

Principles and goals that determine the choice of Estonian language and mathematics learning materials as reported by pre-school and primary school teachers

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Summary

Introduction

In the case of learning materials, it is important to support the achievement of instructional goals and the development of pupils' cognitive and social competencies (Tomlinson & Masuhara, 2017). Teachers should be knowledgeable of high-quality learning materials (Lebeda et al., 2018) and have the skills to choose them. The quality criteria and principles of selection of learning materials have been discussed mainly in the school context, and much less in the pre-school situation. Pre-school education has become more school-like during the last decades (Bassok et al., 2016; Neudorf et al., 2017) and, therefore, more attention should be paid to learning materials at this stage of education. National standards and earlier studies have shown five types of principles that guide teachers in selecting learning materials.

First, the teacher must have the skills and opportunities to select learning materials that are age-appropriate for pupils and correspond to their characteristics (Basic School National Curriculum 2011/2014). However, they do not always have the opportunity to make such choices (Reichenberg & Andreassen, 2017), are unable to cope with the selection or may not have the expertise to compile these materials. Second, good learning materials should be in line with instructional and methodological choices. It has become clear that the pre-school curriculum does not always take into account the age of the children. For example, teachers may use memorising instead of game-based learning and child-centred activities. Third, good learning materials should be affordable at age-appropriate and weaker levels (Gürkaynak, 2015) as well as challenging for those more talented (Czeglédy & Kovács, 2008). The age-appropriateness of materials is characterised by the clarity of content (Ho & Hsu, 2011), logic of structure (Lebeda et al., 2018) and comprehensibility of instructions (Howard

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& Major, 2004). Fourth, materials should include, in addition to text- or work-book, test materials and a teacher's book (Czeglédy & Kovács, 2008). Fifth, design of materials (e.g. authentic pictures) is important (Birhan, 2015).

Good learning materials help teachers in achieving cognitive, affective and metacognitive goals. The development of cognitive skills is supported by the variety of exercises in the study material (Lopera, 2015; Mikk, 2000). Affective skills are important for concentrating on the learning process, coping with failures in learning (Hattie et al., 1996) and motivating pupils (Fahyuan et al., 2018). To support metacognitive skills, the tasks of learning materials should allow pupils to evaluate their own performance (Howard & Major, 2004).

The international study TALIS has revealed that, compared to other OECD countries, Estonian tertiary teachers have autonomy over the use of learning materials (Taimalu et al., 2020). Pre-school teachers also want freedom of choice and opportunities to choose their learning materials (Tuul et al., 2015). However, the autonomy and responsibilities of teachers of first school stages in using learning materials have not been studied in Estonia. The aim of this study was to find the rationale of how Estonian pre-school and primary school teachers decide on the choice of Estonian language and mathematics learning materials, what principles they follow and what goals they consider important for learning materials. The differences between pre-school and primary school teachers were analysed based on three research questions.

1. To what extent can pre-school and primary school teachers decide which learning materials to use in the instruction of the Estonian language and mathematics?
2. What principles do pre-school and primary school teachers consider important in the selection of Estonian language and mathematics learning materials?
3. Which goals should high quality learning materials fulfil in the opinion of pre-school and primary school teachers?

Method

The sample consisted of 111 teachers, including 64 pre-school and 47 primary school teachers. Pre-school teachers' average age was 46.7 and teaching experience 19.6 years. Primary school teachers' average age was 44.7 and teaching experience 20.6 years. The data was collected with a questionnaire. Teachers were asked about their opportunities to select learning materials, principles for choosing materials and the instructional goals included in high quality materials. For comparing teachers' responses Mann-Whitney U-test and Chi-square test were used. Teachers' open-ended answers were analysed by

content analysis. The goals of high-quality learning materials were divided into three groups according to the classification of learning skills by Hattie et al. (1996), i.e. cognitive, affective and metacognitive skills.

Results and Discussion

Opportunities to decide on the choice of learning materials

To answer the first research question, the researchers analysed to what extent pre-school and primary school teachers can decide on the choice of learning materials. The analyses showed that 92.2% of pre-school teachers and only 8.5% of primary school teachers had full autonomy over what learning materials they used. 76.6% of the primary school teachers reported partial possibility to select learning materials and 14.9% stated that they could not decide what learning materials to use.

Principles for selection of learning materials

Based on the teachers' open answers four main categories were formed. In the first, "Compliance with the Curriculum," primary school teachers referred more often to modernity and affordability as selection principles, while pre-school teachers reported age-appropriateness and integration. Playfulness of learning materials was reported only by pre-school teachers. There is a conflict of opinion between pre-school teachers who value playfulness and subject integration, and primary school teachers who do not consider these principles so important.

The variety of content and tasks in the second category "Content and Assignment Diversity" was mentioned almost equally by pre-school and primary school teachers. Similarly, they mentioned that the curriculum must be diverse. However, pre-school teachers mentioned some principles more often than primary school teachers: developing creativity, individualisation and an interest to learn. Previous studies have emphasised the importance of diversity of learning materials, easy differentiation of teaching (Reints & Wilkens, 2019), and individual approach (Czeglédy & Kovács, 2008). These principles were also mentioned in this research. Only a few respondents mentioned creativity as an important principle.

In the third category "Clarity and Comprehensibility of Content and Tasks" three of the four principles were mentioned more often by pre-school teachers than by primary school teachers. The comprehensibility of the structure of learning materials received more support from the primary school teachers. Earlier studies have shown that the content must be clear (Ho & Hsu, 2011)

and the instructions understood by the pupils (Howard & Major, 2004). Only pre-school teachers mentioned the importance of authentic illustrations.

The fourth category was “External Factors”. Compared to other categories, these principles were the least mentioned. Previously, it has been found that the availability of additional materials (e.g. a workbook, etc.) is important for the integrity of learning materials (Czeglédy & Kovács, 2008). Other external factors (e.g. price, additional materials, previous experience) were mentioned more by primary than pre-school teachers, who, on the other hand, pointed out the attractiveness of learning materials.

Teachers’ evaluations about the goals of learning materials

To answer the third research question, teachers had to select the goals of high-quality learning materials. Among the cognitive, affective and metacognitive goals there was a significant difference between the two groups regarding the metacognitive goals. The primary school teachers have chosen metacognitive goals significantly more than pre-school teachers ($p < .01$). Therefore, the importance of developing children’s metacognitive skills should be given greater importance in the training of pre-school teachers.

In conclusion, as primary school teachers had limited opportunities to select learning materials, it would be necessary to raise awareness of school leaders to trust teachers as experts in choosing such materials. Among pre-school and primary school teachers only one-fifth or fewer respondents mentioned principles other than age-appropriateness. We must consider that in the questionnaire teachers had the opportunity to name only the three most important principles of the choice of study materials. So, it cannot be concluded that they do not follow other principles they did not indicate now. Pre-school teachers should be encouraged to develop metacognitive skills through learning materials.

Keywords: learning material, pre-school and primary teachers, principles and goals of learning materials