraints and risks.

4. Conclusions and general recommendations are presented in the last section of the paper.

Preliminary Remarks

5. There is a widespread consent that a framework model of quality in teaching, learning and well-being environments comprises input, process, and outcome. Some aspects have to be included:

- While the main causal chain can be conceptualized as going from input via process to output, reciprocal relations have also to be accounted for. Especially, outcomes can re-enter as inputs in subsequent sequences of the causal chain. A one example may serve child's language competencies, which are certainly an important outcome of an ECEC setting. But as an input it will also affect the child-staff interactions, thus the process.
- The sequences of input, process, and outcome take place at different levels (individual, dyad, class/group, ECEC setting, region, state, country and so on). Again, these levels are interrelated and single items of the framework model need not to be on the same level. Actually, in case of ECEC settings outcomes are often related to the individual level of the child, whereas input conditions und processes relate to ECEC setting or class/group level. Also, for outcomes other

than individual level are thinkable, e.g. for the group of children as a whole. The genuine level of an ECEC staff survey is mainly class/group.

- In ECEC settings, *inputs* can be related to *structural quality* as well as *orientational quality*. This conceptualization is utilized in NEPS and NUBBEK, for example. In TALIS, aspects of orientational quality (e.g. teacher pedagogical beliefs) are subsumed under process but this is more a matter of framing than of content.
- There is a widespread acknowledgement that *process quality* relates mainly to *interactions* between staff and child, parent and child, teacher and student and so on. Also conditions that foster these interactions (like available materials) can be related to process quality.
- *Processes* are hard to assess. It has been argued that a comprehensive assessment of educational process quality needs a triangulation of the views of teacher/staff, student/child and external observer. Every perspective gives own contributions and signifies different aspects of the process. Thus an ECEC staff survey can only account for some but not all aspects of process quality. Nevertheless, it seems valuable to include these aspects in an ECEC staff survey.
- Although child *outcomes* are most important other outcomes should not be neglected. Especially for an ECEC staff survey outcomes related to staff seem valuable. These outcomes (e.g. professional self-efficacy, job satisfaction) can also serve as inputs to the system.

6. In ECEC settings staff surveys are seldom used. Most studies on ECEC quality and especially process quality rely on observational methods, mostly in combination with live ratings. Staff surveys might be prone to be biased, most notably when they are perceived as an evaluation of one's own work. This (mis-)impression should be avoided.

7. The OECD Network on ECEC has recognized the data gaps an ECEC staff survey could or should answer. Therefore, a best-practice example cannot be presented. Instead ECEC staff survey developed within the German NEPS framework under the authors' responsibility will be discussed. Also, TALIS teacher questionnaire will serve as an excellent example for a staff survey in educational settings as well as international context. In fact, TALIS items are used in teacher questionnaires within NEPS.

National Educational Panel Study (NEPS) in Germany

8. NEPS is a scientific infrastructure providing access to a database on educational processes and trajectories covering the whole lifespan. Its framing concept consists of five so-called pillars that provide the theoretical foundation:

- Pillar 1: Competence development across the lifespan;
- Pillar 2: Education Processes in life-course-specific learning environments;
- Pillar 3: Social inequality and educational decisions in the life course;
- Pillar 4: Educational acquisition with migration background in the life course; and
- Pillar 5: Returns to education in the life course.

9. Eight stages that divide the life course into meaningful periods in relation to education form a second layer of the NEPS framing concept:

Stage 1: From Birth to Early Child Care;

Stage 2: From Kindergarten to Elementary School;

Stage 3: From Elementary School to Lower Secondary School;

Stage 4: From Lower to Upper Secondary School;

Stage 5: From Upper Secondary School to Higher Education, Vocational Training, and the Labor Market;

Stage 6: From Vocational Training to the Labor Market;

Stage 7: From Higher Education to the Labor Market; and

Stage 8: Adult Education and Lifelong Learning (see chapter 18, this volume).

10. To obtain relevant data as quickly as possible, six separate cohorts were started between 2009 and 2012 following a so-called multi-cohort sequence design. Each of the cohorts is followed at least once a year so that the data base will expand with every measurement wave:

- Starting Cohort 1: Early Childhood – education from the very beginning
- Starting Cohort 2: From Kindergarten to elementary school
- Starting Cohort 3: Paths through lower secondary school
- Starting Cohort 4: School and Vocational Training
- Starting Cohort 5: From higher education to the labor market
- Starting Cohort 6: Adult education and lifelong learning

11. For the ECEC context, Starting Cohort 2 is most relevant. With regard to ECEC staff quality Pillar 2 takes the main responsibility for item and instrument development – in close collaboration with Stage 2. The cohort started in 2011 with 2996 target children within 720 groups of 279 ECEC settings (Kindergartens in Germany). Children were selected which were about two years before their regular school enrollment, leading to two waves of assessment within ECEC settings. Besides testing the competencies of the children a variety of information is gathered about their socio-economic and familial background as well as home learning environment by means of parent interview. Also, information about the ECEC settings is gathered by means of a paper-and-pencil questionnaire for heads and teachers. The items of these questionnaires will be discussed thoroughly in the next chapter. Data from both preschool waves are already available as Scientific Use Files (SUF).

12. NEPS main studies are always preceded by pilot studies as well as (cognitive) pretests to secure a high data quality. In the case of Starting Cohort 2 a small methodological study was conducted with a special focus on the assessment of process quality with educators' questionnaires. Therefore, observational data of 60 Kindergarten groups using the ECERS rating scales was compared to data from the first pilot educators' questionnaire. Results for single items will be discussed in the following chapter as well

(referred to as “NEPS methods study”). An interpretation of the main results of this study shows a rather comprehensive picture: Quality as measured by the ECERS scales is positively related to two main aspects: (1) hours of education and care a preschool group and every single child receives and (2) quality of teacher’s education.

13. Some limitations of the NEPS in the context of ECEC staff survey have to be considered:

- The NEPS ECEC staff survey does not cover all items that are proposed to be tested by the OECD Network on ECEC. Due to space limitations the questionnaires cover especially structural quality features and staff professional status and development (teacher education and further education) as well as working conditions. Process quality is restricted to (general) activities and materials.
- The NEPS ECEC staff survey serves as an assessment tool for context factors influencing child development. Within NEPS the learning person is always the target person and not the teaching or caring person which serve as context persons. Therefore, the NEPS ECEC staff survey has to be treated as a supplementary instrument of an individual panel survey on educational trajectories.
- The questions in the NEPS ECEC staff survey are suited to the German context and may not directly assignable to the international context. Although English versions of the questionnaires are available it has to be kept in mind that these are simple translations without the scientific guided translation procedures like in TALIS or PISA, for example.

Evaluation of Indicators and Items for an ECEC Staff Level Survey

14. The evaluation of indicators and items for a staff level survey will draw especially on the aforementioned studies in the context of NEPS as well as the TALIS frame. All conclusions and recommendations should be treated as tentative because of the relatively small amount of data it is based on. Also it is recognized that numerous items, especially in the case of process quality, have yet to be developed. As NEPS and TALIS share the same conceptual framework (as the OECD Network on ECEC does) both instruments are used to select and evaluate indicators and items for an ECEC staff survey. In both cases adaptations have to be considered:

- For NEPS especially adaptation to the international context
- For TALIS especially adaptation to the ECEC context

15. In the following we start with input conditions, followed by process features.

16. *Personal characteristics* (age, gender, immigrant background): These are needed for a description of the sample, but relation to process and outcome is rather weak. They might also be perceived as discriminatory by staff, thus can be a (minor) threat to response rates. To avoid this it is recommended to frame such questions in the context of other personal questions, like questions on qualification or working conditions. Also, a short explanatory introduction might be advisable. In general, the survey should be subdivided into sections that are separated with short titles (and some introductory remarks, if preferable). In TALIS such questions are framed as “Background Information”, in NEPS they are entitled as “Questions on your person and work”. Also, placement in the questionnaire has to be considered. Whereas TALIS teacher questionnaire starts with this section, NEPS educator questionnaire ends with it.

17. *Qualification* (level of formal education, vocational/professional education): These questions also belong to the section “Questions on your person and work”. Here, TALIS-like questions can be used with adaptations to the ECEC context. NEPS items may not be suited to the international context.

18. *Further Education*: Both NEPS and TALIS use quite extensively questions on this topic. In the NEPS methods study questions on further education (or professional development in TALIS) were those most highly correlated with observed quality. It is therefore recommended to include such questions into an ECEC staff survey. TALIS items can be used with (minor) adaptations especially concerning content of further education activities.

19. *Salary*: Neither NEPS nor TALIS contain questions on salary. As they are of interest for monitoring quality in ECEC, these questions should nevertheless be included. They might be best placed within the context of working conditions and job satisfaction.

20. *Working hours and working schedule*: These items relate not only to general working conditions of ECEC staff but play also a role for the quality of child-staff interactions. In the NEPS methods study it was shown that working hours in general as well as share of direct and indirect pedagogical work relates to observed quality. In conjunction with other results this was interpreted as follows: The more time for education and care of children on teachers working hours is available the more educational quality is actualized. It is recommended to include such questions in an ECEC staff survey. NEPS items might be suited better to the ECEC context than TALIS items and should also be suited to an international context.

21. *Work experience*: Work experience is also a “standard” item used in educational staff surveys. Especially in ECEC settings results concerning these items are mixed. In relation to trends in most countries toward better professionalization of ECEC staff work experience can be negatively related to ECEC quality. Therefore, additional information like on data on further education is of higher priority. Work experience should not be used as a “stand-alone” item.

22. *Staff responsible for class/group cared for*: On the one hand, respondents of an ECEC staff survey should be basically persons in charge of the children within an ECEC setting (that is in most cases a class or group; but also open groups have to be considered). On the other hand, children are often cared for by several staff members. As the NEPS methods study shows, there might be no simple linear relation of a staff-child-ratio to ECEC quality. Asking for the working hours of up to four staff members responsible for a group, there was a positive correlation to ECEC quality for the first person (“main caregiver”) that diminishes with every additional staff member and even gets negative for the fourth person. This was interpreted in two ways: First, pre-school children might need a definite attachment person which is maybe missing if more than two teachers share the group. Second, the need for a third or fourth teacher may give hints that there are problems within the group that also reduce the quality as a whole.

23. *Composition of class/group cared for*: Composition of class/group (e.g. in relation to gender, age, immigrant background, special needs; also: group size) does not relate to ECEC quality per se but can have an effect that can be positively or negatively correlated with ECEC quality. As far as diversity is increased, ECEC quality might also rise, as several studies has shown. In the NEPS methods study it was shown that this is the case for an equal share of boys and girls and a share of immigrant children up to 30 percent. Unfortunately, this does not hold for children with special needs, as there is a negative correlation to ECEC quality. Besides the cautionary note on interpreting such results causally this points to a second interpretation: Every child which has to be treated in a special way reduces the total amount of education and care time for the group as a whole as well as every (other) child, thus leading to an overall reduced evaluation of preschool quality. Also, it points to the need of additional staff members caring for the group. In summary, composition of the group of children cared for can serve as a relevant input factor of a teaching, learning and well-being environment and should therefore be included in an ECEC staff survey.

24. *Pedagogical beliefs and attitudes*: As input conditions pedagogical beliefs and attitudes serve as a relevant source of teaching, learning and well-being environments as TALIS has shown, they should be included in an ECEC staff survey. There is no information available from NEPS, as there was no assessment in the ECEC context (but for school teachers, TALIS questions were used in the NEPS). TALIS gives an excellent account on such items, but they have to be adopted for the ECEC context.

25. *Self-Efficacy and Job Satisfaction*: Again, these questions were not included in NEPS but in TALIS. TALIS items should be included with minor adaptations. These personal factors of staff do not only impact on the quality of teaching, learning and well-being environments but are also of high relevance for staff. Thus, they may also contribute to motivation to participate in an ECEC staff survey.

26. *Pedagogical Practices*: Pedagogical practices are a main feature of process quality. They have been included in TALIS but not in NEPS. TALIS items can be used but have to be adapted to the ECEC context. The conceptual framework of TALIS that is also used in NEPS should also be assigned to the ECEC context that is to develop items with regard to *structure, support and challenge* realized in a teaching, learning and well-being environment. It is recognized that these items still have to be developed but are of high relevance.

27. *Activities*: Because items on pedagogical practices were not available for ECEC settings in NEPS a more general approach was used by asking for frequencies of activities that are commonly offered to the children. These might be used as a substitute for pedagogical practices if items cannot be developed in time. However, the NEPS items need adaptations and improvements concerning content as well as answer scale, too.

28. *Materials/Facilities*: Although materials and facilities are often assessed in the ECEC context, for example by the ECERS scales, it should be kept in mind that these offers serve rather as an input condition than as an expression of process. The availability of materials does not require that children use them. As they are easier to assess as activities and can serve as prerequisites of activities they should be optionally included. NEPS ECEC staff questionnaire might serve as an example.

29. *Interaction with Children* (Sensitivity, Responsiveness): The quality of the interactions between staff and children is a core feature of process quality and can be related to the support dimension proposed by TALIS and NEPS. Yet, it is the most difficult to measure. For pre-school children the most valuable features of a child-staff-interaction are staff's sensitivity and responsiveness. Measurement is mostly conducted via observational tools. Unfortunately, development of questionnaire items is still in a preparatory state. Given its significance, efforts to overcome this situation should be undertaken. But it is recognized that this will probably need a longer time frame.

30. *Interaction among Staff*: Interaction among staff should be taken into account in an ECEC staff questionnaire because it contributes to the general centre climate that also will impact on educational processes. TALIS items can serve as a good example, with minor adaptations to ECEC staff.

31. *Interaction with Parents*: Interactions with parents contribute to the overall quality of teaching, learning and well-being environment but are of minor interest if child outcomes are in focus. In addition, they need a triangulation with parent views to give valid accounts. For an ECEC staff survey it is recommended to treat these questions as an optional feature.

32. *Cooperation with Primary Schools*: The last recommendation holds also for cooperation with primary schools. Also, these questions might be asked better in a centre manager questionnaire.

Advice section

33. *Statistically defensible insights:* The teaching, learning and well-being environment is the proximal environment to a child within an ECEC setting. Although physical environment, compositional characteristics and facilities play a role in description of the teaching, learning and well-being environment staff characteristics (like working conditions, professional attitudes) and especially direct interactions between staff and children are of more relevance for child outcomes. Structural characteristics as well as staff characteristics mainly serve as inputs to the process of staff-child interaction that influences the child outcomes. For staff characteristics, especially professional attitudes, expectations and perceptions, an ECEC staff survey is the only valid approach because these measurements are of subjective nature by itself. For staff professional development (education and further education) an ECEC staff survey also seems to be the most natural source. Processes cannot be captured by system-level data but are of core importance for teaching, learning and well-being environments. As one of the actors which directly shape the processes within these environments staff is a valuable source of information.

34. *Constraining features:* There seem to be little constraining features when basing an ECEC staff-level survey on a design like TALIS. TALIS can serve as an excellent example for such a survey. Nevertheless, a general constrain of a staff-level survey relates to the capturing of process quality which is best measured using the accounts of different actors within the process and/or external observers.

35. *Other research questions:* Other research questions that could be answered with an ECEC staff survey relate to outcomes on staff level. Questions concerning job satisfaction or professional self-efficacy as well as professional development, that serve as input of teaching, learning and well-being environments will give also information of how the ECEC setting impacts on these staff characteristics. In addition to child development and well-being also staff professional development and well-being could be monitored. There are at least three advantages associated with this conception:

- direct relevance for policy issues of professional development of ECEC staff
- staff outcomes serving as inputs to subsequent child-staff-interactions (process) and influencing child outcomes again
- motivation to participate in the survey, thus impacting on response rates

36. *Scope of the survey:* Given the additional possible research questions as well as limitations concerning process measurements, it might be advisable to focus on ECEC staff characteristics and professional attitudes and beliefs as well as their professional development. Pedagogic and teaching practices should also be assessed but one has to keep in mind that measurement in this domain has to be improved. Information on children on class/group level as a contextual feature should also be an element of an ECEC staff survey. In general, the survey should focus on content areas that are of high personal relevance for staff in order to keep participation rate high. Scope in terms of number of pages or items should not exceed a time frame for answering of about 30 minutes in order to keep dropout rate low.

37. *Operational constraints and risks:* Operational constraints and risks are related mainly to respondents' motivation to answer the survey. Items should demonstrate relevance to the participants and take them seriously. The impression to serve only as a source for child matters or societal or policy matters should be avoided. Staff should also not think that they are evaluated because this may cause biased response toward social desirability.

38. *Respondents:* As some items are still to be developed and in orientation to TALIS framework a first wave of an ECEC staff survey should be restricted to (i) staff in centre-based programmes (ii) staff in

education-focused programmes and integrated programmes in addition and (iii) staff working for public providers. The last point relates mainly to easy access to staff but may not be suited well to countries where ECEC is mainly provided in a private basis.

Conclusions and general recommendations

39. To conclude it is recommended to proceed with the development and implementation of an OECD ECEC staff level survey. Doing so, some aspects have to be kept in mind:

- TALIS teacher questionnaire can serve as an excellent and primary source for an ECEC staff level survey.
- In doing so, adaptations to ECEC contexts have to be conducted.
- Especially for process features, items are still to be developed.
- Focus should be on staff characteristics, professional development, attitudes and practices, followed by process features.
- Staff should be interested in content of the survey and motivated to participate by means of personal involvement.