Differences in Primary School Students' Ratings about Themselves and the School

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Abstract

L2L is a frequently used concept, which can be approached from different perspectives. In our theoretical background we provide an overview of the early and current research trends. Then, we approach the issue from the perspective of the Finnish framework, the second order learning and the learning how to learn approaches. Next, we present the results of the 'Me and the school' questionnaire from the Finnish framework. Our participants were 5th and 6th grade primary school students. We found that this online questionnaire is a reliable tool for the Hungarian sample. Comparing the results of Grades 5 and 6, we did not register significant relationships between the grades, except for their 'use of computer'. The most important differences were discovered between the genders, where significantly higher mean values were observed for girls. We also analyzed the effects of mathematics and literature school results on some variables. It can be concluded that school results have a significant effect on students' performance and attitude. While the effect of attitudes on students' performance was not substantial, there was a stronger effect on students' evaluation of own competencies in math for both genders and in reading for boys.

Keywords: learning to learn; research trends; primary school; questionnaire

Diferencias en la Evaluación de los Estudiantes de Primaria Sobre sí Mismos y Sobre la Escuela

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Resumen

L2L es un concepto utilizado frecuentemente que se puede abordar des de diferentes perspectivas. En nuestro marco teórico aportamos una visión sobre líneas de investigación más recientes y otra más consolidada. Después, entramos en la temática des de una perspectiva del marco finlandés, el aprendizaje de segundo orden y el aprendizaje sobre como aprender perspectivas. A continuación, presentamos los resultados del cuestionario "Yo y la escuela" realizado con el enfoque finlandés. Nuestros participantes eran estudiantes de 5º y 6ª grado de escuelas de primaria. Hallamos que este cuestionario online es una herramienta fiable para la muestra húngara. En la comparación de los resultados de 5º y 6º, no registramos relaciones significativas entre los grados a excepción del "uso del ordenador". Las diferencias más importantes fueron observadas entre géneros, las chicas tuvieron valores significativamente mayores. También analizamos los efectos en los resultados de matemáticas y comprensión lectora de otras variables. Se puede concluir que los resultados escolares tienen un efecto significativo en la actitud y el rendimiento de los estudiantes. Mientras que los efectos de las actitudes en el rendimiento de los estudiantes no fueron substanciales, hubo un mayor efecto en la evaluación de los estudiantes sobre sus propias competencias en matemáticas para los dos géneros y en lectura para los chicos.

Palabras clave: aprendiendo a aprender; líneas de investigación; escuela primaria; cuestionario

Our learning to learn (L2L) research emerged out of the '*Exploring the Possibilities of Expanding Diagnostic Assessment to Include Other Cognitive and Affective Domains*' project supported by the '*Developing Diagnostic Assessment*' large scale project. Over ten thousand primary school students are involved in the project representing a wide range of socio-economic contexts across Hungary. The project was initiated in 2009 and will end in 2014. Since the start of the project numerous courses related to diagnostic assessment have been organised for teachers to focus their attention on this issue. Moreover, students have been tested in the domains of reading (Csapó & Csépe, 2012), mathematics (Csapó & Szendrei, 2011) and science (Csapó & Szabó, 2012). In addition, knowledge and skill domains have been researched, which have not received sufficient attention so far even though they are vital elements of a holistic view of education. The *Diagnostic Assessment of Cognitive and Affective Domains* subproject (Csapó & Zsolnai, 2011) provides an opportunity for research on L2L (Habók, 2011). Our aim is to give an overview of the notion of L2L and, focusing on gender differences, present students' ratings about themselves and the school.

Early research trends in the field of learning to learn

L2L is a frequently used concept, which has diverse interpretations, and can be approached from different perspectives. Various research projects have dealt with this notion, and they interpreted it from numerous perspectives. We attempt to offer an overview of approaches to the concept of L2L and synthesize the various definitions and interpretations.

Waeytens et al. (2002) focused on teachers' views on L2L (Housell, 1979), and used the term in a broader and a narrower sense, where the main difference is in the achievement of aims. In the broader interpretation L2L includes higher order cognitive skills, and the higher level application of

problem solving and information processing skills. Teachers also would like to teach students who are able to achieve their own goals (Candy, 1990). Learning is a lifelong process and the school needs to provide a knowledge base that is adequate enough for students to ensure the development of their learning skills to be successful lifelong learners. The roles of beliefs, attitudes and skills are also to be taken into consideration, since they deeply affect the outcome and course of the learning process (Candy, 1990). These factors contribute to the effectiveness of learning and to the development of self-regulated learning. Age is another factor influencing the learning process, since habits, strategies and techniques may change with age (Smith, 1990).

The narrow interpretation of L2L focuses on the application of skills, strategies and techniques in the learning process and on creating own knowledge. Rawson (2000) defined L2L as a skill, or more appropriately, a set of skills comprising learning skills, critical analysis, managing time, planning and setting the goals. These are the skills needed for successful learning, since L2L is increasingly present in everyday life, and it is necessary for successful adaptation to the rapidly changing economic and societal circumstances.

The development of the learning to learn process might be characterized as the student's growing toward an ideal state of being an active, confident learner who is able to objectively perceive himself and who possesses a repertoire of learning strategies and understandings together with the ability to learn effectively (Smith, 1990). Smith (1990) described L2L as an umbrella that can be interpreted as a goal, a process or a field of interest as well. The goal represents an instrument of becoming more effective learners irrespective of environmental impacts. The process focuses on how to acquire the activities and processes of L2L; finally, the field of interest stresses the role of providing information to the participants of educational practice and policy in order for them to have credible and reliable information about the concept (Roth, 1996). Smith (1990) summarized the main issues of L2L, which also concern teaching to learn: (1) developing capacities of self-consciousness and self-reflection in the learning activities;

(2) helping individuals in becoming active learners, able to properly monitor their learning activities; (3) extending the repertoire of learning strategies; (4) preparing individuals to be able to adapt to the changing conditions of subject domains and learning methods; (5) increasing students' confidence and motivation; (6) compensating cognitive shortages; (7) developing skills of community inquiry and problem solving; (8) helping students in selecting the educational programs appropriate to them; (9) fostering organized learning (Smith, 1990).

Current research trends in the field of learning to learn

Current research trends approach L2L from the cognitive, affective and metacognitive perspectives. Traditionally, L2L included only the first two of these domains. The cognitive dimension refers to information processing, knowledge creation and the ability to cope with problems or difficulties that may arise during learning in various contexts (Hoskins & Fredriksson, 2006). The affective dimension encompasses will or attitudes or beliefs (Hautamäki, Hautamäki & Kupiainen, 2010), as well as social skills, including learning relationships, motivation, confidence, learning strategies, the organisation of own learning time and information management. At a later stage the metacognitive domain was also added (Hoskins & Fredriksson, 2006). Some of the above mentioned elements of the affective dimension can also be seen as belonging to the metacognitive domain (Moreno, 2006). For instance, time and information management, awareness of learning involve active reflection and monitoring of the learner's own learning process. Since L2L can be analysed from both perspectives, the allocation of the elements to these domains is flexible and depends on the aspect of the learning process which is emphasized.

Connections to the Finnish framework

The Finnish L2L framework has made a significant contribution to the definition of the notion of L2L. As compared to earlier efforts, more intensive research started in the 1990s with the support of the National Board of Education. The main goal of the education policy was "to develop a system for the evaluation of the effectiveness of education" (Kupiainen & Hautamäki, 2006, 36). A research team was in charge of creating a framework for L2L, the development of which was carried out by the Centre for Educational Assessment coordinating the devising of tasks to evaluate L2L. The evaluation system focuses on general educational goals rather than on the assessment of single school subjects. According to Hautamäki et al., (2002, 38) L2L can be defined as "the ability and willingness to adapt to novel tasks, activating one's commitment to thinking and the perspective of hope by means of maintaining one's cognitive and affective self-regulation in and of learning action". Hautamäki, Hautamäki and Kupiainen (2010, 269) emphasise that L2L can be summarized "as the learning set of the prepared mind to adapt to novel tasks in new and surprising circumstances and, often, within constraints which mean a high mental load." Numerous research projects have been carried out since the development of the framework (e. g. Kupiainen & Hautamäki, 2010). The affective and cognitive areas were based on (1) context-related beliefs, (2) self-related beliefs and (3) learning competencies. The context-related beliefs included societal frames and perceived support for learning and studying, while self-related beliefs contained learning motivation, academic selves at school, self-evaluation, action-control beliefs, assignment/task acceptance and future orientation. Learning competencies comprised affective self-regulation, reasoning domain, learning domain and management of learning.

Demetriou (2006) emphasises that L2L is a developmental variable, which can be interpreted depending on learners' age. It is stimulus and action driven in infancy, mind driven but global in preschool, domain driven

in primary school, and process driven in adolescence. However, it must be taken into account that L2L varies from learner to learner, and it is influenced by an awareness of cognitive functions and capabilities.

Csapó (2006, 2007) adopted the definition of L2L constructed by Hautamäki et al. (2002) and summarized the main points relevant to his and his colleagues' research projects. The main theoretical background for their projects is provided by the Neo-Piagetian paradigm and theories dealing with information processing. The focal point in their large-scale projects and longitudinal survey is how students can learn well. More precisely, what is the highest quality that can be achieved in teaching and learning, "how good knowledge is organised" (Csapó, 2006, 23), how educational practice affects this knowledge, how students' developmental curves can be described with reference to given skills and abilities, and what kind of factors are required for learning success.

Kloosterman (2006) also shares some impressions regarding L2L. He claims that the key factor is motivation, that students should be able to decide what/how they want to learn, and when studying can stop. These factors are not included in personal competence in traditional learning. In contrast, more recent approaches emphasise students' responsibility for their own learning in various learning situations. For example, students can organize and manage their own learning, they do not get a complete agenda concerning the expected process, but their effectiveness has to be monitored throughout the learning process. Learning tools are important for supporting students, and the quality of learning tools needs to be ascertained. They can be very helpful in different learning situations for students with different learning styles.

Grønmo (2006) discusses the experiences gathered in PISA and TIMSS concerning students' views on L2L. She analysed the performance of Norwegian students in mathematics and stressed the role of learning strategies. She draws attention to the fact that learning strategies are a potential explanatory factor in Norway. Grønmo (2006) states that learning strategies have to be interpreted in a broader sense. A misinterpretation of

the constructivist view of learning is identified as a possible reason for low achievement among Norwegian students. She draws attention to the fact that although "rote learning, drill and practice, and passive listening to lecture" (Grønmo, 2006, 28) may appear to be passive forms of learning, they can in fact involve active processes at the mental level, therefore they should not be excluded from the learning process. A similar stance is taken by Jedeskog (2006), who discusses how teachers in compulsory education, trainee teachers and teacher educators interpret L2L. A very broad interpretation emerges from the answer. While teachers in compulsory education define L2L in a more concrete way (basic skills, study habits, appropriate behaviour), trainee teachers interpreted it in a broader sense. Trainee teachers mentioned the relation "between factors and reliable sources" (Jedeskog, 2006, 31), social aspects, the importance of processes and the role of school marks. Teacher educators describe L2L in a more sophisticated way referring to the "need for a common base of knowledge, including values, tradition" (Jedeskog, 2006, 31), etc., continuous effort to develop yourself, be critical, form and discuss conclusions.

The role of second order learning

Adey (2006) characterizes L2L as 'second order' or 'a special sort of learning', which involves not only cognitive elements but also affective ones. The cognitive elements include 'general processing of ability', 'broad and narrower special abilities', and 'specific tactics'. The affective elements comprise 'dispositions', 'motivational styles', 'attitude to learning', 'self-efficacy', and 'belief system'. Adey (2006) draws attention to the interpretation of these elements in a social context as they can be defined by group values, prior learning experiences, and teaching style.

Similarly, Moreno (2006) approaches L2L from the perspective of metacognition. She has a similar view to Adey (2006), in that she defines L2L as metalearning, i.e., learning about learning. According to Moreno (2006) metalearning has two basic components, metaknowledge and

metacognitive monitoring. Metaknowledge involves three subcomponents: people, tasks and strategies. The first subcomponent refers to people's knowledge and includes a variety of notions viewed from the perspective of the individual such as an active mental attitude, effort, desire and active assessment of students' mental processes. The tasks subcomponent refers to the fact that students have to be fully aware of the aim of the learning task, and they have to be able to make judgements concerning the difficulty, characteristics, and structure of the tasks. During the learning process it is important for students to realize which learning strategies they possess, and which strategies they can apply in various learning situations. The second component, metacognitive monitoring, includes control and regulation. Students' planning and decision making processes are emphasised, namely, analysis, understanding, memorization, and personal assessment. Moreno stresses that L2L is a particularly complex notion. It can be analysed from the perspective of metacognition, it is part of the teaching-learning process, and it is more than "automatically following a series of directions" (Moreno, 2006, 44).

The learning how to learn approach

McCormick (2006) interprets L2L in a broader sense and approaches it from the perspective of learning how to learn. McCormick adopts Dearden's definition (1976, 70) of learning how to learn: "Learning how to learn is at one stage further removed from any direct specific content of learning. It might therefore reasonably be called 'second-order learning'. There could be many such comparably second-order activities, such as deliberating how to deliberate, investigating how to investigate, thinking out how to think things out, and so on." McCormick also stresses the usefulness of the definition by Hautamäki et al. (2002).

Chrisholm (2006) emphasises the importance of the notion of 'how to learn'. The phrase refers to the learners' own activity, and their responsibility for their learning. According to Chrisholm (2006), an

important feature of learning is self-readiness, which helps learners to discover the possibility of autonomous reasoning and action. Learning how to learn involves a "mixture of acquiring competences and developing qualities" (2006, p. 22), but these cannot be analysed separately because learning happens in a social context.

Higgins reports the conclusion of the Learning to Learn project which was carried out as part of the Campaign for Learning by a research team form Durham University, Newcastle University's Centre for Learning and Teaching and the Institute of Education at London University. The researchers collected data from more than 30 primary and secondary schools with the participation of 150 teachers. The project outcomes were published in several case studies, reports, books, and journals (see e. g. Wall, 2008). The main conclusions of the project were that L2L means more than "a simple set of activities or techniques which can be implemented easily by a school teacher" (Higgins, 2007, p. 8). The project's findings focus on more inter-dependent learning roles with an emphasis on individual learner responsibility, addressing possibilities of achieving understanding for different learners, open and overt discussion of the process of learning, and supportive and challenging environments facilitating changes in the learning process.

Finally, let us highlight the LHTL programme, presented by James et al. (2007), which underlines the role of the assessment of learning. The LHTL view of learning approaches L2L form the perspective of learning how to learn. The emphasis is mainly on "how to" focusing on the development of the learning practice. The LHTL framework stresses the reflective, strategic, rhetoric, instructional and collaborative aspects of learning and analyses the role of the individual as well as that of the peers in these processes. Three types of school practice are researched in the project. (1) The first area of interest is the classroom level, in which teachers are also included through the assessment of learning. The following three main issues were identified and described in the project: making learning explicit, promoting learning autonomy and performance orientation. (2) The second area of interest is teachers' professional development. Four main issues are highlighted and

analysed: inquiry, building social capital, critical and responsive learning, and valuing learning. (3) The third area if interest includes school management practices and systems. The following four issues are involved and specified at this level: deciding and acting together, developing a sense of where we are going, supporting professional development, and auditing expertise and supporting networking.

It can be concluded that L2L is a very complex notion, which has not only cognitive and affective but also metacognitive components. L2L can be analysed from the perspective of the individual and at a classroom level, from teachers' professional development and school management practices and systems. In our research we focus on the Finnish definition and analyse the affective domain of learning.

Research questions

Our goal is to develop a Hungarian measurement instrument for evaluating educational outcomes. In our research we address the cognitive, affective and metacognitive domains. In our large-scale project we had the opportunity to use some questionnaires and cognitive tasks from the Finnish L2L framework. Their measurement tools are used in several research projects and have been validated for assessment for L2L. In the present study we focus on the affective domain by using one of the Finnish tools, the '*Me and the school*' online questionnaire, which had been successfully tested on a Finnish sample. While questionnaires are traditionally administered to students on paper in Hungary, in future we would like to replace the paper and pencil tests by online instruments. In previous Hungarian research projects online measurement tools were found to be suitable and reliable tools appropriate for primary school students (Grades 1-6) (see for example Molnár, R. Tóth & Csapó, 2011). We would now like to find out whether the '*Me and the school*' online questionnaire is reliable for the Hungarian sample as well.

In our analyses we focus on 5th and 6th grade students' opinions about themselves and the school. We would like to establish whether there are any

significant differences between the ratings of Grade 5 and Grade 6 students, and between those of girls and boys. In a separate analysis (Study 2), we shall discuss the relationship between performance on cognitive tasks (reading and mathematics) and the fields of the questionnaire. Finally, we look at the correlations between mathematics and literature school results and students' attitudes towards school subjects, and model the relationships that can be discovered between school results, attitudes towards school subjects, performance on cognitive tasks and selected fields of the questionnaire (Study 3).

Our studies thus aim to answer the following research questions:

- Does the '*Me and the school*' questionnaire in online form have appropriate reliability for the Hungarian sample?

- Are there any significant differences between the students in Grade 5 (aged 11) and the students in Grade 6 (aged 12)?

- Are there any gender differences in students' results?

- What relationships exist between mathematics and reading performance and the fields of the questionnaire?

- Do students' school results in mathematics and literature have any effect on the questionnaire fields?

Study 1

Participants and procedure

Our participants were 5th and 6th grade primary school students from all regions of Hungary. 273 students took part from Grade 5 and 379 from Grade 6; 332 girls and 313 boys. Unfortunately, however, students did not give their gender in some cases. A total of 15 schools participated in the

study. The data collection took place in average schools. Participation was voluntary, one important requirement was having an internet connection since students filled in the questionnaires online. The students filled in three questionnaires and a test of cognitive tasks assessing their mathematics and reading comprehension knowledge. All tests and questionnaires were completed in May 2012 during two double and one single school periods.

The instrument

For details of the cognitive tasks, see Study 2. The three questionnaires were (1) the 'Me and the school' questionnaire discussed above, (2) a questionnaire about learning habits, and (3) a questionnaire about foreign language learning. Of the three questionnaires, only the results of (1) are analysed in the present paper.

The Finnish measurement instrument consists of a very complex tool system and covers the cognitive, affective and metacognitive dimensions of L2L. This study involved the use of the '*Me and the school'* questionnaire from the Finnish framework and some background data. The instrument is divided into 18 sections (fields), which contain a total of 56 statement items. Students rated their answers on a seven-point Likert scale. In Hungary, generally 4 or 5-point Likert scales are in use, but the Finnish questionnaire allowed the students to have more options and give more differentiated answers in their responses. Cronbach alphas for the different fields were calculated to test reliability. The 18 fields, the number of items included in each field, and the reliability value calculated for each field are presented in Table 1.

Table 1

The number of items and reliability of the questionnaire fields

Fields	Number of the items	Grade 5	Grade 6
Attitude toward school	3	.73	.75
Attitude toward teachers	3	.83	.78
Own competence: Math	3	.85	.87
Own competence: Speaking	3	.65	.72
Own competence: Thinking	3	.66	.71
Own competence: Writing	3	.75	.78
Own competence: Reading	3	.76	.74
Control expectancy - Learning	3	.70	.70
Control expectancy - School achievement	3	.83	.84
Belief: Peers' attitude toward school	3	.87	.81
Belief: Parents' attitude toward school	4	.71	.73
Belief: Peers approve of me	3	.85	.82
Belief: Parents approve of me	3	.74	.85
Belief: Teachers approve of me	3	.84	.85
Self-concept	4	.70	.80
View on class	3	.47	.52
Use of books	3	.57	.57
Use of computer	3	.72	.64

The 'Attitude toward school' field asks students if they acquire useful, interesting and important knowledge at school. The 'Attitude toward teachers' field examines what students think about their teachers, whether their teachers are fair, and whether they are ready to consider students' ideas. The 'Own competence: Math' field explores whether students think maths is easy, and whether they can solve more difficult problems successfully in maths. In addition, some questions refer to how students evaluate their performance in maths. The 'Own competence: Speaking' field looks at students' verbal skills and how good speakers students are. The 'Own competence: Thinking' field discovers how perceptive and imaginative students' thinking is, what their opinion is, how fast they think, and how often they have constructive ideas. The 'Own competence: Writing' field reveals how students perform in written assignments and how successfully they can express themselves in written tasks. The 'Own competence: Reading field concerns the reading of written texts and asks students if they are good readers. The 'Control expectancy – Learning' field looks into students' confidence, whether they are interested in what they study and whether they make an effort to learn something despite encountering difficulties. The 'Control expectancy - School achievement' field is based on the fact that students' decisions have significance and living up to and fulfilling their own resolutions is important because it results in learning and acquiring good school marks.

It is widely accepted that students' learning is influenced by other participants of the learning process, such as peers, parents, and teachers. The 'Belief: Peers' attitude toward school' field examines whether peers are interested in learning, and whether students get on very well with their classmates. The 'Belief: Parents' attitude toward school' field focuses on parents' support and parents positive values towards school. The 'Belief: Peers approve of me' field measures the degree to which students' are accepted by classmates. The 'Belief: Parents approve of me' field reveals how students' are getting along with their parents, and if students think they are accepted on a personal level. The 'Belief: Teachers approve of me' field

refers to students' acceptance by teachers, and teachers' positive attitude towards students. The 'Self-concept' field discovers how positive students' attitudes towards themselves are, and if they accept their own personality. The 'View on class' field attempts to find out how good the atmosphere is in the classroom, and if students can enjoy their success and if success is honoured. The 'Use of books' field refers to the use of books, newspapers, and dictionaries. Since students use computers frequently, it was necessary to collect information about the 'Use of computer' as well.

As regards the Cronbach alphas calculated for the different fields, only one field, the 'view on class', showed a slightly lower reliability, but was still within the acceptable level.

Results

Comparing the results of the Grades, we did not find significant differences between the two Grades except in the 'use of computer' field. Grade 6 students use computers significantly more often. In Hungary, a certain tendency can be observed that students use the computer very frequently, but they not only use it for learning but also for maintaining social contacts. Using a book occurs significantly less frequently among boys.

Table 2
Comparison of 5th and 6th graders' scores on the fields of the questionnaire

Fields	M Grade 5	M Grade 6	t	p
Attitude toward school	4.7	4.5	1.639	(n. s.)
Attitude toward teachers	4.7	4.5	1.858	(n. s.)
Own competence: Math	3.5	3.5	-.344	(n. s.)
Own competence: Speaking	4.2	4.2	-.204	(n. s.)
Own competence: Thinking	4.0	4.1	-.335	(n. s.)

Table 2 Continued

Fields	M Grade 5	M Grade 6	*t*	*p*
Own competence: Writing	4.0	4.0	.139	(n. s.)
Own competence: Reading	4.4	4.3	.329	(n. s.)
Control expectancy – Learning	4.2	4.3	-.586	(n. s.)
Control expectancy - School achievement	4.8	4.8	.154	(n. s.)
Belief: Peers' attitude toward school	3.6	3.6	-.036	(n. s.)
Belief: Parents' attitude toward school	4.9	4.8	.802	(n. s.)
Belief: Peers approve of me	4.5	4.6	-.131	(n. s.)
Belief: Parents approve of	5.2	5.3	-.597	(n. s.)
Belief: Teachers approve of me	4.5	4.5	-.163	(n. s.)
Self-concept	4.5	4.4	1.001	(n. s.)
View on class	4.1	4.2	-1.172	(n. s.)
Use of books	3.4	3.5	-1.100	(n. s.)
Use of computer	4.2	4.5	-2.710	($p<0.01$)

As regards gender differences (Table 3), girls showed a more positive attitude toward teachers, and they are more self-confident writers. On the whole, they trust themselves more often. In the fields of 'beliefs: parents' attitude towards school' and parents approve of me' girls are more positive. Girls also think significantly more positively about teachers than boys. We can further discover a tendency that girls read more, and use books more

often than boys. In only one field, the 'own competence in mathematics' could we detect an advantage of boys.

Table 3
Comparison of boys' and girls' scores on the subscales of the questionnaire

Fields	M Boys	M Girls	*t*	*p*
Attitude toward school	4.5	4.7	-1.791	(n. s.)
Attitude toward teachers	4.4	4.7	-3.104	(p<0.01)
Own competence: Math	3.5	3.2	4.519	(p<0.001)
Own competence: Speaking	4.2	4.2	.290	(n. s.)
Own competence: Thinking	4.1	4.0	1.168	(n. s.)
Own competence: Writing	3.9	4.1	-1.983	(p<0.05)
Own competence: Reading	4.3	4.4	-1.654	(n. s.)
Control expectancy – Learning	4.2	4.3	-.364	(n. s.)
Control expectancy - School achievement	4.7	4.9	-2.523	(p<0.05)
Belief: Peers' attitude toward school	3.6	3.6	-.004	(n. s.)
Belief: Parents' attitude toward school	4.8	4.9	-2.125	(p<0.05)
Belief: Peers approve of me	4.5	4.6	-1.487	(n. s.)
Belief: Parents approve of me	5.2	5.4	-2.931	(p<0.01)
Belief: Teachers approve of me	4.4	4.6	-2.563	(p<0.05)
Self-concept	4.5	4.4	.502	(n. s.)
View on class	4.2	4.2	.194	(n. s.)
Use of books	3.3	3.6	-2.897	(p<0.01)
Use of computer	4.4	4.3	1.193	(n. s.)

Study 2

Participants and procedure

The same students took part in Study 2 as in Study 1. See Study 1 for the details of participants and the data collection procedures.

The instrument

The questionnaires analysed in study are those discussed in Study 1.

The cognitive test in mathematics assessed students' knowledge of mathematics as required in everyday situations. Reasoning, inference, and the use of other thinking operations were required for the successful completion of the test. In the reading comprehension tasks students had to find information in texts, make decisions on the truth of given pieces of information, and interpret textual elements. The test items were developed by our research group. They were based on students' prior knowledge and students did not need further preparation for the completion of the tasks. The cognitive tests and the questionnaires were identical for the two grades, which allowed us to look for relationships between the questionnaire of Study 1 and maths and reading comprehension performance to provide a more differentiated picture.

Some of the test items had a multiple choice format while others were open ended questions. The students' answers to multiple choice questions were scored automatically through our online system called EDIA. Answers to open ended questions were scored manually by a trained researcher.

Results

We computed correlations to examine interactions between the questionnaire fields and mathematics and reading performance, as shown in Table 3.

Table 4
Correlation coefficients between the questionnaire fields and maths and reading performance by grade and gender

| | Maths | | Reading | |
| | Grade 5 | Grade 6 | Grade 5 | Grade 6 |
Fields	Boys/Girls	Boys/Girls	Boys/Girls	Boys/Girls
Attitude toward school	n. s./.42**	n. s./n. s.	.22*/.47**	.24*/.32**
Attitude toward teachers	n. s./.32**	n. s./n. s.	n. s./.35**	n. s./.27*
Own competence: Math	.64**/.27*	.46**/.25*	.53**/.63**	.66**/.66**
Own competence: Speaking	.47**/.43**	.38**/n. s.	.59**/.41**	.32**/n. s.
Own competence: Thinking	.62**/.37**	.40**/n. s.	.63**/.43**	.41**/n. s.
Own competence: Writing	.52**/.40**	.39**/.32**	.64**/.40**	.34**/.25**
Own competence: Reading	.53**/.51**	.44**/.37**	.63**/.43**	.40**/n. s.
Control expectancy - Learning	.47**/.37**	.41**/.26*	.56**/.41**	.41**/.30*
Control expectancy - School achievement	.49**/.36**	.40**/n. s.	.54**/.32**	.42**/n. s.
Belief: Peers' attitude toward school	n. s./n. s.	n. s./n. s.	n. s. /.35**	n. s./.34**
Belief: Parents' attitude toward school	.34**/.36**	.34**/n. s.	.34**/.44**	.39**/.22*

Table 4 Continued

Fields	Maths		Reading	
	Grade 5	Grade 6	Grade 5	Grade 6
	Boys/Girls	Boys/Girls	Boys/Girls	Boys/Girls
Belief: Peers approve of me	.37**/.50**	.29**/.27*	.37**/.41**	.36**/.26*
Belief: Parents approve of me	.40**/.50**	.32**/n. s.	.39**/.33**	.30**/n. s.
Belief: Teachers approve of me	.48**/.51**	.43**/n. s.	.47**/.49**	.40**/.35**
Self-concept	.53**/.42**	n. s./n. s.	.41**/.40**	n. s./n. s.
View on class	.28*/.28*	n. s./n. s.	.23*/.41**	n. s./n. s.
Use of books	.37**/.27*	n. s./n. s.	.31**/.28*	n. s./.29**
Use of computer	n. s./.28*	n. s./n. s.	n. s./.23*	n. s./n. s.

$**p<.01$, $*p<.05$

Pearson correlation coefficients showed significant correlations between the questionnaire fields and cognitive tasks in Grade 5 in most cases. However, we found few significant correlations between the questionnaire fields and cognitive tasks in Grade 6. As regards the maths performance of boys and girls, and 'attitude toward school and teachers' they did not have a significant influence on each other, except for Grade 5 girls. The fields of the 'own competencies' and control expectancy' did show significant correlations for 5th and 6th grade boys. This result can be explained by the fact that competencies very strongly determine students' performance. Reading, writing and counting are every-day activities at school. In line with this, the results of maths and writing showed significant correlation

coefficients in all grades and genders with 'control expectancy in learning'. The fields of beliefs, except for 'belief: peers' and 'attitude toward school', showed a significant correlation with maths and reading tasks in Grade 5. The same results were revealed for Grade 6 girls. In addition, Grade 5 students, who performed more successfully in maths and reading, have a more positive self-concept and more positive view on class. Also, Grade 5 students who use more books performed higher.

Study 3

For Study 3 we collected data on school results in a number of subjects and on students' attitudes towards those school subjects. School marks are important indicators of students' achievement, and attitudes towards school subjects provide information regarding whether students like a school subject. It is essential feedback for teachers whether students are fond of a school subject. Students who like a school subject tend to perform better and are more successful learners in that field. One of our reasons for collecting data about school results was to analyse the effect of school marks on students' maths and reading comprehension performance and own competence in maths and reading. We aimed to give a more detailed picture about the relationships between school marks, attitudes, tasks and own competence in maths and between the same variables in reading.

Participants and procedure

In Study 3 the same participants were involved as in Study 1. The first aim of the study was to explore the relationship between students' school marks and their attitudes towards school subjects. The following school subjects were included in the research: mathematics, literature, Hungarian grammar, foreign languages and science. Students rated their answers on a 5-point Likert scale since Hungarian students' receive their school marks on a scale ranging from 1 to 5. 1 is for the lowest achievement and 5 for the highest. As regards the attitudes, 1 means that students dislike a school subject and 5 means they like it a lot.

Results

First, we compared the school marks of 5th and 6th graders in maths and literature. Looking at school results in maths, we found no significant differences between the grades. Students achieved the lowest marks in maths as compared to the other school subjects (M_{Grade5}=3.7, M_{Grade6}=3.6, F=3.769, t=1.582, p=n. s.). This school subject does not belong to the popular subjects, in fact it turned out to be one of the least popular school subjects (M_{Grade5}=3.4, M_{Grade6}=3.2, F=.142, t=1.845, p=n. s.). It has to be taken into account that the use of mathematics knowledge is also required in other school subjects, for example students have to do arithmetic in science as well. The problem can be interpreted with the notion of understanding, which is related to maths. If somebody falls behind and does not understand something, he/she will have increased difficulty moving forward and will not be able to connect new information to prior knowledge.

Comparing the school subject of literature to maths, it can be established that there are no significant differences between school marks, although students performed slightly better in literature than in maths (M_{Grade5}=4.0, M_{Grade6}=3.9, F=1.556, t=1.247, p=n. s.). However, there are some differences in the attitude scores. Students like literature significantly more in Grade 5, although literature is not among the most popular school subjects (M_{Grade5}=3.7, M_{Grade6}=3.5, p<.05, F=5.857, t=2.162, p= p<.05).

As regards gender differences, there are no significant differences between Grade 5 girls and boys in maths school marks or attitudes, while Grade 5 girls showed higher results than boys in literature school marks ($M_{Grade5boys}$=3.8, $M_{Grade5girls}$=4.1, F=.011, t=-2.433, p<.05) and attitude ($M_{Grade5boys}$=3.6, $M_{Grade5girls}$=3.8, F=.034, t=-1.990, p<.05). Finally no significant differences were revealed between Grade 6 girls and boys in maths school marks and attitudes, and the literature school marks did not show any significant differences either. However, there was a difference in literature attitudes. Namely, girls prefer this subject to others, whereas boys do not ($M_{Grade5boys}$=3.4, $M_{Grade5girls}$=3.7, F=7.141, t=-3.323, p<.01).

In the second part of our analysis, AMOS was used in order to reveal the internal coherence of the variables of school results, task performance, attitudes and own competence. We were looking for an answer to the question what strong effects exist between any two of these variables. Our variables are connected with arrows, which show the direction of relationships. Both the mathematics and the literature models contain direct and indirect paths. The direct paths reflect the direct effects between two variables and the indirect paths lead through more variables. The first coefficient is for boys and the second represents girls' results.
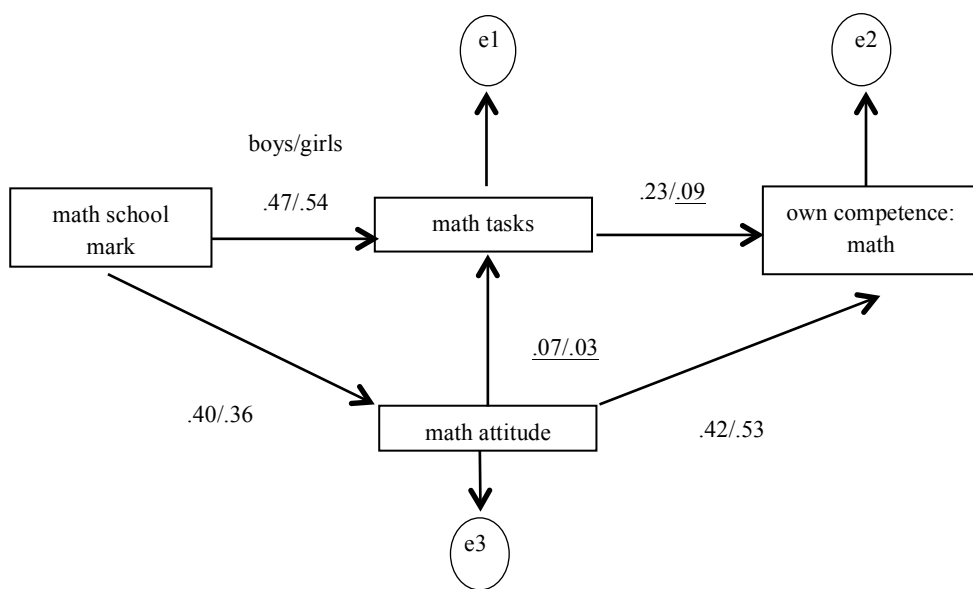

Figure 1. *Path analysis in maths*

The chi-square value, which indicates the fit of the model, is low for both genders (boys: chi-square=50.934, df=1, p=.000; girls: chi-square=69.693, df=1, p=.000). The path coefficient shows that school marks play an important role in maths performance. The effect of the maths tasks on own

competence in maths is not significant for girls while boys' performance showed a significant effect on own competence. We revealed stronger coefficients between school marks and attitude in both genders. The role of maths attitude on maths tasks is not significant. The effect of maths attitude on own maths competences is significant and shows a strong effect.

We trace two paths in our model. The strength of the path between boys' school marks and own competencies in maths through maths tasks is .108, while the strength of the path between boys' school marks and own competencies in maths through maths attitude is .168. As regards girls' coefficients, the strength of the path between girls' school marks and own competencies in maths through maths tasks gives .049. Finally, the strength of the path between girls' school marks and own competences in maths through maths attitude is .191.
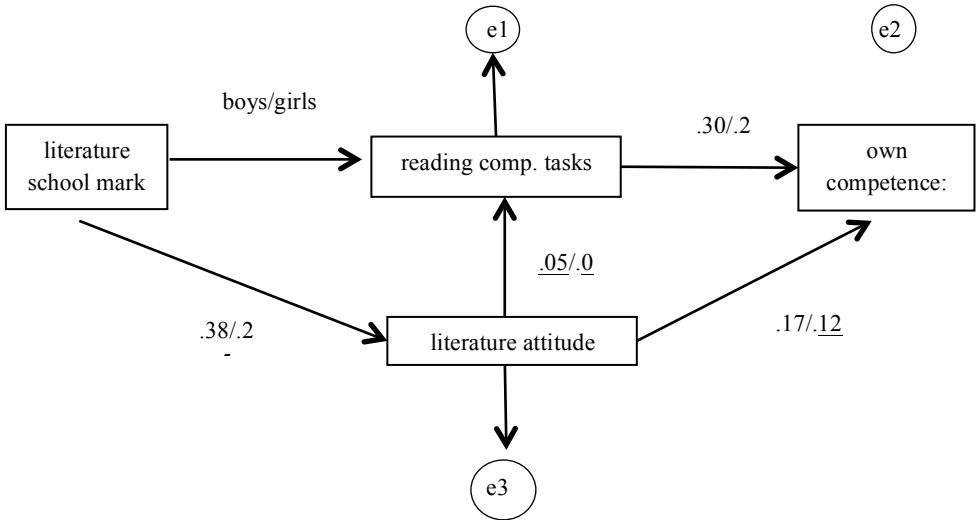

Figure 2. *Path analysis in literature*

We found that the chi-square value, which indicates the fit of the model, is low for both genders (boys: chi-square=21.202, df=1, p=.000; girls: chi-square=19.449, df=1, p=.000). We analysed the effect of literature school mark on reading comprehension tasks. It can be stated that there are strong relationships between these variables. We also detected a significant effect of reading comprehension on own competence. As regards the relationship between school marks and attitudes, we found that school marks influence students' attitudes significantly. The attitude variable did not show a significant effect on the reading comprehension tasks, but attitudes influenced boys' reading competences significantly.

We also examined the strength of the path between boys' school marks and own competencies in reading through reading comprehension tasks and got .123, while the strength of the path between boys' school marks and own competencies in reading through literature attitude is .065. As regards girls' coefficients the strength of the path from girls' school marks to own competences in maths through maths tasks gives .097, and the strength of the path from girls' school marks to own competences in reading through literature attitude makes .03. The revealed indirect effects showed lower coefficients in reading. For the future, we plan to analyse the relationship between own competence and reading comprehension in more detail to be able to obtain a clearer picture.

Summary

Traditionally, the concept of L2L can be approached from different perspectives. Among the approaches two perspectives can be highlighted, namely, the psychological and the socio-cultural perspectives. The former can be connected to two further models. One of them focuses on working memory and concept formation, e. g. information processing, selecting, sorting while the other explores thinking and intelligence, which are related to thinking skills and strategies, higher-order thinking, and understanding. The latter, the socio-cultural approach, focuses on learning and society, observes how people learn and stresses the individual's need to reflect on

new information and maintain self-awareness to plan their own learning process.

In our studies we found that the '*Me and the school*' questionnaire can be applied reliably for the Hungarian sample. We compared Grade 5 and Grade 6 results and did not register significant relationships between the grades, except for 'use of computer'. The main differences can be found between the genders, where significantly higher means were recorded for girls. Higher results were measured in only two areas for boys: whether they think they are good at maths, and whether they make an effort.

In our last analysis we looked at the correlations between the fields of the above questionnaire, school results, attitudes towards school subjects and performance on a set of cognitive tasks. We revealed the strongest correlations in Grade 5. As regards the results of Grade 6 students, boys' results showed stronger correlations between the questionnaire fields and cognitive tasks. In summary, it can be concluded that school marks have a significant effect on students' performance and attitudes. While the effect of attitudes on students' performance was not significant, it had a stronger effect on students' evaluation of own competencies in maths for both genders and in reading for boys. We discovered higher indirect effects in maths, which encouraged us to analyse the effects of further variables.

References

Adey, P. (2006). Learning to Learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report* (pp. 19–20). European Commission. Directorate JRC - Joint Research Centre. Centre for Research on Lifelong Learning.

Candy, P. C. (1990). How people learn to learn. In Smith, R. M. et al. (Eds.): *Learning to learn across the life span.* (pp. 30–63). San Francisco: Jossey-Bass.

Chrisholm, L. (2006). Defining learning to learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report* (pp. 21–22)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Csapó, B. (2006). Learning to learn through meaningful learning - Summary of the presentation. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report* (pp. 23–26)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Csapó, B. (2007). Research into learning to learn through the assessment of quality and organization of learning outcomes. *The Curriculum Journal, 18*(2): 195–210. doi: 10.1080/09585170701446044

Csapó, B. and Csépe, V. (2012), Eds. *Framework for Diagnostic Assessment of Science*. Budapest: Nemzeti Tankönyvkiadó.

Csapó, B. and Szabó, G. (2012), Eds. *Framework for Diagnostic Assessment of Science*. Budapest: Nemzeti Tankönyvkiadó.

Csapó, B. and Szendrei, M. (2011), Eds. *Framework for Diagnostic Assessment of Mathematics*. Budapest: Nemzeti Tankönyvkiadó.

Csapó, B. and Zsolnai, A. (2011), Eds. *A kognitív és affektív fejlődési folyamatok diagnosztikus értékelésének lehetőségei az iskola kezdő szakaszában*. [*Diagnostic Assessment of Cognitive and Affective Domains*]. Budapest: Nemzeti Tankönyvkiadó.

Fredriksson, U. and Hoskins, B. (2006). The Pilot project on learning to learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report* (pp. 11–24)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Grønmo, L. S. (2006). Learning (how) to Learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R.,

Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* (pp. 27–29). European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Habók, A. (2011). A tanulás tanulása és mérésének lehetőségei. [*Learning to learn and its assessment*]. In Csapó, B. and Zsolnai, A. (Eds.): *A kognitív és affektív fejlődési folyamatok diagnosztikus értékelésének lehetőségei az iskola kezdő szakaszában*. [*Diagnostic Assessment of Cognitive and Affective Domains*] (pp. 225–252). Budapest: Nemzeti Tankönyvkiadó.

Hautamäki, A., Hautamäki, J. and Kupiainen, S. (2010). Assessment in Schools – Learning to Learn. In Penelope Peterson, Eva Baker and Barry McGaw, (Eds.), *International Encyclopedia of Education*. 268–327. Oxford: Elsevier.

Hautamäki, J., Arinen, P., Eronen, S., Hautamäki, A., Kupiainen, S., Lindblom, B., Niemivirta, M., Pakaslahti, L., Rantanen, P. and Scheinin, P. (2002). *Assessing, learning to learn, A framework*. Helsinki University in collaboration with the National Board of Education in Finland. Finland, Helsinki.

Higgins, S. (2007). Learning to Learn in Fredriksson, Hoskins, Higgins and Hautamäki (eds):Schools. In *Learning to learn network meeting Report from the second meeting of the network Ispra*. (pp. 7–10). Ispra, Italy, 3 - 4 May 2007.

Hounsell, D. (1979). Learning to learn: Research and development in student learning. *Higher Education*, *8*(4), 453–469.

James, M., McCormick, R., Black, P., Carmichael, P., Drummond, M-J., Fox, A., MacBeath, J., Marshall, B., Pedder, D., Procter, R, Swaffield, S., Swann, J and William, D. (2007). *Improving Learning How to Learn. Classroom, Schools and networks*. London, New York: Routledge.

Jedeskog, G. (2006). PowerPoint of Gustav Vasa. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* (pp. 30–32). European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Kloosterman, P. (2006). Some experiences and thoughts about learning to learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* (pp. 33–35)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Kupiainen, S. and Hautamäki, J. (2006). A short overview of the Finnish presentation: "Measuring Learning to Learn – The Finnish Framework". In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* (pp. 36–38)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Kupiainen, S., and Hautamäki, J. (2010). *Fifteen grades of learning to learn assessment in Finland*. Paper presented at the 2nd Szeged Workshop on Educational Evaluation, Szeged, April, 2010.

McCormick, R. (2006). Learning how to learn: a view from the LHTL project England. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* (pp. 39–41)*.* European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Molnar, G., R. Tóth, K. and Csapó, B. (2011). Comparing Paper-Based *and* Computer-Based Testing in the First Grade. AERA 2011, New Orleans, Louisiana, USA. April 8 –12. 2011.

Moreno, A. (2006). Learning to learn. In Fredriksson, U., Hoskins, B., Adey, P., Chisholm, L., Csapó, B., Grønmo, LS., Jedeskog, G., Kloosterman, P., Kupiainen, S., Hautamäki, J., McCormick, R., Moreno, A., Sorensen, E., Deakin-Crick, R. and Demetriou, A. (Eds.), *Learning to learn network meeting report.* 42–47. European Commission. Directorate JRC Joint Research Centre. Centre for Research on Lifelong Learning.

Rawson, M. (2000). Learning to learn: more than a skill set. *Studies in Higher Education, 25*(2), 225–238.

Roth, G. L. (1996). *Learning to learn: Western perspektives*. International Adult&Continuing Education Conference (IACEC) 27-28 May. Educational Resources Information Center, ED 401 408, CE 072 899.

Smith, R. M. (1990). The promise of learning to learn. In.: Smith, R. M. et al. (Eds.): *Learning to learn across the life span.* (pp. 4–29). San Francisco, Jossey-Bass.

Waeytens, K., Lens, W. and Vandenberghe, R. (2002). 'Learning to learn': teachers' conceptions of their supporting role. *Learning and Instruction, 12*(4), 305–322.

Wall, K. (2008). Understanding metacognition through the use of pupil views templates: Pupil views of Learning to Learn. *Thinking Skills and Creativity, 3*(1), 23–33.

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