

ITERS-R as a tool for improving quality in Norwegian ECEC settings: A critical reflection

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Abstract

This study shows and discusses how the use of Infant/Toddler Environment Rating Scale–Revised (ITERS-R) can contribute to the development of pedagogical content knowledge (PCK) in physical active play and science for early childhood teachers. These items are described in ITERS-R, and a full-ended scoring procedure and results on each item-indicator yielded a nuanced picture based on 206 Norwegian kindergartens. Some of the indicators were close to cultural values, while other indicators revealed a missing awareness of PCK. We suggest that ITERS-R reveals a framework for possible quality, and that teachers need an increased awareness of PCK.

Key words: ITERS-R, physical play, nature/science, PCK, early childhood.

Introduction

The purpose of this article is to increase awareness of learning environment and staff involvement in early childhood education and care (ECEC) settings with children under the age of 3 years.

The Nordic model of ECEC has a good reputation (OECD, 2006), and the Norwegian holistic approach to children’s learning, well-being, and development is highly regarded (OECD, 2015). Nevertheless, questions concerning quality have been raised (OECD, 2015). Knowledge of Norwegian ECEC quality is limited. Only qualitative in-depth studies have been conducted, and large-scale studies are lacking (Bjørnstad et al., 2012).

During the last two decades, access to Norwegian ECEC has increased and almost every Norwegian child now enters childcare at the age of 1 year. Children at that age are learning through movement, developing their motor skills, sensing the world around them, and making discoveries about it. These activities are core components of the subject areas “Body, movement and health” (BMH) and “Nature, environment and technique” (NET) in “The framework plan for content and task in kindergarten” (Ministry of Education and Research [MER], 2011). We investigated how kindergartens facilitate BMH and NET for the youngest children, and teachers’ awareness of pedagogical content knowledge and how they used it.

The Norwegian context

The practice of spending large amounts of time playing outdoors is characteristic of the Nordic countries. Norwegian kindergartens also have sizable outdoor areas for play (Moser & Martinsen, 2010).

The relatively large outdoor spaces as well as the time children spend outside imply that playing outdoors has historically, culturally, and pedagogically had an important role in Norwegian kindergartens. Moser and Martinsen (2010, p. 469) indicated that “being outdoors in itself may not be a sufficient pedagogical value and provides learning and development in accordance with the national values.” They thus argued that simply being outside does not have sufficient value, which implies that the objectives of the Framework Plan for the Content and Tasks of the Kindergarten (MER, 2011) regarding play and learning may not be met. Furthermore, they saw a danger regarding the strong focus on being outside, which may imply a form of hidden curriculum, requiring the staff to critically reflect upon their practice outdoors (Moser & Martinsen, 2010).

An evaluation report following the introduction of the framework plan (Østrem et al., 2009) found that ECEC settings are not necessarily amenable to systematically working with the subject areas. The staff reported time as a limitation when working with the youngest children because of their primary needs. With the youngest children, the most common practice is unplanned and informal in here-and-now situations (Østrem et al., 2009). Kaarby and Tandberg (2017) found the same tendency in their data, which are also based on self-report.

The term PCK, as originally developed by Shulman (1986), could be useful for teachers, as shown by Nilsson and Elm (2017). Hansson, Löfgren, and Pendrill (2014) described the diversity of science questions that children ask and wonder about, and they outlined the experience and learning potential of these situations. Brostrøm (2016) stated that a teacher must be able to use their know-how to improvise with the children. However, the teacher also needs to have the content knowledge of the situation as well to be able to use it as an opportunity to experience, explore, and learn.

Perspectives of quality

Sheridan (2001, 2009) introduced the pedagogical perspective on quality. Her approach is based on beliefs in a “common core of qualities and shared knowledge of characteristics that constitute the concept of quality” (Sheridan, 2001, p. 25). The shared knowledge relies on theoretical and practical knowledge that can define a high-quality environment for children’s learning and development. Values, traditions, norms, and ideologies of the society are interwoven into this broad perspective. This perspective is child oriented and interactive, and it is formed by the interplay between the child and the environment. The pedagogical perspective of quality emphasizes the staff’s capability to create environments that appeal and attract children, enabling them to discover, explore, act, and learn along with the staff and their peers. Sheridan (2009) further proposed four interacting and interdependent dimensions in the pedagogical perspective of quality in ECEC settings: the society, the child, the teacher, and the learning context.

Baustad’s (2012) aim was to explore whether the ITERS-R is an appropriate tool for examining the pedagogical quality for infants and toddlers in the Norwegian ECEC setting. Her findings indicate that Sheridan’s theories, norms, and values underlying pedagogical perspective on quality correspond with the idea of the Norwegian framework plan for content and tasks in kindergarten. Both ITERS and the framework plan (MER, 2011) “[give] a picture of the children being competent and active learners who learn through activities in interaction with peers and staff members.”

ITERS-R

ITERS-R is a widely used instrument for measuring quality in ECEC settings for children aged 6 weeks to 30 months. The ITERS-R was originally created and designed by Harms, Cryer, and Clifford (2006). Together with the Early Childhood Environment Rating Scale, ECERS-R, for children from 2 1/2 through 5 years of age, ITERS-R is perhaps the most widely used instrument for measuring quality in childcare settings (Vermeer, van Ijzendoorn, Cárcamo, & Harrison, 2016). ITERS-R covers different aspects of quality: physical arrangement, materials and activities, routines, supervision, interactions, and schedule. ITERS-R is based on research from relevant fields such as health, development, and education; it also takes into account professional views of best practices (Harms et al., 2006, p. 1).

ITERS-R is organized along seven subscales: Space and Furnishings, Personal Care Routines, Listening and Talking, Activities, Interaction, Program Structure, and Parents and Staff. Distributed among the subscales are a total of 39 items, each of which in turn consists of several indicators. The indicators are hierarchically organized, with basic needs at low levels and more educational and interactional aspects at higher levels. They are rated on a scale from 1 to 7 (1 = inadequate, 3 = minimal, 5 = good, and 7 = excellent). The requirements for each indicator must be met before the next indicator is measured, and measurement stops when a requirement is not met, a stop-scoring procedure.

Although ITERS-R is highly regarded, it has also drawn considerable criticism. Because the rating scale was developed in the United States, its relevance in non-American cultural settings has been questioned (Dickinson, 2006; Mathers, Singler, & Karemaker, 2012). Others (Sanders & Howes, 2013; Vermeer et al., 2008) have criticized the ITERS-R scale for placing too much emphasis on the structural aspects of childcare. The scale fails to account for and assess in depth the interactions that are considered to be key quality factors in childcare (Bisceglia, Perlman, Schaack, & Jenkins, 2009; Helmerhorst et al., 2014).

Both the hierarchical organization of the quality scales and the stop-scoring procedure have been criticized (Gordon et al., 2015). Despite the discussions on measuring and quality, Lambert et al. (2008) found that ITERS-R is appropriate for measuring quality at or below the medium level; however, the scale is not suitable for distinguishing between settings at higher levels.

The United Kingdom, Portugal, the Netherlands, and Norway have included ITERS-R in studies related to quality in ECEC, and the scores are low. The total scores vary from minimal to inadequate, and for all countries the scores for subscale activity are even lower (Bjørnstad & Os, 2018). In the United Kingdom, the mean score has increased from minimal to good in a period of 5 years with a focus on quality in ECEC (Melhuish & Gardiner, 2017).

This study

The purpose of our study was to contribute to increased awareness of PCK and quality in pedagogical work in kindergartens with children under the age of 3 years through the use of ITERS-R. The study was based on work within the scientific disciplines BMH

and NET from the MER (2011). For several years, we have worked with these subjects in the context of early childhood teacher education. However, little research has been conducted on how these disciplines are being undertaken pedagogically in ECEC. Using data from two of the items in the subscale activity, we explored whether ITERS-R could reflect PCK.

Research questions

How do results from the ITERS indicate quality in active physical play and science in Norwegian kindergartens?

How do they relate to the Norwegian kindergarten tradition?

In which way can they be a tool for enhancing the teachers' PCK?

Methodology

The empirical data for this study are based on results from ITERS-R collected as part of two research projects "Better provision for Norway's Children in ECEC" and "Searching for Qualities" supported by The Research Council of Norway. Ellen Os and Elisabeth Bjørnstad led the data collection. For further details about the data collection and data processing, see Bjørnstad and Os (2018).

Sample

The sample in the current study included 206 classrooms with 2,811 children from 93 centers selected using stratified random selection (SRS) and self-recruitment in four regions or counties in Norway. The distribution was representative of the Norwegian population. A minimum of one staff member in all but three of the classrooms held a bachelor's degree or higher in ECEC. The centers were both municipal and private, and the distribution consisted of 63% municipal and 37% private centers. However, an independent sample *t*-test showed no significant differences in the total ITERS-R scores between municipal and private centers (municipal $M = 3.93$, $SD = 0.78$, private $M = 3.81$, $SD = 0.81$, $t(204) = 1.03$, $p = .304$).

Measurement

The ratings were based on 3–4 hours of observation followed by an interview with the class teacher to gain information that was not observable during the visit. The original scoring procedure in ITERS-R was a stop-scoring approach. In the current study, all indicators were scored even if the classroom did not meet the requirements at lower levels; this approach provided a more nuanced picture of classrooms' strengths and weaknesses. This alternative scoring procedure does not affect the ITERS-R scores; it simply gives more information (Os & Bjørnstad, 2016). One of the subscales was activity, which in turn consisted of nine items. Few studies report results on an item level (Bjørnstad & Os, 2018). In this study, we looked at item level and even indicator level to get a better understanding of how the indicators reveal quality in a Norwegian context and how they could increase the PCK for the teachers involved.

Ethical considerations

This project was conducted in accordance with the generally accepted values of Norwegian law and other research ethics regulations. Participants were explicitly informed that the information collected would be used for this purpose and in no other contexts.

Results and discussion

As mentioned previously, ITERS-R, is organized along seven subscales, one of which is activity. Subscale activity consisted of nine items, including physical play and nature/science.

Activity items, scores from Norway

Table 1 shows median scores for items 15 to 24. There is no direct correspondence between the items and the subject-specific areas in the Norwegian kindergarten (MER 2011), but most items can still be recognized as activities in Norwegian ECEC settings as well.

Table 1
Items 15 to 24 with mean and standard deviation. Item 23 was not scored.

Item number	Item	<i>M (SD)</i>
15	Fine motor	3.32 (1.43)
16	Active physical play	4.80 (1.94)
17	Art	2.91 (2.04)
18	Music and movement	2.37 (1.07)
19	Blocks	2.00 (1.44)
20	Dramatic play	3.37 (1.85)
21	Sand and water play	5.46 (1.92)
22	Science	3.92 (1.46)
24	Promoting acceptance of diversity	3.44 (1.25)

Two of the items are clearly relevant to the subject area of interest for us. Active physical play is close to parts of BMH and science is close to NET. Substantial variation can be seen in a comparison of scores for the different items. The scores range from inadequate for art, music and movement, and blocks to good for sand and water play. The items pertaining to active physical play and science have scores close to sand and water play, but fall within the minimal rating category. The average score for active physical play is 0.88 points higher than that for science. The scores reflect a substantial variation in how the ECEC settings support children in these activities. However, it is difficult to draw conclusions from the scores without investigating each item and taking a closer look at the indicators. The three items with the highest score are all connected to outdoor play. The standard deviation is also high, which typically means scores in the extremes.

Item 16. Active Physical Play

The results show a relatively high score for physical active play. The score was 4.8, which is slightly below the score of 5 indicating a good rating. Few studies report on the item level. A study from Portugal (Barros & Aguiar, 2010) found a very low score for this item, 1.79 ($SD = 0.88$), and compared to this outcome, our score is high; however, we do not know which factors account for the difference. As pointed out previously, the indicators are hierarchically organized, with basic needs at the low levels and more educational and interactional aspects at higher levels. Scoring lower than 3 is strongly associated with having adequate space outdoors and indoors, but lacking equipment and materials or having equipment that is generally in poor repair.

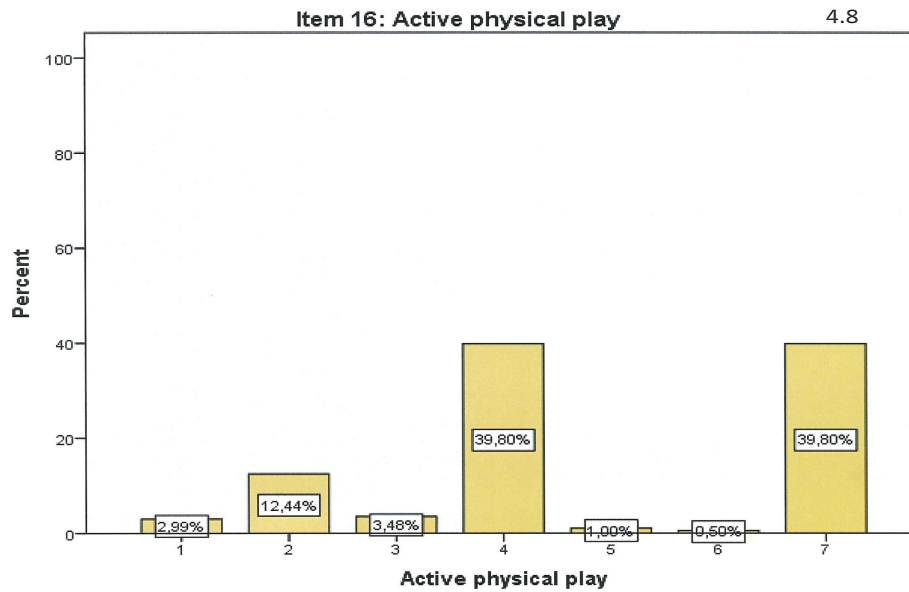


Figure 1. The distribution of the 206 Norwegian ECEC settings at each level of the scale.

Figure 1 shows how the 206 Norwegian ECEC settings are distributed at each level of the scale. Overall, 15.43% of the settings scored below 3, which translates to a rating of inadequate. The largest group, accounting for 43.26% (levels 3 and 4 combined) of settings, had scores for a minimal rating; however, the next largest group (39.80% of settings) had scores leading to an excellent rating. To interpret this information, we had to take a closer look at the indicators composing this item. Figure 1 shows the results of the scoring procedure applied to the item. Our study extended the scoring through all items and therefore yielded much more nuanced information. Figure 2 presents the results of that scoring and highlights that only 3 out of 14 indicators had substantially lower scores than the others.

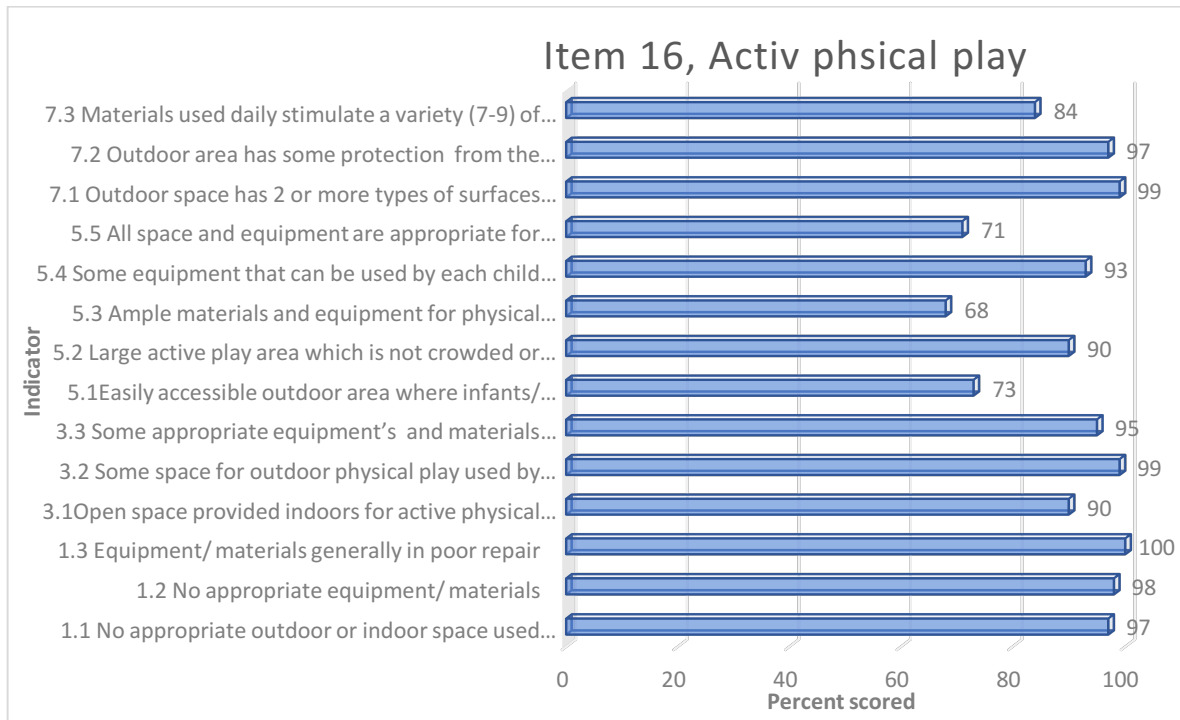


Figure 2. The percentage score on each indicator for the item active physical play.

Indicator 5.1, requiring an ‘easily accessible outdoor area where infants/toddlers are separated from older children is used at least 1-hour daily year around, except in very bad weather,’ was met by 74% of settings. Thus, three quarters of all the observed kindergartens had an outdoor area where the youngest children are separated from older children for at least one hour each day. This study provided no information about how the playground is organized for the rest of the day. However, not all Norwegian daycare centers have age groups, and not all kindergartens divide the children according to age on the outdoor playground. Therefore, asking whether this indicator truly reflects an aspect of quality is necessary.

Indicator 5.3 requires ‘ample materials and equipment for physical activity so children have access without long periods of waiting,’ and 31% of the observed ECEC settings failed to do so. Indicator 5.5 requires that ‘all space and equipment be appropriate for children.’ Both indicators 5.3 and 5.5 focus on materials and equipment, and the scores may indicate that some Norwegian ECEC settings are poorly equipped.

The indicators at the highest level (excellent) are achieved to a greater extent. Ninety-nine percent of the ECEC settings had an outdoor space with two or more types of surfaces, permitting different types of play. A traditional Norwegian outdoor playground offers at least two surfaces, sand and safety-regulated ground for falling, and most playgrounds also have grass and asphalt. Ninety-seven percent of the ECEC settings also had an outdoor space with some protection from wind and sun. Both of these indicators are a matter of course, and in the Norwegian context, they may not belong to the excellent level. It may make more sense to categorize these indicators at a lower level. The proportion of ECEC settings that score at the final indicator falls to 84%. At first glance, this percentage seems like a good result. Indicator 7.3 requires daily use of materials that stimulate seven to nine different gross motor skills. This indicator is the only one that examines some kind of activity; all the other factors are at a structural level. According to Baustad (2012), the focus on how often activities occur

and the amount of materials and equipment available is the biggest difference between the framework plan and the ITERS-R.

Motor development is crucial for children in this age group, and from our perspective, the quantification of different gross motor skills to be stimulated could be used to differentiate a good physical environment from one that is merely adequate. However, a traditional Norwegian playground offers areas and equipment that invite children to crawl, walk, run, jump, balance, climb, slide, throw, ride a tricycle, and pull (Moser & Martinsen, 2010), so this score may not necessarily be excellent in a Norwegian context. According to the ITERS-R manual (Cryer, Harms, & Riley, 2004), the term 'daily use' refers to the presence of equipment. A possible question would be whether it is the Norwegian culture for outdoor play and the relatively well-equipped playground for gross motor activities that is being measured. None of the indicators for item 16 deal with the staff's involvement in motivating and engaging children to participate in active physical play. According to Sheridan (2009), the quality of ECEC settings hinges on how staff use the physical conditions and apply their PCK. These aspects are not measured at all.

Item 22. Nature/science

The item science had a mean score of 3.92, indicating that it falls into the minimal rating category according to the ITERS-R standard. Scoring lower than 3 is strongly associated with a lack of children's opportunities to experience the natural world daily and having access to pictures, books, or toys that represent nature realistically. All of these factors are quite common in Norwegian ECEC settings and are a part of the culture and beliefs pertaining to a happy childhood environment (Borge, Nordhagen, & Lie, 2003).

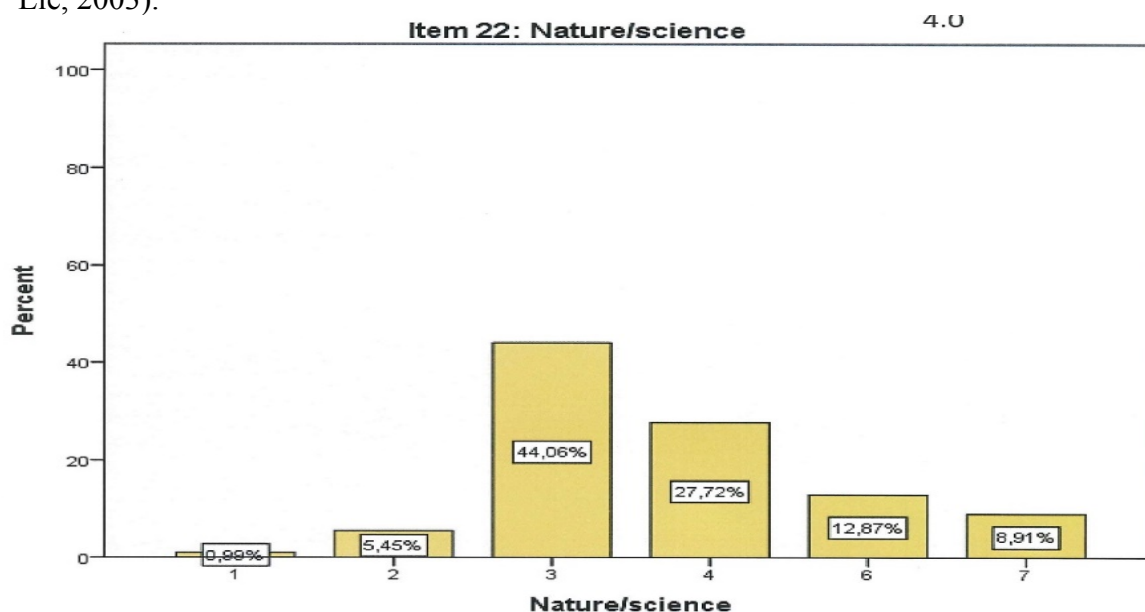


Figure 3. The distribution of the 206 Norwegian ECEC settings at each level of the scale for the item nature/science.

Figure 3 shows the distribution of the 206 ECEC settings in Norway for item 22, which differs greatly from the distribution for item 16 (Figure 1). It has more of a bell-like curve, and the majority of scores cluster around a central value (3). There are no final

scores at 5, which is described in a later section. To interpret the distribution shown in Figure 3, we took a closer look at the item’s indicators. Figure 3 depicts the item scoring procedure, while Figure 4 presents the scores for all indicators and provides a more nuanced picture. Three indicators stand out as having lower scores than the others: 5.2, 5.3, and 7.2.

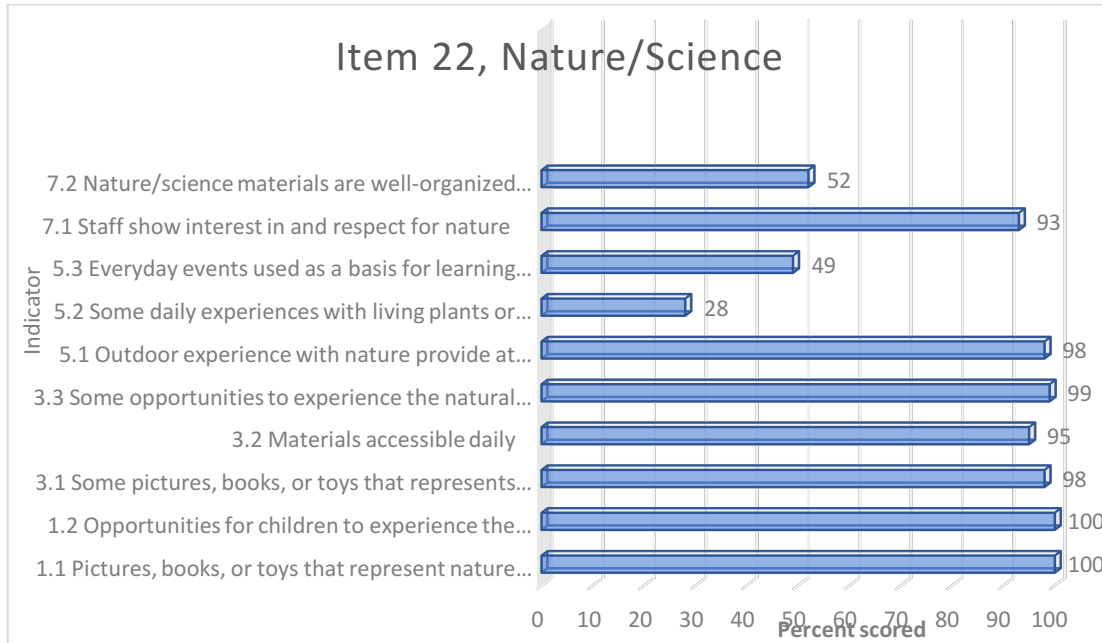


Figure 4. The percentage score for each indicator connected to Nature/ science.

The item has indicators for both external and internal qualities, although there are only two internal quality indicators, both of which were scored at 5 (5.2 and 5.3). As shown in Figure 4 indicators 5.2, 5.3, and 7.2 had relatively low percentages, 28%, 50%, and 52%, respectively. The tasks connected to indicator 5.2 and 5.3 both demand a subject-specific interaction, either staff–child or child–child. The low score for indicator 5.3, everyday events used as a basis for talking about nature and science, accords with our previous study (Kaarby & Tandberg, 2017). In that study, we reported that staff often do not take the opportunity to use an everyday situation to start and advance a ‘science talk’ with curious children. This oversight may be connected to low PCK among the staff.

After indicators 5.2 and 5.3, many settings drop out of the scoring, such that none are able to achieve a score of 5 on this item (Figure 3).

For the indicators 1.1 through 5.1, with the exception of 3.2, it is reasonable to say they are positively culturally conditioned and in a sense appreciated by the majority. Part of the cultural heritage is to have realistic/naturalistic pictures and paintings and large outdoor areas (Moser & Martinsen, 2010), and consequently, even the youngest children have opportunities to experience nature. Kaarby and Tandberg (2017) showed that the youngest children in Norway are outdoor for a fair amount of time every day. We would also argue that indicator 7.1, show interest and respect for nature, is particularly culturally conditioned in Norway, and thus, a score of 94% does not necessarily reveal a quality indicator of excellent in a Norwegian context.

Indicators 1.1, 3.2, and 7.2 all deal with scientific equipment and materials, their availability, and their organization and condition. For the organization and condition of the equipment, the score was at 52%. This result could possibly be explained by

preferences for toy-free and equipment-free environments in Norwegian ECECs (Bjørnstad & Os, 2018).

Final comments

Our results suggest that toddlers attending Norwegian kindergarten are receiving minimal to good quality care and education with regard to the items science and active physical play.

This article used reported results at an item level for an analysis of subscale scores, and this analysis was in turn supported by information on which requirements were met at the level of indicators. In line with Bjørnstad and Os (2018), we found, at item and subscale levels, that the quality of the learning environment in Norwegian ECEC is not as good as we had expected or in line with its reputation. The results were in line with ITERS-R scores in Europe and the rest of the world (Vermeer et al., 2016), and we were astonished to find that the possible subject-specific interactions between staff and children were not used or regarded as important moments for possible learning. It could be that neither ECEC education nor the common culture in the ECEC settings emphasizes or increases PCK of teachers with regard to science. As Nilsson and Elm (2017) also stated, the professional development of teachers needs to focus on their understanding of the content, PCK, and attitudes toward the subjects. Furthermore, as beliefs are often transmitted, early childhood teachers' beliefs also need to be taken into consideration (Kaarby & Tandberg, 2017). Brostrøm (2016) and Hansson et al. (2014) indicated that using everyday science moments is crucial; to accomplish this goal, we think teachers need high PCK.

Clearly there are limitations to our study, and the ITERS-R represents just one view of quality. ITERS-R provides only a broad evaluative overview of care, and it does not go into depth or detail about the different aspects of that care. This limitation applies in particular to a core aspect of quality ECEC: human interactions (Bjørnstad & Os, 2018). As mentioned previously, ECEC settings in Norway have a culture of free play outdoors where children move in and interact with the physical environment. But the extent of a child's activity varies, especially for physical active play (Storli & Hagen, 2010). Consequently, to measure the quality of active physical play, the staff's facilitation and promotion of play as well as their interactions with children must be evaluated. Therefore, we recommend the addition of an indicator that also evaluates the degree and quality of staff involvement in children's active physical play in the Norwegian context. Other approaches to evaluating Norwegian toddler care might yield different results than we found.

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