

Teachers' and students' evaluations of the effectiveness of learning strategies: An overview of the results of Estonian schools

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Summary

It is important that students learn not only academic knowledge but also acquire knowledge and skills to manage and regulate their learning (Panadero, 2017). This includes knowledge about learning strategies and the skills to use these strategies (Dunlosky et al., 2013). The Estonian education strategy (Ministry of Education and Research, 2018) and national curricula (Vabariigi Valitsus, 2021; Vabariigi Valitsus, 2023) emphasise the importance of learning to learn as a key competence, which includes knowledge of the advantages of different learning strategies and skills to use them. Each teacher's task is to support students by helping them choose the most suitable learning strategies, justify their advantages and train their application (Kornell & Bjork, 2007). Therefore, teachers need a thorough knowledge of learning and learning strategies (Waeytens et al., 2002). Different learning activities entail differences in understanding, memorisation, and flexibility of the subsequent use of the knowledge. When describing these factors, researchers distinguish between learning strategies that support deep learning and learning strategies that support surface learning. It is essential to understand which strategies support deep and which ones surface learning and how the efficiency of strategies depends on the task and the context (Dirkx et al., 2019). Knowing different learning strategies and flexibly applying these in studies is vital for every student, both for independently learning new material and for planning the learning process, as well as establishing objectives (Dignath & Veenman, 2020).

The study aimed to determine how teachers and students evaluate the effectiveness of learning strategies that support deep and surface learning. Students and teachers of the 3rd (hereinafter "basic school") and 4th (hereinafter "upper-secondary school") school levels of the same schools were involved. The aim was also to assess how teachers and students rate particular strategies (eight different ones).

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Methodology

The article uses data from the school studies conducted by the Tallinn University Centre for Innovation in Education – the *Teacher Study 2021* and the *Student Study 2022*. The sample consisted of teachers and students from the same schools. A total of 659 teachers participated in the survey, of which 321 teachers taught only at the basic school level, 176 only at the secondary level and 162 teachers at both basic and secondary levels. A total of 4888 pupils participated in the survey, of which 2375 were in basic school, and 2513 were in secondary school. Data were gathered using scenario-based assessment – four learning tasks that two students solved with different, more or less effective, learning strategies were described (distributing vs massing, rereading vs self-testing, associating vs. underlining and structuring vs linear; Surma et al., 2022). Respondents had to evaluate the effectiveness of the strategies for fulfilling a particular learning task on a scale of 1 – the effectiveness of the strategy is low – to 5 – the effectiveness of the strategy is very high.

The Kruskal-Wallis one-way analysis of variance (ANOVA) was used to assess whether there were any differences between the three groups of teachers regarding their evaluations of strategies supporting deep and surface learning.

Descriptive statistics were used to analyse the evaluations of basic school and secondary school students and teachers, and the Mann-Whitney U-test was used to determine whether there were statistically significant differences between the groups. The Spearman correlation analysis was conducted to assess whether there was a correlation between the teachers' length of service and their assessment of strategies.

Results and discussion

Today, teachers are expected not only to teach academic knowledge but also to develop students' general competencies, including learning to learn (Ohst et al., 2015). To do this successfully, teachers first need a good knowledge of learning and learning strategies (Waeytens et al., 2002). As in a previous small-scale study conducted in Estonia (Granström et al., 2022) and several studies conducted elsewhere in the world (McCabe, 2018), teachers generally highly rated the effectiveness of learning strategies that support deep learning. Teachers at basic and secondary school levels did not differ in their ratings. When assessing teachers' ratings across different subject areas, the results showed that there were no differences across subject areas. It was also found that teachers' ratings of learning strategies did not depend on years of experience. Previous work has also shown a non-relation with seniority (Halamish, 2018). The results

suggest that teachers of different years of experience and subject areas rate strategies relatively similarly, and their knowledge of learning strategies tends to be consistently good.

When analysing the students' results, it was found that similar to teachers, basic school and secondary school students rated strategies that support deep learning higher than strategies that support surface learning. The study showed that secondary school students rate strategies that support deep learning higher than basic school students. However, no difference was found between the ratings of strategies that support surface learning. This difference may be because secondary school students have to cope with more complex and large-scale learning tasks, which also require greater use of deep learning strategies, and secondary school students are more likely to have already acquired the skills to apply more complex learning strategies.

We also examined how teachers' and students' evaluations of strategies differ. Basic school teachers appeared to rate learning strategies that support deep learning higher than basic school students. Secondary school teachers and students rated learning strategies that support deep learning relatively equally. In contrast, teachers rated strategies that support surface learning lower than students, which was the case at both basic and secondary school levels. The present study did not assess how teachers actually use/teach learning strategies in the classroom context, so it cannot be concluded that good theoretical knowledge is actualised in the classroom and that conscious teaching of learning strategies takes place.

In addition, one of the study's objectives was to analyse how teachers and students evaluate the effectiveness of specific learning strategies. The study used eight different learning strategies in four scenarios. Consistent with previous research (McCabe, 2018; Smith & Karpicke, 2014), we found that students rated self-testing higher than teachers.. This was confirmed at both basic and secondary school levels. This result may be because teachers perceive (self-) testing more as an assessment than a learning tool. However, self-testing is a learning strategy that supports deep learning that is also easy for students to use independently (Agarwal et al., 2021).

Both basic and secondary school students rated massing higher than teachers, while there was no difference between students' and teachers' ratings of distributed learning in secondary school. On the one hand, this result may be due to the context of the questionnaire, where the respondent chooses between two learning strategies. However, on the other hand, based on previous studies (Dunlosky et al., 2013), it can be argued that massing is highly rated by students. It can be assumed that the students' planning skills are rather modest and that they have not been taught how to distribute learning material. Associating and

structuring learning was rated highly by both teachers and students (median 4 on a scale of 1 to 5), while teachers rated it higher than students. Both are effective learning strategies, with association including various possibilities, such as using diagrams and models, integrating new knowledge with previous knowledge, etc.

In contrast, students rated the underlining of what they were learning and linear learning higher than teachers. Both are learning strategies that tend to support surface learning. Underlining is easy to use (Gurung et al., 2010), but learners frequently underline an already familiar part which can create an illusion of having learned the material (Dunlosky et al., 2013).

Keywords: learning strategies, deep learning, surface learning, teachers' knowledge