

Implementation of formative assessment in Estonian basic schools

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ABSTRACT

Assessment is integral to the process and outcomes of teaching and learning (Heitink et al., 2016). Broadly, it refers to all activities undertaken by teachers and students, which generate information that can be used as feedback to adjust teaching and learning activities (Black & Wiliam, 1998b). In most educational policy documents, a distinction is made between formative assessment that focuses on facilitating learning through a student-centred approach to instruction and feedback, and summative assessment which measures the achievement of learning outcomes (Dixson & Worrell, 2016). The aim of this study was to research formative assessment implementation in the context of the general education system of the Republic of Estonia.

To address the aim of the research, a multiple-case study was conducted in four schools in the city of Tallinn, the capital of the country, the Tallinn Education Department and the Ministry of Education and Research. The study participants involved headteachers and deputies, grade 7-9 Estonian and Russian language and literature teachers and their students, specialists from the Tallinn Education Department and leaders managing the field of general education at the Ministry of Education and Research. All together, the research was carried out with 78 participants.

The data collection procedure involved conducting 35 interviews and 13 classroom observations. Additionally, policy documents, examples of feedback given to students in their electronic daybooks, visual and digital teaching and administrative resources were gathered. The data was collected during the timeframe of June 2020 to April 2022. As this was the time of the Covid-19 pandemic, due to restrictions, some of the data was gathered online.

In order to answer the research sub-questions on what has enhanced and hindered formative assessment implementation in Estonian basic schools and what students perceive to be important

for successful implementation, the results of cross-case qualitative thematic analysis of interviews with grade 7-9 language and literature teachers and their students were presented. The rest of the data collected for this study was used in the reporting selectively to contextualise the findings and to provide examples from additional sources.

The results of the study were presented in three chapters. These highlighted that positive teacher-student relationships, a student-centred approach to pedagogy, collaboration in professional learning communities and digital technology resources were considered to be enhancing formative assessment implementation. At the same time, the lack of a systematic approach to providing professional development and monitoring, and other systemic barriers, like teacher shortage, were perceived to be hindering. The study showed that Estonia is in the beginning stages with formative assessment implementation and a more systematic approach from policymakers is needed.

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LIST OF ABBREVIATIONS

ABBREVIATION	FULL TERM
avg	Average
CLIL	Content and language integrated learning
CUREC	Central University Research Ethics Committee
IB	International Baccalaureate
ICCS	International Civic and Citizenship Education Study
IEA	International Association for the Evaluation of Educational Achievement
KiVa	Whole-school anti-bullying programme
n	Number
OECD	Organization for Economic Cooperation and Development
OUCEA	Oxford University Centre for Educational Assessment
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
S	Student
School A, B, C, D	Case study schools
SEN	Special educational needs
TALIS	Teaching and Learning International Survey
TIMSS	Trends in International Mathematics and Science Study

INTRODUCTION

Assessment is integral to the process and outcomes of teaching and learning (Heitink et al., 2016). Broadly, it refers to all activities undertaken by teachers and students, which generate information that can be used as feedback to adjust teaching and learning activities (Black & Wiliam, 1998b). In most educational policy documents, a distinction is made between summative assessment which measures the achievement of learning outcomes, and formative assessment that focuses on facilitating learning through a student-centred approach to instruction and feedback (Dixson & Worrell, 2016). Assessment functions as formative when evidence is used to adapt instruction to meet student needs (Black & Wiliam, 1998b).

The research of this thesis focuses on formative assessment implementation in Estonian basic schools. Estonia has had formative assessment as part of the general education school national curricula since 2011 (Government of the Republic, 2014a, 2014b) and it continues to be an essential component in the latest 2023 curricula (Government of the Republic, 2024a, 2024b). In these policy documents formative assessment is defined as assessment that is conducted during the learning process through which the student's behaviour, values, cognitive and affective attributes are analysed (Government of the Republic, 2014a, 2014b, 2024a, 2024b). It involves providing feedback on prior performance, identifying areas for improvement, encouraging and guiding continued learning and planning future objectives and trajectories (Government of the Republic, 2014a, 2014b, 2024a, 2024b).

In Estonia's general education system, formative assessment is implemented by understanding the student as an active participant in the learning process (Government of the Republic, 2014a, 2014b, 2024a, 2024b). In order to provide support to the students, the national curricula require teachers to create a learning environment where pedagogical activities prioritise each student's

individuality and well-being over execution of tasks (Government of the Republic, 2014a, 2014b, 2024a, 2024b). According to the curricula, learning engagements should align with students' developmental levels while requiring meaningful effort to achieve the intended study outcomes (Government of the Republic, 2014a, 2014b, 2024a, 2024b). In order to create such a learning environment, the national curricula propose that teachers give students regular feedback on their achievements and shortcomings and help them with setting further goals (Government of the Republic, 2014a, 2014b, 2024a, 2024b). The feedback that teachers provide should focus on the students' own development (Government of the Republic, 2014a, 2014b, 2024a, 2024b). The national curricula advise that teachers give both oral and written verbal feedback daily in order to implement formative assessment successfully (Government of the Republic, 2014a, 2014b, 2024a, 2024b). In addition, the curricula propose that teachers use a portfolio as a formative assessment instrument where the student can gather their work to show the process of learning, write reflections and get regular feedback (Government of the Republic, 2014a, 2014b, 2024a, 2024b).

Through formative assessment implementation, the students should begin to develop a deeper understanding of their own learning process (Government of the Republic, 2014a, 2014b, 2024a, 2024b). Well-executed formative assessment practices are expected to assist the students in becoming more intentional in their approach to learning when working towards the national curriculum learning outcomes and individual goals (Government of the Republic, 2014a, 2014b, 2024a, 2024b).

In addition to the national curriculum, the implementation of formative assessment was one of the five strategic measures of enacting the change in the approach to learning in the Estonian Lifelong Learning Strategy 2020 - a document that advised the most significant advancements in

the field of education in Estonia up to the year 2020 (Ministry of Education and Research et al., 2014). While the national curricula emphasise a student-centered approach in both teaching and assessment practices (Government of the Republic, 2014a, 2014b, 2024a, 2024b), according to the Strategy, approved by the Government of Estonia in 2014, it is implemented only in theory (Ministry of Education and Research et al., 2014). The Strategy emphasises that everybody should be viewed as a learner and ensuring that studying becomes an essential component in each individual's life trajectory is important (Ministry of Education and Research et al., 2014). In order to support the development of lifelong learners, five goals were proposed in the Strategy (Ministry of Education and Research et al., 2014). This study set out to research one of these goals, the implementation of the change in the approach to learning through the strategic measure of implementing formative assessment (Ministry of Education and Research et al., 2014). The Strategy advised that schools should focus their assessment practices on the learning process itself and not just the end goals (Ministry of Education and Research et al., 2014). To achieve this, teachers are encouraged to promote student involvement in the planning of their own learning paths by facilitating the setting of individual learning goals and supporting them in identifying effective strategies for goal attainment (Ministry of Education and Research et al., 2014). The teachers should assist the students in assuming responsibility for achieving learning objectives (Ministry of Education and Research et al., 2014). The teachers are expected to provide students with regular feedback, especially regarding the key competences (Ministry of Education and Research et al., 2014).

In 2021 the Ministry of Education and Research Education published the Education Strategy 2021-35 (Ministry of Education and Research, 2021a) - a follow-up to the Lifelong Learning Strategy 2020, setting the educational goals in Estonia up to year 2035. One of the objectives of

the Education Strategy 2021-35 is to continue applying a contemporary approach to learning at all levels of education (Ministry of Education and Research, 2021). This includes implementing assessment methods that best support the development of each child (Ministry of Education and Research, 2021).

Although formative assessment is set as essential in the Estonian national curriculum for basic schools (Government of the Republic, 2014a, 2024a) and implementing it by 2020 was an educational policy goal (Ministry of Education and Research et al., 2014), there is limited research into this topic. Conducting this study was motivated by the need to add to the gap in the academic literature. The overarching research question of this study was: How have general education schools in Estonia implemented formative assessment as set in the Estonian national curriculum for basic schools? In order to position formative assessment implementation in Estonia within the broader educational context, the following two chapters cover the fundamentals of Estonia's general education system, the theoretical formative assessment framework and empirical research on the implementation process.

Researcher positionality

This research has been carried out by holding both an insider's and a researcher's perspective. As I have a professional background in the role of a school's deputy headteacher and teacher and a guest lecturer at university, I have experienced educational policy changes, including formative assessment implementation, in the context of a general education school in Estonia. The support for policy implementation that has been provided and challenges I have faced as an educator have guided my interest in researching this topic. The experience acquired through carrying different roles during the process of policy implementation offers insights for understanding the

perspective of different level stakeholders. However, as I work in the education system in Tallinn where this research is conducted, and have first hand experience with formative assessment implementation in the context of Estonia, conducting this research demands constant reflexivity for noticing potential biases in interpreting the results. Extra attention has been given in this study for writing a detailed methodology section to cover the process of conducting this study in detail, showing the critical engagement with my positionality through methodological rigour.

GENERAL EDUCATION SYSTEM IN ESTONIA

“And we believe that through education all things are possible for everyone. Education is our might,” said Alar Karis, President of Estonia, in a speech delivered on Independence Day, 24 February 2024 (Vabariigi Presidendi Kantselei, 2024).

Education is highly valued in Estonia (Tire, 2020). The principles and structure of the current education system were established after the restoration of Estonia’s independence in 1991 (Tire, 2020). The current structure of the formal education system in Estonia is illustrated in Figure 1. Formal education system in Estonia is divided into pre-primary (for children up to the age of 7), basic (for 7-16-year-old students who are in grades 1-9), secondary (mostly 16-18/1-year-old students who are in grades 10-12 in upper general education or study 3-4 years in vocational education) and tertiary levels of education (Santiago et al., 2016).

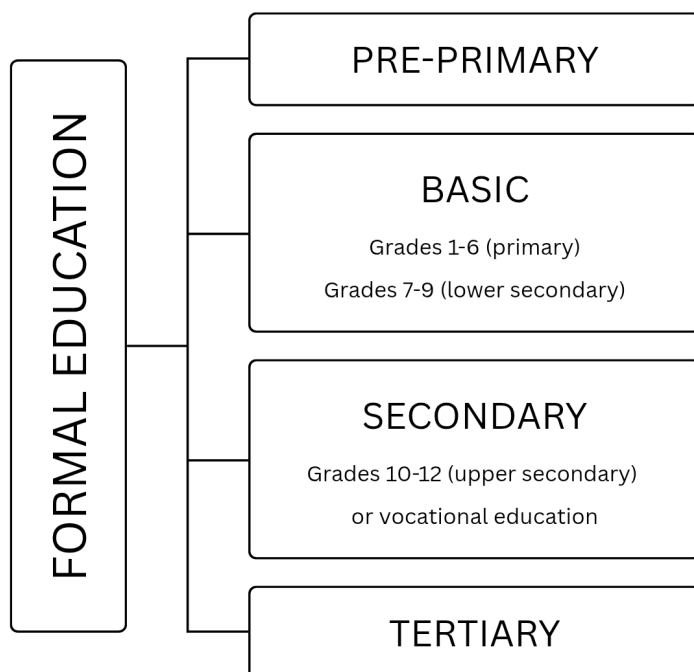


Figure 1. Formal education structure in Estonia

General education is divided into basic and upper secondary education (Santiago et al., 2016). Studies are compulsory during the basic education stage of schooling or until the student turns seventeen (Santiago et al., 2016). Basic education is structured into primary education (two stages: grades 1-3 and grades 4-6) and lower secondary education (third stage of studies in grades 7-9) (Santiago et al., 2016). This research focuses on how formative assessment has been implemented in the lower secondary school (grades 7-9). The main focus in the lower secondary school is on helping students become responsible society members who are able to cope independently in their daily lives and make a choice of a path in life that aligns with their interests and abilities (Government of the Republic, 2014a, 2024a). In order to achieve these objectives, the national curriculum proposes the implementation of formative assessment as one of the approaches because it can assist the students in understanding their own learning process, setting and reaching developmentally appropriate goals (Government of the Republic, 2014a, 2024a).

This study was conducted in language and literature classes because although during the general basic education stage of schooling all students in Estonia follow the same national curriculum, schools can differ according to their language of instruction (Ministry of Education and Research, 2015). This is largely due to considerable ethnic diversity of the population (Santiago et al., 2016). This ethnic diversity is reflected in the Estonian education system as not all schools expose students to the national curriculum in the official language of the country - Estonian (Ministry of Education and Research, 2021b). In most general education schools the language of instruction is Estonian (Santiago et al., 2016). However, as about a fifth of Estonian population are ethnic Russians (Statistics Estonia, 2025), students whose first language is Russian, have the

choice of attending an Estonian- or Russian-medium school or one that offers the Estonian language immersion programme (Santiago et al., 2016). Most of these students attend Russian-medium schools but still study according to the same curriculum as those in Estonian-medium and Estonian language immersion schools (Santiago et al., 2016). Exposing all students to the same curriculum and providing Estonian language lessons in Russian-medium schools is seen as a way of integrating the Russian-speaking community (Stevick, 2015). Both Estonian- and Russian-medium schools were chosen for this research due to the diversity in the language of instruction. In 2022 the Parliament adopted the necessary amendments to the law needed for the full transition to Estonian-language instruction (Ministry of Education and Research, 2024). This process began in September of 2024 when all children in Russian-language kindergartens and first and fourth grade students in basic schools started studying in Estonian (Ministry of Education and Research, 2024). The full transition to Estonian-language education is expected to be completed by 2030 (Ministry of Education and Research, 2024).

The national curricula of 2011 defined standard-based learning targets that have to be achieved by the end of each stage of study (Years 3, 6, 9, 12) (Government of the Republic, 2014a, 2014b). To graduate from the basic school stage of studies, the student must have reached a satisfactory level in all subjects of the curriculum, compile and present creative work and take standardised exams in Estonian language, mathematics and subject of their choice (Government of the Republic, 2014a, 2024a). Student performance is assessed by national achievement papers (Education and Youth Board, 2024), national exams in grades nine and twelve and ongoing formative and summative classroom assessments (Government of the Republic, 2014a, 2014b, 2024a, 2024b).

General education school governance involves the levels of the central government and municipalities (Santiago et al., 2016). National education policy, including developing and monitoring the implementation of general education school national curricula, is the responsibility of the government and the Ministry of Education and Research (Santiago et al., 2016). At municipality level, the county education system is supervised by the education department in the county government (Santiago et al., 2016). Larger cities have their own education departments (Santiago et al., 2016). Headteachers are given full responsibility for the quality of education (Santiago et al., 2016). This includes the responsibility to lead the development of the school-level curriculum that is based on the national framework (Santiago et al., 2016). Thus, the implementation of formative assessment involves stakeholders at different levels: the Ministry of Education and Research, local education departments and general education schools. Stakeholders from these different levels of the education system are involved as participants in this research.

Estonia has taken part in various international assessments, like TIMSS (Trends in International Mathematics and Science Study), PISA (Programme for International Student Assessment), TALIS (Teaching and Learning International Survey), IEA (International Association for the Evaluation of Educational Achievement) International Civic and Citizenship Education Study (ICCS) and OECD PIAAC (Programme for the International Assessment of Adult Competencies) (Tire, 2020). Estonia is a country with a general education system that has gained international recognition because of consistently high results in PISA (Tire, 2020). Since taking part in PISA for the first time in 2006, up to the year 2018 Estonia's scores in reading (501 points in 2006, 523 points in 2018) and mathematics (515 points in 2006, 523 points in 2018) had been gradually increasing with each cycle (Puksand et al., 2019). The scores in the science test

increased in 2012 (531 points in 2006, 541 points in 2012) and then slowly decreased to 530 in 2018, which was still the best result among European and OECD countries in PISA 2018 (Puksand et al., 2019). The media analysis I conducted in December 2018 – April 2019 in order to research what explanations were given to PISA 2015 results in Estonia, showed that high scores were associated most with educational equality. PISA data analysis results have also indicated that the Estonian general education school system is top-ranking not only in performance but also in equity - students from various socio-economic backgrounds have a universal access to education and achieve good results (Tire, 2020). However, the PISA-tests show that schools that have Estonian as a language of instruction outperform Russian-medium schools (Tire, 2020). PISA 2022 results highlighted that Estonian students once again scored at the top in Europe and among the OECD countries (Puksand et al., 2023). However, it was also the first time the PISA results indicated that the learners' socio-economic background affects academic outcomes. Additionally, like in many other countries, the overall scores decreased among students in Estonia, particularly in mathematics and reading. Another main issue in the Estonian education system, highlighted in the international study TALIS, is the ageing teacher demographic and an increasing problem with the shortage of teachers (Tire, 2020). The President of Estonia Alar Karis reflected on these issues and the path ahead in his Independence Day speech on 24 February 2024:

However, one of the most significant shifts revealed by the comparison of basic school students is the growing connection between students' academic performance and their family's socio-economic background. Young people from more modest circumstances - the modern-day shepherd boys - are beginning to fall behind, and this signals a tremor in the foundations of the Estonian dream. It is unlikely that the cause lies with the students themselves. Rather, it may be the first sign of the broader consequences brought about by the shortage of teachers [...]. (Vabariigi Presidendi Kantselei, 2024)

Nonetheless, I remain convinced that the comprehensive school - one of the cornerstones of Estonia's education policy, our future, and our collective wisdom—must be upheld. Until now, our education system has enabled all young people, regardless of their family's financial situation or place of residence, to receive a sound education and to access opportunities that might otherwise have remained beyond their reach. The state, together with

local governments, continues to have to carry the responsibility of safeguarding the principle of the comprehensive school. (Vabariigi Presidendi Kantselei, 2024)

LITERATURE REVIEW

The origins of formative assessment

Formative assessment has gained prominence as an essential concept in educational discourse and practice (Grant et al., 2021). The origins of the term “formative” can be traced to curriculum development and evaluation (Grant et al., 2021). Lee J. Cronbach (1963, as cited in Grant et al., 2021) emphasised the potential of using evaluation as a means for improving curricular programs. The term “formative evaluation” was coined in 1967 when Michael Scriven described the role assessment could have in continuous improvements in the curriculum (Black & Wiliam, 2003; Wiliam & Thompson, 2008). Scriven highlighted the distinction between summative and formative evaluation by describing the former’s focus on enabling administrators to determine whether the finished curriculum justifies the cost it has when adopted by the school system, whereas the latter’s results were intended to contribute to the development of the programme (Black & Wiliam, 2003; Wiliam & Thompson, 2008). In 1969 Benjamin Bloom used the same terminology of summative and formative evaluation (Black & Wiliam, 2003; Wiliam & Thompson, 2008). He described that formative evaluation should deliver ongoing feedback and corrections during all stages of the teaching-learning process while the intention of the summative is to measure what the learner has accomplished by the end of the course or programme (Black & Wiliam, 2003; Wiliam & Thompson, 2008).

Research in education during the 1980s and 1990s continued building on the earlier ideas and theories, replacing the term “formative evaluation” with “formative assessment” (Grant et al., 2021). D. Royce Sadler (1989) presented a theory of formative assessment relevant across a wide variety of subjects and learning outcomes, particularly where multiple criteria are used for making judgments regarding student responses. He emphasised the importance of feedback and

an active role of the learner in the assessment process (Sadler, 1989). Additionally, he argued that developing students' self-assessment abilities is needed for them to make progress on the learning journey (Sadler, 1989). In 1994 it was documented by Gipps (2012, as cited in Grant et al., 2021) that a shift in perspectives on assessment had taken place within the educational community. This included a transition from the psychometric view, centred on standardised testing as the primary paradigm in assessment toward a classroom-oriented approach entailing development and use of various tools and use of data by teachers to inform instruction (Grant et al., 2021).

In the 1990s and early 2000s the Assessment Reform Group in the United Kingdom, committed to ensuring that assessment policy and practice are shaped by research evidence, had an important role in establishing a widely cited definition of formative assessment and advancing formative assessment practices (Grant et al., 2021; Wiliam, 2011). The Assessment Reform Group promoted the term “assessment for learning”, defined as “the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there” (Broadfoot et al., 2002, p. 2). The Assessment Reform Group has developed and promotes ten key principles of assessment for learning in order to enhance how this concept translates into practice:

1. “is part of effective planning;
2. focuses on how students learn;
3. is central to classroom practice;
4. is a key professional skill;
5. is sensitive and constructive;
6. fosters motivation;

7. promotes understanding of goals and criteria;
8. helps learners know how to improve;
9. develops the capacity for self-assessment;
10. recognises all educational achievement.” (Broadfoot et al., 2002, p. 2).

Researchers use two different terms to mean the same approach to assessment: formative assessment and assessment for learning. In this thesis the term formative assessment has been adopted because it was used in the official English translation of the 2011 Estonian national curricula for basic and upper secondary schools (Government of the Republic, 2014a). While most authors use the terms of formative assessment and assessment for learning interchangeably, there are some authors who have made a distinction (e.g., Swaffield, 2011; Wiliam, 2011). For example Black et al. (2004) have described that assessment becomes formative only when evidence of learning is put into teaching practice that in turn helps students meet learning goals. They have summarised the difference between assessment for learning and formative in the following manner:

Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students’ learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence. An assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged. Such assessment becomes “formative assessment” when the evidence is actually used to adapt the teaching work to meet learning needs. (Black et al., 2004, p. 10)

Formative assessment framework

Formative assessment has evolved in its meaning and prompted significant interest and research since the concept was first introduced (Cizek, 2010, p. 6). The Assessment Reform Group's work brought formative assessment into the focus across teacher education programmes, professional development and research (Grant et al., 2021). Also, formative assessment has emerged as a prominent approach to assessment during the last few decades and this has largely happened in connection to the publication of Paul Black's and Dylan Wiliam's review of literature on classroom formative assessment (Black & Wiliam, 1998a, 1998b) which was commissioned by the Assessment Reform Group (Swaffield, 2011). Their systematic research (e.g., Black & Wiliam, 1998a, 1998b, 2009, 2018) is acknowledged as the basis for studies and practical work around formative assessment (Ecclestone et al., 2010).

Formative assessment takes place during instructional activities (Cizek & Lim, 2023). According to Black and Wiliam (2009) instruction should be understood as an interplay between teaching and learning. What distinguishes formative assessment theory from the overall theory on instruction is that formative assessment focuses on facilitating and using moments of contingency in teaching and learning in order to regulate the learning process (Black & Wiliam, 2009). Both synchronous (e.g., teachers making adjustments in real time) and asynchronous (e.g., teachers using student's lesson summary and feedback for planning the next lesson) moments of contingency are part of formative assessment (Black & Wiliam, 2009). How moments of contingency are created and used by teachers, students and their peers, affects pedagogy and curriculum (Black & Wiliam, 2009).

The term formative assessment refers to a collection of pedagogical practices designed to enable both teachers and students to actively gather and analyse evidence of learning while students are

acquiring knowledge, skills and understanding (Heritage, 2021, p. 7). The purpose of the process is to use this information to direct and enhance continued learning (Heritage, 2021, p. 7). Thus, any assessment can be formative and it fulfils this function when it enhances the instructional decisions made by teachers, learners or their peers (Wiliam, 2018, p. 51). These adjustments can be immediate or as part of long-term planning (Wiliam, 2018, p. 51).

Formative assessment strategies and techniques

Various techniques can be applied to implement formative assessment with students (Leahy et al., 2005; Leahy & Wiliam, 2012). While teachers need flexibility to choose and modify routines in order to select those that are most supportive and suitable for a specific classroom context, it has to be ensured that they are effective in fulfilling the objectives of formative assessment (Leahy & Wiliam, 2012). For implementation to be successful, it is useful to make a distinction between formative assessment strategies and techniques (Leahy & Wiliam, 2012).

In order to define strategies, the following three fundamental processes of formative assessment have to be taken into account: identifying where the students currently stand in their learning, determining where they are going and what steps are required to get there (Leahy & Wiliam, 2012). Additionally, the roles that the teachers, students and peers have in these processes have to be considered (Leahy & Wiliam, 2012). A set of the following five broad formative assessment strategies that can be used with any age group of students in all subjects have been identified (Leahy et al., 2005, p. 20):

- “• Clarifying and sharing learning intentions and criteria for success.
- Engineering effective classroom discussions, questions, and learning tasks.
- Providing feedback that moves learners forward.

- Activating students as the owners of their own learning.
- Activating students as instructional resources for one another.”

Each of these five essential strategies offers a central focus for various aspects fundamental to a teacher’s work, like curriculum, psychology and pedagogy (Leahy & Wiliam, 2012). Classroom routines, termed techniques, have been identified for these strategies (Leahy et al., 2005; Leahy & Wiliam, 2012). Although the strategies are universal (Leahy et al., 2015), the techniques applied should still be tailored to specific subject domains (Bennett, 2011). There are a range of techniques teachers can choose and modify while taking into account the variability of students and subject areas as long as they relate them to at least one of the five strategies (Leahy et al., 2005; Leahy & Wiliam, 2012). As these techniques are low-cost, do not require much digital literacy and are realistic for individual teachers to put into practice, they differ from large-scale formative assessment implementation approaches, like reducing the class size or reforming the curriculum, making them valuable techniques teachers can learn and apply to effectively implement formative assessment with their students (Leahy et al., 2005).

The following is a description of the important aspects of the key strategies:

Learning goals and success criteria

Learning goals are statements that describe the knowledge and skills students are intended to acquire (Ruiz-Primo & Brookhart, 2018, p. 24). Formative assessment begins with formulating clear learning goals for a single or series of lessons (Heritage, 2021, p. 10). These goals are aligned with the national standards and should reflect a lesson’s worth of substantive learning contributing to achieving the standards, so that it is positioned within a broader progression of learning (Heritage, 2021, p. 10).

Learning goals and success criteria are interconnected aspects of the same concept, both guiding students on where to focus their learning efforts (Ruiz-Primo & Brookhart, 2018, p. 23). Success criteria define what achieving the learning goal entails (Heritage, 2021, p. 10). Success criteria are actively used by both teachers and students to determine the learners' progress in relation to the goals during the lesson or sequence of lessons (Heritage, 2021, p. 10). They serve as a roadmap for learning as students engage in tasks and activities (Heritage, 2021, p. 11). As the success criteria clarify the learning goals for students, they can be communicated to them in various ways, like ““I can” statements, rubrics, checklists, guiding questions” and using exemplars (Ruiz-Primo & Brookhart, 2018, p. 27). Without the success criteria, learning goals are incomplete and unlikely to lead to meaningful use of formative assessment evidence or feedback (Heritage, 2021, p. 11).

Teachers review or co-create the goals and success criteria with the student (Heritage, 2021, p. 10). Developing learning goals and success criteria together with the students is often a valuable process (Wiliam, 2018, p. 64). However, it is essential to take into account that the teacher has more knowledge about the subject than the students, thus the educator should always guide this process and not have the students set just any learning goals and success criteria they think are important (Wiliam, 2018, p. 64). The advantage of involving students in developing the learning goals and success criteria is that it helps them to understand them better and develop and apply their own in their learning (Wiliam, 2018, p. 64).

Eliciting, interpreting and using evidence of learning

Black and Wiliam (2009) have defined formative assessment in the following way:

Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about

the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited. (p. 6)

A key practice in effective formative assessment entails purposefully eliciting evidence of learning throughout a lesson (Heritage, 2021, p. 69). In a classroom where assessment supports learning, the distinction between instruction and assessment becomes less obvious as most activities students do can be a valuable source for insight into their level of comprehension (Leahy et al., 2005). This provides teachers with a constant stream of information regarding how the students are progressing toward the intended learning goals (Heritage, 2021, p. 69).

Teaching should be adaptive to the students' needs (Wiliam, 2018, p. 52). In order to do that, educators have to use the evidence of learning they have gathered to adjust instruction where needed to better address the changing demands of the students' learning journey (Wiliam, 2018, p. 52). The continuous flow of evidence is necessary because when teachers adjust their instruction based on the evidence, previous information will likely become outdated, even if gathered during the same lesson (Heritage, 2021, p. 69). However, not all of the collected evidence is equally effective - some will enhance only a monitoring or diagnostic function (Wiliam, 2010, p. 33). In order for the elicited evidence to be useful for instruction, both the type of evidence collected and the method used for gathering must be informed by a clear understanding of the learning goals and progression in learning (Heritage, 2008, as cited in Wiliam, 2010, p. 33), also an awareness of the challenges students experience (Wiliam, 2010, p. 33). A teacher who intentionally uses assessment to guide learning takes into account all of this information, analyses it and makes decisions about instruction that address what the students have understood and aspects that are difficult to comprehend (Leahy et al., 2005).

Through ongoing assessment it can be ensured that the students' learning is taking place in the zone of proximal development (Heritage, 2021, p. 69). This is important because it is essential

formative assessment practice that appropriate action is taken to close the gap between where the students are in their learning at a certain moment during the lesson and achieving the learning goal (Heritage, 2021, p. 82). If no steps to meet the goal are taken, eliciting and interpreting evidence of learning by themselves cannot be considered formative assessment (Heritage, 2021, p. 82). Placing the right level of demands on the students within each of their zones of proximal development, informed by the evidence obtained, supports them in closing the gap (Heritage, 2021, p. 13).

Feedback that moves learning forward

Feedback is the core component of formative assessment (Hattie & Timperley, 2007). In order for feedback to be considered formative, it should be delivered while students are in the process of learning (H. L. Andrade & Heritage, 2018, p. 5). Feedback takes effect once it is both received and acted upon (Hattie & Clarke, 2019, p. 5).

Feedback should be related to study goals and success criteria (Hattie & Clarke, 2019, p. 12). It aims to assist students in understanding their achievements while on the course of working towards meeting the learning goals and success criteria, as well as giving them insight into areas for improvement (Heritage, 2021, p. 89). If the learning intentions and success criteria are not clear, the focus of feedback, no matter the source, is likely to be more vague and less effective in acknowledging success and recommending improvement (Hattie & Clarke, 2019, p. 12). When students understand what success entails, they are more inclined to be committed participants in overcoming the challenges they encounter during learning (Hattie & Clarke, 2019, p. 12).

Additionally, feedback can only assist learning when it also entails the gathering of evidence and responding to it by using it to enhance learning (Black et al., 2003, p. 122). Feedback should

serve as an episode of learning for both teacher and student (Ruiz-Primo & Brookhart, 2018, p. 51). Educators should concentrate on using feedback to gain insight into student thought process and understanding (Ruiz-Primo & Brookhart, 2018, p. 51). The purpose of teacher feedback to students within the formative assessment cycle is to guide students' thinking from the presently demonstrated level to the next step toward the mastery of a learning goal (Ruiz-Primo & Brookhart, 2018, p. 51).

Students need to be taught how to receive, interpret and apply the feedback provided (Hattie & Clarke, 2019, p. 5). This is more important than the amount of feedback the teacher provides because if feedback is given but not used, it will not make much of a difference to student learning (Hattie & Clarke, 2019, p. 5). Feedback has to be provided in combination with effective methods of teaching and learning in order to have the greatest impact as re-teaching can be more significant for learning than just giving feedback (Hattie & Clarke, 2019, p. 5). Feedback is part of an effectively developed collection of strategies, beliefs and procedures, with each exerting a strong impact on the others (Hattie & Clarke, 2019, p. 12).

Feedback that moves learning forward can encourage students to exert more effort, motivation or engagement to reduce the gap between the current performance output and the goal (Hattie & Clarke, 2019, p. 3). Additionally, feedback can confirm for students whether they are on the right path or they need to make adjustments (Hattie & Clarke, 2019, p. 3). Also, it can give information regarding progress toward the goal, highlight that additional information is available or required, guide them to direction that the students could explore (Hattie & Clarke, 2019, p. 3). Ultimately, feedback can lead to reshaping understanding (Hattie & Clarke, 2019, p. 3).

Self-assessment

Research has demonstrated that students can develop necessary insights into their own learning to improve their academic performance (Wiliam, 2018, p. 170). Self-assessment refers to the process which involves students using success criteria to review their own work, identifying strengths and weaknesses to improve performance (Moss & Brookhart, 2019, p. 68). Students engage in self-assessment by comparing their work to their own conception of what they aimed to achieve (Moss & Brookhart, 2019, p. 68). Through this process students identify their strengths and weaknesses, acknowledge their progress toward a goal, and decide the steps they should take to continue moving forward (Moss & Brookhart, 2019, p. 68).

Self-assessment can be viewed as a vital competence of self-regulation (G. Brown & Harris, 2014) because, effectively executed, self-assessment allows students to directly regulate their own learning journey (Moss & Brookhart, 2019, p. 67). Self-regulation occurs when students establish a goal, monitor their progress and adjust study methods to reach the set outcome (Butler & Winne, 1995). Successful self-regulation is dependent on accurate metacognitive monitoring (Thiede & Dunlosky, 1999; Winne & Perry, 2000) which entails the skill of checking one's own level of comprehension and determining when further learning is necessary (Bransford et al., 1999). Self-assessment involves students thinking metacognitively about their learning and the strategies that help to do this effectively should be explicitly taught before students can independently prompt themselves and track their own comprehension without external support from the teacher (Bransford et al., 1999).

Peer assessment

Peer assessment, in contrast to self-assessment, is an external source of regulation for the students, similar to feedback from teachers but from a source that has less authority (Ruiz-Primo & Brookhart, 2018, p. 106). Similarly to self-assessment, peer assessment requires students to comprehend and use success criteria (Moss & Brookhart, 2019, p. 67). However, peer assessment is most effectively viewed as a collaborative learning rather than assessment activity (Moss & Brookhart, 2019, p. 67). Peer assessment involves applying success criteria to a classmate's work in order to provide formative feedback that the peer can use for improvement to achieve goals (Moss & Brookhart, 2019, pp. 68–69). Also, this formative feedback can be used to enhance teamwork (Moss & Brookhart, 2019, p. 69).

The key outcome of participating in peer assessment to a student providing formative feedback is greater clarity regarding the learning target and success criteria which can then be applied to one's own work (Moss & Brookhart, 2019, p. 67). The objectives of peer assessment may also vary: teachers might focus on cognitive or metacognitive growth, time saving, or other gains (Topping, 2009). Peer assessment can occur within or beyond the classroom, as part of life, with everybody having the potential of taking on the role of the assessor or assessee at different times and settings, thus, participating in peer assessment at school helps develop transferable skills that can be applied in other areas of life during the school years and also in the future (Topping, 2009).

Peer assessment activities can differ in various ways, functioning across subjects or areas of the curriculum (Topping, 2009). They can be applied for many forms of student work, ranging from written tasks and portfolios to test performance, oral presentations, and other demonstration of skills (Topping, 2009). The participants involved may vary, with the assessors and the assessed

collaborating in pairs or groups (Topping, 2009). Peer assessment can also take different formats in terms of direction, being either one-way or reciprocal (Topping, 2009). At its core peer assessment is an interpersonal process, creating thoughts, behaviours, motivations and emotions for both the assessors and the assesseees (Panadero, 2016). Teachers need to recognise the diverse responses students experience during the peer assessment process (Harris & Brown, 2013) in order to create a classroom environment of trust and respect as this is fundamental to students' participation in assessment activities (Brown et al., 2015).

Impact on learning

Formative assessment aims to have a positive impact on teaching and learning (Harlen, 2007). The effectiveness of formative assessment is measured in terms of the extent to which it has facilitated further learning (Harlen, 2007). Effectively applied formative assessment can enhance student learning, achievement and self-regulation (Andrade & Heritage, 2018, p. 1). Many studies have found a significant positive effect of formative assessment on student learning (e.g., Black & Wiliam, 1998a, 1998b; Brown & Harris, 2014; Hattie & Timperley, 2007; Pellegrino et al., 2001). Black and Wiliam (1998a, 1998b) proposed that students taught by teachers who used formative assessment could have an increase in achievement by 0.4 to 0.7 standard deviations, corresponding to a 50 to 70 percent improvement in the rate of student learning. These improvements in achievement demonstrate consistency across countries, age brackets, content areas and can be maintained over extended periods of time (Leahy et al., 2005).

The effect reported by Black and Wiliam (1998a, 1998b) has been challenged and debated in some of the later studies (e.g., Hendriks et al., 2014; Kingston & Nash, 2011). Bennett (2011) highlighted that the original review by Black and Wiliam (1998a) had too much diversity in the

research covered which limits the extent to which it can be meaningfully summarised through meta-analysis. The studies Black and Wiliam (1998a) included in the meta-analysis encompass a wide range of themes, like feedback, student goal orientation, peer and self-assessment, self-perception, teachers' use of tests, selection of assessment tasks and questioning strategies, and mastery learning systems (Bennett, 2011). This selection of studies was criticised by Bennett (2011) as too diverse to be effectively put together and captured in a single or range of mean effect-size statistics. Overall, drawing on the analysis of also further body of literature (e.g., Meisels et al., 2003; Rodriguez, 2004) Bennett (2011) concluded that the research base connected to formative assessment is not as unequivocally supportive of this approach as it is often implied and that formative assessment "is both conceptually and practically still a work-in-progress" (p. 21). There are various features that can make formative assessment effective, many of which have been brought out under the section of the formative assessment framework. Although the effect size on student learning has been debated, there is still ample evidence to support the impact of formative assessment on achievement and this approach is now firmly embedded as a clear and essential component of classroom practice (Heritage, 2021, p. 6).

Formative assessment implementation

The aim of formative assessment is to support everybody who is part of the learning process by providing feedback to both the teachers and the students, in addition also mentoring learners to improve and accelerate their learning process (Black & Wiliam, 2009) and support the development of self-regulation skills, including the development of self-assessment abilities (Brookhart et al., 2008). Different level stakeholders can enhance or hinder this process.

The school's leadership team carries an important role in implementing educational reforms, for example it can build culture for applying formative assessment techniques by building a school-wide vision and goals and ensuring time and a positive atmosphere for teacher collaboration and preparation for formative assessment instruction (Birenbaum et al., 2011; Sach, 2013). A professional learning community that collaborates well and receives ongoing training has been found to be essential for successful formative assessment implementation (Birenbaum et al., 2011). This approach to assessment is applied more effectively in school environments where there is a positive atmosphere and a climate of trust (Birenbaum et al., 2011). Teachers working in schools with decentralised leadership have shown better quality formative assessment practices than teachers in centralised environments (Birenbaum et al., 2011). If teachers' professionalism is respected and they have a high level of autonomy, they show greater ownership of formative assessment implementation and are more likely to participate in collaborative learning communities (Birenbaum et al., 2011; Sach, 2013). This shows that the school leadership team has a central role in facilitating a teaching and learning environment where formative assessment can be effectively applied (Heitink et al., 2016).

In order to implement formative assessment in a way that benefits the students, teachers need to be able to integrate formative assessment with their pedagogical and content knowledge

(Fletcher & Shaw, 2012). Teachers who have a greater understanding of pedagogy and content, have also a greater potential to give students feedback that is useful to them (Fletcher & Shaw, 2012). If the teacher lacks pedagogical or content knowledge, the feedback provided to students can lack in accuracy and is not complete (Furtak, 2012). In classroom formative assessment practice, for example during discussions, teachers need to be able to understand on the spot what and how the students have learned (Feldman & Capobianco, 2008). If teachers practice formative assessment techniques, they gain a deeper understanding of this approach to assessment, which helps them with instructional decisions (Feldman & Capobianco, 2008).

Formative assessment includes students' active involvement in their own learning process. A prerequisite for successful implementation is that the students' perceptions of their role in the learning process also change (Looney, 2011). Chen & Brown (2018) have found that it is the learner's understanding of the reasons for assessment that predicts the level of self-regulation skills associated with learning. A positive attitude toward the learning process is associated with the perception that assessment supports the development of the learner's skills and also broader moral growth (Chen & Brown, 2018). Additionally, it relates to the understanding that assessment is honest and objective, intended to support student progress not measure the performance of the teacher and the school (Chen & Brown, 2018). Negative emotions and fear related to assessment have been linked to learners' perceptions that it is not intended to support learning, rather, it is an indicator of the teachers' and school's effectiveness (Chen & Brown, 2018).

Although formative assessment is part of the education policy of many countries, like Australia, New Zealand, Norway, the Netherlands, the US, Canada, Chile, Malaysia, Singapore, Rwanda, Cameroon (Baird et al., 2014), and it is an established method, formative assessment is not

always applied in schools for various reasons (Looney, 2011). One of the barriers to implementation of formative assessment has been the lack of knowledge on the subject among teachers - inadequate assessment literacy (Popham, 2009). The reason may also be that formative assessment is a complex and systemic phenomenon that teachers are not able to put to work if it is narrowly defined as just one element and an attempt is made to add into the existing, traditional school system (Looney, 2011; Popham, 2009). Successful implementation of formative assessment has been found in schools where there is a whole-school approach to implementing the policy reform, where teachers have more freedom over their decisions, where teachers learn from each other and where factors such as trust and dialogue between teachers and the leadership team are part of daily work life (Hopfenbeck et al., 2013). At the same time it has been found that although there are countries with a high level of accountability that can hinder formative assessment implementation, in countries where schools have more freedom in putting educational reforms into practice, it is important to also add a level of accountability (Hopfenbeck et al., 2013). As Hopfenbeck et al. (2013) researched different level stakeholders' experiences of formative assessment implementation, they found that although there are schools with high level of trust within the school itself, what could hinder successful formative assessment implementation was if there was low level of trust between the school, for example teachers, and policymakers.

Empirical studies on formative assessment implementation in Estonia

Limited research has been conducted on formative assessment implementation in the context of Estonia's general education schools. Most of the studies in this strand of research have been carried out by Master's and undergraduate degree students. The sub-chapter does not cover those and focuses only on the published sources (Aksen et al., 2018; Henno & Granström, 2012; Jürimäe et al., 2011).

Research by Jürimäe et al. (2011) showed that there are schools and teachers in Estonia who had been implementing aspects of formative assessment already before the 2011 change in the approach to learning. This study was commissioned by the Ministry of Education and Research and conducted by the University of Tartu Centre for Educational Research and Curriculum Development (Jürimäe et al., 2011). Researchers used qualitative methods to examine teachers', students' and parents' attitudes, knowledge and expectations related to assessment in eight basic schools, out of which four were already applying some of the formative assessment techniques (Jürimäe et al., 2011). The study showed that overall teachers working in schools implementing formative assessment had the understanding that all students have the ability to meet national curriculum learning outcomes and they deserve to receive motivating positive feedback (Jürimäe et al., 2011). In the other four schools there were some teachers and parents who supported a teacher-centred approach in education according to which educators are the primary source of knowledge and students are passive recipients of information (Jürimäe et al., 2011). The study found that teachers in Estonia have some perceptions that do not support formative assessment implementation: assessment means grading; most students are motivated by grades; parents view grades as essential; educators should be doing assessment, thus, self- and peer-assessment cannot be fair; enacting the national curriculum is so time-consuming that it is not possible to implement

formative assessment (Jürimäe et al., 2011). Additionally, the following misconceptions about formative assessment were identified: it means providing formative or verbal grades, graphical marks, only praising the students, writing extensive feedback at the end of the study period, it is a trendy term to describe practices teachers have always been implementing and it is a new trend that will naturally lose prominence (Jürimäe et al., 2011). The researchers concluded that school-based assessment systems in Estonia are diverse and that more traditional approaches in education do not support learners' own initiative and development of assessment skills (Jürimäe et al., 2011).

Henno and Granström (2012) conducted an online survey in order to study the implementation of 2011 general education school national curricula. This research highlighted various reasons for limited formative assessment implementation among teachers, like their perception that students are reluctant to take responsibility for their own learning, students want to compare themselves with their peers and use grades as criteria for comparison, learners and their parents expect grades and have a lack of understanding about formative assessment (Henno & Granström, 2012). Additionally, challenges such as teachers' difficulties in shifting established mindsets and articulating feedback were identified (Henno & Granström, 2012). Both teachers and school leaders also brought out the time-consuming nature of formative assessment as an argument against its broader adoption (Henno & Granström, 2012).

A study examining the variety of assessment practices used in general education schools in Estonia was carried out at the request of the Ministry of Education and Research (Aksen et al., 2018). The study began with telephone or Skype interviews with 24 general education school headteachers or deputies (Aksen et al., 2018). After this initial stage five schools were chosen for the research based on the criteria of maximum assessment system diversity (Aksen et al., 2018).

One school was a primary school, three were basic schools and one school had both basic and upper secondary school sections (Aksen et al., 2018). In these five schools either individual or group interviews were conducted with teachers, parents and students from basic school first and second stage (Aksen et al., 2018). In addition, at each of these schools, examples of feedback given to students in the school electronic daybooks were collected (Aksen et al., 2018). After data collection at schools, five experts involved in delivering professional development workshops for teachers were interviewed in order to find out how teacher training supports the implementation of assessment practices (Aksen et al., 2018).

The study found that a shift had taken place in schools around Estonia according to which grading had been replaced with more diverse assessment practices (Aksen et al., 2018). Also, that schools are engaging in the development of context-specific assessment practices that align with the organisation's identity and curriculum (Aksen et al., 2018). At the same time, it was found, schools are also learning about assessment from each other (Aksen et al., 2018). The study showed that while the knowledge and methods of implementation differ, schools have interest towards using formative assessment (Aksen et al., 2018). Also some misconceptions were identified: it was common understanding that formative assessment is any descriptive feedback and that simply changing from numbers to symbols means that formative assessment has been implemented (Aksen et al., 2018).

Research that was carried out for the thesis adds to the limited number of studies conducted about formative assessment implementation in Estonian general education schools. The study design, described in detail under the "Methodology" chapter, differed from previous works done in the Estonian context in a number of ways. Given the sparse body of research in the area, this study helps to bridge existing gaps in understanding which factors have enhanced or hindered

formative assessment implementation in Estonian general education schools and how the grade 7-9 students have perceived the process. This gives insights for future research, can facilitate an understanding of what further support is needed and how to tailor professional development to continue with formative assessment implementation in Estonia.

METHODOLOGY

In order to research how formative assessment has been implemented in the general education system of Estonia, a multiple-case study was conducted in four schools in the city of Tallinn, the capital of the country, the Tallinn Education Department and the Ministry of Education and Research. The study participants involved headteachers and deputies, grade 7-9 Estonian and Russian language and literature teachers and their students, specialists from the Tallinn Education Department and leaders managing the field of general education at the Ministry of Education and Research. All together, the research was carried out with 78 participants.

The data collection procedure involved conducting 35 interviews and 13 classroom observations. Additionally, policy documents, examples of feedback given to students in their electronic daybooks, visual and digital teaching and administrative resources were gathered. The data from the schools and the Tallinn Education Department was collected during the timeframe of June 2020 to June 2021. The Ministry of Education and Research interviews were conducted in April 2022. As this was the time of the Covid-19 pandemic, due to restrictions, some of the data was gathered online.

For this study qualitative thematic analysis of interviews and observations was conducted. The results of thematic analysis of interviews with the school leaders, grade 7-9 language and literature teachers and grade 7-9 students were presented in the “Findings” chapter. The rest of the data collected for this study was used in the reporting selectively to contextualise the findings and to provide examples from additional sources. The results of data analysis were presented in three parts. Two of these described the enhancing and hindering factors in formative assessment implementation, respectively, and the third covered the students’ perception of what was important for successful formative assessment implementation.

Research questions

Based on the review of the theoretical and empirical literature, this study was guided by an overarching research question and three sub-questions. The aim of these was to explore how the general education schools in Estonia have implemented formative assessment. To address the aim, the study investigated possible factors that have enhanced and hindered the implementation process according to the school leaders and grade 7-9 language and literature teachers. Additionally, the study explored what grade 7-9 students consider essential for formative formative assessment implementation.

The research questions were the following:

How have general education schools in Estonia implemented formative assessment as set in the national curriculum for basic schools?

- a. What factors do school leaders and teachers perceive as enhancing the implementation of formative assessment in the general education system of Estonia?
- b. What factors do school leaders and teachers perceive as hindering the implementation of formative assessment in the general education system of Estonia?
- c. What do the grade 7-9 students in Estonia perceive as essential for formative assessment implementation in their Estonian and Russian language and literature studies?

Mode and method of inquiry

The research design that was used for this study is illustrated in Figure 2. Case study research was adopted as the mode of inquiry and the method of inquiry was a multiple-case study (Yin, 2018). The reasons for using case study research, based on Yin (2018), were the following: the research questions required an in-depth extensive description of what factors school leaders and 7-9 grade teachers understand to have enhanced or hindered formative assessment implementation in the Estonian general education system, and what the students are perceiving as essential in formative assessment implementation in grade 7-9 language and literature lessons; research questions sought to explain a contemporary set of events by asking “how” the phenomenon of formative assessment has been implemented in general education schools in Estonia; the fieldwork methodological path relied heavily on interviews with stakeholders involved in the formative assessment implementation process and direct observations of formative assessment implementation in language and literature classrooms as sources of evidence; the researcher had no control over behavioural events that had taken place during the formative assessment implementation process in general education schools in Estonia.

The unit of inquiry (case) was a general education school together with its governing bodies at municipality and central government levels. Municipalities are Estonia’s smallest administrative subdivisions (Santiago et al., 2016). In addition to municipalities, school governance involves the central government which is represented by the Ministry of Education and Research (Santiago et al., 2016). The reason for the boundary of the case in this research being wider than the general education school, was the direct effect the local and central governing bodies have on how schools are implementing formative assessment. The municipality level governing body has this impact by supporting schools in national curriculum implementation (Tallinn Education

Department, 2020) and the Ministry of Education and Research by planning, coordinating, executing and monitoring education policies (Ministry of Education and Research, 2022). This made it important to widen the boundary of each school to also include the municipality and central educational governing bodies.

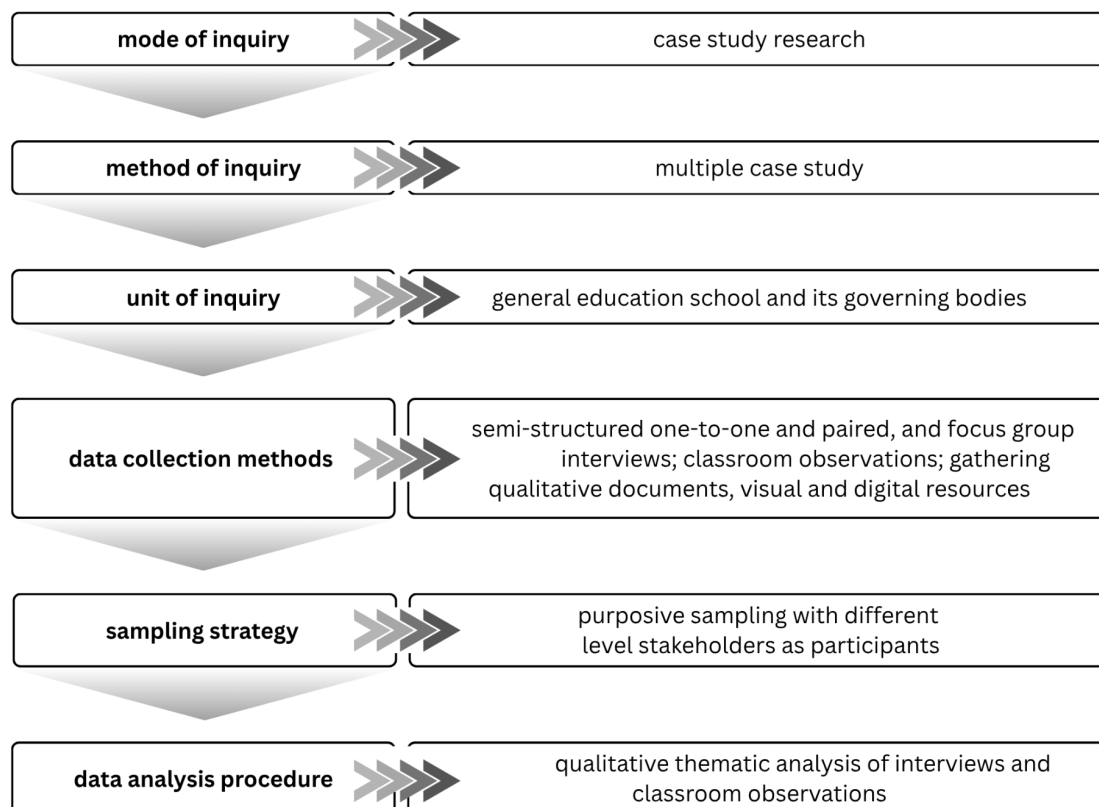


Figure 2. Research design

Data collection procedures

Research sites

The research sites were chosen for this study through purposeful sampling in order to explore settings that most relevantly informed the understanding of the central phenomenon (J. Creswell

& Poth, 2018) which was the implementation of formative assessment in Estonia's general education schools. To investigate the central phenomenon, the study involved six research sites: four general education schools, the Tallinn Education Department and the Ministry of Education and Research (Table 1).

Table 1. Research sites

RESEARCH SITE				
Governing body at national level	Ministry of Education and Research			
Governing body at municipality level	Tallinn Education Department			
General education school and its characteristics	School A National curriculum taught in Estonian International programmes taught in English Over 800 students Basic and upper secondary school Strong state examination results	School B National curriculum taught in Estonian Over 800 students Basic and upper secondary school Large number of SEN students	School C National curriculum taught in Russian and through the Estonian-language immersion programme Over 800 students Basic and upper secondary school Large number of SEN students	School D National curriculum taught in Russian Over 800 students Basic and upper secondary school Best Russian-medium school in PISA 2018 in Estonia

Municipality

As this study researches formative assessment implementation in grade 7-9 language and literature lessons, maximum school language of instruction diversity was set as the criteria for choosing the municipality where the research would be conducted. The location of the case study schools was the city of Tallinn, selected because the general education schools there have the

biggest language of instruction diversity out of all the municipalities in Estonia (Foundation Innove, 2019; Ministry of Education and Research, 2021b; Tallinn Education Department, 2021). The Education Department governing the case study schools is also located in Tallinn. The Ministry of Education and Research has offices in two cities: Tartu and Tallinn.

The sample of schools

The characteristics of the case study schools have been listed in Table 1. The general education schools were selected based on the following two criteria of maximum diversity: the language of instruction used to implement the national curriculum and the location across the different districts of Tallinn.

1. Language of instruction

As in Estonia there are both Estonian- and Russian-language municipality schools (Ministry of Education and Research, 2015), two general education schools with Estonian and one with Russian as language of instruction were selected. Additionally, a school with Russian as a language of instruction that also offers the Estonian language immersion programme was chosen. The languages of instruction for implementing the national curriculum in the sample of schools were the following:

School A - Estonian

School B - Estonian

School C - Russian and Estonian

School D - Russian

2. District of Tallinn

Tallinn is divided into eight districts (*Linnaosad*, 2019). The case study schools were located in four different districts within the municipality of Tallinn. In order to ensure the confidentiality of the participants, the location of the schools is not revealed in this study.

In addition to the principles of maximum diversity, the similarities in the stages of studies offered and in the number of enrolled students were set as the criteria for selecting the sample of schools. At the time of conducting this research each of the case study schools had over 800 students enrolled and offered both basic and upper secondary stages of studies. Before contacting the sampled schools, the assessment policies on schools' websites were read in order to ensure that all schools had developed some formative assessment procedures in their official documents.

Tallinn Education Department

In Estonia larger cities have their own education departments (Santiago et al., 2016). These cities have a greater capacity than counties to organise an education department that provides quality assurance and assistance to schools (Santiago et al., 2016).

The Tallinn Education Department manages educational policy in the city of Tallinn (Tallinn Education Department, 2020). In addition, it is responsible for the administration of different levels of education (early childhood, general, vocational and extra-curricular) in municipal educational institutions of Tallinn and other establishments administered by the Department (Tallinn Education Department, 2020). The coordination process involves providing consultations, financing, shaping the learning environment and creating the needed conditions to thrive in learning and other educational activities (Tallinn Education Department, 2020).

As of September 2020, the Tallinn Education Department had a total of 57 general education schools in its administrative area, out of which 42 offered both basic and upper secondary stages of studies (Tallinn Education Department, 2020). Approximately 46,200 students attended municipal general education schools at that time (Tallinn Education Department, 2020).

This study involved the Division of Educational Organisations at the Tallinn Education Department.

Ministry of Education and Research

The Ministry of Education and Research is managing the development and supervision of Estonia's education system (Santiago et al., 2016). For that purpose, the Ministry of Education and Research plans, develops and administers national policies that are related to education, research, youth and language (Ministry of Education and Research, 2022). The Ministry designs and develops national curricula and other educational standards, and organises their preparation and accreditation (Ministry of Education and Research, 2022). Also, the Ministry exercises state supervision over the teaching and educational activities of educational institutions, as well as over the compliance with national curricula and other educational standards (Ministry of Education and Research, 2022).

As of January 2022, the Ministry of Education and Research had 11 departments (Ministry of Education and Research, 2022). This study involved the General Education Policy Department, which manages, among other areas of responsibility, the field of general education (Ministry of Education and Research, 2022).

Forms of collecting and recording data

This research involved multiple data collection forms: conducting semi-structured one-to-one and paired, and focus group interviews; carrying out classroom observations; collecting qualitative documents; gathering visual and digital resources (Figure 2, Table 2). The data collection forms that were used at each research site are summarised in Table 2.

Table 2. Data collection forms

Research site	Data collection forms
Ministry of Education and Research	• 3 semi-structured one-to-one interviews with leaders managing general education in Estonia • collecting online public policy documents
Tallinn Education Department	• 2 semi-structured one-to-one interviews with general education specialists • collecting online public policy documents
School A	• 1 semi-structured interview with the headteacher • 1 semi-structured interview with the deputy headteacher • 4 language and literature classroom observations (grades 7p, 7, 8, 9) • 4 focus group interviews with students (grades 7p, 7, 8, 9) • 3 semi-structured one-to-one interviews with language and literature teachers (grades 7, 8, 9) • collecting grade 7-9 language and literature lessons' records of feedback provided to the students in the school's electronic daybook • collecting curriculum and assessment policy documents from the school's website • collecting visual lesson materials and examples of feedback shared by the grade 8 language and literature teacher
Schools B	• 1 semi-structured paired interview with the headteacher and the deputy headteacher • 3 language and literature classroom observations (grades 7, 8, 9) • 3 focus group interviews with students (grades 7, 8, 9) • 3 semi-structured one-to-one interviews with language and literature teachers (grades 7, 8, 9) • collecting grade 7-9 language and literature lessons' records of feedback provided to the students in the school's electronic daybook • collecting curriculum and assessment policy documents from the school's website • collecting digital formative assessment presentation provided by the deputy headteacher and digital lesson materials shared by the grade 7 and 8 language and literature teachers
School C	• 1 semi-structured interview with the headteacher • 1 semi-structured interview with the deputy headteacher

	• 3 language and literature classroom observations (grades 7, 8, 9) • 3 focus group interviews with students (grades 7, 8, 9) • 2 semi-structured one-to-one interviews with language and literature teachers (grades 8, 9) • collecting grade 7-9 language and literature lessons' records of feedback provided to the students in the school's electronic daybook • collecting curriculum and assessment policy documents from the school's website
School D	• 1 semi-structured paired interview with the headteacher and the deputy headteacher • 3 language and literature classroom observations (grades 7, 8, 9) • 3 focus group interviews with students (grades 7, 8, 9) • 3 semi-structured one-to-one interviews with language and literature teachers (grades 7, 8, 9) • collecting grade 7-9 language and literature lessons' records of feedback provided to the students in the school's electronic daybook • collecting curriculum and assessment policy documents from the school's website • collecting visual formative assessment materials provided by the headteacher and examples of school-wide projects shared by the grade 8 language and literature teacher

As shown in Table 2, in each of the four general education schools the following data collection procedures were used: conducting semi-structured one-to-one or paired interviews with the headteacher and the deputy, carrying out semi-structured one-to-one interviews with grade 7-9 language and literature teachers, conducting language and literature classroom observations in grades 7-9, carrying out focus group interviews with grade 7-9 students, collecting grade 7-9 language and literature lessons' records of feedback provided to the students in the school's electronic daybook, gathering curriculum and assessment policy documents from the school's website, collecting visual and digital resources shared by the stakeholders.

Research at the case study schools' governing bodies involved collecting online public policy documents, conducting semi-structured one-to-one interviews with the general education specialists at the Tallinn Education Department and the leaders managing the field of general education at the Ministry of Education and Research (Table 2).

Interviews

As per Yin (2018), the main source of evidence in this multiple-case study was the interview because in order to answer the research questions, insights into formative assessment implementation that reflect the stakeholders' relativist perspectives were needed. This study involved 35 interviews out of which 20 were semi-structured one-to-one interviews, 13 focus groups and two semi-structured paired interviews. The total length of the interviews was 34 hours, 18 minutes and 19 seconds. Five interviews were conducted at schools' governing bodies and 30 at case study schools. 27 of the interviews were held in Estonian, six in Russian and two in English.

The interviews were carried out either in a distraction-free place at school or online via Google Meet video-communication service. Before agreeing to the interview, the participant was sent an information sheet (Appendix 4). At the beginning of each interview, the participants were informed of the purpose and procedure of the study (Creswell & Poth, 2018). Additionally, the approximate amount of time the interview would take, how it would be recorded and the right to review and withdraw interview data were discussed (Creswell & Poth, 2018). The participants were informed of how the results of interview data analysis would be used (Creswell & Poth, 2018). They had the possibility to ask questions and were asked to sign a consent or assent form (Creswell & Poth, 2018, Appendix 5). Participants interviewed at school signed the consent form provided to them on paper, while those interviewed online completed it digitally by typing their first and last names and the interview date into the consent form and sending it by e-mail. Before the interview questions were asked, the consent forms were reviewed to make sure that the participants had agreed to the procedure. At the start of the interview, the participants were

encouraged to ask clarifying questions, should anything be unclear to them in the wording of the questions.

The interview protocols (Appendix 1) were developed based on Creswell and Poth (2018) and upon previous work on the Assessment for Learning Programme in Norway (Hopfenbeck et al., 2013). The interview protocols involved demographic information about the time, date and place of the interview and the participant's name and role (Creswell & Poth, 2018, Appendix 1). Additionally, the protocols set guidelines for the opening and closing statements (Creswell & Poth, 2018, Appendix 1). Within the interview protocol, space was placed between each question to allow note-taking during the interview (Creswell & Poth, 2018, Appendix 1).

The interview recording procedures involved recording the interview with a device and writing field notes on the protocol sheet. Interviews that were conducted in the physical school environment were recorded with an Olympus digital voice recorder VN-731-PC, and those online via the Google Meet recording service. During the course of the interview field notes were written down only if there were topics requiring clarification, a follow-up question was needed or if the participant had already answered any of the upcoming questions. Depending on the participants' answers, during some of the interviews, questions were asked in a different order than what was set in the protocol. This was done to ensure the flow of the guided conversation. To be able to change the sequence without interruptions to the discussion, the content and order of the questions in the interview protocol was memorised beforehand. This helped to ensure that each question could be found easily. All questions set in the interview protocol were asked. If the participant had already answered the question while providing an answer to another question, the interviewee was asked, "Is there anything you would like to add to this question?". Otherwise, answers were not written down during the interview and active listening was used instead. At the

end of the interview the participants were thanked for sharing their thoughts and experiences and for their time (Creswell & Poth, 2018).

After the interview, reflective notes of themes and issues raised were written into the protocol. The recordings were checked to ensure that they were audible for transcribing. Interviews that were recorded with a device were transferred to a password-protected computer and deleted from the recording device. Interviews that were recorded via Google Meet were downloaded to the same computer and deleted from the Google Drive folder. All interviews were transferred to the computer under a code that involved the letter of the case, if applicable, and the abbreviation of the participant's role. As an example, DHT was used for the interview with the headteacher from case D. All recordings were saved to a password-protected folder. Field notes were typed into a Microsoft Word document that was encrypted and protected with a password. Hard copies of interview protocols were destroyed. Depending on whether the participant had signed the consent or assent form on paper or digitally, it was stored either in a locked filing cabinet or in an encrypted format on a password-protected computer.

Pilot interviews

The interview questions and guidelines (Appendix 1) were revised following a pilot study (Creswell & Poth, 2018). The interview questions for the school leaders (Appendix 1.3.1), the teachers (Appendix 1.3.2), the students (Appendix 1.3.3) and the Education Department specialists (Appendix 1.2) were piloted in 2020 in case A (Table 3). The Ministry of Education and Research interview protocol (Appendix 1.1) was piloted in 2022 (Table 3). Due to the Covid-19 pandemic the information sheets (Appendix 4) and the consent, opt-in and opt-out,

assent forms (Appendix 5) were re-written to include information about the procedure of conducting the interviews online.

Table 3. Pilot study interviews at case A

Stakeholder	Language	Location	Duration (h:mm:ss)	Date
Headteacher	English	Online	0:38:25	25 June 2020
Deputy headteacher	English	Online	1:12:05	26 June 2020
Teacher	Estonian	Online	0:56:01	1 July 2020
Students	Estonian	School	0:37:39	2 December 2020
Education Department specialist	Estonian	Online	1:25:44	5 July 2020
Ministry of Education and Research leader	Estonian	Online	0:52:20	13 April 2022

The leadership team at school A uses both Estonian and English as its working languages. The headteacher and the deputy expressed no preference regarding the choice of interview language. Therefore, data collection with these stakeholders was conducted in English in order to pilot whether the questions and guides worked in the format they were originally written. After piloting the questions with the school leaders, it was concluded that some of the multi-part questions should be broken down into separate questions. Additionally, as the interviews were conducted after all the general education schools in Estonia had finished their three-month distance learning period that was set up due to the Covid-19 pandemic, a question about implementing formative assessment during distance learning was added to all of the interview protocols (Appendix 1). Also, the closing statements in the interview protocols were re-written to

include a question about whether there was anything the participant would like to add to what had been discussed during the interview (Appendix 1).

After the interview protocols had been revised, the modified versions were translated into Estonian and Russian. They were piloted in Estonian with the grade 7 teacher and the Tallinn Education Department specialist (Table 3). It was possible to continue piloting the interview protocols with these stakeholders because most of the questions were the same as the ones asked from the school leaders. No modifications were made to the interview protocols after pilot interviews with the grade 7 teacher and the Education Department specialist of school A. However, it was noted that it was more difficult for the teacher than the school's leadership team members and the participant from the Education Department to answer the questions "Given your experience in the Estonian education system, what are the main competencies we already have that help us implement educational reforms? What are the competencies that are needed and lacking?". The teacher said that she does not know enough about other schools in Estonia to answer this question. As the teacher still offered a thoughtful response, this question was not removed from the interview protocol.

The initial pilot study procedure involved interviews at the stakeholders' workplace. In addition, all interviews were meant to be audio recorded. Due to the Covid-19 pandemic, the pilot interviews with the headteacher, the deputy, the language and literature teacher and the Education Department specialist were conducted and video recorded online instead, using the Google Meet video-communication service (Table 3). Additionally, in the initial pilot study procedure it was intended that the two school leaders would be interviewed together in a group setting. Due to the workload of the headteacher and the deputy, they had different meeting times available, thus, the choice to conduct one-to-one semi-structured interviews was made instead.

The rich data in the interview transcripts showed that this alternative worked well. It was concluded that leadership team members in schools B, C and D would be given a choice between a semi-structured one-to-one and a paired interview.

Students' focus group interview protocol was piloted in grade 7 in the physical school environment (Table 3). Students were able to respond to most questions without guidance, however, when they were asked to name learning activities, they needed some examples from the interviewer before feeling confident to answer. Based on what the students spoke about during the pilot interview, the protocol was modified to add questions connected to the classroom observation (Appendix 1.3.3). The questions added to the interview protocol were "What do you think were the learning goals of today's lesson/the lesson I visited? How do you know whether you achieved these learning goals?". A guideline for the interviewer to remind the students of the observed lesson context was also added to the protocol to ensure the students remembered the lesson topic and activities before answering these questions.

The interview protocol for the Ministry of Education and Research (Appendix 1.1) was piloted in April 2022 (Table 3), after the data from the other research sites was analysed. It was done in this order to ensure that the follow-up questions during the interviews with the leaders managing general education would also take into account the results of data analysis. The pilot study with the Ministry of Education and Research participant was conducted and video recorded online (Table 3) via Google Meet. No modifications were made to the interview protocol after the pilot interview with the Ministry of Education and Research leader 1.

After each of the interviews was conducted, it was transcribed in its original language and the recording was deleted. The names of people, places and schools were not used in interview transcripts to ensure that the stakeholders would not be identified. The codes used for the

stakeholders in interview transcripts were the following: AHT (headteacher in case A); AD (deputy headteacher in case A); A7T (grade 7 teacher in case A); A7S1, A7S2, A7S3, A7S4 (grade 7 student 1, 2, 3, 4 in case A); AEDS (Education Department specialist in case A); ML1 (Ministry of Education and Research leader 1). Students were assigned numbers in their codes according to the order in which they sat during the interview at school. In the case of online interviews the numbers represented the order in which the students appeared on the researcher's screen.

All stakeholders were informed that they had an option to request the interview transcript and make any modifications they considered necessary. This option was used by the deputy headteacher of school A. The interview transcript was protected with a password and sent to the stakeholder's work e-mail. The deputy was asked to use the track changes command before doing the re-writes. She made 14 changes, 11 of these were modifications in grammar and three were word replacements. These did not alter the meaning of the original answers provided during the interview.

After transcription, the documents were gathered into four files that were named with the following codes: SL (school leaders), T (teachers), S (students) and GB (governing bodies). These files were encrypted and protected with a password. As the modifications in the interview protocols that followed piloting were minor, all of the transcripts were used in data analysis.

Interviews at governing bodies

In order to research the enhancing and hindering factors in formative assessment implementation according to specialists from governing bodies supporting schools, this study involved three semi-structured interviews at the Ministry of Education and Research and two at the Tallinn

Education Department (Table 4). The data collection at the Ministry of Education and Research took place in April 2022 (Table 4) after the data from the four cases was analysed. The timing of each interview at the Tallinn Education Department was connected to data collection at schools. Thus, specialists coordinating schools A and B were each interviewed during fieldwork at those schools. The Tallinn Education Department specialist supporting both schools C and D did not want to be interviewed for the study, therefore, two instead of three interviews were conducted at this research site.

Data collection at the governing bodies involved one-to-one semi-structured interviews. All interviews were held in Estonian (Table 4). Due to the Covid-19 pandemic, the interviews were conducted and recorded online (Table 4) via Google Meet video-communication service. The total duration of the interviews that were carried out at the governing bodies was 6 hours, 27 minutes and 29 seconds, and the average length was 1 hour, 17 minutes and 30 seconds.

Table 4. Interviews at governing bodies

School	Participant	Language	Location	Duration (h:mm:ss)	Date
The Ministry of Education and Research	Educational leader 1 (pilot)	Estonian	Online	0:52:20	13 April 2022
	Educational leader 2	Estonian	Online	1:26:26	19 April 2022
	Educational leader 3	Estonian	Online	1:17:14	22 April 2022
Tallinn Education Department	Specialist school A (pilot)	Estonian	Online	1:25:44	5 July 2020
	Specialist school B	Estonian	Online	1:25:45	13 April 2021

Interviews with school leaders

To find out the enhancing and hindering factors in formative assessment implementation according to the headteachers and deputies of case study schools, six interviews with the school leaders were conducted. The interviews at schools B and D were carried out in the format of semi-structured paired interviews where both the headteacher and the deputy were interviewed together (Table 5). Interviews with the school leaders in cases A and C were conducted as one-to-one semi-structured interviews (Table 5). The interviews at school A were held in English (Table 5), and at schools B, C and D they were carried out in Estonian (Table 5).

Table 5. Interviews with school leaders

School	Participant	Language	Location	Duration (h:mm:ss)	Date
A	Headteacher (pilot)	English	Online	0:38:25	25 June 2020
	Deputy headteacher (pilot)	English	Online	1:12:05	26 June 2020
B	Headteacher, deputy headteacher (paired interview)	Estonian	Online	2:19:14	18 March 2021
C	Headteacher	Estonian	Online	1:42:06	17 December 2020
	Deputy headteacher	Estonian	Online	1:00:31	26 February 2021
D	Headteacher, deputy headteacher (paired interview)	Estonian	School	1:31:50	24 May 2021

The total duration of the interviews with the school leaders was 8 hours, 24 minutes and 11 seconds. As the paired interviews involved the answers of both the headteacher and the deputy, they were on average longer than the one-to-one interviews: the average length of the paired

interviews was 1 hour, 55 minutes and 32 seconds, and for the one-to-one interviews it was 1 hour, 8 minutes and 17 seconds.

Due to the Covid-19 pandemic the interviews at schools A, B and C were conducted online (Table 5) via Google Meet. As research at school D was carried out after the distance learning period, the paired interview with the headteacher and the deputy was held at school (Table 5).

Interviews with teachers

A total of 11 interviews were conducted with the grade 7-9 language and literature teachers (Table 6). Six of the teachers interviewed were Estonian language and literature teachers in an Estonian school, two Estonian language immersion programme teachers in a Russian school and three Russian language and literature teachers in a Russian school. One Estonian language immersion programme teacher in school C, working with grade 7, did not want to be interviewed for this study.

The interviews at schools A, B and C were conducted in Estonian (Table 6). The interviews at school D were held in Russian (Table 6). All interviews that were conducted in Estonian took place online (Table 6) via Google Meet video-communication service. The interviews with Russian language and literature teachers in case D were held in the physical school environment (Table 6). They took place at a designated quiet and private area in the school library. Interviews at schools A, B and C (Table 6) were conducted before the classroom observations (Table 8). Interviews at school D (Table 6) were conducted on the same day as classroom observations (Table 8). Each classroom visit at this research site took place before the interview with the teacher leading the lesson.

Table 6. Interviews with teachers

School	Grade	Language	Location	Duration (h:mm:ss)	Date
A	7 (pilot)	Estonian	Online	0:56:01	1 July 2020
	8	Estonian	Online	0:58:38	3 July 2020
	9	Estonian	Online	0:51:21	8 July 2020
B	7	Estonian	Online	1:42:21 (part 1) 0:27:14 (part 2)	23 March 2021 25 March 2021
	8	Estonian	Online	0:46:56	24 March 2021
	9	Estonian	Online	1:07:48	26 March 2021
C	8	Estonian	Online	1:01:29	25 March 2021
	9	Estonian	Online	1:10:11	29 April 2021
D	7	Russian	School	0:26:12	24 May 2021
	8	Russian	School	0:37:57 (part 1) 0:35:15 (part 2)	25 May 2021
	9	Russian	School	0:39:32	1 June 2021

The total duration of the interviews with the teachers was 11 hours, 20 minutes and 55 seconds. The average length of the interviews conducted in Estonian (1 h 7 min 45 s) was longer than that of the interviews carried out in Russian (46 min 19 s). As all of the interviews in Estonian were conducted online and in Russian they were held in the physical school setting, the average length of the online interviews was longer than that of interviews conducted at school. Due to time constraints in the stakeholders' schedules, two of the interviews, with the grade 7 teacher in school B and grade 8 teacher in school D, were carried out in two parts (Table 6). The interview with the grade 7 teacher in school B was also the longest, lasting 2 hours, 9 minutes and 35 seconds (Table 6). This teacher said at the beginning of the interview that he tends to speak at

length and, thus, his answers would probably take an extended amount of time. As the teacher had to go to a lesson before the end of the interview, the second part of the interview was held two days later. Also, the grade 8 teacher from school D had to teach a class in the middle of the interview, thus, the researcher continued with the interview on the same day right after the lesson. The interview with the grade 7 teacher from school D was the shortest (26 min 12 s) (Table 6) because the teacher had limited time available in her schedule. However, she came to the interview fully prepared to answer questions about formative assessment implementation, spoke at a fast pace and kept a focused approach. This meant that all the questions were covered during the time frame she had available for the interview.

Interviews with students

In order to research how the grade 7-9 students are perceiving the formative assessment implementation process in Estonian and Russian language and literature studies, 13 focus group interviews were conducted with grade 7-9 students. In total 54 students participated in the focus group interviews (Tables 9 and 11). Four interviews were conducted in school A and three in each of schools B, C and D (Table 7). Case A involved four focus group interviews instead of three because two observational protocols were piloted in the grade 7 classes of school A and, thus, also students from both of the pilot classes were interviewed. Those two interviews were conducted after the language and literature classroom observation. Overall, the focus group interviews took place either on the same day as the observation or later.

Ten of the interviews with the students took place in Estonian and three in Russian (Table 7). Interviews were conducted in the language in which the students study at school, thus, interviews at schools A, B and C were conducted in Estonian and interviews at school D in Russian (Table

7). As the students in school C have Russian as their mother tongue but the language of instruction in the immersion programme is Estonian, the students were offered a choice of the interview language - either Estonian or Russian. All students chose to do the interview in Estonian (Table 7). Students from school C were instructed at the beginning of the interviews that if something was unclear, they could ask questions or answer in Russian. Their proficiency in the Estonian language was at an advanced level, thus, the students did not need to use this option. There were two students from grade 8 who said a few words in Russian but otherwise the interviews were conducted fully in Estonian.

Table 7. Interviews with students

School	Grade	Language	Location	Duration (mm:ss)	Date
A	7p (pilot)	Estonian	School	37:39	2 December 2020
	7	Estonian	School	22:28	7 December 2020
	8	Estonian	School	44:03	9 December 2020
	9	Estonian	School	40:44	10 December 2020
B	7	Estonian	Online	32:31	6 April 2021
	8	Estonian	Online	53:50	1 April 2021
	9	Estonian	Online	41:06	13 April 2021
C	7	Estonian	Online	26:37	12 May 2021
	8	Estonian	Online	45:23	3 May 2021
	9	Estonian	Online	55:59	19 May 2021
D	7	Russian	School	27:16	24 May 2021
	8	Russian	School	25:52	25 May 2021
	9	Russian	School	32:16	1 June 2021

Only students whose parents had signed an opt-in form were invited to participate in the study. Focus group interviews with students from schools A and D were conducted in the physical school environment (Table 7). Interviews at school A were conducted in a small meeting room. At school D, interviews were held in a distraction-free area of the school library. Interviews at schools B and C were conducted online (Table 7) via Google Meet. As it was not obligatory for the students to turn on their cameras for the online interview, most of the students kept them turned off. During the interview all of the students were encouraged to talk. If a participant kept silent, the question was directed to that student to make sure that everybody had the possibility to express their thoughts in connection to each question. Additionally, this helped ensure that none of the participants would dominate the conversation.

The total length of the focus group interviews with the students was 8 hours, 5 minutes and 44 seconds. On average the focus group interviews with the grade 7 students (avg. time 29 min 18 s) were shorter than those with participants from grades 8 (avg. time 42 min 17 s) and 9 (avg. time 42 min 31 s). The reason for this could be that older students have a better ability to analyse their learning process due to which they give longer answers to questions connected to their studies. Also, interviews that were conducted at school were on average about 10 minutes shorter (avg. time 32 min 54 s) than those that were held online (avg. time 42 min 34 s). This could be due to the technical matters of online interviews, like turning microphones on and off to answer questions. The average interview length in schools B (avg. time 42 min 29 s) and C (avg. time 42 min 40 s), where interviews were conducted in Estonian and online, was similar. However, interviews that were conducted at school were on average longer if conducted in Estonian (avg. time 36 min 14 s) than when conducted in Russian (avg. time 28 min 28 s). Overall, the average length of the interviews held in Estonian was 40 minutes and 2 seconds and in Russian 28

minutes and 28 seconds. Aspects specific to language, like rate of speech, could explain why interviews in Russian were on average shorter than interviews in Estonian.

Classroom observations

In addition to the self-reported data gathered through interviews with grade 7-9 language and literature teachers and their students, 13 classroom observations were conducted during the school year 2020/21 (Table 8) in order to find out whether classroom practice confirms the interview data. Classroom observations were carried out in grades 7, 8 and 9 (Table 8). The study involved three classroom observations in each of schools B, C and D (Table 8). At school A four classroom observations were conducted because two observation protocols (Appendix 2) were piloted in grade 7 classes of this school.

Ten of the classes observed were Estonian and three Russian language and literature lessons (Table 8). Three of the Estonian language and literature classroom observations were conducted in the Estonian language immersion programme stream of the Russian school C.

At the beginning of each classroom observation the researcher was introduced to the students by either the teacher (schools A, B and C) or the deputy (school D). The teacher and the students had the possibility to ask questions. As the researcher did not participate in the lesson activities but instead observed and took field notes without joining the tasks online or sitting separately at the back of the class in the physical school environment, these were non-participant observations (Creswell & Poth, 2018).

Classroom observations in schools A and D were conducted at school (Table 8). Classroom observations that took place in the physical school environment were recorded with an Olympus digital voice recorder VN-731-PC. As observations in schools B and C took place during the

distance learning period, lessons in these schools were observed online (Table 8). School B used Microsoft Teams and school C Google Meet video-communication service for teaching online. Classroom observations that were conducted online were audio recorded with a QuickTime Player on a Macintosh computer.

Table 8. Classroom observations

School	Grade	Language	Location	Duration (h:mm:ss)	Date
A	7p (pilot)	Estonian	School	0:47:19	2 December 2020
	7 (pilot)	Estonian	School	0:41:16	7 December 2020
	8	Estonian	School	0:43:46	9 December 2020
	9	Estonian	School	0:46:31	9 December 2020
B	7	Estonian	Online	1:09:17	25 March 2021
	8	Estonian	Online	1:18:42	24 March 2021
	9	Estonian	Online	0:49:31	5 April 2021
C	7	Estonian	Online	0:48:11	5 May 2021
	8	Estonian	Online	1:11:20	28 April 2021
	9	Estonian	Online	0:58:15	14 May 2021
D	7	Russian	School	0:39:42	24 May 2021
	8	Russian	School	0:33:07	25 May 2021
	9	Russian	School	0:37:09	1 June 2021

The total duration of the classroom observations was 11 hours, 4 minutes and 6 seconds. The average length of a classroom observation was 51 minutes and 5 seconds. Classroom observations that took place online were slightly longer than the lessons that were observed in the physical school environment (Table 8). The longest observation time was 1 hour, 11 minutes

and 20 seconds, and the shortest 33 minutes and 7 seconds (Table 8). Classroom observations of shortest duration were conducted in school D (Table 8), probably because they were carried out at the end of the academic year when the school days are somewhat less structured around the 45-minute lessons.

During the lesson visits, an observational protocol (Appendix 2) was used to guide and record field notes in Estonian. The reason for conducting four classroom observations instead of three in school A was that first the AssessToday observation protocol (Appendix 2.2) that has been developed to measure how teachers use formative assessment in a short cycle during one lesson (Eddy et al., 2017) was piloted in grade 7 (Table 8). As per Eddy et al. (2017), during the lesson the field notes were written according to the following seven dimensions: learning target, question quality, nature of questioning, self-assessment, observation of student affect, instructional adjustment and evidence of learning (Appendix 2.2). After reflecting on the pilot classroom observation it was decided that these dimensions would not be recorded during the lesson itself but rather as themes for qualitative thematic analysis after transcribing the classroom observations.

A new observational protocol based on Creswell and Poth (2018) was developed (Appendix 2.1) and piloted with a different grade 7 class (Table 8). The protocol involved demographic information about the name of the school, the date, the start and end time of the observation, the subject, the grade and the number of students (Appendix 2.1). Additionally, the observational protocol included sections for descriptive and reflective notes (Creswell & Poth, 2018, Appendix 2.1). The lesson activities were recorded in the descriptive notes section in a chronological order. Particular attention was given to writing down any information that was visible during the observation that might not be clear from listening to the lesson recording (e.g., how the students

were seated and the number of students who raised their hand to answer the teacher's question). Both during and after the classroom observation reflections on the activities and interactions that took place during the lesson, and initial thoughts for data analysis were written into the reflective notes section of the protocol.

At the end of each classroom observation the participants were thanked, informed of how the data would be used and their right to withdraw data. Participants had the possibility to ask questions. Additionally, they were informed of the possibility to access the results of the study.

After each classroom observation, the recording was checked to ensure that it was audible for transcribing. The recordings were transferred to a password-protected computer under a code that involved the letter O (observation), the letter of the case (A, B, C or D), and the grade number. As an example, OB7 was used as the code for the classroom observation in school B grade 7. After the recordings were transferred they were encrypted. The field notes were compared to the observation recordings to ensure the accuracy of the information written down and to have a full account of the lesson that was observed. The field notes were typed into a Microsoft Word document that was encrypted and protected with a password. The hard copies of the observational protocols were destroyed.

Qualitative documents

The qualitative documents collected at general education schools included the school curricula and assessment policies publicly accessible from school websites. These documents were gathered in order to understand the educational goals of the research sites and how the formative assessment procedures had been developed in the school policy documents. The files were downloaded into the data collection folder of each case on a password-protected computer.

Although these files are publicly accessible, they were encrypted and protected with a password to ensure that the schools would not be identified in the study.

Additionally, records of language and literature lesson progress feedback given to the grade 7-9 students who had participated in the focus group interviews and signed an assent form were collected from the schools' electronic daybooks. In Estonia each grade 7-9 student has an account in an electronic daybook that can be accessed by both themselves and their parents. Teachers write lesson logs, homework, grades and progress feedback into the electronic daybook. In total the feedback of 50 students was collected in this study (15 from school A, 11 from school B, 8 from school C and 16 from school D). This data was collected to understand how the teachers word written feedback and the frequency with which the students get this feedback.

In each of the case study schools the deputy headteacher ensured access to the electronic daybook entries by sending an overview to the researcher's e-mail or providing a printed version of the written feedback entries. The feedback documents were transferred to a password-protected computer into the data collection folders of each case. The e-mails were deleted and hard copies destroyed. The files with the feedback were encrypted and protected with a password. Instead of the students' names, codes according to the order of how the students sat during the interview that took place in the physical school environment or in which they appeared on the researcher's screen during an online interview were used. As an example the code FC7S1 was used for the feedback given to the grade 7 student number 1 in school C.

Qualitative document collection at the Tallinn Education Department involved gathering the policy documents *Tallinn Educational Strategy 2020-2030* and *Tallinn Development Strategy 2035* from the Tallinn City Government publicly accessible website. The following policy

documents were collected from the Ministry of Education and Research public website: *National Curriculum for Basic Schools 2014*, *Lifelong Learning Strategy 2020*, *Knowledge-Based Estonia 2014-2020*, *Education Development Plan 2021-35*. These public policy documents gathered from the governing bodies' websites were collected in order to put into context the ways in which formative assessment implementation is connected to the educational goals of the country. The policy documents were reviewed to prepare for the interviews and to support data analysis.

Visual and digital resources

Some of the participants wanted to share visual and digital resources, or both, that illustrate formative assessment implementation in their work (Table 2). The deputy headteacher of school B shared various digital materials to explain the stages of formative assessment implementation at the school. The headteacher of school D shared the yearly overview of different activities at school. Grade 8 teacher from school A provided examples of handwritten feedback and self-developed study materials. Grade 7 and 8 teachers from school B shared digital materials they had used for formative assessment implementation during online lessons with students. Grade 8 teacher from school D provided examples of school-wide projects. Visual and digital resources were saved digitally to a password-protected computer and hardcopies were destroyed. The files were encrypted and protected with a password.

Sampling strategy and description of participants

Participants were chosen for this study through purposeful sampling (Figure 2) in order to research people who most relevantly inform the understanding of the central phenomenon (Creswell & Poth, 2018) which was the implementation of formative assessment in Estonia's

general education schools. The participants of this study were different level stakeholders (Figure 2): the Ministry of Education and Research leaders in general education, Education Department specialists, school headteachers and deputies, grade 7-9 language and literature teachers and their students (Table 9). All together, the study involved 78 participants (Table 9).

Table 9. Stakeholders as participants

Type of organisation	Role of participant	N
Ministry of Education and Research	Educational leader	3
Tallinn Education Department	General education specialist	2
General education school	Headteacher	4
	School A	1
	School B	1
	School C	1
	School D	1
	Deputy headteacher	4
	School A	1
	School B	1
	School C	1
	School D	1
	Teacher	11
	School A	3
	School B	3
	School C	2
	School D	3
	Student	54
	School A	15
	School B	12
	School C	11
	School D	16
Total		78

Participants from governing bodies

As the study researched formative assessment implementation in general education schools, the sample at the Ministry of Education and Research consisted of three people (Table 9) in leadership positions managing the general education system in Estonia. All three participants had

extensive experience in the field of education, ranging from 18 to over 30 years. Before starting work at the Ministry of Education and Research, they held other leadership positions in the field of education. Additionally, all of them had previous teaching experience.

The participants from the Tallinn Education Department were sampled based on the selection of case study schools because the sample involved the Department specialists coordinating the schools participating in the study. The sample consisted of two participants (Table 9), the specialists working with schools A and B. The specialist supporting national curriculum implementation in schools C and D did not want to participate in the study. The two Tallinn Education Department specialists who were interviewed for this study also held other roles at the Department connected to coordinating studies in general education schools and kindergartens of Tallinn. According to the interviews both of them had work experience as school leaders and teachers.

School leaders as participants

At each school the sample of leadership team members involved the headteacher and the deputy responsible for studies in grades 7-9. In total the sample of school leaders consisted of eight participants (Table 9).

According to the interviews with the school leaders, in all cases the headteacher and the deputy had a background in teaching (Table 10). Additionally, the headteachers of schools A and B previously held a position of a school deputy (Table 10). The headteacher of school C had previous experience as school development manager (Table 10). At the time of data collection, in addition to their leadership positions, the headteacher of school D and deputies of schools A, C and D were also working as teachers (Table 10). The headteacher of school C held the same

position at another school (Table 10). The deputy of school A was working as an International Baccalaureate (IB) Middle Years Programme coordinator and the deputy of school C as a language immersion programme coordinator (Table 10). In addition to grades 7-9, the deputy headteachers of schools C and D were also responsible for studies in the upper secondary school and the deputy of school B was the head of studies of the whole school (Table 10). The headteachers of schools A, B and D and the deputy of school B had worked in their roles for more than 20 years; the headteacher of school C and deputy headteachers of A, C and D for less than 5 years.

Table 10. Previous experience and current additional roles of school leaders

Stakeholder	Role timeframe	School A	School B	School C	School D
Headteacher	Previous roles	Teacher, deputy headteacher	Teacher	Teacher, school development manager	Teacher, deputy headteacher
	Current additional roles	None	None	Headteacher of another school	Teacher
Deputy headteacher	Previous roles	Teacher	Teacher	Teacher	Teacher
	Current additional roles	Teacher, IB Middle Years Programme coordinator	Deputy headteacher of the whole school	Teacher, language immersion programme coordinator, deputy headteacher of the upper secondary school	Teacher, deputy headteacher of the upper secondary school

Grade 7-9 language and literature teachers as participants

The criteria for sampling teachers from the case study schools were the following: subject taught (Estonian, Estonian immersion or Russian language and literature), grade level where the teacher

works (either 7, 8 or 9) and one teacher per grade level. The sample of teachers involved three grade 7, four grade 8 and four grade 9 teachers, thus, 11 teachers in total (Table 9). Three teachers were sampled from each of schools A, B and D (Table 9). Two teachers took part from school C (Table 9) because the grade 7 teacher did not want to be interviewed for this study. In each of schools B and D more than three teachers met the sampling criteria. In this case the three participants were chosen by the deputy headteacher.

Ten of the participants were female and one was male. Teachers from schools A, B and C who participated in this study had Estonian language as their mother tongue while the first language of teachers from school D was Russian.

Grade 7-9 students as participants

The sample of students participating in the focus group interviews and collection of formative assessment feedback was randomly chosen from each class where the classroom observation was conducted. In order to create the random sample, the deputy headteacher was asked for the number of students in each of the classes participating in the study. Without asking for the students' names, Microsoft Excel was used to conduct a random sample selection of four students from each class based on their position in the class registry. Students' parents needed to sign an opt-in form (Appendix 5.3) by a certain date and if they did not do that, the next student from the random sample list was contacted by either the deputy headteacher or the class teacher. The total number of students from each grade level who participated in the study depended on how many parents signed an opt-in form (Appendix 5.3) and how many students signed an assent form (Appendix 5.5). All together 54 students were interviewed for this study (Tables 9 and 11), 24 of them boys and 30 girls (Table 11). In school A the sample consisted of 15 students, 12 in

school B, 11 in school C and 16 in school D (Tables 9 and 11). In total, 19 students were from grade 7, 21 from grade 8 and 14 from grade 9 (Table 11). In grade 8 of each of schools C and D more than four students participated (Table 11) because some of the parents signed the opt-in form after the deadline when the next student had already been contacted. Also, eight students in total participated from grade 7 of school A (Table 11) because focus group interviews were conducted in two classes (Table 7). Four students from each of the grade 7 classes were interviewed in school A.

Table 11. Number of students that participated in focus group interviews

School/Grade	7	8	9	All grades
A	8 (3 boys, 5 girls)	4 (2 boys, 2 girls)	3 (1 boy, 2 girls)	15 (6 boys, 9 girls)
B	4 (4 girls)	4 (1 boy, 3 girls)	4 (2 boys, 2 girls)	12 (3 boys, 9 girls)
C	3 (3 boys)	5 (3 boys, 2 girls)	3 (2 boys, 1 girl)	11 (8 boys, 3 girls)
D	4 (2 boys, 2 girls)	8 (3 boys, 5 girls)	4 (2 boys, 2 girls)	16 (7 boys, 9 girls)
All schools	19 (8 boys, 11 girls)	21 (9 boys, 12 girls)	14 (7 boys, 7 girls)	54 (24 boys, 30 girls)

Out of the 54 students who participated in the focus group interviews (Tables 9 and 11), 50 students marked on the assent form (Appendix 5.5) that they agreed to the 2020/21 school year Estonian (school A, B and C) or Russian (school D) language and literature lesson feedback to be collected from their school's electronic daybook. All students from schools A and D agreed to share the feedback for the purpose of this research. In schools B and C one grade 7 student did not want their feedback to be collected. Also, in school C two grade 8 students declined from participating in this part of the study. Thus, the feedback of 15 students from school A, 11

participants from school B, eight from school C and 16 from school D was collected from the electronic daybooks.

Gaining access to research sites and participants

The access strategy to the Ministry of Education and Research and the Tallinn Education Department involved contacting the participants by e-mail. Each of the participants was sent an introduction about the researcher and the study, an information sheet (Appendix 4.1) and a request for an interview. The participants were given the possibility to ask any clarifying questions and an option to decline from taking part in the study. At the beginning of each interview the study procedure and confidentiality matters were discussed and the participants were asked to sign a consent form (Appendix 5.1).

Table 12. Stakeholders facilitating research at case study schools

School	First contact	Communication with teachers	Communication with students and parents
A	Deputy headteacher	Deputy headteacher	Deputy headteacher
B	Deputy headteacher	Deputy headteacher	Teachers
C	Headteacher	Deputy headteacher	Teachers
D	Deputy headteacher	Deputy headteacher	Deputy headteacher

In order to gain permission for conducting research in the case study schools, either the headteacher (case C) or deputy (cases A, B, D) was first contacted (Table 12) and explained the purpose of the study, school selection criteria and the study procedure. First contact was made either via the telephone (cases A and C), or by sending an introductory e-mail (cases B and D) that included the “Letter to the Headteacher” (Appendix 3). When the first interaction occurred

over the telephone (cases A and C), an e-mail with the “Letter to the Headteacher” (Appendix 3) was sent after the phone call. In each school, introductory e-mails were addressed to both the headteacher and the deputy.

If the headteacher gave consent for the research to be conducted in the case study school, the headteacher and the deputy were sent the school leaders’ interview information sheet (Appendix 4.1). Either one-to-one or paired interviews were agreed with these two stakeholders. At the beginning of the interviews with the headteacher and the deputy, they were given an overview of the study purpose and procedure, and opportunity to ask questions. If they agreed to being interviewed, they signed a consent form (Appendix 5.1).

At each school, the deputy headteacher facilitated data collection in grades 7-9. For that reason information sheets for the teachers (Appendix 4.1), students (Appendices 4.4 and 4.5) and parents or guardians (Appendices 4.2 and 4.3), also opt-in (Appendix 5.3) and opt-out forms for the parents or guardians (Appendix 5.4) were sent to the deputy headteacher. The deputy coordinated the research procedure with the grade 7-9 language and literature teachers by explaining to them the study purpose and procedure. In school D, the deputy headteacher sent the teachers the information letter. In schools A, B and C the deputy gave the researcher the school e-mail addresses of the teachers who had agreed to participate in the study, and the information sheets were sent to the teachers by the researcher. In schools B and D the deputy headteacher provided the times when interviews with the teachers could be conducted. In schools A and C the researcher agreed the interview times via e-mail correspondence with the teachers. In all instances where direct e-mail communication between the researcher and teachers took place, the deputy headteacher was added to the e-mails. This was done to ensure that the school leaders would have an overview of the procedural matters of the study and ask clarifying questions.

When this suited the deputy and the teacher, the researcher conducted the interview with the teacher at least one day before the classroom observation. This was done with all teachers in school A, grade 7 (part 1 of the interview) and 9 teachers in school B, and grade 8 and 9 teachers in school C. This gave the teacher the opportunity to get acquainted with the researcher prior to the classroom observation and ask questions directly. In order to build trust and credibility also with the teachers who were not interviewed prior to the classroom observation, these participants were given a possibility to ask questions through e-mail correspondence and to schedule a meeting. These options were also given to all the other teachers. Before the interview or classroom observation each teacher was asked to sign a consent form (Appendix 5.2).

Either the deputy (cases A and D) or the language and literature teacher (cases B and C) sent parent/guardian (Appendix 4.2) and student (Appendix 4.4) information sheets and parent/guardian opt-out forms (Appendix 5.4) for the classroom observations via the school electronic system. If the parent or guardian did not want their child to take part in the study, they were asked to sign an opt-out form (Appendix 5.4) and send it to the deputy headteacher. In that case the child would have been given a task to do individually either at the back of the class where the classroom observation took place or in a different room. None of the parents signed an opt-out form. In the original study procedure it was planned that the researcher would attend class teacher hours in grades 7, 8, 9 during the week of classroom observations in order to explain the study procedure and ask the students whose parents had not signed an opt-out form to sign an assent form if they wanted to participate. However, due to the Covid-19 pandemic this step was taken out of the study procedure. Instead, the teachers explained the classroom observation purpose and procedure to the students beforehand and the researcher explained the

study right before the observation. Students were given the option to ask questions before or after the classroom observation.

For student focus group interviews and collection of formative assessment feedback either the deputy headteacher (cases A and D), students' homeroom teacher (case B) or the language and literature teacher (case C) was informed of which students were in the random sample and was asked to send parent/guardian (Appendix 4.3) and student information sheets (Appendix 4.5) and parent/guardian opt-in forms (Appendix 5.3) via the school electronic system to the randomly selected students and their parents. If any of the students' parents did not consent to their child's participation in the study, the next student according to the random sample list was selected. The number of students participating in the group interview and formative assessment feedback data collection depended on both the number of randomly selected students whose parents signed an opt-in form (Appendix 5.3) and who themselves, at the beginning of the interview, signed an assent form (Appendix 5.5).

Data analysis procedures

The interviews and classroom observations collected for this research were analysed using qualitative thematic analysis (Braun & Clarke, 2006; Silverman, 2020). This is a method for finding, examining and reporting patterns within data, called themes (Braun & Clarke, 2006). A theme entails meaningful information about the data, holds something important about the data in connection to the research questions, and shows “some level of patterned response or meaning within the data set” (Braun & Clarke, 2006). Qualitative thematic analysis was chosen for this study in order to explore the participants' perceptions and experiences.

Firstly, the collected data was organised and prepared for analysis (Creswell & Creswell, 2018). After the interviews and classroom observations were conducted, the field notes were typed up and the recordings were transcribed verbatim (Brinkmann & Kvale, 2018), except for the names from which the participants could be identified. This included the names of people, schools and locations. Instead of the name, a description of what was left out of the transcript was written in the brackets, for example (name of colleague). All transcribing was conducted manually. Following the transcribing process of each of the interviews and classroom observations, the recording was listened to again to check for any possible discrepancies in the transcript. After comparing the transcript to the recording and making the necessary re-writes, the recording was deleted. In order to validate responses with the participants, the teachers, the headteachers and deputies, the stakeholders at the Tallinn Education Department and the Ministry of Education and Research were given the possibility to review interview transcripts. This option was used by the deputy headteacher in case A. To organise the collected data for analysis, the data was systematised according to the research questions (Table 13).

To get a sense of the data from interviews and classroom observations and reflect on its meaning, the data was read several times and notes were written in the margins (Creswell & Creswell, 2018). In the next stage of data analysis codes were generated and applied to data (Braun & Clarke, 2006). Coding was conducted in NVivo14. All the interview data was analysed using an inductive approach. An inductive method allows for the use of data-driven codes, which means that codes were not developed in advance, instead, analysis was started without codes and they were developed through reading of the data (Brinkman & Kvale, 2018). The codes with similar contents were grouped into themes (Braun & Clarke, 2006). In the next stage of inductive qualitative thematic analysis the main themes were revised and refined and the sub-themes were

identified (Braun & Clarke, 2006). Finally, the generated sub-themes were reviewed and refined (Braun & Clarke, 2006).

For coding classroom observation transcripts, a deductive approach with predetermined themes, sub-themes and codes was used (Braun & Clarke, 2006). The themes were taken from the AssessToday observation protocol that has been developed to measure how teachers use formative assessment in a short cycle during one lesson (Eddy et al., 2017). The themes were the following: learning target, question quality, nature of questioning, self-assessment, observation of student affect, instructional adjustment and evidence of learning (Eddy et al., 2017). The sub-themes and codes for each of the themes were taken from the AssessToday observation protocol that set what aspects of formative assessment each of these seven themes contain.

The qualitative thematic analysis conducted on the data collected from case study schools was done in the cross-case analysis format (Creswell & Poth, 2018). This meant that themes were examined across cases to find out which of them were common to all cases and which ones differed (Creswell & Poth, 2018).

The data was analysed in its original language. After data analysis, citations in Estonian or Russian that would be used in the thesis were translated into English, using Google translate, Deepl and ChatGPT.

The data that was used to answer research questions is shown in Table 13. Combined, the data outlined (Table 13) provided a rich source of information from which to answer the overarching research question of *How have general education schools in Estonia implemented formative assessment as set in the Estonian national curriculum for basic schools?* The study involved method (semi-structured one-to-one and paired, and focus group interviews; classroom observations; collection of qualitative documents, visual and digital resources) and data (three

different education system level stakeholders as source) triangulation in order to combine various perceptions of the same phenomenon to provide a more holistic and robust overview of formative implementation in the general education schools in Estonia (Tritter, 1995). Triangulation was also used between different level stakeholders as some of the interview questions were the same, although the aim was not only to provide a single coherent overview of formative assessment implementation in Estonia but also to highlight differences (O'Donoghue & Punch, 2003).

Table 13. Overview of data sources used to answer research questions

How have general education schools in Estonia implemented formative assessment as set in the national curriculum for basic schools?	
Research sub-question	Data
What factors do school leaders and teachers perceive as enhancing the implementation of formative assessment in the general education system of Estonia?	-Transcripts of interviews with school leaders from schools A, B, C and D* -Transcripts of interviews with grade 7-9 language and literature teachers from schools A, B, C and D* -Transcripts of interviews with policymakers -Classroom observation transcripts -Records of feedback -Policy documents -Visual and digital resources
What factors do school leaders and teachers perceive as hindering the implementation of formative assessment in the general education system of Estonia?	-Transcripts of interviews with grade 7-9 language and literature teachers from schools A, B, C and D* -Transcripts of interviews with school leaders from schools A, B, C and D* -Transcripts of interviews with policymakers -Classroom observation transcripts -Records of feedback -Policy documents -Visual and digital resources
What do the grade 7-9 students in Estonia perceive as essential for formative assessment implementation in their Estonian and Russian language and literature studies?	-Transcripts of interviews with grade 7-9 students from schools A, B, C and D* -Classroom observation transcripts -Records of feedback -Visual and digital resources

Note. Qualitative thematic analysis was conducted for all interviews and classroom observations, the data marked with an asterisk is reported as thematic analysis results in the “Findings” chapter.

The results of qualitative thematic analysis of the data most aligned with the research questions were presented in this thesis (Table 13). This included interviews with the school leaders, grade 7-9 language and literature teachers and grade 7-9 students (Table 13). The rest of the data collected for this study was used in the reporting selectively to contextualise the findings and to provide examples from additional sources. The results of data analysis were presented in three parts. Two of these described the enhancing and hindering factors in formative assessment implementation, respectively, and the third covered the students' perception of what was important for successful formative assessment implementation. The codebooks underpinning the "Findings" chapter are presented in Appendix 7.

Ethical issues

Ethical issues were considered throughout the research process, thus, before conducting the study, while collecting, analysing, reporting, sharing and storing the data and after the study was finalised (Creswell & Creswell, 2018).

Prior to conducting the study the University of Oxford standards for ethical research were considered. In 2020 this study gained approval by the Central University Research Ethics Committee (CUREC) (Appendix 6). As due to the Covid-19 pandemic changes had to be made to the procedure regarding the location of the research sites, and part of the study had to be conducted online, CUREC was informed of this by e-mail in 2020, and the changes were approved. Prior to conducting the study in Estonia, also the University of Oxford "Fieldwork Safety and Risk Assessment" was submitted and received approval.

Many of the ethical practices of this study with regard to how access was gained to research sites and participants, how the data was collected and stored, have been detailed in previous sections

of the “Methodology” chapter. In summary, these ethical practices included informing participants of the purpose of the research and not using deceit, asking them to sign a consent or assent form, being respectful, using ethical interview and observation practices, ensuring confidentiality, data protection, access and ownership, and storing the data securely.

Extra attention was given to conducting research with underage participants. The study involved participants younger than 16 years old as classroom observations and focus group interviews with students in grades 7-9 were conducted and their formative assessment feedback was collected from the electronic daybook. Generally in Estonia, students in grade 7 are 13-14 years old, in grade 8 they are 14-15 and in grade 9 students are 15-16 years old. Learners who participated in the focus group interviews were selected randomly and as some of the sampled students did not want to be interviewed, they were assured that they had no obligation to participate and that there would be no negative consequences following their decisions. The interviewed students’ parents signed an opt-in form (Appendix 5.3) and the students themselves signed an assent form (Appendix 5.5). The assent form (Appendix 5.5) was written in a language that the students would be best able to understand. Additional time was taken at the beginning of each interview to explain the study purpose and process and the assent form content to the students in detail. Students who were interviewed had an option to decline from formative feedback collection. Four students decided they did not want to share their language and literature course formative feedback for the study. Again, the students were assured that they had no obligation to give consent. After each of the interviews additional time was taken to answer any of the students’ questions. They asked various questions about the study, the researcher and the University of Oxford.

During the classroom observations the research focused on normal mainstream lesson activities where language and literature teachers implemented formative assessment into their lessons, thus, the students were not asked to do anything out of the ordinary activities at their school. The unit of analysis was the lesson itself, not individual learners. Students had the possibility to decline participation in the lesson activities in order not to be included in the study but none of the students nor their parents chose this option.

In addition to giving extra attention to various ethical considerations with regard to conducting the study with participants who were underage, it was important to ensure that the teachers did not feel that the researcher was observing their lessons or interviewing them to evaluate their work. The researcher assured the teachers that they had no obligation to participate in the research, that the researcher had talked the procedure through with the school leaders who understood that teacher participation was not obligatory and, thus, the leadership team would not assess the decision of not participating in a negative way. Also, the researcher informed the teachers that she was not there to collect data for the leadership team, and would be sending the school leaders only the published work, not raw data. It was important to minimise teachers' stress levels by taking additional time to collaborate with them and answer any questions. In addition to participant ethics, the aim of conducting classroom observations was to see a regular class, not a lesson that was prepared especially for the study, or where the teacher was stressed, and, thus, students would feel uncomfortable and would not want to participate in the activities. As with the classroom observations, the teachers had the possibility to decline from being interviewed. This option was used by grade 7 teacher in school C who agreed to the classroom observation but did not want to be interviewed.

In order to lower the possible anxiety the teachers, school leaders, specialists at the Education Department and the Ministry might have regarding talking about the formative assessment implementation process truthfully, the researcher ensured the participants that data collection was done only to understand the implementation process. The participants were told that the researcher was not aiming to change or evaluate how the schools conducted their teaching and learning processes. Also, that the researcher was not aiming to evaluate the work of specific participants from the Education Department and the Ministry regarding how they manage and support the general education schools. The researcher assured the participants that she was gathering data solely for research purposes.

As part of the study was conducted online, the platform for online interviews was carefully considered. The Google Meet service was chosen for conducting and recording the online interviews because the researcher has an account for this platform that can only be accessed through her Estonian national identity card identification service. The researcher downloaded and deleted the recording from Google Drive right after each of the interviews. The classroom observations were conducted via the online platform that the case study schools were already using for their lessons. All electronic data of this study was encrypted and stored on a password-protected computer. The data that was collected in paper format was stored in a file in a locked drawer or a safe.

During the stage of the study when data was analysed and reported, dutiful qualitative thematic analysis practices were applied by coding the data many times before generating themes and sub-themes. Also, the themes and sub-themes were reviewed many times. As the researcher works in the field of education in Estonia, it was important to self-reflect to ensure that the researcher disclosed the results objectively and avoided siding with the participants. All

participants were assured of confidentiality and, thus, the findings in the research were reported under the roles of the stakeholders and not the names.

During the data collection stage all participants were informed of the option to receive an electronic copy of the thesis upon their request. The publication of this research will involve depositing the thesis in Oxford University Research Archive and possibly writing academic papers based on the study.

Challenges

The main challenge to conducting this research was the Covid-19 outbreak. The original study procedure involved schools in four different areas of Estonia. Due to the Covid-19 pandemic the location of the case study schools had to be modified. At the height of the pandemic, the Government had to make weekly decisions about the Covid-19 restrictions, including how the schools should operate. They based their decisions on the infection rates in the different areas of Estonia. This meant that depending on the location, the schools could operate under different restrictions. In addition, schools had to be ready to go from face-to-face teaching at school to distance learning in a matter of the same day, should there be any Covid-19 positive cases among the staff or students. In order to ensure data collection, due to these reasons, the boundary of the sample schools' maximum location diversity criteria had to be changed from the whole country to one municipality. The municipality of Tallinn was chosen for this study because it has the biggest language of instruction diversity in general education schools.

As the location of the sample of schools had to be reduced from four municipalities to one, the study involved only the Tallinn Education Department, not four municipality education departments as originally planned. In future studies a broader sample of municipality level

governing bodies would be necessary to gain an understanding of how different municipalities are working with the Ministry of Education and Research to support schools with formative assessment implementation. In the current research this limitation was addressed by asking the participants from the Ministry and Education and Research what level of interaction with the municipality education departments has the formative assessment implementation process involved and what have been the major positive aspects and challenges in these collaborations (Appendix 1.1).

Every headteacher has the obligation to ensure the safety of the staff and students, thus, during the Covid-19 outbreak the schools offered limited outside access, including to researchers. If the headteachers worried about granting research access due to the pandemic or they were contacted during the distance learning period, they were offered the choice of online data collection. This option was chosen by schools B and C and partially also by school A. If the headteacher preferred data collection to be conducted in the physical school environment, at times research had to be put on hold until there were fewer Covid-19 positive cases in Estonia and the distance learning period had ended. For example in school D data collection was initially planned for December 2020 and was postponed until May and June of 2021.

The Covid-19 pandemic made the research process slower also because as schools and governing bodies were experiencing added workload on the staff, it took longer than normally to get access and agree on the data collection times. However, even though the Covid-19 pandemic added stress and increased the stakeholders' workload, they were welcoming and helpful in facilitating data collection.

As some of the data was collected online, it meant that the study was not conducted entirely in the participants' physical work or learning environment. All pilot interviews with the adult

participants were conducted online. By the time of the pilot interviews, due to the Covid-19 pandemic, these participants had been attending online meetings or teaching remotely for many months. Based on the interviews with the adult participants it was concluded that they were already used to the online work environment. Both sets of interviews with the adult participants, the ones conducted in the physical school environment and those that were held online, provided a rich dataset. Additionally, the adult participants did not show any visible or audible signs of distress during any of the online interviews.

Although the focus group interview protocol for the students was piloted in the physical school environment, in schools B and C all of the interviews with the learners were conducted online (Table 7). To ensure that the students feel comfortable in an online interview setting, it was not obligatory for these participants to turn on their cameras. As these were focus group interviews, all students were encouraged to talk. No differences were noticed in student input depending on whether the focus group interview took place at school or online.

As in schools B and C only online lessons were observed, this was not a normal classroom environment for the students. This setting did not allow the researcher to fully understand how the participants interact in the school context because the researcher was not able to experience different aspects of the physical classroom environment that could affect the learning process, for example the communication of students between each other and the seating arrangements. The differences between online lesson activities and classes in the physical school environment were discussed during interviews with the school leaders, teachers and students in order to understand the school context better and to address this limitation.

This was the first time for the researcher to work with such a large dataset that contains a total of 35 interviews and 13 classroom observations. As in addition formative assessment feedback of

50 students, policy documents, visual and digital educational resources were collected, an easy-to-manage system for storing and finding data was created. The data was systematised according to either the school or the governing body where it was collected. In each of the grade level folders the data was stored according to the collection method. During data collection and analysis a research journal was used as a tool of writing down descriptive information and reflections on methodological and ethical issues in order to generate ideas and plans for subsequent research stages and thesis write-up. The research journal was kept digitally and protected with a password.

Although the study was conducted during the Covid-19 pandemic, overall, the data that was originally planned was collected, except for the research at one education department instead of four. After the pandemic the study could be scaled up to include more municipalities.

FINDINGS

Enhancing factors in formative assessment implementation

This chapter describes enhancing factors in formative assessment implementation that are based on the qualitative thematic analysis results of interviews with eight school leaders (four headteachers and four deputies) and 11 teachers (eight grade 7-9 Estonian and three Russian language and literature teachers) from four case study schools. The chapter also includes some references to the interviews with the policymakers, descriptions from the classroom observations and the written feedback to enhance the reporting by school leaders and teachers. The chapter aims to answer the following research question: What factors do school leaders and teachers perceive as enhancing the implementation of formative assessment in the general education system of Estonia? Qualitative thematic analysis of interviews generated four themes as enhancing to formative assessment implementation: new approaches to learning, experiencing positive outcomes, in-school collaboration and external support. In this chapter, first, the summary of the findings in each of these themes is presented and, second, the results related to the sub-themes are described in detail. The findings in each of the themes and their sub-themes are the following:

1. New approaches to learning

Under the sub-theme of shifts in society and students' needs, the theme of new approaches to learning describes the developments that have taken place in connection to the restoration of independence in 1991. It was reported that society has become more open and nurturing towards

students' needs and their individual learning journeys which has been enhancing to formative assessment implementation. Also, that students are more independent, goal-oriented and creative. At the same time, as reported, students have a smaller attention span and there are more students with special educational needs. The sub-theme of 2011 national curricula and school culture changes summarises that when formative assessment was introduced in the 2011 national curricula, it was one of the reasons for a change in the approaches to learning and overall school culture. Schools reported to have shifted from teacher-centred to student-centred methods, there are nurturing teacher-student relationships present and meaningful collaboration takes place among staff members. The sub-theme of implementation of additional learning models brings out that with support from well-researched and effective approaches and programmes, like inclusive education, IB Middle Years Programme, content and language integrated learning (CLIL) and whole-school anti-bullying programme KiVa, the school gains more ideas, techniques and training also for formative assessment implementation. Overall, under the theme of new approaches to learning it was highlighted by the participants (n=19) that society is constantly changing and with that students and the education system has to be adaptive to the needs of contemporary times as the role of schools is always to give the best support for students' development.

2. Experiencing positive outcomes

The theme of experiencing positive outcomes describes encouraging changes that have taken place in case study schools as the result of working on the formative assessment reform. All school leaders (n=8) and most teachers (n=8) highlighted that experiencing the benefits of formative assessment motivates them to continue with the implementation process. For example

the headteacher of school A said, “Although change is always complicated, if I may say so, but the positive changes it brought about have fostered the whole process.” This theme encompasses the sub-themes of positive outcomes for students, positive outcomes for teachers, positive outcomes for parents and positive outcomes for leadership team members. The sub-theme of positive outcomes for students describes how, with the help of formative assessment implementation, the students have become more independent and self-directed, understand why they are learning something, receive feedback and develop self-analysis skills, have higher motivation, better mental health and potentially higher achievement levels. Overall, the students are reported to be experiencing a more supportive school environment. The sub-theme of positive outcomes for teachers highlights that teachers report the following positive outcomes that have encouraged continued implementation process: increased teacher motivation, multifaceted interesting work and positive teacher-student relationships. Also, teachers leaders and many teachers pinpointed that teacher professionalism has increased with formative assessment implementation because they have learned new skills that have made them better at their work. The sub-theme of positive outcomes for parents describes that as a result of formative assessment implementation, parents are better informed of their child’s development, can support their children better and have better mental health. Leadership team members and teachers report that through experiencing these benefits, many parents are starting to support formative assessment implementation. The sub-theme of positive outcomes for leadership team members is not described in detail as it encompasses a small dataset. This sub-theme entails the school leaders’ (n=8) and some teachers (n=3) reporting on the following positive outcomes for the leadership team that support continuing with formative assessment implementation: gaining new theoretical and practical knowledge (n=8), getting positive feedback about the changes in school

culture (n=8), putting some formative assessment methods into practice in the leadership team (n=3).

3. In-school collaboration

The theme of in-school collaboration describes how school leaders have supported formative assessment implementation (sub-theme: vision from the leadership team) and the importance of collaboration among staff in ensuring authentic formative assessment practices (sub-theme: in-school collaboration). Each of the school's school leaders had put a vision into effect to guide formative assessment implementation, for example by developing whole-school standards for the staff. The study showed that there are various ways the school community can collaborate to put formative assessment into effect, like during planning meetings, disseminating the approach in the subject group, providing mentorship and sharing materials.

4. External support

The theme of external support encompasses the sub-themes of collaborating with educational institutions and authorities and information technology resources. The first sub-theme describes how support from universities, other schools, programmes, other external collaborations and to some extent the Ministry of Education and Research has been enhancing for formative assessment implementation for schools that participated in this research. As the study was conducted during the Covid-19 pandemic when schools had to implement distance learning and because Estonia is recognised as a digital society, the data analysis results under the sub-theme of information technology resources are reported in greater detail than other enhancing factors. This sub-theme describes in what ways leadership team members and teachers have found access to

the internet, online platforms and IT-equipment enhancing to formative assessment implementation.

New approaches to learning

Shifts in society and students' needs

All policymakers (n=5), leadership team members (n=8) and teachers (n=11) acknowledged that the need for formative assessment to support student development has come as part of the changes in the society in connection to the restoration of independence in Estonia in 1991. According to participants, the society became more open, liberal and based on Western rather than Soviet ideology. A grade 7 teacher from school A explained that as liberal worldview started to dominate in Estonia in the 21st century, children gained more rights and the school system adapted to the new values by putting the child at the centre of the education system. The grade 7 teacher from school D highlighted that because society has become more individualistic overall, schools are also expected to have a student-centred approach. She concluded that formative assessment has been necessary to respond to this need to give more support to each student's individual learning journey. The grade 8 teacher from school D pinpointed that during the Soviet era the world order was more collective, structured and closed but now the world is open to endless possibilities. She highlighted that to manage one's life well in this changed society, different kinds of skills are needed. She acknowledged that this had resulted in the change in the approach to learning at schools. The grade 8 teacher from school B expressed that with the developments in Estonia, also the labour market transitioned from mostly needing people with a specific skill set to perform certain tasks to those who have great self-management skills, like adaptability, self motivation and goal alignment. She highlighted that formative assessment has supported the development of learners that the changed job market needs.

But I myself think that the need for formative assessment might have come from the fact that the world around us has changed... This kind of feedback and peer assessment and so on, I think it helps to do well in the new societal context. (Grade 8 and 9 teacher from school A)

The participants (n=19) acknowledged that students who were growing up in the Republic of Estonia and went to school in the 2000s required different approaches to teaching and learning than previous generations because as the society changed, so did the needs of the students. For example, the deputy headteacher of school C compared current students to the ones she taught 15 years ago and acknowledged that the students' needs with regard to the learning process structure have changed a lot and, thus, these students need a different approach. Through these changes in students, in the perception of the headteacher and the deputy of school D, it has become possible to also change the teacher, and, with that implement formative assessment practices. Also, the grade 7 teacher from the same school highlighted that more than anything else, the changes in students have transformed the school.

Through the client, you actually change the teacher (deputy headteacher of school D).

But the fact is that the children have changed a lot during this time, and they have transformed the school. It's not the teacher who has done it. We get a new set of expectations from the students. (Grade 7 teacher of school D)

There were many changes that the participants reported that they have noticed in students. School A grade 8 and 9 teacher acknowledged that contemporary students are more goal oriented and start to think early about what they want from life. She reported that formative assessment is important in helping them achieve their individual goals. Grade 9 teacher from school C highlighted that the way contemporary students think is different and are more creative than the students in the past. She said that learners from 20, 30 years ago were much more serious and studious. She highlighted positives in both kinds of students and expressed that also students from a few decades ago had very good language and literature learning outcomes. Thus, she acknowledged that she sees the changes, however she cannot pinpoint which kind of student will do better at school and in life. She acknowledged that it is more to do with if the society is changing, so are the students and the schools are adopting to that. Two teachers highlighted that

new approaches to teaching and assessment have been needed because the attention span of students towards studies is smaller than in the last decades of the 20th century. This, according to them, is largely to do with the digital world where students spend their time. One of these teachers (school B, grade 9) highlighted that current students are not reading books and if some are, then mostly they are doing superficial reading, especially in upper secondary school. She highlighted that she sees less ability to read with a high level of concentration. The grade 9 teacher from school D spoke about how she has tried to support students by trying to find books that are contemporary and would engage them, to get them interested in reading. The grade 7 teacher from school D highlighted that if in the past doing school work was one of the ways to not get bored then now students have so much visual content that schools have to think about how to be on the learning journey together with the student.

Now, with so many things going on around us, learning is one of the small little elements in students' lives. You feel it in the students as a teacher, and it's a different audience. Now the school has to do something amazing to at least get their attention. Otherwise they won't be interested in you. They will switch you off from their attention and if we don't change, then the school will be separate, the children will be separate, and this will be a huge problem. (Grade 7 teacher from school D).

Additionally, some leadership team members (n=2) and teachers (n=3) from schools B and C discussed that the change in students that they have noticed is that now there are many more children diagnosed with special educational needs than in previous generations. In their understanding these students need a different approach and this aspect has also directed schools towards implementing new ways of teaching and assessment, including using formative assessment practices. In the view of the deputy headteacher of school C, for students with special educational needs, formative assessment practices are essential to progress in their studies, social and self-management skills. She has noticed that if these students are assessed in a formative way, unpredictable behaviours diminish and the students' approach to the learning process becomes much more self-guided, the motivation of students is higher and they collaborate better.

School B grade 9 teacher highlighted that many students have emotional problems and formative assessment has been helpful in giving one-to-one support where students feel seen and understood, thus helping to regulate emotions better.

Times change and children change. There are a lot of children with special educational needs who really need a different approach. Rather, it is in this context that formative assessment is needed, that the child has changed. For the last 10 years it has been very relevant. (Deputy headteacher of school C)

Although societal changes have taken place since the restoration of independence of Estonia, including changes in the education system to support the development of the student who has grown in a more open society, some teachers (n=4) brought out that although the changes have been needed, it has to also be acknowledged that there were many positive aspects to the Soviet school system as well. For example school D grade 8 teacher said the logic of how material was presented in the textbooks during the Soviet era, if everything regarding ideology would be taken out, was professionally done. She said that she knows of Finnish education specialists who have praised Soviet era textbooks with regard to subject content, without the political ideology, and that during the Soviet era many of these textbooks were used as examples also in the Finnish education system. However, all stakeholders (n=19) acknowledged that the society and with that students have changed so much that teaching and assessment practices exactly in the same way as in the Soviet era would not benefit the contemporary student.

Everything's changed in society, we're different, students are different. We cannot go back to the old system. (Grade 9 teacher from school D)

2011 national curricula and school culture changes

Most participants (n=13) reported that in the Estonian general education system large-scale formative assessment implementation process started together with the adoption of the 2011 national curricula where a description of formative assessment was introduced. They (n=13) acknowledged that the national curricula of 2011 had been one of the main reasons for changes

in approaches to learning, named *muutunud õpikäsitus* or MÕK in Estonian, which brought developments in both teaching and assessment methods.

I think formative assessment became important because of the overall change in approaches to learning (Grade 8 teacher from school B).

Four school leaders from schools B and D acknowledged that the theory and reasoning behind these changes is not new and that similar theories were highlighted already during the first Republic of Estonia. The names of Peeter Põld, Estonian first Minister of Education and Research (1918) and Johannes Käis, Estonian educator who was a leading figure in the school renewal movement in the 1930s were noted in this study. These school leaders highlighted that the change in the approaches towards learning is not based on completely new understanding but more that what has been known regarding how to best support the students for at least a century has been adopted for contemporary times. Also, three teachers from schools A, B and C expressed in relation to formative assessment that these methods have always been part of their language and literature teaching practice.

All interviewed leadership team members (n=8) and teachers (n=11) acknowledged that in the 2000s, especially during the decade after the introduction of the 2011 national curricula, school culture has changed in a way that has supported formative assessment implementation. They highlighted that the national curricula helped to re-think the roles of students and teachers. Leadership members and teachers (n=19) described that the main change in the school culture has been in the school system transitioning from teacher- to student-centred. In order to achieve this change, as reported in the interviews, teaching and assessment methods that support the development of a self-directed lifelong learner, like formative assessment, had to gain importance. The main reason for this shift to a student-centred school culture according to school leaders (n=8) and many teachers (n=7) has been the focus on transdisciplinary skills in the

written curriculum and how it has been delivered to the students in the classroom by using engaging learning activities that are connected to real life and formative assessment methods. According to them (n=15), supporting the development of a student as a whole person has made the school environment more nurturing towards the learners.

Everything at school is focused more on the student, as opposed to, for example, 20 years ago (grade 9 teacher from school D).

The school culture is more supportive and more tolerant and more looking at the student as a whole person and looking at the student in terms of how to have a school environment that nurtures the student and develops the student to the best of their ability (deputy headteacher of school A).

We are trying to apply all kinds of new techniques and methods to make it safe and comfortable for students to study in this physical environment, to make the learning environment suitable for them (deputy headteacher of school C).

The teachers (n=11) saw nurturing relationships between them and students as the main reason behind the development of a school culture that promotes formative assessment implementation. According to most teachers (n=9) this relationship is strengthened through formative assessment methods. For example grade 7 teacher from school A highlighted that, “I would say that I think formative assessment is really a very positive phenomenon and I can say from my own experience that it only improves the interaction with the students and builds trust.” Importantly, as described in the chapter “Students’ Perceptions of Formative Assessment Implementation”, in each of the 13 interviews with grade 7-9 students it emerged that students consider the relationships with teachers to be the most important factor in the learning process. Also, school leaders (n=8) noted that they have seen a change in teacher-student relationships. For example the headteacher of school D said, “There is now a partnership in the study process between students and teachers.” Teachers (n=11) brought out that trust and respect between them and the students is essential for the learning journey. All of them (n=11) talked about various positive outcomes for students that have come from a good teacher-student relationship, like lowered

school stress, excitement to come to the lesson and understanding the learning process. Some teachers (n=4) highlighted how important it is for them to be on the learning journey together with the students.

I think that's what I'm like - I would call myself a democratic teacher who navigates the learning path with the students, rather than a teacher who teaches. I call it a journey in which we both move together, them and I. It shouldn't be that I'm at the front or behind - we go together. I personally think that students can only learn if those kids are your friends. First of all, we have to build a relationship where the student is not afraid, is not scared. I respect the students and they respect me. We have this kind of professional friendship, that is the most positive thing, that the teacher is your friend. Yes, the teacher is the older friend, it is not as familial - a supporter, who is there for you even when you are doing badly, who does not say, "You are stupid, you can't do it, you can't do it!" Who, even when you're having the worst time, will say, "What could we do differently to make it better next time?" That's the most important thing for me. (Grade 7p teacher from school A)

In addition to mostly positive relationships between teachers and students, also improved collaboration between teachers was seen as a change in the school culture. This was noted by both the leadership team members (n=8) and most teachers (n=8). It was highlighted that collaboration was previously done more for appearance but now it has real substance where teachers support each other and build shared understanding about the new approaches to teaching and learning, including implementing formative assessment. The ways in which teachers collaborate at case study schools is reported in detail under the theme of in-school support. Two teachers (schools A and D) noted that the school culture has become more professional because there is more in-depth thinking and focus among the staff regarding how to best support students. At the same time a grade 7 teacher from school A noted that not all teachers have similar approaches to working with students. She highlighted that if some teachers go along with the developments and some don't then it is impossible to build a shared school culture from which all students can benefit.

The changes in the school culture were mostly seen as positive for students and staff. Also, about a decade after the 2011 national curricula that introduced formative assessment, in 2020 and 2021 when the interviews were conducted, this set of assessment practices that supports learning,

was recognised as important by all leadership team members (n=8) and most teachers (n=9). They pinpointed various formative assessment procedures they consider beneficial for learners' development, like giving feedback, setting learning goals, self-analysis and peer assessment. Acknowledging the importance of formative assessment is an enhancing factor for implementation because it shows that the understanding of the necessity to continue with implementation is present. As an example, the deputy headteacher of school A described her vision for the outcome of continued formative assessment implementation:

In our school, what I want us to have is that the formative assessment is more evidence-based, better understood, and acknowledged by teachers, parents, and students. And, of course, most importantly, formative assessment is designed so well that it improves student learning. This is my hope for our school, that we work towards this end. (Deputy headteacher of school A)

When asked what they think will happen with formative assessment reform in Estonia, all leadership team members (n=8) and most teachers (n=9) acknowledge that as formative assessment has important benefits for the students, it will continue to be an important part of the general education system. The two teachers who were not certain about whether formative assessment implementation will continue were not fully against it, however they expressed that a more supported and thought through system is needed, otherwise they cannot understand how to go on with formative assessment implementation.

We will continue with formative assessment, I do believe so. This belief I have. Cannot go back to grading the same way. (Headteacher of school D)

And certainly, as we are now talking about formative assessment, I am absolutely sure that we need to continue to work on it (Deputy headteacher of school C).

Well, I can't imagine that we will continue with formative assessment like this. To be honest, as far as the mainstream classes are concerned then I really can't imagine how it would work at all in practice. (Grade 9 teacher from school C)

Implementation of additional learning models

The findings highlighted that if the school is implementing additional educational programmes and approaches, like the IB system in school A, CLIL and KiVa in school C, then the leadership team members (n=4) and some teachers (n=4) of those schools consider these as supportive to formative assessment implementation. Additionally, leadership team members of school C (n=2) and teachers from schools B (n=2) and C (n=1) saw inclusive education as a promoting factor. In the experience of these participants (n=10) the reason for this has been that by implementing approaches to learning content with support from additional programmes and models, the school gains more ideas and techniques for formative assessment implementation.

Four participants from school A indicated that the IB approach to assessment has helped with understanding how to implement formative assessment at their school. According to the deputy headteacher, school A has used the IB framework for assessment as an example of how to give students feedback as suggested in the Estonian national curriculum for basic schools. Specifically, according to her, teachers have used IB rubrics to make their feedback to students more systematic and holistic. She pinpointed that teachers are still using the national curriculum subject objectives as well but the IB framework has helped them to understand how to give students feedback in a more formative manner.

I think that the feedback in the IB format is more holistic or a little bit more general and is focused more on maybe the skillset and less on the content. I think the Estonian curriculum is more focused on the content and, therefore, it's harder to maybe implement the formative feedback. At least, we went with the IB framework, and we started using that. This formed the basis of our feedback. At the same time, I think teachers are also using certain milestones in the national curriculum to give feedback to the student in terms of, again, content acquired, meaning how well they know that content of the national curriculum. And, they may point out certain subject-specific content there that the student either knows or doesn't know. (Deputy headteacher of school A)

In school C three participants indicated that CLIL, according to which one class per grade level studies subjects in Estonian, has helped to increase the teachers' methodological capacities for teaching and assessment, including using formative assessment. The headteacher of school C explained that individual coaching for teachers that the Language Immersion Centre at Foundation Innove (organisation under the jurisdiction of the Ministry of Education and Research, as of 2020 it has been re-named the Education and Youth Authority Board) had provided had been especially beneficial. In the perception of the headteacher of school C, before coaching was provided, the teachers had felt overworked and unable to fully understand how to methodologically work in the language immersion system. Through coaching the teachers felt supported both mentally and methodologically and this helped lower teacher turnover. According to the headteacher of the school, teachers' understanding of the student-centred teaching and assessment methods, including using formative assessment, increased through one-to-one coaching provided by Foundation Innove. The deputy headteacher of school C also highlighted the language immersion programme in Estonia as a great additional approach to teaching content that helps to implement a student-centred approach. However, in the perception of the deputy, further development of the language immersion programme is needed in Estonia to continue gaining methodological benefits at schools.

Grade 9 teachers from schools B and C highlighted that formative assessment became important in Estonian general education schools because of inclusive education. The Basic Schools and Upper Secondary Schools Act of 2010 in Estonia set inclusive education as a leading principle for managing the general education system. Inclusive education means that every child is offered an organisation of studies that suits their abilities and needs. According to the Basic Schools and Upper Secondary Schools Act, when schools organise the studies of students with special

educational needs (SEN), they should follow the principles of inclusion by considering the academic and social skills and needs of all students, by providing necessary support and an individual approach and by ensuring that all SEN students who are capable to do so effectively study in mainstream classes. The headteacher and deputy of school C highlighted that they have a large number of students with special educational needs. According to these two stakeholders the biggest supportive factor to formative assessment implementation at their school has been the work the leadership team, the teachers and support specialists are doing to help the development of students with special educational needs. These two stakeholders explained that at school C there is a large number of smaller class groups for SEN students where new approaches to learning have to be implemented. In order to be able to organise the study process of students with special educational needs in a student-centred way, the teachers of school C have attended various workshops that have helped also with formative assessment implementation. According to the headteacher of school C, most teachers who work with SEN groups also teach in mainstream classes. The headteacher and deputy have noticed that teachers who are able to use student-centred teaching and assessment methods, including formative assessment, are better teachers for all students.

Even now, we see it when a teacher goes to a small group class, a special educational needs class, and starts teaching in an academic style so that students would listen, so that they would sit still, no, it doesn't bring any results. And those teachers who have realised that when they come to class, use a variety of different teaching and assessment methods, help students set very small and reachable goals, they are successful with all students, with or without special educational needs. (Headteacher of school C)

The deputy headteacher of school C brought an example of how, in her own teaching practice, she has started using the same methods that are well-suited for SEN students, including formative assessment, with all students. One of her students in the Estonian language class did not want to participate in oral study activities. The deputy consulted a colleague who had just had training on how to give supportive feedback to SEN students. The deputy tried the same

methods with all her students and increased the previously shy and reluctant student's motivation and ability to speak in classes. The deputy of school C noted that had she always known how to implement formative assessment with SEN students, she would have probably been better at supporting some students with whom it had been more difficult to work with.

SEN students have a completely different learning process and in this respect they need a different approach and formative assessment, I think, helps such children even more than so-called regular children... Certainly, the training and experience of working with SEN students also gives benefits to teaching in the mainstream classroom. I mean, how I worked, for example, 15 years ago, if I applied that knowledge of working with SEN students, the process might go differently with a more difficult student. (Deputy headteacher of school C)

In school C the headteacher and two teachers noted KiVa, a whole-school anti-bullying programme developed in Finland, as supportive to formative assessment implementation. They highlighted that using KiVa methods they give ongoing feedback to support students' emotional and social well-being. The grade 8 teacher highlighted that she has seen positive changes in students' behaviour and concluded that the formative assessment methods in KiVa have been the reason for this shift. The headteacher described that as the school's KiVa team visits homeroom lessons, they give feedback to teachers regarding how certain methods have been implemented. He described that at the time of the interview the focus had been on goal-setting and teachers got both training and feedback on how this formative assessment method had been implemented in KiVa lessons.

Experiencing positive outcomes

Positive outcomes for students

All interviewed leadership team members (n=8) and most teachers (n=8) gave examples of how, through the use of formative assessment, the students have become more independent, courageous and self-directed. According to the headteacher of school A, one outcome of formative assessment implementation for students has been that they have realised that the learning process is at least as important as the achievement. 7p teacher from the same school noted that her main focus with students has been to help them concentrate on the process itself, obtaining study skills rather than learning with the top grade as the only objective. Also the grade 8 teacher from school B pinpointed that formative assessment has helped students to understand why they are learning something. The headteacher of school A highlighted that as a result of formative assessment implementation, the students now understand the connection between the learning journey and achievement better and put more self-directed effort into the process. The headteacher and deputy of school D also highlighted that the students have become more self-directed in their learning by being able to analyse the learning process, comprehend through self-assessment what needs further work and what kind of support to ask from the teacher the next time.

Grade 8 and 9 teacher from school A highlighted, “The most positive outcome of formative assessment has been that the student becomes independent at a relatively early age.” Many leadership team members (n=5) and teachers (n=7) highlighted that one reason why the students have become more independent and self-directed learners, is that they get feedback and have been taught how to reflect on that feedback. The grade 8 teacher from school B pinpointed that this has helped the students to grasp the study journey better which in turn has helped them to

ease into the understanding that it takes time and many mistakes before they can learn something well. The grade 7 teacher from school D acknowledged that formative assessment is not about providing a result but it is about understanding current progress, being truthful towards oneself, self-aware and setting next steps to progress. The headteacher of school A highlighted that the reflection skills of students have developed. He expressed, “I believe the students have become more reflective on their progress, and on their learning, and on their knowledge.” According to the deputy headteacher of the same school, the students have become more reflective because they have begun to realise that if they analyse the feedback they receive, they can use the feedback for the benefit of their own development. The deputy headteachers of schools A and C highlighted that through formative assessment implementation at their schools, the students have become used to getting feedback, pay attention to the content of the feedback, are able to analyse it and ask questions. According to the deputy headteacher of school A, if the students know their strengths and weaknesses, they have a better understanding of themselves as learners. She highlighted that the development of reflection skills creates a basis for lifelong learning and better coping strategies at university, work and in life overall.

And, if they get this skill from school, then they should be better prepared for whatever, the university studies or the career in general that they know themselves as a learner, they know what their strengths and what their weaknesses are, and where they have to work on... they are more in tune with themselves. (Deputy headteacher of school A)

We are implementing formative assessment, so that our children would be in demand. Then they can enter the labour market, and so it would be easy for them in their future life - when they become university students and, in general, when they become adults. This is what we are aiming at. (Grade 9 teacher from school D)

Motivation of students to learn was highlighted by most participants (n=13) as one of the main indicators of how well formative assessment implementation is going. For example grade 8 teacher from school B explained, “A very good indicator of how well formative assessment has been implemented is the work done by students in class: how motivated they are to come to the

lesson, how motivated they are to do their work in class, whether they participate at all.” The headteacher of school C recognised that when he first started working as a teacher, he noticed that the motivation of the students was very low. He began to use active learning methods and experienced that they only increased the motivation to learn when he also helped the students to set goals, prioritise them, take small steps, reflect on that progress, and achieve learning outcomes through that process. Also, the grade 8 teacher from school C highlighted the importance of helping students understand where they are going and how to close the gap to learning goals. She acknowledged that formative assessment can support students in building that understanding. According to the deputy headteacher of school D, formative assessment lays the foundation for lifelong learning, because formative assessment teaches how to learn, thus, the student is able to continue learning throughout life as there is an established interest towards learning. In addition to the deputy of school D, also all the headteachers of schools (n=4) highlighted examples of how the students’ motivation and interest towards learning has increased through formative assessment implementation. For example the headteacher of school B recognised a change in student satisfaction due to the feedback they are receiving. He noted that before, when the student progress was evaluated only numerically, they often asked the teachers for better grades. Now that the students are receiving feedback, there is no longer a way to challenge grades in this form. According to him, due to the feedback, the student's satisfaction with the learning process is higher even in the case of a negative result.

This then prevents the grades from being challenged, in this case the feedback. If before the students wanted to get five out of a four or get a four out of a three, or whatever they were not satisfied with, the satisfaction is now higher, regardless of the content of the feedback, wording or whatever, of this assessment. Perhaps a student receives a bad result, it is clear that this is a bad result, perhaps more needs to be done. But if we just grade with a two, it might seem like such an unfair uniform revenge on some scale. But now it's clear. (Headteacher of school B)

In order to provide meaningful feedback to students and to teach them reflection skills, teachers need to be aware of the development of each student. By doing that, students can become more self-aware, something that the deputy headteacher from school D highlighted that has been the case. 7p teacher from school A described that in order to support all students, she tries to make sure each one of them has a voice which gives her also the possibility to provide personal feedback during the lesson to all students during the week. Recognising each student by implementing formative assessment in this way can support students' mental health, as highlighted by most teachers (n=8) and many leadership team members (n=4). Most teachers (n=8) said that formative assessment does not scare students while grading during the learning process used to be stressful for them, thus formative assessment lowers stress. Grade 8 teacher from school D acknowledged that she sees that students are much more relaxed because of formative assessment implementation because students have realised that they are on the learning journey where they develop and reflect, rather than are pressured and tested.

Formative assessment doesn't scare students. It's the negative grades that make them feel tense. Formative assessment relieves tension. The child is not afraid to admit mistakes. (Grade 7 teacher from school D)

The grade 9 teacher from school B highlighted that formative assessment has been especially helpful for the learning outcomes of students who are struggling academically. She explained that formative assessment has made the learning process much more understandable and manageable for them. Also, grade 7 teacher from school A pinpointed that when the student is underachieving in several subjects and teachers are supporting the learner in a formative manner, also collaborating among each other to think together how best to support the overall development of that certain child, it is beneficial for his or her progress at school. Two stakeholders, the headteachers of schools B and D, acknowledged that the implementation of the new approach to learning, including formative assessment, has improved student achievement.

As Estonia has had formative assessment in the national curriculum since 2011 (Government of the Republic, 2014), the students who began their studies according to this curriculum were at the age of the upper secondary school students when the research for this study was conducted. Two stakeholders, the deputy headteachers of schools C and D, pinpointed that they notice the long-term positive impact of formative assessment implementation among the upper secondary school students. The deputy headteacher of school C noted that over the years at school current upper secondary school students have become so used to receiving and analysing feedback that they ask for it not only from the teachers but also from the leadership team members. The deputy of school D brought an example of how teaching communication and problem-solving skills through formative assessment from first grade onwards has made current tenth and eleventh grade students much more capable and willing to solve problems. The deputy headteacher of school C highlighted that when she has had interviews with the grade 9 students who would like to continue their studies in the upper secondary school, she has noted that the students are able to analyse their progress during the course of the basic school. She acknowledged that although the students' reflection skills still need some development, formative assessment implementation at school C has helped the students to understand their progress better. The grade 9 teacher from school B highlighted that she has experienced that often the final grades that students have at the end of basic school is reflective of how they are going to progress in upper secondary. She highlighted the importance of supporting the development of self-directed learners who would be able to manage their learning journey in the upper secondary school and said that she has tried to do that. The grade 8 teacher from the same school highlighted that formative assessment assessment should be used all throughout the general education school in grades 1-12 because

she has noticed that in upper secondary (grades 10-12) students can lose their motivation and she thinks that formative assessment could help with the incentive to learn.

Positive outcomes for teachers

In all the interviews with teachers (n=11) it was a recurring theme that they want to support students' development in the best way possible. Eight teachers viewed formative assessment as advantageous to students' development. These teachers (n=8) described a range of positive outcomes for themselves and students that are motivating to continue with the formative assessment implementation process. The three teachers who mostly described challenges, not positive outcomes, doubting whether formative assessment methods in the way currently used at their school fully support students' development, expressed two reasons for their concerns. Firstly, two of the teachers questioned whether giving students long written feedback which takes them a long time to do, is something that learners can use for their benefit by extracting the needed information about what they have mastered and how to improve. They (n=2) questioned whether there is a correct balance between teachers' effort and meaningful support that students are getting. Secondly, two teachers expressed that there is not enough support to deeply understand the formative assessment methods. They pinpointed that the way they had been using formative assessment has not had many positive outcomes for them or students. The three teachers were not against using formative assessment, instead, as they wanted to support students in the best way and were not experiencing positive outcomes, they were doubtful about some aspects of using the methods. However, most teachers (n=8) expressed that in their view formative assessment has been beneficial for them and the students. Increased teacher motivation when experiencing the benefits of formative assessment for students' development, was one of

the positive outcomes reported (n=8). Also, it was highlighted that being fully present for each student's learning journey makes the teaching profession more interesting because as students have taken on a larger role in giving their input, the experience for the educators is more multifaceted (n=8). Furthermore, all teachers (n=11) place great importance on the positive, supportive teacher-student relationship. Many of them (n=8) saw formative assessment as enhancing to these relationships.

It brings tears to my eyes to see their progress... I'm no longer afraid to enter three or five or two or whatever I used to put in the journal. I can write to them in a human way about how they did or what they need to do better, what they need to pay attention to and by now I'm used to the system. If somebody continues to have problems, I engage with them individually and talk to them. The person understands if you speak to him or her... Of course this individual approach, really, this formative assessment, we don't always get to do as much as we would like to because there are too many students and too many lessons. But, if the students are as motivated as they are, it makes the teacher work. I really work like crazy and I ask myself sometimes if it's worth it or what I'm doing. They inspire me to give that feedback. (Grade 8 and 9 teacher from school A)

All interviewed school leaders (n=8) highlighted that the implementation of formative assessment has had a positive effect on teachers' work. They (n=8) indicated that for the leadership team and also many teachers this positive effect has been motivating for continuing with the implementation process. Most participants (n=15) pinpointed that teachers have acquired new skills. For example, the headteacher of school A stated that the teachers have learned to notice each student. The deputy of school D recognised that through the formative assessment implementation process the teachers are better able to help the students understand where they have made progress and what they need to learn to reach the next level. The headteacher of school B acknowledged that the teachers have become more systematic in their approach to the students' study process and, thus, the learning outcomes have become better. Also, the deputy headteacher of school A highlighted that the learning, teaching and assessment processes are now more systematically planned and implemented by teachers than before the start of the formative assessment implementation process.

And, for the teacher's side, I think it's more the teaching and learning that is planned... or the taught curriculum, it's better planned and, I hope, also better executed. It's not random and they know that, in order for the students to get to a certain place, they have to make sure that their assessment is thoroughly executed and planned, known in advance to the students - what they have to do, how they can get there, and what are the steps. (Deputy headteacher of school A)

All school leaders (n=8) acknowledged that many teachers have begun to understand that implementing formative assessment is helping them be effective in their work. The headteacher of school B pinpointed that by now the teachers have understood and experienced that for them, implementing formative assessment is not an additional task, but rather helps to reduce the rest of the workload. This was highlighted by the grade 8 teacher of the same school but the grade 7 and 9 teachers pinpointed that formative assessment has increased the workload. The deputy headteacher of school D acknowledged that for teachers formative assessment implementation is not so much a cost as it is an investment into their work with students. Also the headteacher of school D highlighted that formative assessment gives teachers back more than it takes from them. The headteacher of school B acknowledged that by giving the students feedback, teachers have less to explain to students overall than if they only assess numerically.

And by now, teachers have found that for them, this formative assessment is not extra work, but rather helps to reduce the rest of the workload. By giving the student formative feedback, you will save yourself from a lot of explanation. (Headteacher of school B)

The headteacher of school B highlighted that if teachers apply formative assessment from grade 1 onwards, a holistic system will emerge and the teachers' work will become easier. The headteacher of school D pinpointed that after formative assessment was first implemented in grades 1-3, it was the teachers' decision to continue with this process also in the older grades. According to the headteacher of school D, teachers began to notice that using only numerical grading for assessment was more of a hindrance and wanted to continue with giving feedback as that became the easier way. The headteacher of school B explained that through formative assessment the contact teachers now have with students is much more meaningful than before.

The headteacher of school D has also witnessed this - she highlighted that the students and teachers have become more collaborative than before. The headteachers of schools B and C acknowledged that the implementation of formative assessment has reduced the challenge for teachers where previously students and parents appealed grades. One stakeholder, the headteacher of school C, acknowledged that formative assessment implementation has a positive effect on the teachers' mental health which, according to him, can be a motivating factor for continuing with the implementation process. He highlighted that when he first started as a teacher, he experienced burnout because he felt that he was doing a lot of work, but the students' grades did not improve significantly and the parents also asked a lot of additional questions. As he began to use a learner-centred approach in his work, including implementing formative assessment practices, the students' performance improved, the number of parents' questions became smaller, and in return his mental health conditions, including burnout, decreased. Teachers did not highlight mental health improvement in a similar description, however, all of them (n=11) discussed the importance of a caring teacher-student relationship which has benefits for both students and teachers well-being.

All school leaders (n=8) highlighted that once teachers learn how to put elements of formative assessment into practice, they are more inclined to continue to do so. For example the deputy of school A acknowledged that when the formative assessment implementation process first started, there was no system of how to give feedback to students. When the teachers started using rubrics, they learned how to give feedback to students based on the learning criteria and are now more inclined to use the rubrics for formative feedback. Teachers (n=8) also brought examples of how gaining knowledge and skills has increased the likelihood of using formative assessment methods. The grade 8 teacher from school B described how she was initially one of those

teachers who was reluctant to implement formative assessment but as she started to understand how to give students feedback that supports the progress on their learning journey, she began to comprehend how and why this method works. Also, the grade 8 and 9 teacher from school A highlighted that initially it was difficult to shift from a more teacher-centred approach to giving a higher degree of involvement and responsibility during the learning journey to the students. She explained that initially she was worried that students could not be so self-directed but with experience she started noticing that they took ownership for their progress.

At the beginning, I think it was difficult because teachers were not used to using this criterion-based assessment. But, it has improved over the years, and teachers are more inclined to give feedback based on those objectives.
(Deputy headteacher of school A)

Some school leaders (n=3) highlighted that when the teachers themselves get feedback, it has been motivating for them to continue with the formative assessment implementation process. In each of the schools teachers (n=6) brought examples of how they ask for feedback from students with the intention to use it to better support them. Those teachers (n=6) that reported being open to feedback from students praised the students for expressing what works for their development. These teachers (n=6) highlighted that feedback from students adds to the understanding about the specific learners' journey rather than a generic group of students'. They (n=6) saw this feedback as advantageous to their professionalism as teachers. The headteacher of school D brought an example of how the Ministry of Education and Research representative came to give the teachers feedback about their effective work when the students of school D had performed very well in the PISA 2018 study. According to the headteacher of the school this feedback motivated teachers to continue with implementing new teaching and assessment methods, like formative assessment. The deputy headteacher of school C highlighted that she has noticed that through many years of formative assessment implementation now there are teachers who want feedback

to their work as much as the students do. She described how she visited online lessons during distance learning and after these lessons, the teachers came to her room to ask her whether she had found the methods used during the lesson effective.

I hold roundtable meetings with the students, I ask for their feedback. I also listen to their criticism. So there is two-way feedback. When students give me feedback, I'm very pleased that they actually do it . They do it very well. (Grade 7 teacher from school A)

Positive outcomes for parents

The majority of leadership team members' and teachers' data showed a lack of parents' buy-in that is reported in this thesis as a hindering factor. However, six leadership team members and six teachers also identified some positive outcomes for parents as a result of formative assessment implementation, motivating the schools to continue with the process.

The headteacher of school A highlighted that because formative assessment is being used, the parents are better informed of their child's development. Also, grade 8 teacher from school C expressed that should the parent be interested, feedback gives a better overview of where the student is on their learning journey and what they need to master to achieve study goals.

I think the parents also get a more positive and systematic picture of their child's development, rather than the anonymous numbers, which say very little, usually (headteacher of school A).

The deputy headteacher of school C also highlighted that formative assessment implementation helps parents understand their child's development better. She emphasised the importance of teaching students to actively monitor their own learning through self-assessment. She highlighted that students' self-analysis is important for the students and their parents. She stated that by applying self-assessment practices at school, students are able to explain their strengths and areas of improvement to their parents, which in turn helps caregivers to understand their child's development. The deputy headteacher also highlighted the student-parent-teacher conference as an effective method of formative assessment at school C. She pinpointed that these conferences

are a possibility to give feedback and introduce formative assessment to the students' caregivers. In addition to a better understanding of their child's development, according to the deputy headteacher of school C, the conferences help the parents become aware of the formative assessment methods used at school. Also a grade 8 teacher from school B discussed the importance of student-parent-teacher conferences. She highlighted that as she mainly works with students with special educational needs, she breaks down the teachers' feedback with the students, helps them self-reflect and often involves parents to these meetings, so that the caregiver would also have a full understanding of how the child is doing at school. She explained that at these student-parent-teacher conferences there is a collaboration to build a strategy to close the gap to achieving study goals. Thus, she highlighted that different formative assessment methods help the parents understand how their child is doing at school and what kind of support they need.

Three teachers highlighted that formative assessment is not only good for the students' but also the parents' mental health. The grade 9 teacher from school D described that she spends a lot of time trying to put together the most supportive feedback, so as not to hurt the students' feelings with her words. Also, so that the family could read and understand the current level of progress and what the student could work on further. These teachers (n=3) acknowledged that especially in instances where the student still has a lot of room for improvement, parents are calmer when they see feedback to analyse rather than a negative grade.

Neither parent nor child will be put in a bad mood. If the child comes home with negative grades on the report card, both the child and parent will be sad. But if it's on there in the form of the text, nicely, positively conveying the negative, it doesn't create that bad mood, I think. (Grade 9 teacher from school B)

When a parent looks at whether their child got a 5 or a 2 when it's a 2, it's a catastrophe for the family. But with this approach, it may also be easier for the parents to understand what the child needs to work on and how to help them. (Grade 7 teacher from school B)

The headteacher of school C and the deputy of school A highlighted examples of how formative assessment has also helped the parents to understand the child's learning process during the Covid-19 pandemic. The headteacher of school C gave an example of how the grading system was changed during distance learning and because of that he had thought that parents would ask various clarifying questions. However, he noted that since the school's electronic daybook had explanatory feedback connected to the grades, they didn't send in enquiries. The headteacher concluded that because of the feedback in the electronic daybook, the parents were able to understand their children's development even as the grading system changed. The deputy headteacher of school A brought an example of a grade 9 parent who had informed her of noticing that during distance learning the teachers had provided such quality feedback that the child was able to understand the learning process and his development while being at home and, thus, was able to progress in the studies. According to the deputy headteacher, the parent was surprised how much more self-directed the students had become in their learning.

The headteacher of school B highlighted that the parents of students at their school are beginning to understand why formative assessment is important. He said that for parents the process to this realisation about the positive aspects of formative assessment had taken time. According to him, it had been necessary to justify formative assessment methods scientifically. When the parents began to understand the need for the implementation process, they supported the school in the changes to assessment.

Interestingly, we have actually been very supported by our parents (headteacher of school B).

Also, grade 8 and 9 teacher from school A highlighted that although she had noticed that parents had some doubts in the beginning of the implementation process, with time caregivers had started to see how formative assessment had helped students develop in new ways, like being

more independent, being able to express themselves better, showing a higher level of curiosity towards the learning process and having more courage. She highlighted that step-by-step these positive outcomes of formative assessment implementation had lowered the parents' worries and caregivers had found that their children need less help with homework and organising their studies.

In-school collaboration

Vision from the leadership team

While many teachers acknowledged that the stakeholders at the Ministry of Education and Research or the Tallinn Education Department are responsible for the successful formative assessment implementation, it was consistently brought out across the interviews with them (n=11) that for teachers the most important factor regarding implementing educational reforms is whether the leadership team manages change by creating a meaningful school-wide system, communicates about it effectively and trusts teachers in the process.

I can tell you about the implementation of educational reforms from having delivered workshops at very different schools myself. And fortunately or unfortunately, most of my friends are teachers and in different locations: very small places, on an island, on the mainland, in a big city, in an elite school, in a mainstream school. I would say that it really all starts with the leadership team. How the leadership team promotes the need for change, how the leadership guides, how executes - a lot depends on that. (Grade 7p teacher from school A)

In all the interviews with the school leaders (n=8), it emerged that they understand the important role the leadership team has in implementing reforms. These were some of the examples in which this was evident at each school:

At school A the deputy explained that the headteacher has the most impactful role in the formative assessment implementation process. The headteacher explained this in reverse: he acknowledged the role of the deputy, who needs to have the knowledge and ability to bring about change, as being the most important. Two teachers interviewed at school A brought positive examples of how the deputy headteacher had supported them with using formative assessment methods, like being open to questions during meetings and having given encouraging constructive feedback after doing classroom visits. The deputy headteacher of school A pinpointed that it is essential that the headteacher believes in the formative assessment approach and is educated about why and how to implement it. She highlighted that if the headteacher is the forerunner of reforms at school, it makes it more likely that formative assessment will be

implemented successfully by engaging teachers, parents and students in the right way into the process.

I think headteachers definitely should be held accountable, and they should be the visionaries and forerunners of formative assessment. If they are not in the boat, so to say, or if they don't believe in that, then I don't see how this could work. I think it very much comes from the standards or the benchmark that they set. And, I think the important part is that the headteachers themselves understand what that [formative assessment] means and how it is implemented and what works. If it is very much a lip service that they know a lot of maybe philosophical stories but they don't know how it works in practice, they can't support the teachers, and they probably can't enlist the parents and ultimately the students. So, I think headteachers are accountable or should be accountable if we want to implement something that affects so many different areas. (Deputy headteacher of school A)

Engage the right people in the right positions to have it [formative assessment implementation] happen. [...] The first stage was to engage the deputy headteachers of the age groups, who would be knowledgeable, and not only knowledgeable, but also skillful. [...] Not only that there is a deputy headteacher who wants to implement it [formative assessment], but this leader should be the spokesperson for the ideas, so that it's not only the knowledge, but it's also the implementation. That the deputy headteacher could show the way and then carry out [formative assessment implementation], so the firsthand feedback would be there. That has been the key factor, number one, definitely. (Headteacher of school A)

At school B both leadership team members and at school C the headteacher highlighted that students did not benefit much from a few changes in the assessment methods that took effect at their respective schools after the 2011 national curricula were introduced. They (n=3) explained that this did not work because an overall change in the understanding of student-centred teaching and assessment methods was needed for successful formative assessment implementation. Thus, they (n=3) talked about formative assessment as being part of the overall change in the approach to learning with the systematic approach created by the leadership teams as integral to implementation. At school B leadership team members introduced the stages of change that they put into practice in order to be able to implement formative assessment: focusing on students' holistic development, setting and reaching achievable developmental goals for staff, using active learning and co-teaching methods, creating e-learning days, making changes in lesson length and schoolday agenda, creating a transdisciplinary curriculum and meaningful collaboration among teachers. The headteacher of school D pinpointed that formative assessment methods did not initially take effect and the leadership team had to conclude that as overall little active learning

was taking place, teachers needed the leadership team to create stages of systematic change in using teaching strategies that engage students as active participants in their learning. He talked about formative assessment as being part of the overall change in the approach to learning which the leadership team set as a priority from the school year 2017-18. One of the important stages according to him had been the creation of Õunakool (translation: Apple School) by the leadership team in collaboration with the motivated teachers. Õunakool is centre at school D that provides methodological support in various ways, including mentorship, doing lesson visits and providing materials. This shows that leading change to implement formative assessment involves a wide range of stages to create deep understanding, not only the introduction of specific formative assessment methods that teachers can put into practice.

At school C the deputy headteacher acknowledged that in the Estonian general education system reforms are implemented more in a bottom up than top down model with the leadership team holding the central role. She explained that even if the Ministry of Education and Research does not take on the obligation of leading change in a well-developed manner, the leadership teams of schools can play the key role in bringing new ideas to the teachers and creating a systematic approach at school level. She acknowledged that at the time of carrying out this research, formative assessment had somewhat lost national importance and was no longer under the policymakers' spotlight. Thus, she highlighted that it was important that once the leadership teams have created a system for implementation, collaborations between schools should follow to learn from each other's best practices and make adjustments. After this stage has taken place, she envisaged that the schools can bring the information regarding the implementation stages to the national level for analysis and support. This means that the deputy headteacher of school C understands the important role leadership teams have to implement formative assessment. She

described a model where educational reforms are introduced by the Ministry of Education and Research but all implementation stages are carried out according to the bottom up model of change. Also, the headteacher of school C saw the systematic approach created by the leadership team as integral to formative assessment implementation. He highlighted that students did not benefit much from a few changes in the assessment methods that were taken on after the 2011 national curricula were introduced. He talked about formative assessment as being part of the overall change in the approach to learning which the leadership team set as a priority from the school year 2017-18.

The headteacher of school D highlighted that positive developments and outcomes at their school have come about because of how quickly the leadership team has been able to respond to the introduction of each of the educational reforms. The deputy of the same school, grade 8 and 9 teachers pinpointed that it is the headteacher who has brought about the meaningful change by always finding solutions while implementing reforms. Also, by being caring towards staff members and open and supportive towards their ideas. The headteacher and deputy brought out that not all leadership teams of Russian language schools have been able to do that and, thus, they highlighted that those schools have not progressed as greatly as school D.

But [name of headteacher] is always somehow going forward. She doesn't get stuck, realising that something is difficult. She always finds additional ways of how to explain to people and help them understand that it's [formative assessment] necessary. But she doesn't do it from the top down. She says, "Here you go and then you can do this and then you do that." (Grade 8 teacher from school D)

The leadership team members mainly talked about how to manage change to create understanding about formative assessment for teachers. They saw a challenge in how to explain formative assessment to all teachers. The headteacher of school C highlighted that for that the school needs very specific standards that everyone follows. If the communication regarding what formative assessment means is not clear, teachers may not understand what is expected or will

not want to implement what is expected. According to all school leaders (n=8) clear guidelines and set standards help with formative assessment implementation.

It was reported by leadership team members and teachers that it takes time to come to a common understanding among all the staff on how to implement formative assessment. In some of the interviews it was mentioned that too much change means that at some point teachers will not implement them. Thus, one headteacher said he has tried to make the changes slowly because he felt that the Ministry of Education and Research had somewhat forgotten those who are actually implementing the changes on site and who are thus responsible for the quality of change implementation.

In-school collaboration

Collaborative planning was considered essential by school leaders (n=6) and some teachers (n=5) to ensure successful formative assessment implementation. Various ways of collaborating were brought out by these stakeholders:

Firstly, school A and B reported weekly collaborative planning meetings, C and D had whole staff meetings taking place about once a month. In school A the deputy highlighted that teachers are working in subject groups to disseminate various aspects of the curricula, including formative assessment. In school B it was brought out that every year teachers choose a topic they want to concentrate on as part of professional development and once they have done that, the teams for each topic meet weekly to read and discuss their area of interest. Throughout the school year the teams provide professional development on their topic of focus to other staff members. In schools C and D aspects regarding developments are covered at whole staff planning meetings.

However, it was highlighted that due to the Covid-19 pandemic consistent professional development in formative assessment was not focused on during these meetings.

The school leaders from schools A (n=2) and B (n=2) found the in-school training system essential for formative assessment implementation. In school A the deputy regularly provides teachers with training about different aspects of pedagogy, and also teachers who are more knowledgeable about some aspects of teaching and learning can provide training sessions to other staff members. An important way of collaborating that some teachers (n=4) had found helpful for formative assessment implementation was mentorship for new teachers. All teachers in school A highlighted that a mentor during the first year at school had been helpful for them in understanding the school's practices regarding assessment.

A key factor's definitely the in-school service, in-school training sessions for the teachers. Without those, you can hardly achieve full implementation. (Headteacher of school A)

Additionally, sharing materials was found to be essential for formative assessment implementation. In school C, for example, a group of enthusiastic teachers was reported to have created a separate unit at school for sharing materials from workshops and their own lessons that could be helpful for other colleagues.

It is important that teachers collaborate in their subject groups to understand how to implement formative assessment within a specific area of content (e.g., Bennett, 2011). In school D it was reported that at the start of the implementation process Russian language and literature teachers worked together to examine and develop formative assessment techniques that can be used in their subject.

When we started working with formative assessment, I was the head of the school's methodological council, so we developed all these elements of formative assessment and assessment during the lesson, which was moving toward full implementation (Grade 7 teacher from school D).

External support

Collaborating with educational institutions and authorities

School leaders (n=8) reported that the most important external support they need comes from universities. It emerged from all four schools that there is a very high level of trust towards educational scientists among leadership team members. The following main reasons for the need to collaborate with universities were discussed: they provide a theoretical framework of reasons to use formative assessment, knowledge about the practices and ways of implementation. It was also evident that teachers (n=10) consider support from universities important. Teachers talked mainly about the need for the quality of teacher training and continued professional development. For example, a grade 7 teacher from school A expressed the following about who carries the responsibility for formative assessment implementation in schools:

First of all, I think the uppermost stage should be the universities, the University of Tartu, Tallinn University, to educate students as concretely as possible, to make them understand exactly what formative assessment is. (Grade 7 teacher of school A)

While leadership team members (n=8) also considered the quality of teacher education to be important for formative assessment implementation, they also focused on how the Ministry of Education and Research should have a systematic approach to reforms that would be developed in collaboration with universities. This is further discussed under the hindering factor of the lack of systematic evidence-based approach to reforms from policymakers. School leaders (n=8) highlighted that when their respective schools encountered difficulties with formative assessment implementation, such as increased workload for teachers, lack of students' and parents' understanding. They found support from educational science: school A implemented formative assessment based on the scientific research provided to institutions implementing IB programmes, schools B joined projects led by Tallinn University and the University of Tartu,

school C invited Tallinn University specialists as workshop leaders on formative assessment to provide training to staff, school D participated in a University of Tartu programme. This shows that schools want to do evidence-based developments and when there is a lack of Estonia-wide systematic support in that, schools have tried to find their own solutions in order to have a scientific approach to formative assessment implementation. Also, although there was discontent among leadership team members (n=8) and most teachers (n=8) regarding the lack of well-developed approaches to reforms by educational authorities, school leaders, to some extent, considered it to be normal that when there are gaps in the system, autonomous schools should try to find their own solutions, like approaching universities themselves to get support. It can be concluded that the schools in this study have an understanding that with the high level of autonomy they also have to take responsibility.

In 2016 we started to work with Tallinn University by joining the Future School programme... It's like evidence-based school development, where researchers give us the tools, basically from the science side, and we then put them into practice. So perhaps now, when I have been educated myself, I'm convinced that I wouldn't have started doing formative assessment in 2011 in such a way that we didn't have a very clear goal, we didn't have a clear understanding of why we were doing it, that it was a bit of a mess. But we were able to move in the right direction later on with the right tools and on the one hand when Tallinn University put together its materials for formative assessment, we have taken them as a starting point, and in the case of the University of Tartu as well. (Deputy headteacher of school B)

In addition to projects led in full by universities, five other ones that have supported schools with implementing new approaches to teaching and learning, including formative assessment were noted by participants. Two of these programmes helped the staff reflect on the teaching and assessment methods by focusing on developing IT-skills. The project that was referred to most was Youth to School that schools B and C had joined. This is a programme that brings people from different fields into the school system to teach for two years at schools where there is lower graduation rate, while providing teacher training to them at Tallinn University. The deputy headteachers of schools B and C acknowledged that teachers who have to come to the schools

through the Youth to School programme are being selected and taught in a way that they come to school with an open mindset ready to implement contemporary methods, including formative assessment. According to the deputies this is positive not only for the students but an overall school culture.

But they're different [teachers from Youth to School programme], honestly, because they're taught a bit differently. For example, we have those teachers who are from the old system, teachers from a different system, they don't want to move away from their ways and use the new approaches. But young people come with new ideas. We have many teachers who also go along with Youth to School teachers, collaborate, of course. (Deputy headteacher of school C)

In addition to projects, some collaborations with the Ministry of Education and Research were mentioned that support formative assessment implementation. For example, 7p teacher from school A and leadership team members (n=2) from school D noted that participation in expert teams who give feedback on national curriculum changes has helped to understand new approaches to teaching and learning better. Also, in school B the deputy and in D the headteacher noted that although there are many aspects of the Ministry-led satisfaction surveys for students, teachers and parents that they would criticise, they have found some of the data about their schools useful to understand how implementation is going and what to develop further.

One teacher (grade 7 from school D), who had extensive knowledge about formative assessment methods and how to implement them in the classroom, is the author of textbooks and workbooks for teaching Russian language and literature. She acknowledged that the collaborative work with the external team she worked with to write these, including the teachers' example work plans that accompany the materials for each grade level, was where she gained most of her knowledge about formative assessment. The researcher has analysed these open access work plans and can confirm that they do involve consistent guidance on how to use formative assessment activities. The researcher did the same analysis for other Russian and Estonian language and literature textbooks and workbooks used in the third stage of studies in schools around Estonia, and did not

find similar formative assessment guidance for teachers. There were only a few isolated examples in the work plans for teachers, like doing a self-analysis after many weeks of studies. There were some formative assessment activities in the textbooks and workbooks themselves, like giving feedback to another student. However, the work plan for teachers that accompanies the Russian language and literature textbooks and workbooks for the third stage of studies, written by grade 7 teacher from school D, provided the most clear guidance on using formative assessment consistently. As the teachers' overall knowledge about formative assessment methods and how to put them into practice was best at school D where they use these study materials, it can be concluded that collaboration to write a textbook and workbook with the intention to guide teachers to use formative assessment helps the authors to understand formative assessment better and provides a well-thought through guide for all teachers using the materials to teach students. Study materials used with students that help teachers with understanding how to use formative assessment methods consistently, can be enhancing to systematic country-wide formative assessment implementation.

When I was working in an external group to develop a work plan, and we discussed it, then this idea of formative assessment became clear, where it comes from. And after that, when I understood it myself, I started to teach others. And in the classroom, when I prepare a task, I already anticipate what kind of formative assessment will go along with it. (Grade 7 teacher from school D)

Collaboration with other schools in order to implement formative assessment was noted by five school leaders from schools B, C, D and two teachers. The headteacher of school D highlighted that the best support for formative assessment implementation for staff has come doing school visits because this has given teachers a possibility to experience formative assessment in practice. Additionally, she pointed out that some of the teachers conduct workshops, including on the topic of formative assessment, at schools in Ida-Viru, the third largest county in Estonia where over 70 per cent of the population is of Russian ethnicity. She highlighted that this

experience of teaching others has also helped the staff at school D understand formative assessment better because their thinking about the matter has deepened. This was confirmed by the grade 7 teacher of the same school. The deputy headteacher of school C expressed that inviting educators from schools that are further along with the implementation process to share their experiences and train teachers is something she would like to do in the future in addition to inviting workshop leaders from universities. The headteacher of school B pinpointed that as there is a high level of autonomy in the general education system of Estonia, schools differ from each other greatly. According to him this means that the Ministry of Education and Research has not been able to develop a systematic approach and, thus, schools need to collaborate with each other in order to implement reforms. He pointed out that school B has worked with a network of partners in the city of Tartu but not Tallinn. However, a grade 8 teacher from the same school did bring an example of how she is collaborating with educators from a school in Tallinn with whom they have analysed how best to support self-directed students during distance learning. The deputy headteacher and grade 8 teacher also talked about a school in Tartu where educators are discussing with them how to implement goal-setting and self-analysis.

Just as we have one police force, one health system, we have one education system. Let's say that if the Ministry can't manage everything very well, we try to collaborate with the schools ourselves. We have had very good collaboration with the schools in Tartu in thinking all of this through and negotiating everything, and less so with the schools in Tallinn. (Headteacher of school B)

Digital technology resources

The leadership team members from schools B and D and five teachers acknowledged that one aspect that has helped with reforms, like implementing formative assessment in the Estonian general education system, has been related to information technology. In order to use different online resources, the necessary equipment, like computers and tablets, and the internet

connection is needed at schools. At the end of the 90s a project called Tiigrihüpe (translation: Tiger Leap) began in Estonia with the focus on providing computer and network infrastructure in schools. The headteacher of school B pinpointed that the new approach to teaching and learning and with that the change in the role of the teachers and students is in his view largely related to Estonia-wide access to the internet in schools before the 2011 national curricula were introduced. The headteacher and deputy of school B highlighted that as students could read about different topics in their spare time online, the teacher was no longer seen as a source of most of the knowledge that the student could acquire about a subject but instead became a facilitator of learning, somebody who invites to learn rather than transferring content. The headteacher of school D emphasised how important it has been for continuing with developments that schools had been provided with the needed information technology equipment. She highlighted that this is something that distinguishes Estonia's education system from many other countries'.

As the study was conducted during the Covid-19 pandemic, in the interviews the wireless internet connection, equipment, electronic journal and different online platforms were highlighted as essential for communication with staff, students and parents. When school leaders and teachers were asked whether they had to change anything regarding formative assessment implementation during the pandemic, most of them answered that they used the system of online resources to support implementation that had been set up before and, thus no changes were needed. Four teachers noted that they provided longer written feedback to students during distance learning than they did when schools were open. Grade 7 teacher from school A highlighted that many of her students had written to her to show their appreciation for providing them with such detailed feedback. However, in each of the schools there were some examples brought out of students who did not participate in distance learning well and were difficult to

reach and support. Deputy of school D and four teachers pinpointed that distance learning has greatly contributed to learning new IT skills that can be used with different formative assessment methods. Before that time, one of these teachers, as reported by her colleague, had forgotten how to copy and paste and as she did not ask for help, she wrote similar feedback to each student from scratch which took a lot of time. However, overall, the interviews with teachers and students and classroom observations showed that teachers have a vast set of IT-skills and they use various online resources and platforms, like Google Classroom and Meet, Moodle, Mentimeter, Wiser, Wordwall, Weebly, Zoom. Three teachers, the headteacher of school D and deputy of school C also talked about using OPIQ, an online learning environment that has digital materials that comply with the national curricula for general education schools. During classroom visits, school D grade 7 teacher used OPIQ for some of the activities during the lesson, including giving feedback, while students participated on iPads. Overall, as self-reported in interviews with leadership team members and teachers, Estonia's general education schools managed the Covid-19 pandemic relatively well largely because of the availability of IT-resources. This also includes the fact that educational technologists work at general education schools in Estonia. Although teachers get the support, it was noted by two teachers that due to the lack of time they were unable to use many of the platforms that educational technologists had shown them.

I would like to use platforms more and find ways to do it. The educational technologist has shown me so much, but I have not implemented everything. I think every time, oh what a great idea or platform, but I haven't put it into practice. (Grade 7p teacher of school A)

This shows that with the vast possibilities to use different online resources there needs to be a well-thought through strategy regarding how many and what kind of platforms best support student learning, including what to use for formative assessment implementation. As evident

from interviews with students, students want teachers to use various methods and with that to include IT-resources to make lessons more engaging. Also teachers acknowledge that in the general education system of Estonia they are mostly given autonomy to choose methods and materials, thus, they can also pick the online platforms they consider best suited for students' development. As school D grade 7 teacher noted, "And it should be remembered that in Estonia the textbook is not the main resource used in lessons, so it is assumed that teachers can use any materials they choose." With this freedom, however, even a teacher (school C grade 9) who self-reported that she uses various online platforms to implement formative assessment, like giving feedback on Google Classroom or eliciting evidences of learning from short activities on Moodle, acknowledged that there are so many possibilities of online resources that it can create a sense of confusion and after some time she forgets how to use some of them. Thinking this process through is important also for teachers' and students' mental health, as highlighted by grade 8 teacher from school D.

A person can't keep up with all of these new technologies, everything changes instantly. So we are in Google Meet, then we are in Classroom, then we are here, there, there. Please stop! Choose something, let's teach it to kids, they'll learn it and we can work peacefully. This constant switch, even psychologically not everyone can withstand it the same way. (Grade 8 teacher of school D)

School B grade 7 teacher stood out in this study as an educator who had worked out a comprehensive system of online resources that he uses to support student learning across school years and to implement formative assessment. He has created his own webpage that involves the whole grade 7-9 Estonian language and literature programme to which students can turn to any time they need during their school years or in the future. On this webpage the teacher has provided theoretical resources and explanations in the form of text, videos and weblinks. Additionally, he has set up a vast bank of exercises connected to each topic that students can take. These activities are autocorrected in the system. For the possible mistakes, the teacher has

recorded videos and provided resources explaining the grammar rules. Then a student can do the same exercise again or choose another activity that covers the same topic. The teacher explained that he wanted to support the development of self-directed lifelong learners by providing an online platform for them where they can study any time should the students decide to do it. He said that this creates equal opportunities for everyone. Also, because he thinks that in the upper secondary school the Estonian language and literature curriculum does not have enough focus on grammar, those students who did not master the grade 7-9 programme while they were in the third stage of studies, can turn to this resource during the upper secondary school and learn the grammar topics then. He acknowledged that it is otherwise not fair to the student that in upper secondary it is assumed that they know certain grammar topics from basic school and if they don't, they would not have possibilities to re-learn them in order to succeed at the final exam and have opportunities to go to the university of their choice. Besides the system of online resources, this teacher is keeping an overview of each students' progress in an excel file, so that he is able to provide timely feedback and explain the content of comments, should it be needed. Additionally, the extent to which this teacher is incorporating a system of online resources into delivering content and assessment was evident during the classroom visit when he used various materials on the web that students can access also in their free time, into revising a grammar topic. After revision during which the students actively participated, they took a short practice test on Google Forms. After submitting the answers, the students got automated feedback and grammar explanations on Google Forms for each of the questions. The class analysed this together and the students got a chance to ask questions, a possibility that many used. Finally, they took a short five-question test on Google Forms where they could use any materials and that did not have a time limit. After all students had submitted their answers, the teacher provided

automated feedback to each of them to their e-mail that showed the correct answers and grammar explanations. When analysing the activities and discussing the next steps with the teacher after the lesson, he said that already during the class he looked at the results of the practice test which gave him information for the revision portion of the lesson regarding which aspects of the grammar rule were mastered by most students and which needed more explanation. Additionally, he said that he would be looking at the results of the second test to see who had improved and which topics needed more practice time during the next lessons. The teacher summarised that he would be taking the following next steps: aspects of the grammar rule that were most difficult would be covered again and aspects that were mastered by almost all students would not be extensively covered with the whole class but one-to-one support would be provided to those students who made mistakes. This shows that by involving various online resources into delivering content and assessment the teacher used the following formative assessment methods: provided learning goals and criteria for success, elicited and interpreted evidence of learning, used assessment by the teacher and self-assessment, provided feedback, set next steps to close the gap to reaching the study goals while providing the students with the opportunity to work in the zone of proximal development.

In addition to different resource possibilities that teachers can choose, schools in Estonia use a platform where teachers log in lesson topics and add grades, give feedback. As all leadership team members (n=8) and most teachers (n=8) understood formative assessment mainly as a procedure of providing feedback, a school's electronic daybook was discussed as an important space where to give written feedback. They (n=16) highlighted that this platform is used to implement formative assessment. Five school leaders and two teachers also saw this as a space

that can be used for students' written self-reflection, one school leader as a platform for adding learning goals.

The third implementation phase was also the platform, which would help teachers and students, as well as the parents, to receive feedback, but also to give feedback or give the personal reflections. That was the third important stage. (Headteacher of school A)

The deputy and grade 8 teacher of school B highlighted that they are collaborating with the electronic journal provider in order to add developments that schools need for formative assessment implementation. This, according to the deputy and the teacher, would include possibilities to set goals, reflect and give feedback. Grade 8 teacher from school C highlighted that the electronic journal company should provide teachers with feedback templates that teachers could use and develop further. This teacher came back to describing the need for this development various times during the interview and stated that this is the support she needs to continue with the implementation process. It emerged from the interview that she was asking for these templates in order to understand what kind of feedback is expected from her and that she could do her work well. In addition to the needed developments highlighted by schools B and C, three school leaders from schools A and C noted that they are trying to use the possibilities that these platforms already provide in a meaningful way for formative assessment implementation at their respective schools.

It's that step of setting goals and structuring the lesson around the goals and then having the student be able to give feedback. In cooperation with eSchool, we are trying to create such a model that the teacher sets the objective of the lesson, the child can set his or her own goals based on the objective of the lesson. And then can analyse meeting them afterwards: write a short feedback, for example, that he or she really did not understand the topic of the lesson or did not listen enough, did not follow the lesson, the teacher's explanation was not clear enough, perhaps some kind of visual material was not used to give some kind of ideas. And then create a kind of self-analysis form based on that. (Deputy headteacher of school B)

And at this stage, we also want to put a template for formative assessment in eSchool, so that teachers can, as there is a feature in eSchool, teachers can take some keywords and then add them to the student. But it certainly needs to be developed explicitly because it's such an intermediate stage for us, it's still very raw to be honest. (Deputy headteacher of school C)

The information on these platforms, like absences, grades, feedback, self-reflection, was seen as an important dataset for understanding student progress and helping the students with their learning. For example the deputy headteacher of school A pinpointed that it offers each teacher the possibility to monitor progress during the unit. Additionally, she noted that the dataset on the platform is an important input for teachers' self-reflection about whether the kind of support they have provided students has helped with learning. The deputy headteacher of school C highlighted how the class teacher can implement formative assessment by using the information on the platform to support the students' progress throughout the academic year by providing ongoing oral and written feedback. Also, she pinpointed that this information can be used during developmental meetings with the class teacher either one-to-one with the student or by involving the parents in order to collaboratively support the learner's development. At the same time grade 7 teacher from school B highlighted that one of the reasons he has declined the role of the class teacher has been that it is expected that in this position he would have a full overview of each students' development but he has found that working through written feedback from each teacher is firstly time-consuming and secondly does not provide the full picture that is needed to support the student. He highlighted that looking at grades gives a better starting point for oral reflections with the student than trying to read each teacher's comments. He also questioned whether the leadership team can really have an overview of how students are doing when they have thousands of comments in the electronic journal to process.

In addition to the platform possibilities having the potential to help support student progress, it can also help school leaders to review the implementation of some formative assessment procedures. Deputy headteacher from school B noted that she has an agreement with the teachers that they have to add learning goals into lesson descriptions and she uses the electronic platform

to monitor whether and how successfully they have done that. Additionally, it was highlighted by at least one from each school's leadership team members (n=6) that the electronic journal is used to monitor the quality of written feedback teachers have given students and whether any improvement in learning can be noted through reviewing ongoing feedback.

How I measure it, I have looked at the teachers' electronic journals and have analysed what they write in the formative assessment feedback... For me, as a teacher, it's also evidence of student learning but as an administrator, it's also seeing whether the formative assessment data that the teachers provide is enough or adequate for there to be any learning. (Deputy headteacher of school A)

However, when leadership team members analyse the quality of the feedback teachers provide in the electronic system, it is important to communicate any changes needed in a supportive manner, especially, as it was noted by all teachers who participated in this study (n=11) that it is time-consuming to write comments to students. For example, the school D grade 7 teacher said that at the end of the half-year it can take teachers weeks to provide students with feedback. Grade 7 teacher from school B highlighted that one of the reasons he prefers not to teach in grades 5 and 6 is that it was stressful working with the programme coordinator of those classes because of the way she communicated that feedback needs to be re-written. This shows the importance of taking into account the teacher workload, creating a system manageable for them and giving feedback to colleagues in a supportive manner, especially, as it was evident from all interviews with teachers that they want to do good work and if the quality of feedback is not there, it is not because they have tried to find an easier way to write them.

Well, I know situations where the programme coordinator has come to the teacher and said, "See, here, I looked at your, your feedback and it's all incorrectly written. That's not the way we write, we don't write things like that, start from scratch." And actually in the fifth or sixth grade, the tension of whether or not she's going to come and tell me this time - it was crazy, every time I saw this person. I was like, well, actually I held my breath, go past, go past, say hello. Let's smile, go past, don't say anything. It was so massive that if, if really like, say I had to rewrite like a hundred assessments. (Grade 7 teacher from school B)

The study also revealed that different online platforms are being incorporated into collaborative planning and teacher training at case study schools. Some teachers (n=5) talked about how they

build unit plans in shared documents, attend staff meetings and teacher training sessions online during the pandemic. Grade 8 and 9 teacher from school A talked about how the Estonian language and literature team met online at the end of term to reflect on the unit of inquiry they had facilitated to students, thus showing a formative assessment practice of self-reflection used among teachers. Deputy headteacher of school C highlighted that based on the information in the lesson logs, she remotely attends some online lessons in order to monitor the content of the lessons during the pandemic. She highlighted that after the lesson she gives teachers feedback which they appreciate, thus showing that the formative assessment method of giving feedback is also being used by school leaders. Regarding workshop possibilities, grade 9 teacher from school D said that she attended a webinar on formative assessment that helped her to understand the system better.

Hindering factors in formative assessment implementation

This chapter describes hindering factors in formative assessment implementation that are based on the qualitative thematic analysis results of interviews with eight school leaders (four headteachers and four deputies) and eleven teachers (eight grade 7-9 Estonian and three Russian language and literature teachers) from four case study schools. The chapter also includes some references to the interviews with the policymakers, descriptions from the classroom observations and the written feedback to enhance the reporting by school leaders and teachers. The chapter aims to answer the following research question: What factors do school leaders and teachers perceive as hindering the implementation of formative assessment in the general education system of Estonia? The qualitative thematic analysis of interviews generated four themes: absence of a systematic approach for implementation across all schools, issues in educational policy and structure, challenges in adapting to change and pedagogical misalignments. In this chapter, first, the summary of the findings in each of these themes is presented and, second, the results related to the sub-themes are described in detail. The findings in each of the themes and their sub-themes are the following:

1. Absence of a systematic approach for implementation across all schools

The theme focuses on how all stakeholders (n=19) described that it is essential that the Ministry of Education and Research has a well-established strategy for the developments in the general education system of Estonia, structure in place that supports formative assessment implementation at school level and keeps the vision alive by communicating about the benefits of reforms that have been undertaken. These stakeholders (n=19) reported that there is an

absence of such a systematic approach in the country-wide formative assessment implementation. The theme encompasses the sub-themes of autonomy of schools and a lack of systematic centralised support, insufficient professional development in formative assessment and absence of a system for monitoring formative assessment implementation.

The sub-theme of autonomy of schools and a lack of systematic centralised support highlights that school leaders and teachers believe that independence in decision-making is essential but it becomes a hindering factor for formative assessment implementation when there is no systematic centralised support from policymakers, leaving each school to figure out the fundamentals of formative assessment and the implementation process on its own.

The sub-theme of insufficient professional development in formative assessment highlights how school leaders and teachers report that policymakers have not provided them with sufficient training in formative assessment methods, neither as part of university studies or ongoing professional development, even though it is essential for a successful implementation process. Also, they report that open-access online resources in Estonian and Russian are not sufficient for educating oneself about formative assessment.

The sub-theme of absence of a system for monitoring formative assessment implementation describes that according to school leaders and teachers there is no well-developed approach to overseeing the implementation of the formative assessment reform at any stage of the process. These stakeholders believe that systematic monitoring of formative assessment implementation by researchers and policymakers that would be supportive and take into account each school's autonomy is needed. Leadership team members and teachers report about some existing attempts to track formative assessment implementation, like national satisfactions surveys, headteachers' assessment by the Tallinn Education Department, lesson visits, assessment of the quality of

feedback in the electronic journal, teachers' participation at collaborative meetings, feedback from students and parents. However, the stakeholders acknowledge that these are merely attempts and systematic support for meaningful monitoring and feedback is needed by developing collaborations between policymakers, universities and schools.

2. Issues in educational policy and structure

The theme describes challenges that are related to legal frameworks, teacher shortages and factors at school that increase work obligations. This theme encompasses the sub-themes of limitations in legislation, ageing teacher demographic and workload.

The sub-theme of limitations in legislation describes how stakeholders report that the legislation does not support formative assessment implementation and highlight the following aspects of it as hindering: descriptions of formative assessment in the national curriculum and its supporting documents are not detailed enough, the use of formative assessment is not obligatory, there is a requirement to give marks in the third stage of studies and it is mandatory to convert summative assessments into grades. Their reporting reflects gaps in understanding about the fundamental formative assessment principles.

The sub-theme of ageing teacher demographic highlights that there is a serious issue of shortage of educators because there are not enough teachers to replace those who have reached retirement age. The stakeholders believe that this is hindering formative assessment implementation because current teachers have to step in to cover for the shortage of staff by working overtime, thus they do not always have the possibility to implement new approaches to assessment. Some of these stakeholders believe that the younger teacher demographic takes to the reforms more easily and as there is a shortage of those teachers, this is hindering formative assessment

implementation. At the same time others highlight that there are individual differences among teachers and the older generations can be more hard-working, thus they put more effort into formative assessment implementation and when they retire, there will be an even bigger shortage of teachers willing to invest the time into this reform.

The sub-theme of workload describes how the following aspects can be hindering to formative assessment implementation: too many students in class and lessons per week, low salary. Among the formative assessment methods, these stakeholders highlight that written feedback contributes most significantly to the increase in workload.

3. Challenges in adapting to change

Challenges that come with managing change to implement reforms, like using formative assessment, were mentioned in both the interviews with the leadership team member and with teachers. The theme of challenges in adapting to change encompasses the following sub-themes: lack of buy-in from teachers, lack of buy-in from parents and the Covid-19 pandemic.

The sub-theme of lack of buy-in from teachers describes how school leaders highlight that there is an issue with a lack of buy-in from teachers. Teachers pinpoint that resistance to formative assessment implementation is connected to increased workload, lack of understanding about what the methods entail and how to put them into practice. However, there are individual differences and those who are more knowledgeable and have a high level of autonomy are more inclined to use formative assessment methods. Teachers and school leaders believe that some of the initial resistance to formative assessment implementation has been overcome.

The sub-theme of lack of buy-in from parents describes how the stakeholders report that there is an issue of parents not supporting and understanding formative assessment methods due to the

following reasons: they prefer that the same assessment methods are applied as those used during their school years, there is worry about a possible decrease in the level of learning outcomes, they do not take the time to analyse written feedback and there is too little overall focus on the responsibility of parents in the society. Also, the stakeholders report that schools are taking steps to increase the parents' buy-in to formative assessment methods. In addition, they highlight that in grades 7-9 students are more independent, thus, to some extent it is possible to successfully implement the reform even when parents do not engage with formative assessment methods, although buy-in from parents is preferred.

Under the sub-theme of the Covid-19 pandemic it is described that in order to manage the various aspects of formative assessment implementation, constant focus and work is needed. It was reported that the Covid-19 pandemic had been disruptive to that process in various ways, for example there had been fewer possibilities for teachers to obtain evidence of student learning.

4. Pedagogical misalignments

The theme highlights mismatches in some aspects of the teaching and learning process that are hindering formative assessment implementation. These are reported under the sub-themes of subject-centred rather than student-centred approach, assessment practices that are focused on grades and difficulties in supporting diverse educational needs in the classroom.

The first sub-theme describes how a student-centred approach is needed in order to implement formative assessment but some educators are applying a subject-centred approach instead. Also, some school leaders believe that the national curriculum is heavily focused on subject outcomes, making summative results more important than the child's overall development. The findings show that teachers in this study do implement a student-centred approach and use different

methods to do this. One teacher believes that schools are catering too much to each individual student.

The sub-theme of assessment practices that are focused on grades describes how school leaders and teachers report that formative assessment implementation is hindered by the teachers', students' and parents' focus on summative outcomes, especially grades but also for example medals at the end of the upper secondary school, rather than the learning process.

The sub-theme of difficulties in supporting diverse educational needs in the classroom highlights how many stakeholders acknowledge that formative assessment works better for some students, like those who are more self-directed and have better critical thinking skills, than others. Most school leaders and teachers from schools B and C report that as there are a lot of SEN students and overall there are big differences in academic capabilities among students, it is hard to support each student's learning journey through formative assessment implementation.

Absence of a systematic approach for implementation across all schools

Autonomy of schools and a lack of systematic centralised support

The study showed that both school leaders (n=8) and also teachers (n=11) consider agency to be essential in their work. Overall, it was reported (n=19) that these stakeholders can make their own decisions regarding most aspects of their professional lives, including the school leaders' decisions about the focus of the school's curriculum and how to implement reforms, like formative assessment, and teachers' choices in methods and how to structure the learning journey. The headteacher and deputy of school D reported that generally the policymakers trust schools to make best decisions in the context of their specific communities. Regarding the formative assessment reform the school leaders (n=8) highlighted that the most positive aspects of schools' high level of autonomy have been that they can take into account the developmental stage of the school in all areas, reflect on what works and what doesn't in their particular context and also learn from other schools' experiences.

However, it was reported by school leaders (n=8) that the autonomy of schools becomes a hindering factor to formative assessment implementation when the policymakers have not provided enough support but still expect the reform to be figured out at school level. These stakeholders noted that a much more systematic approach from policymakers is needed for successful formative assessment implementation:

I can say that there has been no sort of guidance and no sort, any kind of leadership from the local education authority or the Ministry for the schools to implement. So the schools in Estonia are autonomous, and therefore, it very much relies on the knowledge of the school from the headteacher down to every key stakeholder. But, yeah, if it were a systematic approach, I think the outcome for Estonia, in general, on the whole, would be better. The systematic approach from the Ministry, from the Ministry to the local education authorities. That would secure the way that the local education authorities would pay more attention to the schools so that the schools could be more effective in implementing the formative assessment the way it should be, it could be, because I still feel that there are a little bit too many people who have very little knowledge about what formative assessment, in essence, is, especially in schools, and then, thus in their local community, I believe, because, yeah, they work together. (Headteacher of school A)

The real issue is that, yes, in some respects I fully agree with this autonomy, but at the same time, I also believe that the Ministry of Education, local government, still, primarily the Ministry of Education, should have a strategy in place with clear guidelines (deputy headteacher of school B).

Deputy headteacher: The process should ideally begin with the Ministry, followed by its subordinate institutions and governing bodies. These entities, in turn, should encourage their organisations to take action. Then comes the headteacher, the leadership team, and, ultimately, the staff responsible for implementation.

Headteacher: As it stands, everything is left to individual initiative, done in an ad hoc manner. This approach is far from sustainable.

(Headteacher and deputy headteacher of school D)

School leaders (n=8) noted that in order to implement formative assessment successfully, a more structured approach would be needed so that all schools understand the fundamentals of formative assessment the same way. They (n=8) pinpointed that it is a hindering factor when each school tries to figure out formative assessment methods on their own, without much support from the policymakers because then the interpretations of the fundamental aspects of this approach can vary greatly between schools. All school leaders (n=8) agreed that unless the policymakers actively demonstrate the importance of reforms, schools will continue to struggle to put them into practice.

The Ministry should take the lead in this process. There hasn't been anything on formative assessment. When we know something is coming from the Ministry of Education and Research, we hear about it, we see it, and it's clear that this is the direction we are heading. [...] If we consider whose responsibility this is, we - the schools - are essentially managed by the state. It would make sense for the state to remind us consistently, perhaps through articles or some other ongoing communication efforts. (Deputy headteacher of school D)

The study showed that when schools have a high level of autonomy, it can be used by policymakers as an excuse to create reforms without a well-developed step-by-step plan of how to fully support schools so that they would be able to implement it. Also, it was reported by school leaders (n=8) that the Ministry of Education and Research shifts focus to new reforms before previous ones, like formative assessment, have been adequately integrated. For example, the headteacher of school C highlighted that in his opinion, as there are no systems in place on how to implement reforms, this has allowed the Ministry to continue with ongoing reforms before previous reforms have been implemented. He pinpointed that as the Ministry is not doing

the work of establishing systems for implementation, the amount of time and resources that schools need to implement reforms is not being understood by policymakers. He reported that this shallow work regarding reforms has allowed the Ministry to move on to the next ones, leaving the schools to figure out the implementation process. The headteacher of school D summarised the issue by saying, “The problem is, as soon as schools encounter difficulties, [the policymakers convey that] it is up to the schools to figure this out.” Also, the deputy headteacher of the same school noted that this is being called a democratic process by the policymakers. With a high level of autonomy, all stakeholders - policymaker, leadership team members, teachers - still need to take full responsibility for successful formative assessment implementation in their respective areas of expertise. This means that the policymakers should give well-developed support, making sure that there is a structure that provides knowledge about formative assessment methods, practical guidance, possibilities for reflection and resources, so that school leaders can guide the implementation effectively and teachers can put the approach into practice with the students. The study showed that as the policymakers have not done this, schools have gone through implementation stages that have not been effective for teachers and students.

The autonomy of schools in the context of formative assessment has been a hindering factor in the sense that there is no systematic approach to doing formative assessment implementation that is supported by educational research. Thus, each of the schools has tried to understand formative assessment mostly within the context of their school and this has not been effective to Estonia-wide formative assessment implementation. Even so, it emerged in the interviews with school leaders (n=8) that if there was a systematic approach to formative assessment implementation from the Ministry of Education and Research and local educational authorities in collaboration with universities, the stakeholders at school do not want to be told what to do in a

top-down manner, instead they expect a collaboration. At the same time some school leaders (n=4) pinpointed that students should get an equally good education all around Estonia, and, thus a systematic approach from policymakers regarding reforms is needed. Understanding and implementing formative assessment the same way in schools around Estonia would ensure that students in the whole country would be in a similar situation when it comes to the fundamentals of assessment.

On the one hand, we don't want to feel overly pressured, but on the other hand, we recognise that Estonia has a unified school system. Schools must be consistent so that when students transfer from one school to another, or from one county to another, their education continues seamlessly. (Headteacher of school B)

In addition to leadership team members, the teachers (n=11) also noted a lack of Estonia-wide systematic approach while schools have a high level of autonomy as a hindering factor to formative assessment implementation. The grade 9 teacher from school B highlighted the overarching problem by saying, "Exactly, everybody thinks on their own, what [formative assessment is] and how to do [the implementation]." The grade 9 teacher from school C questioned whether it is possible to implement formative assessment well. She acknowledged that some schools have probably been able to do it by each figuring out their own system of implementation, thus highlighting the lack of Estonia-wide systematic approach and autonomy of schools. She brought out that schools would need much more support from the Ministry of Education and Research. This was also highlighted by the grade 8 teacher of the same school who, together with the grade 7 teacher from school D acknowledged that with a supportive system for implementation in place from the policymakers, formative assessment could develop effectively at school level. The grade 7 teacher from school D was the most positive about the current outcomes of the implementation process as she noted that even if there is a lack of centralised systematic support, each of the schools and its stakeholders needs to take

responsibility and she sees that many educators have become aware of formative assessment and have started to implement at least some aspects of this approach.

If it's supported and talked about more [by the policymakers], and, like I said, if steps are taken to ensure there's a place for teachers to get that support, then I believe it can develop very well. Teachers really do want support because there's just so much to handle, and if that support isn't there, then, well, they have nowhere to turn for help. Being left to "boil in the pot" alone is incredibly difficult. (Grade 8 teacher from school C)

But if this is well-developed at the national level, then ultimately, it has to come from within the school. You can discuss it anywhere and in any way, but at the end of the day, it's each school—its leadership team, subject groups - that need to address this. Still, for some reason, I feel that in Estonia, things are not as bad as they might seem in this regard. Why? Because it's been going on for so long, and so many people are already engaged with it. Perhaps in different ways, but I think the situation has significantly improved by now. (Grade 7 teacher from school D)

Insufficient professional development in formative assessment

In reality, if the Ministry has set a goal, then the Ministry of Education and Research should be directly responsible for providing training. If they establish annual or long-term goals, they must also contribute accordingly. (Headteacher of school D)

It was reported (n=19) that when reforms are introduced, an appropriate system of training needs to be organised by the Ministry of Education and Research and local educational authorities for those studying to become leadership team members and teachers, and also for those educators who are already working at schools. As explained by the deputy headteacher of school A regarding the formative assessment reform, "It would have been important from the onset to get everybody on the same page". It was noted by all leadership members (n=8) and most teachers (n=9) that sufficient training in formative assessment methods had not been provided during the course of almost a decade when this approach had been part of the national curriculum.

I think, looking back, I think probably at that time there wouldn't have been a lot of training available that would have benefited us, but at the same time, I think we probably would have learned a lot if we had had a certain very basic understanding on behalf of the teachers of what formative assessment means and somebody to show how that differs from what they were doing previously. (Deputy headteacher of school A)

All leadership team members (n=8) noted that schools had been left on their own when it came to figuring out how to provide training for their staff to understand what formative assessment is and how to put it into practice. In all schools it was reported by school leaders that in-school

collaboration (n=8) and learning from other schools' experiences (n=2) were the main ways used to provide teachers with professional development in formative assessment. These aspects are reported in detail under the following themes on enhancing factors: in-school collaboration and external support. Also, although all school leaders (n=8) and most teachers (n=9) highlighted the need for centralised professional development in formative assessment, they also noted that at the time of conducting the research, the possibilities for professional development were insufficient.

In practice, if you start looking for formative assessment workshops, you'll find that they are virtually nonexistent at the moment. [...] While Tallinn University did organise training sessions on community building, which also touched on the topic of formative assessment, there isn't a workshop dedicated to formative assessment available. If you search for it - whether through Tallinn University or the University of Tartu - you won't find a specific course on formative assessment. At least, I haven't come across any. (Deputy headteacher of school B)

I think the level of workshop leaders available in Estonia is also not very good (deputy headteacher of school A).

In addition to ongoing professional development, some problems with teacher training at universities in Estonia were highlighted. Most school leaders (n=6) reported that teachers who are starting their careers after university come to schools with some knowledge about formative assessment methods that they have gained at university, especially if they have gone through the Youth to School programme as described under the theme of external support in the chapter on enhancing the factors. For example the headteacher of school D acknowledged, "Those who have recently joined the profession typically come with university preparation [in formative assessment methods]". At the same time it was reported by all school leaders (n=8) that although those graduating from university have been educated about the new approaches to learning, the knowledge about formative assessment is not sufficient and there are also individual differences in teachers' readiness for using the methods. Out of the teachers interviewed, the grade 7 teacher from school A had recently done her Bachelor's degree at Tallinn University and was at a time

this research was conducted doing her Master's in Estonian language and literature at the same institution. She highlighted that her university education lacked the clarity that would have helped her to understand the fundamentals of formative assessment and other important pedagogical approaches. She noted that universities could try to support future teachers' understanding of methods by offering more concrete definitions and explanations.

At university, it was sometimes the case that, while teaching was provided, much of it felt like vague discussions. I had to grasp many concepts on my own. My minor was in the fundamentals of pedagogy during my bachelor's studies, yet I had to independently make sense of key concepts. Perhaps the university could have been more precise in defining these terms - both the concept of formative assessment and other significant pedagogical terms. For example, I generally understand concepts like student autonomy and motivation and how they function, but I feel the university offered very little clarity when it came to unpacking and concretely defining these ideas for me. (Grade 7 teacher from school A)

This lack of clarity about the fundamentals of formative assessment that was reported by the participant obtaining her teaching qualification was reflective of most interviews with school leaders (n=8) and teachers (n=9). These stakeholders (n=17) either noted that more concrete workshops on formative assessment are needed due to their and other educators' lack of understanding of the methods, or they didn't highlight it but there were shortcomings in their knowledge about formative assessment methods in their answer, like mixing up formative and summative feedback.

Naturally, it's the Ministry of Education [responsible for ensuring reforms are effectively implemented in schools]. The issue, however, is that reforms are introduced, but no additional support is offered alongside them. Theoretical frameworks alone are not what teachers need - they require genuine, practical demonstrations. Real, tangible examples. (Grade 9 teacher from school C)

Based on the interviews, to some extent this lack of understanding has come because of introducing the reform as part of an overall change in the approaches to learning without giving the needed separate attention to the fundamentals of formative assessment. This has brought about the process of school leaders guiding change in overarching concepts of teaching and learning like a student centred-approach, motivation and well-being. Although understanding of this overall framework is needed to use formative assessment, the study has shown that when the

knowledge about the fundamental methods is lacking, the implementation process cannot be successful, even though each of the schools has done extensive work to try to carry it out.

One aspect frequently noted by stakeholders (n=7) was their effort to find materials and articles in Estonian online, either to educate themselves or to use for teacher training at their respective schools. They (n=7) pinpointed that there is a lack of resources on formative assessment in Estonian. The leadership team members of school D (n=2) also noted that there should be articles on formative assessment in Russian, so that this approach would get country-wide attention among Russian-speaking parents. Instead, they pinpointed it is up to each school to explain the changes in assessment to parents, without the focus on it from the Ministry of Education and Research. Two books on formative assessment and some presentations in Estonian that are accessible online were highlighted in the interviews with leadership team members (n=2) and teachers (n=2). However, these stakeholders (n=4) reported that they have been unable to grasp the concepts in these materials on their own. Only the grade 9 teacher in school D highlighted that she has been able to find enough information online on formative assessment to understand the concepts, however, these are not all in Estonian.

Something like that - I can't even say exactly what it should be, but something clear, concise, and precise. Something where you can just look at it and go, "Ah, this, this, this," and get it right away, rather than having to read through 200-300 pages of a book. Maybe something like that, I don't know. Although, to be fair, there are presentations. I skimmed through them and refreshed my memory - they do exist. But perhaps something more illustrative, more hands-on. Yes, practical - something that can actually be used. (Grade 8 teacher from school C)

Absence of a system for monitoring formative assessment implementation

Deputy headteacher: Actually, there are no in-depth studies on formative assessment. There are none at the moment.

Headteacher: It's not monitored at all.

(Headteacher and deputy headteacher of school B)

The interviews with leadership team members (n=8) and teachers (n=11) showed that there is no systematic approach to monitoring the implementation of the formative assessment reform at any

stage of the process. All the stakeholders (n=19) highlighted that they were not aware of research on how formative assessment implementation is progressing in Estonia. Additionally, it was pinpointed by school leaders (n=8) that the schools had not gotten any feedback on the implementation process from the policymakers.

I do not know that it [formative assessment] is measured at all, because, on the basis of our school's example, on the basis of our school, I do not know that there has been any measurement carried out on formative assessment - either the system we have created, or the success of it, or about the relationship of the formative assessment to the outcomes and the knowledge and skills of the students, or the stress level of the students, or whatever aspect you take from the approaches to teaching and learning. Yeah, I don't know that it has been measured. (Headteacher of school A)

As noted under the enhancing factors' sub-theme of collaborating with educational institutions and authorities, school leaders had found their own ways of collaborating with universities in order to get training in formative assessment and feedback on the implementation process. Overall, there was a high level of trust towards universities and the school leaders (n=8) acknowledged that it would be important to have a scientific approach to measure the implementation of formative assessment in the Estonian education system. Additionally, as highlighted under the hindering factors' sub-theme of the autonomy of schools, the stakeholders reported that they would like for the policymakers to take more of an interest in formative assessment implementation at schools. This includes monitoring formative assessment implementation. For example the deputy headteacher of school B brought out that she would like to know whether the model for formative assessment that the staff has developed is appropriate. She highlighted that in her opinion, due to the lack of research and feedback by policymakers, each school is trying to figure out what formative assessment is on their own and thus formative assessment has not been implemented well. Both the school leaders and teachers highlighted the importance of ongoing research into the assessment systems in place at schools.

Perhaps the Ministry of Education should delve a bit deeper, observe, ask questions, and investigate. They should examine the current challenges to understand why formative assessment might not be progressing as

smoothly as it could. Maybe they need to research more, visit schools, and take a closer look. (Grade 8 teacher of school C)

Although there was high trust towards universities, when it came to the question of monitoring by policymakers, leadership team members (n=5) questioned whether local and state educational authorities have the professionals who could evaluate formative assessment implementation. For example the deputy headteacher from school D asked, “Who are the people who are capable of doing this inspection? Who decides that things must be done in this or that way?” The stakeholders (n=5) expected a collaboration where schools would be trusted and supported, not a top-down approach where schools would be told how and what to do.

Again, I would say that with the Tallinn Education Department, we’ve reached a point where, if a school is assigned a specialist, I’ve told the leading figures there that we try to advise the specialist on the processes happening in the school. Let’s not go down the path of saying that the city of Tallinn controls all these schools and tells us what we should do. We can discuss things reasonably with mutual understanding and come up with some common positions. It’s not easy, because all the schools are somewhat different. [...] In that sense, such advising should primarily be mutual, not where someone comes in and tells us what to do. (Headteacher of school B)

It was considered essential by school leaders (n=8) that any research and feedback on formative assessment would respect each school’s individuality. For example, the headteacher of school C brought out that it is important to measure what has already been done and to investigate the subjective factors in each school as educational institutions differ from each other greatly. He highlighted that the goals of the Lifelong Learning Strategy (Ministry of Education and Research et al., 2014) have not been achieved. He pinpointed that it is not an issue to set these goals again because Estonia has good outlines in strategy documents. However, he reported that it would be essential to measure where schools are at and look into why some of them have been able to implement formative assessment better than others, create Estonia-wide strategies based on that understanding and support each school’s future progress. Taking into account the unique aspects of the school when monitoring formative assessment implementation was reported as essential by school leaders (n=8) in each of the schools.

Headteacher: Even within Tallinn, schools are so different that it's impossible to demand uniformity.

Deputy headteacher: You have to trust the schools in this regard. However, there should still be some kind of monitoring at regular intervals.

(Headteacher and deputy headteacher of school D)

If we were to uncover the subjective realities of schools and take an objective look at deeply subjective matters, we would see that our schools are indeed very different. On one hand, this is a strength, but on the other hand, as I've said before, you simply can't measure everything with the same yardstick. (Headteacher of school C)

The school leaders reported two approaches to monitoring that are somewhat related also to formative assessment implementation: national satisfaction and school environment surveys (n=5) conducted by the Education and Youth Board that is governed by the Ministry of Education and Research and headteachers' self-assessment (n=1) that is carried out by the Tallinn Education Department. The focus of the former is to create possibilities to diversify the feedback on the quality of the education system and to provide a systematic approach to monitoring students' well-being and coping at school. Grade 4, 8 and 11 students take part in the surveys every year, teachers and parents every three years. School leaders (n=5) from schools B, C and D reported on the usefulness of this survey. The headteacher from school C highlighted that after the leadership team had made changes to the teaching and assessment process, the results of the survey showed that the students thought that learning had become more engaging with active teaching methods. At the same time they considered the assessment process somewhat unclear and demotivating. Based on this feedback the leadership team set the intention of educating teachers and students on how to set and reach learning goals. The headteacher and deputy of school B had contradicting views of the necessity of the national satisfaction survey with the deputy bringing out its value in guiding developments, like adjusting lesson length and how the school day is set up, while the headteacher was highly critical of the survey, arguing it gave the wrong message that schools should be a place for leisure rather than work, was used for ranking and did not measure the teaching and assessment processes. Additionally, the

headteacher of school D criticised the satisfaction survey by highlighting that it does not assess essential elements of learning. Also, the deputy headteacher of school B, while arguing for the necessity of the national satisfaction survey, acknowledged that it does not focus on the assessment methods used at school, even though it is a crucial part of the learning journey.

I am bothered by these satisfaction surveys. [...] The substantive part - how learning should truly take place - has received so little attention. Instead, we focus on these satisfaction surveys, which tell us that some people are satisfied, and some are not. But a school is not meant to simply be a place that provides satisfaction. It should be a calm and positive environment, perhaps even a happy school, but that is not the primary goal. A school must be a place where effort is required, where learning happens, and where a lot of meaningful work is done - things that truly matter. (Headteacher of school B)

There isn't a single question about formative assessment there [in the surveys] - it touches on topics like cleaning the restroom, meals, and so on, but there's no focus on the actual core [of teaching and learning] at all (headteacher of school D).

It's essential to grasp the underlying reasons for the results and interpret them meaningfully for ourselves [...]. Another important point is that if we view these as developmental studies, I do find the results of these surveys both reasonable and significant. They've guided us in areas like changes to the daily schedule, adjustments to lesson durations, and improvements in the efficiency of student learning, including focus spans and depth of engagement. These surveys are incredibly valuable; in fact, we've based our development plan on them, to be perfectly honest, and they've also shaped our internal assessment documentation. [...] Through the Ministry, satisfaction surveys include a few small questions about formative assessment, but they are very basic - such as whether students are satisfied with assessment methods or not. In that sense, the overall assessment system isn't really being examined, and no one is directly studying the methods used by schools. (Deputy headteacher of school B)

This reporting by school leaders on the satisfaction survey showed that as the schools mainly want support on understanding formative assessment methods, how to implement them and get feedback on the process that can be used for further developments, then for formative assessment implementation the question of how satisfied students are with the assessment methods has not been enough to support ongoing developments. This kind of satisfaction survey could be conducted when the methodological understanding of methods is already present at schools. As the headteacher of school C brought out that the policymakers set what the basic level of formative assessment understanding at schools should be like among staff, create a system that supports reaching that level and then schools could monitor themselves whether they have been able to do the implementation.

We need to reach a minimum standard. First of all, we don't have a unified understanding. I'm not sure if the regulations specify what these minimum standards should be, how to measure them, etc. Probably, it's not there. [...] But what needs to change, yes, is that the minimum requirement must be met. For that, we need to look back and think what exactly is the minimum requirement and what does minimum quality look like. At the moment, we could certainly draw a nice picture on paper: measuring our school's assessment policy, pulling extracts from eKool [school's electronic journal], and showing that this is how it works. But when it comes to the deep and forward-moving level, we still have a long way to go. (Headteacher of school C)

In addition to the state-wide satisfaction survey, the headteacher of school D reported that headteachers' self-assessment carried out by the Tallinn Education Department is a possibility to reflect on the school's formative assessment implementation. Although, according to this stakeholder, the local educational authority does not request this from headteachers, they can decide themselves whether it is important to write about how formative assessment has been implemented at their respective schools and discuss this at the developmental meeting with the Education Department specialist. However, she noted that what headteachers write on paper does not always reflect the reality that is taking place at schools. Still, the leadership team members from school D (n=2) noted that once there are systems in place that support the staff in building understanding about the fundamentals in formative assessment, the monitoring of implementation should be conducted in the format of self-assessment.

Headteacher: In the headteachers' assessment by the Education Department, one can write about formative assessment, but it is not specifically requested. [...] In reality, this means we can write anything, the paper can accommodate it all, and I dare say that in Tallinn, there are many schools where everything looks good on paper.

[...]

Deputy headteacher: Maybe the schools report on it themselves or it should be done in some other softer form. It could be in the form of self-assessment, something more flexible, rather than direct inspection. [...]

Headteacher: It really has to come from within.

Deputy headteacher: Yes, it's more about feedback on that.

(Headteacher and deputy headteacher of school D)

In addition to state and local levels, also each of the schools' leadership team members (n=8) and some teachers (n=4) reported about several methods of monitoring formative assessment implementation at their respective schools, like lesson visits, evaluating the quality of feedback in the electronic journal, teachers' input and discussions during collaborative meetings, feedback

from students and parents. However, it was acknowledged by the leadership team members (n=8) that this in-school assessment is not systematic. Additionally, most teachers (n=7) acknowledged that they were not aware of any monitoring of formative assessment implementation taking place at their respective schools.

I am not aware of formative assessment being monitored [at school A]. At the beginning, I had a few lesson visits, but I don't remember that anything about formative assessment was mentioned. Perhaps too little attention is paid to it, as it is a very important part of the teaching profession, especially in the assessment process, and in my opinion, it has not been directly monitored at our school. (Grade 7 teacher of school A)

Issues in educational policy and structure

Limitations in legislation

All school leaders (n=8) highlighted that the legislation does not support formative assessment implementation. They reported the following aspects of legislation as hindering: descriptions of formative assessment in the national curriculum and its supporting documents are not detailed enough, the use of formative assessment is not obligatory, there is a requirement to use grades in the third stage of studies and it is mandatory to convert summative assessments into grades.

Deputy headteacher: I believe the main obstacle to approaching assessment more creatively lies in the fact that, at some point, you are required by law to provide students with numerical feedback. In this sense, the legal framework needs to be designed to support formative approaches. For example, we've encountered challenges with formative assessment up to grade 6, which then transitions into grading. We end up converting these assessments into grades because Paragraph 29 of the Basic Schools and Upper Secondary Schools Act mandates schools to provide numerical assessments.

Headteacher: This is precisely what we could propose to the Ministry - to work towards overcoming this issue. (Headteacher and deputy headteacher of school B)

The one aspect is that the Ministry wants the schools to use formative assessment, but formative assessment is allowed until form seven, and then the school basically can't even use formative assessments. They should be using the five-grade system instead. So the point is, then, and I think it's the right question many schools or headteachers ask, "Why should we bother with implementing formative assessment if we have to switch over from the middle of the studies, and then start using the five-grade system instead?" And the schools, they must convert the formative assessment systems into a five-grade system. The converting table is necessary. I agree with that, but the school should be given the autonomy, then, to use formative assessment all through the compulsory education and also in the upper secondary, if necessary. (Headteacher of school A)

The national curriculum prescribes that written feedback that does not have numerical equivalents can be used in the first and second stage of studies, as outlined in the school curriculum. By the end of the second stage of studies or when the student leaves the school, written feedback that is used to evaluate progression to the next class must be converted to the standard numerical scale. Thus, the legislation describes written feedback given as part of summative assessment and does not mandate that formative assessment has to be converted to grades. The legislation that school leaders (n=8) noted as hindering was connected to the overall confusion among stakeholders about the difference between formative and summative feedback. When school leaders (n=8) talked about legislation not supporting formative assessment

implementation, they mainly meant having to provide grades instead of summative feedback or convert end of year summative feedback to grades. Thus, they (n=8) were mostly not discussing formative assessment practices in the context of legislation but named them as such. This shows how important it is that policymakers have a structure in place that ensures that school leaders have been provided with the necessary knowledge of formative assessment before they are expected to lead the implementation process.

One stage of the implementation process, derived from legislation, is creating a school's curriculum and supporting documents based on the national curriculum. If the legislation and formative assessment principles are not clear for school leaders, it makes it difficult for stakeholders at schools to develop a well-thought-out assessment policy that differentiates between formative and summative assessment. It was reported by school leaders that inconsistencies have resulted in ongoing amendments to the school's assessment policy. While the annual review of the assessment policy is usually standard practice, the school leaders (n=8) described challenges that went beyond this - their answers highlighted difficulties in implementation due to some confusion over legislation and the distinction between the formative and summative assessment approaches. This, in turn, can create confusion among teachers, students and parents about the structure of the assessment process.

We've also, every year, reviewed our assessment policy. But, it still is not, I think, at the level that I want it to be in terms of, again, feedback and the number-based feedback. [...] So, for me, it's difficult to understand this a little bit and I think for teachers as well. It's one of those areas where I think we maybe should amend the assessment policy so that we also use the formative assessment data as the summative assessment shows the actual level of the student and is not a fair assessment of their progress. I think I would need another review at the beginning of the new school year of our assessment policy and maybe a change in the assessment policy to take into account formative assessment more. (Deputy headteacher of school A)

And that's where the issue arises - the numerical grading system has, for all practical purposes, almost disappeared. Fair numerical grading no longer seems to exist, as grades like a "2" are essentially nonexistent. It's quite peculiar, really - how a "3" can represent 50%, and even 1% still technically counts as a "3." Then, when you've been using formative assessment consistently all along, suddenly in the ninth grade, grades are given to students based on percentages. It just doesn't seem to align well. Moreover, the school league tables in newspapers only add to the issue. (Grade 9 teacher from school C)

Formative assessment is outlined in the national curriculum as an approach that should be used by all schools. However, most school leaders (n=6) pinpointed that its non-mandatory status is hindering effective implementation. More specifically, they (n=6) were not referring to formative assessment itself, although they used the term - instead, they highlighted the option in the national curriculum that schools have to use written summative feedback instead of grades. In essence, these school leaders (n=6) advocated for making written summative feedback mandatory. Also, some of them (n=3) highlighted that the implementation process is challenging without clear summative, naming it formative, feedback guidelines set by policymakers. This is one of the discussions with school leaders that illustrated this issue:

Deputy headteacher: As long as there is a choice between numerical grading and formative assessment, and considering the current generation of educators in Estonia, the shift in mindset will not occur because they do not grasp the underlying principle. It's simply too difficult to comprehend.

Headteacher: Well, if you don't understand it, numerical grading is always 100 times better.

Deputy headteacher: You can easily assign pluses and minuses. The scale is already defined. For instance, 90-100% means one thing, and so on. But when it comes to drafting and explaining the criteria for formative assessment, that should really be provided by the state.

(Headteacher and deputy headteacher of school B)

Additionally, it was highlighted by all leadership team members (n=8) and many teachers (n=5) that the national curriculum and its supporting subject-specific scope and sequence documents do not have enough information about the principles and methods of formative assessment to fully understand how to implement this approach. For example, the deputy headteacher of school C noted, "The national curriculum, as a state-issued document, does address formative assessment, but in reality it provides very little detail. While the basic principles are covered, it falls short of what could and perhaps should be included." Out of the nineteen stakeholders, only the grade 7 teacher from school D pinpointed that the outline in the national curriculum has the necessary information teachers need to use formative assessment. However, she noted that she understood the formative assessment mainly because prior to the release of the 2011 national curriculum, she

took part in the Russian language and literature teachers' meetings where educators discussed how to put formative assessment into practice in the context of their subject. After that preliminary step, the national curriculum description of formative assessment was enough to understand what was expected from her as a teacher.

What helped me was even not so much the national curriculum itself, but rather the work within this group. Before it was incorporated into the national curriculum, we had many internal discussions about it. Once we understood it ourselves, everything became much easier. After that, the clear formulation in the national curriculum helped me. If you read it carefully, everything is laid out very specifically - what needs to be done and why. It's almost like a step-by-step plan: what exists currently, where the weak points are, where the strengths lie, and what needs to be done. If you read this formulation attentively, it essentially serves as a guidebook. (Grade 7 teacher from school D)

All the limitations in legislation that were reported in this study were connected to some gaps in understanding about the fundamental formative assessment principles. If sufficient professional development in formative assessment had been provided to schools, these issues with legislation that were reported might not have been seen as hindering to the implementation process. Problems with training possibilities have been summarised under the hindering factor of insufficient professional development in formative assessment.

Ageing teacher demographic

In all the interviews with leadership team members (n=8) and most teachers (n=8) it was highlighted that one of the most serious problems in the Estonian general education system is the lack of hard-working and well-trained motivated teachers who could soon replace those reaching the retirement age. At the time when the interviews were carried out, the participants highlighted that this was already a serious issue at their respective schools and the general education system of Estonia overall. They predicted that teacher shortage would only increase with time. The main reason, as brought out in the interviews with teachers, why the shortage of educators has been hindering formative assessment implementation, is that the workload of current qualified

teachers can become too big to implement new approaches to assessment.

I think the biggest problem is a shortage of teachers. Yes, well, teachers. And, as there's a shortage of teachers, the teachers that we have in school, they're very busy. But as a result of that, because teachers are overworked, a lot of things are left undone or, or, as they say, done incompletely. Because really, the teacher with a huge workload just doesn't have the time, just doesn't. (Grade 8 teacher from school C)

But when you have a lot of work to do, or a lot of classes, you just forget about it [formative assessment]. Then of course there's the oh, wait, what did I want to do? But see, I didn't. Something, again, got in the way. (Grade 9 teacher from school C)

At each of the schools in this study there were reported to be some teachers working who had reached retirement age. While it is commendable when the teacher wants to do so, there were also examples of educators preferring to retire but as no replacements were found, they continued the work out of a sense of duty. From the stakeholders who were interviewed, the grade 9 teacher from school B was well into the retirement age but stayed on because there was no one to replace her. At the time of completing this study at the beginning of 2025, she still works as an Estonian language and literature teacher in school B. In the interview she highlighted that she cannot work full time any more by saying, “I have a part-time workload. I don't work full-time because I can no longer work full-time. Especially as an Estonian teacher, who has to do a lot of speaking and a lot of checking of written work.” Additionally, for example, the headteacher of school C talked about teachers who would like to retire but are still working because no replacements have been found. He praised an excellent 76-year-old Estonian teacher who, according to the headteacher, had recently retired after acknowledging that she wanted to have more time for herself. The headteacher brought out that while this was commendable, they had to replace her with somebody who does not have the needed Estonian language and literature teacher training.

Interviewer: What kind of support does your school need to continue with formative assessment implementation?

Headteacher: Fresh blood, new people. [...] A colleague who retired from us, she is a 76-year-old Estonian teacher, a very experienced Estonian teacher who had been using her own assessment model for years. Whether it was formative, but in any case it was supportive of learning because her students gave her very good feedback

and, you know, it was still a learning kind of approach. And she said, "Enough's enough! I've got to live a little for myself now." And she retired. Even though she could still have worked, she's full of energy. But no one came to replace her. Although, no, I'm lying, in the middle of the school year we found an andragogy student, who has no training as an Estonian language teacher, but her eyes are full of enthusiasm and her methods are obviously very well suited to the upper secondary school level - these andragogical methods. So I'm over the moon, but she's got a small workload. And at the same time, she's having a very hard time with the students from grade 5 right now. She can't cope with them yet because, well, yes, that's the way it is.
(Headteacher of school C)

Most leadership team members (n=7) were hopeful that, should the problem of teacher shortage be overcome, the youngest generation of educators could take to reforms more quickly as they have grown up in a different environment. Also, because their teacher training involves learning about the methods of changed approach to learning. For example, the deputy headteacher of school A highlighted that she noticed that the younger generation of teachers has taken to formative assessment methods more quickly.

That's probably the biggest resource we need, the lack of teachers, to bring in young people who think a little differently. There's no need to invent a bicycle here. And young people are coming - I mean, [name of the deputy headteacher] and I have also said that we can't ask a teacher, when he or she is over 60, to change. Over 40 will no longer change. But this new person, it's like with the environmentalists, the green party supporters are the young, not the older generation. They are already up to speed with everything. They're reading, they've got this English language already, so they're reading the scientific materials. (Headteacher of school D)

So, I think the understanding of this formative assessment, any new thinking around this comes from the new teachers who are joining schools now or have been joining schools in the recent maybe five years or a decade. And, for us to see any change, we need a whole generation of teachers to be working in schools and implementing this. (Deputy headteacher of school A)

However, some school leaders (n=3) highlighted that among the younger generation there are also many individual differences. One stakeholder, the headteacher from school C, acknowledged that although the lack of teachers is the most important matter, the age and experience of educators has not been an important factor in implementing reforms. He highlighted that he has seen equal resistance to change among educators at various stages of their careers - whether they are just starting, have already gained some experience, or have been in the profession for a long time. He pinpointed that enthusiasm to implement new approaches, like formative assessment, relates more to teachers' individual motivation than any objective factors,

like years of professional experience. Also, the grade 7 teachers from schools B and D highlighted that many of the younger teachers are not willing to commit to the long hours that older teachers typically dedicate. The teacher from school D explained that as writing feedback is time-consuming, it is typically the most experienced teachers who are more likely to invest the time to provide students with written comments on their progress and how to close the gap to reach developmental goals. She was concerned not only about the overall teacher shortage but also about the lack of younger educators fully committed to all aspects of their profession.

And the biggest danger is that there's no replacement. Well, it's like everywhere else, and when young people are not all... I'm not saying that their generation is bad by any means, but they are just not ready to invest so much. And here this formative assessment requires a lot of effort. And that's why this is the biggest danger, if we don't have people who are passionate about their work, who want to do it. Then everything will stagnate - because the older specialists will leave, and there are no new ones to replace them. (Grade 7 teacher from school D)

Workload

Both teachers (n=10) and school leaders (n=8) acknowledged that workload can be an issue when implementing formative assessment. They reported that formative assessment cannot be implemented fully in the 35-hour work week of full-time teachers when there is no extra pay for additional work that formative assessment brings and that there are too many students with whom to use these methods. They acknowledged that class sizes can be too big, over 30 students, and that some subject teachers teach to over 600 students per week, setting limits to possibilities for successful formative assessment implementation. In addition to that, the lack of teachers that has been described under the sub-theme of the aging teacher demographic was seen as increasing the workload for leadership team members and teachers, thus diminishing possibilities for formative assessment implementation. Also, the lack of possibilities and budget for training in formative assessment practices as presented in the sub-theme of insufficient professional development in formative assessment was also seen increasing the workload of school leaders

and teachers. All school leaders (n=8) and teachers (n=10) who reported that formative assessment increases workload talked about the need to decrease the amount of contact hours and number of students in each class in order to implement formative assessment. With regard to this several of them (n=7) talked about the importance of considering how many students per week each teacher has contact with in their lessons. They (n=7) brought out the difference between the workloads of homeroom and subject teachers when having to give written feedback, especially talking about specialist subjects, like music and arts.

The challenge, that is, is certainly time. What I would say is that if somebody wants to do the work with heart, wants to assess in a formative way, 35 hours a week, forget it. Forget the weekends, forget the evenings with the family. It was a shock really. Before I thought that even grading papers takes a lot of time. But now it's feedback in the e-school. How much time it takes and there's no extra money on top of that, or well, and it has to also fit into that 35 work hours. How? [...] You sit there and give feedback... and it's like so different: there's a classroom teacher, the classroom teacher has 20, 25 students. For me there's a 139 students. The music teacher has six hundred or I don't know what, it's just not real... that kind of focus on this formative assessment still requires a teacher to have superhuman abilities. There are actually these kinds of perhaps contradictions between this theory and everyday life. (Grade 7 teacher from school B)

As described under several sub-themes of hindering factors, in most interviews (n=16) with the stakeholders it emerged that there is a misunderstanding of principles according to which formative assessment is thought of mainly as written summative feedback. Although interviews with students and classroom observations showed that in reality all teachers in this study use various formative assessment methods that they do not consciously acknowledge as such, in the context of written feedback the bureaucracy and workload of formative assessment implementation stood out for the interviewed leaders and teachers. All teachers (n=11) in this study find written feedback more time-consuming than any other assessment practice. However, the study showed that what has increased the teachers' workload is how the system of formative assessment has been set up in schools by school leaders due to the misunderstanding of formative assessment principles: at the end of the study cycle teachers are expected to give written feedback in the electronic daybook to each student outlining which subject objectives the

student has met, which need further work and what steps to take. Thus, although this feedback could be used in a formative way in the next study cycle, in essence the teachers are describing the workload that has come with the expectation to write summative feedback. This was even the case with teachers who had the best knowledge of formative assessment practices out of the stakeholders that were interviewed. For example, the following is the account of a teacher who had very good knowledge of different formative assessment methods both during the interview and lesson. However, due to the system set up at school she also named the written feedback the teachers give at the end of the study cycle as formative assessment and acknowledged that this practice takes can take weeks of teachers' time to fulfil, many teachers are resentful to it and some find easier ways to do this task that is not authentically representative of the students' individual development:

For those who have a large number of students, the biggest problem is when, like me, I work with a very large number of classes, and all the classes are full. Therefore, giving feedback to each student takes a very, very long time. And, of course, many teachers find this to be the most stressful part. I'm talking about written feedback, which is given. Some are simply not willing to spend that much time; it requires using up their free time. Sometimes it even takes weeks, and because of this, of course, some try to find a simpler approach. And maybe it doesn't work very well then because it becomes more generic. I think this is something everyone faces. [...] I think they [teachers] are afraid of writing. Because when you have to write formative feedback for each student, if you do it well, it takes a lot of time, because you think about that student. Naturally, you're writing characteristic words for that student, and that takes a really, really significant time commitment. [...] They [teachers] remember what they need to write, and then immediately they have this negative reaction. (Grade 7 teacher from school D)

It was reported by many stakeholders (n=9) that teachers are reluctant to give written feedback not only because it is time-consuming but also because many of them who have tried to implement this practice have not found it as transformative for student progress. For example the deputy headteacher of school A said, "I think this is one of the main criticisms I hear from the teachers, that what's the point of giving this feedback if it takes so much time and if a student doesn't take it into account." At the same time in schools A, B and D the headteachers highlighted that formative assessment increases the workload only until the students start to

understand feedback. They indicated that in the long run formative assessment decreases the amount of work teachers have to do. For example, the headteacher of school B highlighted that if the implementation process begins in the first grade and students get used to formative assessment, the teacher will not need to have many discussions with students or parents about grades because the feedback has been given in detail. The deputy of the same school, however, disagreed with the statement and concluded that formative assessment increases the teachers' workload. The same conclusion of added work hours was reached by deputies of schools A and C.

In comparison to written, mostly summative feedback that most stakeholders found to increase the teachers' workload, all teachers (n=11) talked about giving the students oral feedback during the lesson. The content of this feedback, as described by these stakeholders, is mostly formative. None of these teachers talked about this practice as increasing their workload, raising the question of if they had proper training in formative assessment, to what extent would they actually find formative assessment implementation as too time consuming and increasing their workload. In addition to reporting about the methods of giving feedback, there were two stakeholders who described other practices they found as increasing the workload - one teacher reported that doing self-assessment with students takes up too much planning and lesson time, and the deputy headteacher of school B said the following:

We have failed with the process of decreasing the teachers' workload, and we still haven't quite managed it, because, in reality, formative assessment is demanding. Let's be honest, this self-analysis, this comparative analysis, this feedback, setting learning objectives, interacting with the child, and introducing the role of the parent [increases the workload]. (Deputy headteacher of school B)

To decrease the workload of reporting requirements at the end of the study cycle teachers reported the following ways: writing similar generic feedback to each student who would have received the same grade, speaking to school leaders about their discontent or simply not fulfilling

this work obligation. This resentfulness about written summative feedback has created some frustration about formative assessment overall among teachers (n=9) according to which they do not see it as being very beneficial for student development but at the same time increasing the workload, showing that schools need further support to understand formative assessment practices and base the implementation steps on that knowledge as reported under the hindering factors' theme of absence of a systematic approach for implementation across all schools.

Challenges in adapting to change

Lack of buy-in from teachers

For me, definitely, one of the main challenges is the teacher buy-in into the system (deputy headteacher of school A).

In each of the schools it was acknowledged (n=19) that the staff members are at different stages with their formative assessment implementation journeys and that not all teachers had taken to the various aspects of the reform. Overall, there was an understanding among the leadership team members (n=8) that the change to the approach of learning, with that formative assessment implementation, had not come organically as a side-product of overall changes in society. They (n=8) noted that with some exceptions of educators who are enthusiastic about most processes at school, teachers did not initially welcome the addition of formative assessment. The deputy headteacher of school B acknowledged that although Estonia has professional teachers, in her opinion they sometimes lack the courage and will to go along with the changes. The headteacher of school C highlighted that mostly teachers do not welcome innovations and are not prepared to work to implement them. In each of the schools leadership team members (n=6) described examples of teachers who did not take to formative assessment implementation, for example:

I've got this, I'll be honest, very ugly situation where we were talking to one of the primary school teachers about the need for formative assessment of, for example, arts and crafts work, so that the feedback would be constructive and so on. So that, after all, if an effort has been made, then it should be valued. And I couldn't make it clear to the teacher that her comment on this student's work was motivation-destroying in every sense. Well, it said that the student couldn't draw, couldn't do it and so on. I said, "Please compare the work that the student did before and the work that the student has done now and find at least one positive." No, [she said that] it was no good and that's all. Well, in the end, she no longer teaches these subjects. But in fact, to be quite honest, she's not much better at giving feedback in the other subjects, and she doesn't assess them [the students] in a formative way that is supportive to learning. (Headteacher of school C)

The main reasons for the lack of buy-in by teachers are described under the hindering factors' sub-theme of workload. Apart from these reasons, the interviews with language and literature teachers (n=11) showed that when these stakeholders described being resistant to some aspects of formative assessment implementation, it was because they genuinely wanted the best for student

development, teachers' mental health and work-life balance and were not being resistant to take a stance against formative assessment implementation. It was reported in the interviews with them (n=11) that during almost a decade after formative assessment had been added as part of the national curriculum, most of the teachers had taken to different methods of this approach and some described how they had used many of them already before the change to the approach to learning. There was even an example of a teacher who did not see the benefits but still tried to implement formative assessment in the way that was set out by the school leaders:

Well, I don't know, I haven't quite figured it out yet or made up my mind whether there's a very big benefit from it. Yes, we write long texts, but whether the student's grade has gone up because of it, I haven't figured that out. Because these texts are also relatively long, and in each subject there is so much written. Can the parent really bear to read it? I don't know. In any case, I don't see such a terribly big benefit. (Grade 9 teacher from school B)

In addition to the lack of buy-in due to the workload, any resistance that was reported in the interviews with the teachers was related to genuine problems with understanding what the formative assessment process is in theory and practice. The three teachers that raised the most concerns about the implementation process had justified questions about added workload, how to implement formative assessment in classes that have a large number of students and different levels of academic ability, and the assessment system set up at their respective schools. As at least half of the teachers from the language and literature subject group from each school were interviewed, the concerns that they raised gives an insight into how to further support Estonian and Russian language and literature teachers with formative assessment implementation. It was reported in the interviews that in addition to the steps leadership teams could take, like re-thinking approaches of asking teachers to write feedback next to grades that students and parents do not often read, support is also needed from the policymakers as described under the theme absence of a systematic approach for implementation across all schools.

Those teachers that had overcome most of the initial resistance to change (n=6) acknowledged that they became more inclined to use formative assessment methods when they gained knowledge about them and started seeing benefits for the development and well-being of students. For example the grade 8 teacher from school B explained that she was initially concerned about the workload but as she started seeing how formative assessment supports students' development, she became invested in planning formative assessment methods as part of lessons. The grade 8 and 9 teacher from school A highlighted that at first she was worried that the students' results at final exams would be negatively impacted if they primarily receive formative feedback during the learning process, rather than summative grades. She said that she overcame this concern when she started seeing that students had become more independent, interested in their studies and self-directed. She pinpointed that even if the students achieve slightly lower points at exams, they have gained important skills that will benefit them throughout life, both personally and professionally.

I also had this concern in the beginning and I don't know how it will be now, because next year I will have my first grade 9 class, where they will have to take entrance exams and show their knowledge in a very specific way. How skilful they will be. But I mean, if they're not as good at these scores, as successful, then they're prepared for something else. Again, they're better able to express themselves, they know where to look for information, they're somehow more interested, they're not afraid. So maybe I had those fears at the beginning, but I would say that they are gradually disappearing. (Grade 8 and 9 teacher from school A)

It was also highlighted by leadership team members (n=8) that with time and by putting formative assessment into practice, teachers are more inclined to use the methods. Also, teachers can inspire each other. As noted by the deputy headteacher of school C, when several staff members started using the methods, this motivated many teachers to follow and also give the practices a try. At the same time it was highlighted that there are teachers who still refuse to implement changes and they have problems with students and their parents.

But there are still those who are stubborn and do not go along with it. But they get double feedback regarding this, both from us, when we let them know that this kind of feedback is not appropriate, and also arguing with

parents. I said, "I'm not your public relations manager anymore. If you decide not to implement what has been agreed, you are also responsible." (Headteacher of school C)

The study showed that just as the policymakers and school leaders have to take full responsibility for their role in the implementation process of reforms, the understanding of formative assessment and motivation to use the methods was higher among those teachers who had taken individual time to read and think about formative assessment, its benefits and how to implement it. Thus, taking on the responsibility to educate oneself about reforms, even when leadership team members and policymakers could be giving more support, is essential to overcome the lack of teacher buy-in to the system.

Well, the challenge continues to be those teachers who have not wanted to keep up with the changes for ten years already. They need constant hand-holding and support to keep them going. If you've been working for many years, it's still certainly possible to learn new things, if you have that intrinsic motivation. But if you, if you've already lost it somewhere, it's very difficult to keep up with new things. You have to consciously think through what you want to do with a particular task, that you can't just, you know, just go to lessons thinking that I've been teaching this subject for years, that I already know everything. Well, you still have to think through what the goal of any particular activity is and then how to assess it. If the teacher is willing to put in the effort, then formative assessment is easy. If he or she is not ready and does not understand things yet, then it will certainly be difficult and, and then there will probably also be frustration as to why I must do such nonsense, so to speak. (Grade 8 teacher from school B)

It was reported by all teachers (n=11) that they expect a high level of autonomy, thus, once the teachers are ready to implement the changes in assessment and have understood the methods, it is important that the leadership team members trust them to do their work effectively and do not try to prescribe in detail when and how to use formative assessment. For example the grade 7 teacher from school B, as per the interview with him and the students and the classroom visit, implements formative assessment methods, however, he spoke about being resistant to the expectation of written feedback in the electronic journal. This in turn made him question formative assessment. The grade 7 teacher from school D praised the leadership team for moving away from the detailed requirements for formative assessment and trusting the teachers to do the implementation. She highlighted the importance of this because according to her the methods

that she uses are dependent on the topic she is teaching. Thus, this study showed that in order for teachers to use formative assessment effectively, it is important to help them build their knowledge about theory and methods, and once the teacher is motivated to use formative assessment, it is essential to give them agency to do the implementation.

Lack of buy-in from parents

It was highlighted by some of the leadership team members and teachers that if parents have had an experience of an educational system where formative assessment was not recognised as an approach in assessment, it can be difficult for them to understand the necessity of feedback and other formative assessment methods.

Parents as well, they are not used to having a different system than what they grew up with. It's hard for them to adapt to this system, and they don't yet see any benefits with this system, or the majority of them at least. For the parent it's difficult to adjust to it or it can be difficult to adjust to it for some parents, especially parents whose connections to school are from years back and whose understanding of school was based on their own experience or their own school experience and they expect, in many instances, to... if the school "worked for them," then they expect a similar experience for their kids and then, if they get something different, it's very much to how open-minded they are in terms of accepting this and learning from it as their children are. (Deputy headteacher of school A)

However, with managing change and giving the reform time to take effect, it was reported by many leadership team members and teachers that parents' attitudes can change. It was reported that one aspect that helps with this is when parents see that change in assessment methods does not have a negative effect on learning outcomes. For example, according to the headteacher of school A, the outcomes of standardised achievement papers that all students around Estonia take were an important indicator for parents regarding how effective new approaches to teaching and assessment have been. He highlighted that when parents had evidence that the students did not score lower on achievement papers than before formative assessment implementation, parents started to appreciate the added benefits of formative assessment. This stakeholder highlighted

that parents need measured evidence that any change in the teaching and assessment methods will help students to achieve learning goals, not the other way around.

Change is always connected with very simple things, like fear. You are afraid that, as I said, the outcomes are not going to be the same, and that is due to the missing knowledge. (Headteacher of school A)

It was reported by many stakeholders that school leaders are thinking about how to better engage the parents so that they would understand and appreciate the benefits of formative assessment methods. Some of the teachers questioned whether writing feedback in the electronic journal, especially when presented together with the grades, gives the information parents need to understand and support their child's progress. For example, grade 7 teacher from school B highlighted that when his children were in primary school, he mainly looked at the marks on the report cards and although they also involved extensive feedback, he did not fully engage with it as a parent. The interviews showed that school leaders understand that parents do not always engage with the written feedback and as described under the enhancing factors' sub-theme of positive outcomes for parents, schools have tried other ways, like student-parent-teacher conferences, to increase parents' understanding of the content of feedback, so that they could support their child. Also, in school B the deputy headteacher highlighted how they have involved the parents in developing the assessment policy:

We are also currently rewriting our assessment policy and, as such, we are focusing on three stakeholders: the learner, the teacher and the parent. In fact, there are not very many schools that implement this assessment model from the parent's point of view. (Deputy headteacher of school B)

Even with the steps that schools have taken to increase parents' buy-in, many school leaders and teachers highlighted that in current times there is insufficient discussion in society regarding the responsibility of parents and a disproportionate responsibility for child's development is put on the schools. In the context of formative assessment they considered this an issue when there is no consistency between the approaches to learning at school and at home and parents focus on the

grades rather than supporting the child's day-to-day development as noted under the hindering factors' sub-theme of assessment practices that are focused on grades. In the view of the stakeholders this can mean that parents, even if provided with enough support, do not take the time to read feedback or come to workshops that could support their understanding of formative assessment. It was reported that trying to increase the buy-in of parents takes a lot of effort, although schools do not always have the time needed for giving extensive support to parents because each school has had to figure out their way of formative assessment implementation as explained under the hindering factors theme absence of a systematic approach for implementation across all schools.

Although many stakeholders talked about the importance of increasing parents' buy-in, when asked specifically about the third stage of studies (grades 7-9), which is the focus of this research, most of them highlighted that parents' overall involvement is smaller for this cohort of students than during the primary years and that students are expected to be more self-directed. Thus, the parents' buy-in was seen as preferred and important during the third stage of studies but not essential for successful formative assessment implementation that benefits the students' development.

In the first two stages of schooling, the parent is still very much involved. Now, when they [students] go to the third, the parent is nobody to them. Then there are peers and they have to be able to analyse by themselves. (Headteacher of school D)

Covid-19 pandemic

It emerged from the interviews with leadership team members and teachers that sudden changes in how the society usually functions, like in the case of the Covid-19 pandemic, affect the implementation of educational reforms. It is especially true, according to many of these stakeholders, if the reform has not taken full effect before the sudden disruptions in the education

system as happened in the case of formative assessment. The reason for this, as reported, is that when a reform has not been implemented fully, it can be put aside to make time for more pressing developments. However, these stakeholders noted that had the formative assessment reform taken full effect, the methods would have been perceived as essential for the students' learning journey that even in the case of a crisis like the Covid-19 pandemic, schools would have maintained the focus on the reform. The headteacher of school C highlighted that during the Covid-19 pandemic there had been less priority given on implementing formative assessment systematically. He pinpointed that due to the pandemic teachers were not sharing as much of what they had learned from workshops as they had previously. He acknowledged that during the time of the pandemic the awareness of the need for formative assessment implementation had become more vague as the focus was on other processes. In addition to the headteacher of school C, there were several other stakeholders who highlighted that during distance learning there were less opportunities for contact between staff members which in turn diminished the amount of time spent on implementing reforms.

The interviews and classroom visits showed that in reality teachers used a variety of formative assessment methods during the Covid-19 pandemic. However, changes in organisation of studies were needed and many stakeholders noted that formative assessment practices were not implemented to the same extent as before. For example, the deputy headteacher of school A said that instead of both written and oral feedback, students mostly received the former. Also, she highlighted that formative assessment implementation was hindered by teachers not being able to observe the students' learning process as closely as in person, which meant that they were not able to give as much support based on the evidence of learning as they had done in the physical classroom.

So, I think that coronavirus probably limited some formative assessment practices because there wasn't any observation practice possible and the feedback, the formative assessment that the students were given was mostly written. And, it therefore was probably more narrow than it should have been. (Deputy headteacher of school A)

The school leaders at school D (n=2) highlighted that during the pandemic it was up to the teacher to decide whether he or she was going to provide written feedback. The data analysis of the written feedback collected from the electronic journals at the four schools showed that teachers had made different choices with some (n=4) providing more feedback in the electronic journal during distance learning than when students were at school while most (n=7) had kept the system the same throughout the school year. However, teachers could have given more feedback in other formats, like during online lessons or on students' work rather than on the school platform for lesson logs. In fact, it emerged from the interviews with teachers that many of them tried to give more feedback during distance learning than they had before. At the same time there was a general understanding among teachers that distance learning created some learning gaps, especially, as there were some examples of where students could not be reached. Thus, even if teachers gave more feedback and provided opportunities for one-to-one meetings to discuss progress, they could not reach and thus support all students in the same way as they had done at school. The deputy headteacher of school A highlighted that younger students would have benefitted from formative assessment being implemented at school more than older students who are already more self-directed in their learning.

Pedagogical misalignments

Subject-centred rather than student-centred approach

Some leadership team members (n=5) and all policymakers (n=5) acknowledged that as teaching in Estonia during the Soviet times was subject-centred, it has taken most general education school stakeholders time to come to an understanding of what a student-centred approach could be like in practice. They highlighted that without this transition to student-centred teaching and learning, authentic formative assessment implementation cannot be achieved. The reason for this, according to the stakeholders, is that an overall understanding of reasons and methods of how to fully support students' development is needed to use formative methods, otherwise formative assessment will be an add-on to existing practices rather than an authentically supportive assessment approach. For example the deputy headteacher of school B brought out that it is important for teachers to know how to develop and articulate learning objectives in order to start implementing formative assessment methods in the classroom.

And since it was not common for the approach to be learner-centered, but rather for the focus to be on the subject, in a subject-centered system where learning skills were not supported separately, it became possible to assign numerical grades, and there was no need for formative assessment. However, formative assessment is certainly the greatest motivator for learning... Well, assessment in general is the greatest motivator for learning in school, and it can either diminish or support that motivation. Achieving this is more likely through specific, goal-oriented, and clearly articulated objectives. (Deputy headteacher of school B)

Also, some school leaders highlighted that the national curriculum is heavily focused on subject outcomes, thus, there is less possibility to apply a student-centred approach because subject-specific learning outcomes become more important than the child's overall development. In schools B and D the school leaders highlighted that if the schools are expected to provide students with a transdisciplinary or interdisciplinary curricula with general competencies at the centre of teaching and learning, then the Ministry of Education and Research should do more work to create this kind of curricula instead of expecting this work at school level.

It did not emerge from the interviews with teachers or classroom visits that educators are not applying a student-centred approach and concentrating only on teaching to the summative outcomes. All teachers talked about wanting to give best support to students' overall development, however, their understanding of how to approach that differed somewhat with some teachers wanting to support students' personal development through transdisciplinary skills while others considered meeting the subject objectives most important but at the same time wanted to find the best approach to each student to unlock this potential to meet subject goals. All teachers understood that the current students need a different approach than in the Soviet times. The grade 7 teacher from school B was the one educator who proposed that perhaps schools around Estonia have become too student-centred. This teacher, as evidenced from the interview with him, the students and the classroom observation, has a very good relationship with the students and supports their learning journey in a systematic supportive manner. Thus, he did not question the need for a good teacher-student relationship but the way student-centred approach is understood at schools around Estonia. This teacher highlighted that students from previous generations went to school to learn how to be part of society but currently the main focus is on the student's journey on their own, separate from everybody else. He pinpointed that the messages that teachers receive from the society at large and from the leadership team, is that whenever the student is not progressing quickly enough, the teacher has not given enough support and should do more but not much is said about the responsibilities of the learner. He thinks educators in Estonia should take a step back and examine whether the student-centred school culture that has developed over the past decade is actually best supporting the development of self-directed responsible individuals who are well-prepared for grown-up life as part of society at large.

He brought two examples to illustrate why the approach is not working. Firstly, he noticed as a parent to twin sons that during distance learning one of them participated in online studies and the other was not motivated to take part. As parents, he and his wife tried to talk to their son about responsibility and consequences that will come in life if he does not fulfil the obligations he carries in society. However, at the end of the school year his son who did not participate in distance learning got a report card with better grades and feedback than his brother who did join the online studies. His son concluded that it was the right decision to not join online studies as he had the report card as proof. The reason he got better results than his brother, according to their father, was that it became the responsibility of teachers to cater to all students who had missed distance learning to make sure that each of them achieved learning goals. He exclaimed that progressing at school should be an equally shared responsibility between students and teachers, not the sole responsibility of the educators. Another example that he brought of the current student-centred system not working was regarding some of the young staff members who had tried the teaching job but then left the school system. He pinpointed that those teachers had expected their work environment to first cater to their needs, like not teaching early in the morning if they want to sleep in. He expressed that he considers it unfair towards these teachers that the same school system that helped develop grown-ups who, when carrying out their work tasks, think first about their own needs, rejects them when they come into the workforce. He said that he has heard some of the young staff members who have left teaching being talked about as snowflakes who could not carry out the responsibilities that come with a teaching position. He exclaimed that if Estonia's school system is preparing such individuals for working in the society, it should nurture them more when they take on these positions. Otherwise, according to him, educators should re-think whether the student-centred school culture has the output that is

wanted and if it is not the case, make the necessary changes, like supporting students with the expectation that students also carry responsibility for their learning journey and results.

Assessment practices that are focused on grades

The study showed that the schools that took part in this research are on the course of establishing how to bring assessment techniques into daily classroom practice to support students while learning is taking place. It was highlighted in all interviews with school leaders (n=8) that formative assessment implementation is hindered by the teachers', students' and parents' focus on summative outcomes, especially grades, rather than the learning process. Tradition of focus on summative assessment was brought out as the reason for this in all four schools (n=6). For example the headteacher of school A pinpointed, "Tradition is a factor here - if the teachers and the parents have been graded in a standardised, very old-school way, they do not understand the notion". The headteacher of school B explained that the historical reasons for this can be found in the Soviet times when students were steered toward specific professions based on grades in certain subjects. He pinpointed that after Estonia gained independence, the importance of grades was kept and slowly feedback started to be given in addition to the marks which made the system too complicated.

In school D the school leaders (n=2) explained that they consider it a cultural reason highlighting that in their opinion grades are the most important part of the learning process for the Russian community. They highlighted that this becomes a problem when learning happens for the grade rather than developing the skills and knowledge. They brought out the system of medals at the end of secondary school as one example of where they had witnessed students' focus on achievement at any cost rather than true development. In the Estonian general education system

secondary school course grades can earn them a gold or silver medal that can be advantageous during the university admission process. The headteacher and deputy of school D highlighted that this system is hindering formative assessment implementation because they had witnessed that rather than focusing on developing true knowledge and skills, many students and their parents calculate how to achieve the gold medal, neglecting courses that do not have an impact on this outcome. They also reported it to be a hindrance that universities signal the importance of graduating with honours as a measure of excellence in learning by giving an advantage in university admissions to those students who have a medal. Rather than this system they reported the importance of universities awarding additional points during admission for extra activities where students have shown commitment to learning, such as achieving top results in national subject-based academic competitions or completing some university courses while still at school. These two stakeholders noted that graduating with honours and receiving the gold or silver medal is in their opinion especially important for the Russian community. The calculated focus on graduating upper secondary school with honours was not noted as a hindering factor in any other interviews, however, as the focus of this study was the last stage of basic school not secondary school, it is unclear whether leadership team members of other case study schools consider medals to be hindering to the formative assessment process.

Headteacher: What I would certainly like to do away with are medals. I've said this everywhere, but no... I don't understand - it's a legacy of the Soviet era.

Deputy headteacher: It's a cultural characteristic.

Headteacher: It's an obstacle to real learning. You can't delve deeply into anything because you have to chase the gold medal. I dare to say that this is a hindrance to Estonia as a country - preventing anyone from truly immersing themselves in a subject and becoming a scientist or anything else. Instead, it's all superficial - just making sure that the necessary grade on the report card is a perfect five.

Deputy headteacher: This calculation starts immediately with the students.

(Headteacher and deputy headteacher of school D)

Most teachers (n=9) pinpointed that students and their parents consider grades to be vital. This was confirmed in interviews with students where they highlighted that positive grades are

essential for their motivation at school. Based on the interviews with teachers and classroom observations it cannot be concluded that teachers simply keep the focus of teaching and assessment on grading or other summative activities. Rather, the interviews highlighted that they are taking steps to understand how to best support students on their learning journey and are re-evaluating what role grades have in this process. Also, many of them are adding different formative assessment methods to daily classroom practices, like self-reflection and providing formative feedback. However, teachers differed in how clearly they had defined for themselves what role the learning process plays in reaching summative outcomes. Grades were still considered important by most teachers. At the same time some of them discussed how grades are not the most important part of the learning journey, do not capture the whole learning process and often do not support the development of intrinsic motivation. Two teachers noted that they never give students negative grades and most teachers give students the possibility to improve on their summative learning outcomes.

When you're constantly assigning grades, the student might notice them, but in the case of formative assessment, motivation works differently. With traditional grading, we're not really talking about intrinsic motivation - it's more of a *carrot-and-stick* approach. But is a grade even real motivation? I don't think so, because often, it's just about short-term manipulation to achieve a certain mark. True motivation—you can see it. You see it in how a student engages in class, how they think, how they work. But the real challenge, at times, is for the teacher - finding the right key to reach that student. (Grade 7p teacher from school A)

This study showed that one of the main reasons that summative outcomes in the form of grades has stayed vital in all four schools is shortcomings in knowledge about formative assessment among staff. The reasons for this are reported under the theme of absence of a systematic approach for implementation across all schools. In all four schools it was explained that formative assessment implementation began with adding feedback in addition to the grade or instead of it, keeping the focus on the summative outcome but naming it formative feedback. This confusion in terminology is best highlighted by a grade 9 teacher from school B who used

the term formative grade to talk about summative feedback that she gave students alongside grades. In this implementation process it was realised in these schools by both the leadership team members and teachers that this is not having an effect on learning that was initially thought, because the students and their parents mostly focus on the grade rather than the description of learning outcomes, thus increasing the teachers' workload without much of a positive effect on learning and self-reflection.

Well, I don't know - I haven't quite figured it out yet or formed a definite opinion on whether it actually has a significant benefit. Yes, we do write lengthy texts, but has that really improved students' grades? I'm not sure. Since these texts tend to be quite long and are written for every subject, how much patience or time do parents actually have to read them? Yes, I don't know. In any case, I don't see any particularly great advantage in it. (Grade 9 teacher from school B)

With this realisation the leadership teams have made modifications to the implementation process to try to bring the focus more on the learning journey. For example the deputy headteacher of school B noted that in order to implement formative assessment, the teachers have to re-think the whole pedagogical process:

They [teachers] must gain a clear understanding of what it means to structure a lesson, set objectives, and teach students various learning strategies - what this entails, how to approach it, and how to develop a systematic framework. Grand words are often used - *a self-directed learner* - but what does that actually mean? In reality, it is the step-by-step transmission of learning skills to the child, increasingly deepening and becoming more goal-oriented over time. And, of course, this must be accompanied by supportive assessment and feedback. (Deputy headteacher of school B)

Difficulties in supporting diverse educational needs in the classroom

As described under the enhancing factors' sub-theme of implementation of additional learning models, in schools B and C it was noted that inclusive education had been helpful to formative assessment implementation because understanding of how to work with SEN students by providing each student an individual approach and meeting them where they are at on their learning journey has helped to better understand the deeper meaning behind formative assessment practices. However, although there have been enhancing elements to understanding

formative assessment in integrating inclusive education, as reported in interviews (n=6) at these two schools, a lack of resources, like not enough room to create smaller classes, not enough teachers, not enough funding to have a small number of students per class, not enough funding to hire teacher aides and not enough training has created a situation where in schools B (n=2) and C (n=4) it was highlighted that it is difficult to implement formative assessment because these institutions have a large number of SEN students and large difference in academic capabilities among students, thus it is difficult to support each students' learning journey through formative assessment implementation. Importantly, inclusive education was brought into the education policy at the same time as formative assessment and the interviews showed that stakeholders reported many of the same hindering factors to implementing inclusive education as this study has shown for formative assessment. The stakeholders (n=6) stated that they needed the Ministry to provide schools with much more support than it did at the time of conducting the study.

I believe that, once again, that the structure for children with special educational needs requires further development. The reason I speak so much about SEN children is that it is truly a major issue at the moment, and it is a problematic area. I think it requires a lot of attention from the government. Yes, teacher training, general training for all staff as well. And it has been somewhat lacking recently. (Deputy headteacher of school C)

The grade 9 teacher from school C highlighted that she needs further support in the form of teacher training to understand how to implement formative assessment when there are many students in class with special educational needs. She was doubtful of whether in the long run formative assessment would work in classes where there are various degrees of learning needs. However, she was mainly focusing on giving written feedback to summative activities, naming this practice formative assessment, showing the need for teacher training as noted under the sub-theme of insufficient professional development in formative assessment. She acknowledged that she would implement formative assessment to the full extent in her classes if the Ministry of Education and Research provided training opportunities with clear examples of how to use

formative assessment with students of mixed levels of ability over an extended period of time. She also acknowledged that it is essential for policymakers to provide teacher aides for classes where there are SEN students because it is difficult to implement formative assessment in lessons where there are students with various degrees of learning needs.

And then, of course, when it comes to students with special needs, there are those who are more gifted than others, and then there are those whose cognitive abilities are weaker. When you have many of these students in a class, you simply can't physically reach the more gifted students, and you also can't engage with the average ones. All your energy goes into working with the students with special needs. (Grade 9 teacher from school B)

The grade 8 teacher from school B highlighted that it can be difficult for teachers to give feedback to SEN students so that students would understand and benefit from it. As a SEN pedagogue, she explained that she helps teachers with this part of the implementation process. The deputy headteacher of school C highlighted that it can be difficult for SEN students to do self-analysis and teachers need training and support to understand how to use this practice well with SEN students. Several teachers (n=4) reported that there is not enough time to support gifted children through formative assessment as the main focus in classes that have a large number of students and diverse learning needs is given to those with lowest achievement levels. The following is the account of the issues with inclusive education by a stakeholder who, in addition to working as a teacher, holds the role of a SEN pedagogue at school B:

It seems to me that this [inclusive education] is one area where we have not been very successful. Teachers have been trained, and they have been given the basic knowledge, but for some reason, they do not implement it in practice. Whatever the reason may be, it could be that they don't know how, or they don't fully understand how these approaches work, perhaps they feel unsure, or maybe they simply don't have the time to apply them, especially considering that the classes are often quite large. [...] Perhaps we should rethink the role of teacher training in this regard, in the sense of introducing it to everyone right from the start. When we talk about inclusive education, there should be a subject on special education, where teachers not only learn theoretical knowledge but also practical techniques. (Grade 8 teacher from school B)

In addition to SEN students, some stakeholders (n=5) talked about students who benefit from formative assessment more than others. For example, according to the deputy headteacher of school A, formative assessment works better for more independent, self-directed learners

because they can concentrate on the day-to-day learning journey better, taking them towards achieving learning goals. Also, the leadership team members of school B and the deputy headteacher of school A acknowledged that some students are lacking in their critical thinking skills that they consider to be essential to think about learning more deeply and ask questions. These stakeholders (n=3) highlighted the importance of teaching critical thinking skills from as early of age as possible for formative assessment implementation to be successful. The headteacher of school C highlighted that although the model of formative assessment methods is quite universal, there are still some students for whom these practices do not result in positive learning outcomes. As an example he described that at school C he has witnessed that not all students benefit from setting learning goals, taking steps to move towards them while getting ongoing feedback. At the same time he acknowledged that most students, especially those with SEN, benefit from formative assessment implementation.

Students' perceptions of formative assessment implementation

This chapter describes what grade 7-9 students consider important in formative assessment implementation in Estonian (schools A, B, C) and Russian (school D) language and literature lessons. The chapter aims to answer the following research questions: What do the grade 7-9 students in Estonia perceive as essential for formative assessment implementation in their Estonian and Russian language and literature studies? It is based on the results of qualitative thematic analysis of interviews with the students. Additionally, the chapter also includes references to the classroom observations and the written feedback to enhance the reporting by the students.

The results of data analysis show that according to the students the relationship with the teacher underpins how formative assessment is implemented. Students self-reported that they need a positive relationship with their teachers to feel good at school and to be successful in their studies. Research has shown that a safe classroom environment is essential for successful formative assessment implementation (Heritage, 2021). If students feel safe in their communication with teachers, these relationships are strong and positive, it is foundational to creating a classroom environment where students can succeed (Heritage, 2021). In each of the interviews with students it emerged that the grade 7-9 students of case study schools considered their relationships with the teacher to be the most important factor in the learning process.

The chapter is structured around the main theme of a teacher-student relationship. It describes, based on students' self-reporting, teachers' actions that build positive relationships with students that are characteristic of a classroom where formative assessment can be implemented successfully. From qualitative thematic analysis the following sub-themes related to building a

teacher-student relationship emerged: assessment that enhances learning and well-being, supportive communication and engaging learning activities. As this thesis focuses on formative assessment implementation, the data analysis results under the sub-theme of assessment that enhances learning and well-being are reported in detail and for supportive communication and engaging learning activities a shorter summary is presented.

Assessment that enhances learning and well-being

In all the interviews the students self-reported that they consider assessment to be an integral part of learning. It emerged that assessment enhancing learning and well-being is important for the students. They perceived that an assessment process that is transparent and understandable to the students, supports their development and considers individuality, contributes to building a positive teacher-student relationship.

Importance of effort

Students self-reported that in order to implement formative assessment and build a positive teacher-student relationship, it is important that the teacher notices how each of the students is doing in the study process and supports their individual journey. It is essential for formative assessment implementation that the main focus is shifted from only gaining the end-result to the day-to-day learning journey. One possibility to do that is for the teacher to notice whether the students want to learn and how much effort they put into their studies. This can help with building a positive teacher-student relationship because recognising each student in this way can make them feel seen. Additionally, it is important for formative assessment implementation because the students are given the feedback that not only the end result matters but putting in effort to meet the next individual study goal actually guides the learning process forward. In this study school D stood out because the students from each of the classes self-reported that their Russian language and literature teacher supports their individual learning journeys by recognising effort.

S2: Well, our Russian language teacher has even more of an individual, let's say, approach where she looks at each student's work, sees what the student is capable of and, based on the conclusions, gives a grade. That is, if she knows that someone can write better or, on the contrary, a person tried very hard, then she sort of improves the grades based on these conclusions.

S4: It is very pleasant to work with such a teacher.

(Case D grade 8)

Teacher quality is an important factor in the education system (Wiliam, 2018, p1). To be able to monitor each student's progress in a class of over 20 students in the way case D grade 8 students indicated, the teacher must be equipped with the knowledge about formative assessment methods, like working in the zone of proximal development, and skillset of eliciting and interpreting evidence of learning, giving personalised feedback and supporting learners' self-analysis. The interview showed that the students of this class self-reflect on their input during the lesson. As noticing effort is an important part of the learning process in case D grade 8, the students themselves used it as one criterion which gives them information whether they met the lesson study goals:

S1: We all know we tried our best and did our work as well as we could (Case D grade 8).

In addition to school D grade 8 class, students from the same grade level in cases A and C highlighted the importance of teachers noticing student effort. Three students from school C grade 8 emphasised that it adds to their motivation when teachers notice that students are trying to study and behave well. They appreciated when the teacher rewarded their efforts with a positive grade. At the same time there was one student from case A grade 8 who highlighted that she needs a more individualised learning journey where effort is taken into account:

S3: I think teachers could assess a person's own progress, so that if for example the maximum is 8 and you get a 3 on the basis that you haven't studied and you haven't contributed to your own grade, but if you study a lot and you think you understand the subject and you get a 3, like I have gotten, I don't think that's very fair and the teacher should either re-explain or let the student do the work again, or just assess on the basis of how the student understood, not on the basis of what's correct according to the grading system. (Case A grade 8)

This participant highlighted the importance of each student's individual learning journey. It is not that she hasn't been given feedback that applies to her work - the student's grades and feedback in the electronic daybook at the time of the interview show that the teacher has explained what the student did well and what is missing from her work. However, as the student still thinks that

assessment is unfair, the teacher might not have communicated that she has also noticed the student's individual progress and effort. As the student self-reported that she wants to be on her own learning path, it makes for a good foundation on which to continue building formative assessment implementation. It is notable that this student studies at a school that has one of the best final exam results in Estonia and even in such a high achieving institution basic school students in the last stage of studies, as highlighted also in other student interviews conducted at case A, want the teachers to support their individual learning journey rather than competing with other students for top scores. It could mean that formative assessment has been implemented to some extent and this process has changed the students' mindset from focus on achievement to valuing the whole learning journey. Also, it could be reflective of the overall education system in Estonia where the national curricula emphasise the importance of a student-centred approach and becoming a lifelong learner.

Additionally, in a similar manner to students in other interviews, this participant from case A grade 8 highlighted that teachers should notice effort by allowing learners to improve their results when they are keen to put in more work to close the gap to meet study goals. School D stood out in this research for students' appreciation for Russian language and literature and most other subject teachers for supporting them when they wanted to improve results. As an example, a grade 8 student in school D expressed, "With correcting grades, teachers are almost always supportive. For instance, if there is something regarding results the student does not like, they can go to the teacher and get additional work." This support was not described to the same extent in other schools. For comparison school B grade 8 students highlighted that they cannot improve their Estonian language and literature grades. Students indicated that a similar approach is used in many of their subjects. A student from grade 8 in school B said, "Some teachers are like, I'm

very sorry I'm giving this example... But some teachers are like, if you got a four or a three and then they just won't let you improve [the grade] because they're positive grades.”

Interviews with the students showed that teachers who participated in this study use various methods to express to learners that their effort has been noticed. For example, case A grade 7 students discussed that their teacher praises effort in front of the whole class but if the student shows low engagement, the teacher never mentions it to everybody but speaks to the learner one-to-one. Also, the teacher might commend effort in the electronic daybook as noted by students of case A grade 7p. Additionally, students might be given the option to choose, based on whether their work is reflective of their best effort, if they want the grade added to the electronic daybook, as indicated by case C grade 9 students. However, the main way in which the teachers in this study notice effort, as self-reported by students in all the interviews, is by giving positive feedback for class participation. School B grade 9 S1 and school D grade 9 S1 indicated that recognising classroom participation gives them important feedback about how they are making progress. Students perceive this as a form of showing support which helps build a positive teacher-student relationship (case D grade 9 S1). Sometimes teachers also add a grade for class participation into the electronic daybook. This was brought out by students from school B grade 9 and school D grades 7, 8 and 9.

S1: For me, for example, the reward is that if you are active in class, the teacher notices it. And I would suggest that, I don't know if it's necessary to assess so much of the classroom activity all the time, but it's a very sensible thing to do, even if it's only occasionally, as this gives important feedback to the students. (Case B grade 9)

S1: Well, always in literature we have quite a lot of grades for those who work actively in class and that is pretty much everyone. When we are doing text analysis at the end of the lesson, we are always given grades. Most often they are, of course, positive, because well, you can't really have a wrong opinion, yes, everyone has a subjective opinion. So that's how we get feedback, support actually, also with grades as well. (Case D grade 9)

Overall, the students self-reported that when teachers recognise their efforts, it makes them feel seen and also motivates them to continue learning.

Teachers welcome questions from students

Students from all classes self-reported that in order for them to experience a fair assessment process that supports development, it is essential for the teacher to provide an adequate amount of clear feedback and to be open to clarifying questions from the learners. Students noted that they prefer such a classroom atmosphere where the teacher wants to collaborate with them by encouraging the students to turn to the teacher during and after the lesson to discuss matters that arise in the study process. This aligns with research that has shown the importance of students being active participants in their learning rather than passively acquiring information (e.g., Heritage, 2021). One way to activate students in the learning process is by creating a classroom atmosphere where students are encouraged to ask questions. The majority of the students in the study, 32 in total (case A grade 7p all, 7 all, 9 S1; case B grade 7 all, 9 all; case C grade 9 all; case D grade 7 S2, S3 and S4, 8 all, 9 all) stated that they receive enough information about their progress, ask the teacher additional questions when necessary and get clear answers.

S1: But I think we get as much feedback as we need.

S2: If we don't understand something, we can ask at any time.

(Case D grade 7)

S2: At any time, should there be a wish, any student can go up and ask. They will always get feedback if they want it themselves.

Interviewer: Has anyone used this possibility?

All: Yes.

(Case D grade 8)

S1: And we can certainly go ask any time we don't understand some feedback (Case B grade 9).

Interviewer: Do you understand how you're doing or is there any additional information you need?

S1: Sometimes we need and then if we want to, we then go to the teacher and ask the teacher boldly.

Interviewer: Is it the same for others, that if you have clarifying questions, you go to the teacher and ask and you get the information you need?

All: Yeah.

Interviewer: Do you need any more feedback?

S2: I think there is enough of everything and if I want to ask something I go to the teacher and ask.

S3: I think the same.

(Case C grade 9)

Students from all interviewed classes stated that they can turn to their language and literature teachers for clarification both during and after the lesson. They self-reported that they feel most supported by the learning format that includes a meaningful dialogue with the teachers during the lesson that answers all or at least most of their questions. Turning to the teacher after class was seen as an additional possibility that the students want the teacher to be open to, should there be a need for clarification, however not the main time for asking questions.

S1: But if there's anything we don't understand, especially regarding assessment, of course we'll go to the teacher. Or we won't even do that, but we'll analyse it in class. Most often it can be, well, such a recurring mistake. And then the teacher explains it to us once again. (Case D grade 9)

Although students in all classes stated that they can turn to their language and literature teachers if they have questions, in case of two teachers (case A grade 8 and 9, case B grade 8) the students indicated that they don't often use this possibility. In school A grades 8 and 9, the students explained that their teacher is nice and explains most of the questions they are thinking about already during the lesson, however, they do not usually turn to the teacher for clarification because they are convinced that as the teacher is so experienced, she has valid reasons to give certain feedback or grade. Also, they stated that they do not want to look "stupid" in the eyes of the teacher if they ask a question that she would expect them to figure out on their own. In school B grade 8 students also stated that the teacher is open to questions but they do not usually turn to her after class because when they have asked for clarification, they were not given the kind of clear answers that helped their understanding. These two examples indicate that in order for students to be active participants in their learning, the teacher should build a classroom atmosphere where students could feel that no question is too "stupid" when a student is trying to improve their understanding. Also, for students to be motivated to ask questions, the teacher

should check whether their answer cleared the student's gaps in understanding and if not, give further support.

Although in all interviews students indicated that their language and literature teachers answer their questions if they turn to them, S1 from case A grade 9 stated that in some other subjects they have teachers who are not willing to clarify feedback and grades. Grade 9 is the last class of basic school in Estonia ending with final exams, thus, students are particularly focused on understanding assessment and need extra support from teachers.

S1: It's also with other teachers sometimes, because we have these general criteria that a student gets a seven or an eight if they do this-that-that-that, you get the work and you have a grade of, let's say, "5" and you're not happy with it and you have the text exactly taken from that criterion. And when you ask, some teachers are willing to explain it to you, but some will tell you to look at the criterion to see what's missing, and then the student in particular has a bit of a problem sometimes. (Case A grade 9)

Overall, although students from all classes in this study indicated that they can turn to their teachers with questions, case D particularly stood out in this respect. Grade 7, 8 and 9 students of this school explained that their Russian language and literature teachers explain and answer their questions calmly, while also giving a lot of support until each student understands how to close the learning gap.

Small-scale assessment

In all the interviews students highlighted that they prefer assessments to take place frequently enough so that they have a consistent overview of how they are doing at school. Students self-reported that these assessments should be mainly small-scale, thus, assess a manageable volume of content, create low levels of stress and give them a possibility to feel a sense of success. Students brought out the need for small-scale assessments that serve a formative purpose, summative or both. They self-reported that small-scale assessments add to their motivation to study at school.

S3: What I would suggest is to assess small-scale work, because it can add a lot. And not too harshly, because the teacher also has to understand the students. (Case A grade 7p)

S2: Do assessments that do not last the whole lesson.

S3: And don't do very difficult assessments, so that we would get good marks.

S1: These assessments could be a bit easier, so we could get that feeling of success.
(Case C grade 7)

S4: There should not be many large-scale assessments (Case C grade 8).

The need for small-scale assessment activities was expressed by students across cases and the interviews showed that such assessments are being carried out in all the grades of this study. Students highlighted that small-scale assessment practices give them consistent feedback about having made progress and learned something new. However, the main purpose of this kind of assessment for students, as self-reported in the interviews, is to give them a sense that they can manage their learning process and a feeling that they are doing well at school. Additionally, they self-reported that such assessment activities provide valuable information to teachers regarding how the learners are doing in their studies, allowing educators to choose content and tasks that are manageable for most students when they put in effort.

Students in most cases, except for school B grade 9 where participants highlighted that grading can create stress, preferred that these small-scale assessment tasks would be regularly marked, thus serving a summative purpose.

S1: In my opinion assessments should be structured so that it's maybe like one week for example three lessons or four lessons for one topic, or two lessons for smaller topics, and then after that, if the topic has been learned, then there is a small test and the teacher grades it. (Case C grade 9)

S4: Like do these kinds of assessment activities more often, where you don't get grades, but just, you can see how well you are doing, because grades usually add stress. (Case B grade 9).

Although grades are not considered formative feedback because they are summative judgements of student performance (Heritage, 2021, p. 99), many learners expressed the need for small-scale assessments where they receive a grade specifically for the purpose of improving performance while the study process was still taking place. This shows that students want to draw on

summative feedback for formative purposes. They described using evidence of learning in order to improve while working towards the next low stakes assessment activity or the final large-scale assessment.

S1: Then I get the results and I know whether I know the material well or poorly. And I can improve upon it. (Case C grade 9)

Participants described that in their Estonian and Russian language and literature lessons graded small-scale assessments are being used by the teachers and students for both summative and formative purposes. This was indicated by the students of all classes, except in school B grade 8. Students said that they are being provided with the information they need to monitor progress, understand how to move forward in their studies and set goals. School B grade 8 students described that they do not have large-scale assessments in their Estonian language and literature classes. They indicated that they only have graded small-scale assessments that are final with no opportunities for improvement. The students of this class expressed that this was not supporting their learning journey because even though assessments were small-scale, the evidence was not being used to improve learning while it was still taking place. They indicated that they found this demotivating for their learning.

Additionally, students in school A grade 7p expressed that although their Estonian language and literature teacher does small-scale assessments with the intention to use the evidence to inform ongoing learning and this was highly motivating for them, it is not the case in all of their subjects. They explained that until the end of grade 6, formative and summative assessments had been used for the purpose they are intended. However, as self-reported by students, in grade 7 some of the teachers had started using assessments that they named formative but were actually summative. One student in this class indicated that she considers this to be the biggest problem students have at school, thus, showing how important authentic formative assessment is for

learning motivation and teacher-student relationships. Additionally, this suggests that in case A formative assessment has not been fully implemented across all subjects in grade 7, with some teachers using summative techniques while referring to them as formative assessment.

S2: In other subjects, where both formatives and summatives are included in the criterion grade, I am not motivated to study. I'm used to, I've studied in both grades 5 and 6 so that I do the formative assessments, I find out what my strengths and weaknesses are, then I can practice and I do the summatives well. But we've come to such situations now in grade 7 that all the work we are doing is counted into the final grade. It's confusing as if I haven't challenged myself, I don't know what I can't do.

S1: It's that, this formative that's supposed to be just kind of calm, it now gives the feeling that it's a summative and it's so important and that if I get a bad mark for it, then I'm going to do badly overall.

S2: And now it's like this.

S1: It's that in formative you get a lower mark and learn from your mistakes, but now it's that formative has to be perfect to get a good mark in summative. That's the biggest problem we have right now.

(Case A grade 7p)

In addition to the small-scale assessments that take place during the learning process, students from all grades described how important it is for them that the final large-scale assessments are conducted using various methods and do not create a high level of stress. Also, that these kinds of summative assessments are infrequent and take place only after the students have gone through the whole study process supported by formative assessment methods. The interviews indicated that in all Estonian and Russian language and literature classes where final assessments are conducted after a longer study period, various methods of assessment are used that do not generate high levels of worry and are appropriate for students in terms of content volume. However, students across schools self-reported that this is not the case in all their subjects.

S3: I really like the fact that we don't do big tests or worksheets for our summative assessments where you either get answers right or wrong. It's more like discussions and where you write about a book.

S1: Yes, with summative you're given the opportunity to use your own creativity and, well, to think for yourself about what you're writing, rather than there being only one right answer.

(Case A grade 8).

S1: Overall, it seems that our school is focusing a bit on not just having a workbook and just a big test but to having different activities and tasks to be assessed (Case A grade 9).

S2: It is so much easier, that you do not have any tension. Because in most other subjects, for example, you know that tomorrow we have a big test and all your thoughts are out of your head. But in Russian you know that now there will be a small-scale task on this topic, I will write and that's it.

S3: Well, because in many subjects, the final test is the most important thing, your grade depends on it, and you can, for example, be scared and everything can fly out of your head.

(Case D grade 8)

The study showed that students want to trust their teachers in guiding them through the learning process by making the journey manageable for students, helping them grow and enjoy successes. In terms of small-scale assessment, one aspect that students considered important for a positive teacher-student relationship was that teachers would try to obtain evidence of learning as often as needed to understand how the students are progressing in building skills and understanding. As a student in case B grade 9 described, “It can certainly be that it's not enough to ask the students if you understood and everyone just nods, says yes or doesn't say a word. Like, maybe you should check not by doing a test, but still like checking more to see if students are really understanding.” The students indicated that only when the teachers collect enough evidence of learning can they truly support the authentic learning journey of each student. School D was notable for its students self-reporting in all interviewed classes that their Russian language and literature teachers support them in this way.

Overall, the students expressed appreciation for teachers who used small-scale assessments for formative purposes. The participants found it motivating for their learning.

S2: She somehow motivates us so strongly. I don't know, it seems to me that maybe with a different kind of teacher these tests would be much harder. Somehow she takes them apart, and then we take a little bit at a time and then it's really great at the end. (Case A grade 7p)

Possible negative effects of assessment

A positive teacher-student relationship is built on feeling safe and supported. One way a teacher can create a nurtured classroom environment is by being fair in the assessment process and never using assessment practices to undermine the learners. Giving timely feedback in a way that is supportive to the student's development is essential for formative assessment implementation. If

students fear and resent the teacher and the learning process, formative assessment has not been put into practice authentically.

The results of the data analysis showed that the students of this study were adequately able to differentiate between assessment as punishment and the learner's own responsibility in the study process. For example, S3 from school C grade 9 stated that the assessment process set out by the teacher does not demotivate him even though one trimester he had many negative grades. Although he described that it had been stressful, he reflected that he did not put in much effort at the time, thus, he had to take responsibility and study more to get better results.

The findings indicated that one way in which the teacher can make the learners feel uneasy in the assessment process, is by discussing the students' results with the whole class. S3 from school B grade 8 explained that although this is not done in the Estonian language and literature lessons, she has many teachers who openly talk about the grades in front of all the students and she thinks doing so is not appropriate. Students self-reported that they do not want grades to be revealed to the whole class, even if results are kept anonymous, because this makes them compare achievement levels between each other.

S3: Sometimes it is also the case that when some students ask what the lowest mark was, the teacher will tell them, but they won't say who got it. Then you have a bad feeling that you got a worse grade than others, then they are somehow above you. I don't like the comparison. (Case A grade 7)

This suggests that there is a great foundation for formative assessment implementation because the students indicated that they do not want to compete with others for top scores. Instead, they prefer to concentrate on their individual learning journey and results. At the same time, although the students self-reported that they find it demotivating if results are discussed with the whole class, learners across all cases and grades emphasised the importance of open discussion about common mistakes, without revealing any names. This shows that students are self-reflecting on

how to build understanding and close the gap to achieve learning goals, indicative of formative assessment practice.

Except for grades being discussed openly in some language and literature classes, the data did not show any other assessment practice in Estonian or Russian lessons that the students found demeaning. However, students explicitly pointed out that the teacher should never use assessment for punishment and humiliation. Some of them considered giving a low grade for work with almost no mistakes and undermining students with negative feedback as examples of such an assessment process. The core discussions about the importance of the issue took place with participants from school D. These students wanted to express how essential it was for their learning motivation, helping them build understanding and ability to perform, that assessment in Russian language and literature classes was fair and never demeaning to students.

S1: Yes, your work is not undervalued, not added to, well, it's all fair.

S2: During tests you don't have thoughts in your head that you can't do it, of what if. In this case you have only positive thoughts in your head, you don't have much worry. It seems to me that you're then always better at performing and figuring it all out.

S3: You don't get punished, for example, for your one mistake with a bad grade. This also affects you. (Case D grade 8)

Overall, the students self-reported that assessment can have negative effects on the learners' mental health and ability to perform. Also, that it is essential for the students' success at school that assessment is never used to undermine learners.

Supportive communication

Students self-reported that in order to feel and do well at school, they want a meaningful relationship with their teachers. A key aspect of this relationship is supportive communication, that, according to the students, can be built when a teacher is caring, friendly, helpful, encouraging, honest, respectful, understanding and empathetic, gives students praise, shares

personal stories and uses humour, makes students feel equal to the teacher and creates a light and stress-free environment in the classroom.

Students self-reported in the interviews that they want to feel respected by their teachers. As one student from case A grade 7p highlighted that learners do not want the teachers to make them feel less important, even, as they know more about the subject content than the students. According to the participants from this class, in order for them to feel respected, the teachers should try to put themselves into the role of the students and make an effort to understand their perspective. They highlighted that their Estonian language and literature teacher acts in this manner and it is motivating for students. Participants from this class communicated that the teacher makes an effort to understand how the students think and at the same time respectfully informs them of her perspective. According to the interview with case A grade 7p students, the teacher's understanding of how to relate to the class makes them think and feel that when it comes to the teaching and learning process, everybody is equally important. These students reported that it shows that the teacher respects them and the positive feeling makes them want to study. Also, a participant in case A grade 8 said that if a student does something wrong, the teacher should try to understand why it happened and not undermine the learners. Students self-reported the need for this kind of respectful and understanding way of relating to them in all the interviews of this study.

Interviewer: What motivates you most in your language and literature lessons?

S4: Her attitude towards students.

S2: Yes!

S1: She's so respectful, she's not the type to say that I'm the centre of the world, that you're just students, that you don't mean anything, that I'm just here to teach you. But she just identifies with us and that's how it is nice that it makes you feel so good that someone who is so much bigger than you is still the same as you. (Case A grade 7p)

S1: I think that the teacher could be as understanding as possible towards the students. If the student does something like... did something wrong, then she would still understand why it happened that way and would not show that she is somehow better than the student nor talk about the student as someone more stupid. (Case A grade 8)

According to the students, genuine care from the teacher is very important to their well-being and motivation at school. For example, a grade 9 student in Case D pointed out that during that day's lesson, in addition to teaching the subject content, the teacher actually wanted to calm and support the students in class, because she knew they had an exam coming up soon. The student recognised that the teacher did this through creating a friendly classroom atmosphere. By doing this, she brought the students closer to her as a person. Additionally, the students reported to have felt that the teacher supports them and cares about their progress and well-being. Also, two students from Case A grade 7p brought out that their teacher wants them to engage in activities that support their development during the time between lessons. Students described that as the teacher does not want them to be on the phone or just bored during recess, she provides them with newly published books, newspapers and crossword puzzles. They highlighted that the teacher sincerely cares about the students' overall well-being by offering activities also for recess. Students explained that many from the class happily engage with these activities. Overall, all the students of this study self-reported that they consider it essential that their teachers try to understand them and approach them with a caring attitude. They want to feel that the teacher, in addition to providing subject-specific activities, genuinely cares about them as individuals.

In the interviews the students self-reported that it is important that the teacher praises the learners' effort and progress. They noted that praise is essential for maintaining motivation, and it also serves as feedback to how well learning goals have been achieved. Three students from grade 8 in case A said that it is the teacher's praise that most motivates them to learn. One student from grade 8 in school D said that when the teacher gives positive feedback to the whole class, she understands that the lesson's learning objectives have been achieved.

Interviewer: What motivates you most to study in language and literature classes?

S4: The teacher says something good or I get positive feedback in Stuudium, then I am in a better mood to do the assignments.

S1: The teacher's praise is the greatest.

S3: The teacher's praise, so to speak.

(Case A grade 8)

Interviewer: What informs you about whether you achieved the learning objectives of today's lesson?

S3: We all received a certain amount of praise for our efforts, the teacher didn't leave anyone offended, nobody was told that they didn't work well. We all know that we tried and did our tasks well, as best we could.

(Case D grade 8)

Additionally, the students self-reported that in order to progress in their studies, they want the teachers to create an emotionally safe atmosphere in lessons. According to the interviews, the two main ways in which the teachers can ensure a stress-free supportive study environment is by managing their own emotions so that they stay calm, and by leading the class effectively. For example, the students of all grades in case D said that their Russian language and literature lessons have a very friendly and supportive environment, which takes away any tension and because of that they can learn better. This kind of supportive communication by teachers of school D was also evident in the Russian language and literature classroom observations. At the same time one case D grade 8 student noted that she experiences a tense atmosphere in some subject lessons, for example mathematics. She said that this makes students close down, withdraw and they cannot learn properly in a stressful environment. A student from case B grade 9, who was interviewed during distance learning, appreciated the calm and predictable routine of Monday morning Estonian language and literature lessons. She reasoned that as turning on the cameras was voluntary in that class and students were not pressured to answer, they experienced a sense of comfort when joining the online class. Additionally, the student described that the lesson had a pleasant pace, which helped learners concentrate on the content and tune into the whole week.

S1: I would add that for me these mornings are always, on Monday we have Estonian language and literature for two hours in a row, that they are very calm mornings. That Monday doesn't start with a

headache and that you have to be crazy exhausted, that if you can go in calmly without a camera, you listen to what the teacher is saying, that it's very pleasant. (Case B grade 9)

Stress-free routine in classes does not mean that students prefer monotonous lessons. According to the students, sharing stories and using humour is a good way of creating a supportive class environment. They noted in the interviews that incorporating personal stories and humour into the teaching methods helps students to pay attention, keeps them engaged and increases motivation. For example, all interviewed students from case B grade 7 highlighted that they like the Estonian language and literature classes precisely because the teacher tells stories and anecdotes from his own life that relate to the topics covered in class. The teacher also used humour and told stories during the classroom observation. One student from that grade noted that the teacher is different from all other teachers. She expressed a preference for the kind of teacher who incorporates lots of joyous verbal communication into the learning process. According to her, when the teacher tells stories about his life and makes jokes, it creates a comfortable classroom environment, a learning space where students are more likely to share their own thoughts and feelings.

S3: Sometimes, he starts telling some old funny stories or something like talking about his own experiences, which is very nice.

[...]

S2: Well, he makes jokes and talks about some of his own experiences, and then he asks the students questions.

(Case B grade 7)

Additionally, a student from case A grade 7p brought out that whenever she feels stuck in her thinking, the teacher always tells stories and that opens the students up to engaging with the learning process again, keeping them motivated. This was witnessed also during the classroom observation.

S2: She never condemns anyone. Somehow she motivates in a way that she gives examples from her own life, just like today. She somehow, when we get stuck or we don't come up with any new ideas, she tells us a story and then we get our thoughts going and then it's a kind of comfortable and free feeling, when you know that she understands what you mean and what you say. (Case A grade 7p)

At the same time, for example, the students of case D grade 7 mentioned that they had an intern teacher with whom they got bored because the teacher read monotonously from her papers for the whole lesson and did not interact with the students. Students in all classes self-reported that they appreciate teachers who communicate openly and use humour.

S3: Well, we sometimes got a bit bored, so she [the intern] was like that. Well, probably more like... interact with the class, you know, like...

S1: Make jokes!

All students: Yes!

S1: So that it would not just be boring that the teacher is just reading out loud from her notes.

(Case D grade 7)

S3: Well, one definite suggestion would be to increase students' motivation. Just do interesting tasks like that, or tell a story, or let students take a little break. (Case A grade 9)

Overall, the students self-reported that in order to feel comfortable in classes and find the learning process an enjoyable experience, they prefer to know the teacher as a person who does both, teaches subject content and also creates a sense of trust and understanding by using supportive communication.

Engaging learning activities

One of the ways in which a teacher can create a positive relationship with the students is by trying to provide different types of tasks in class to keep students interested in their studies. In all the interviews with students it emerged that teachers use versatile learning activities in lessons, evident also during classroom observations. This is important for formative assessment implementation because if the students are engaged in meaningful tasks that also relate to real life, it can help them become active participants in their learning. Additionally, using different classroom activities can help teachers draw evidence of learning in various ways.

Most examples about engaging learning engagements were brought out in the school A grade 7p interview where all four students mentioned that their teacher spends time coming up with

interesting tasks and they very much look forward to going to class because they never know what they will be doing that day. Case A grade 7p students talked about various examples of activities that they have done in Estonian language and literature lessons, like creating a radio show as a group project. They mentioned, similarly to other students across all cases, that with some teachers they study only with a textbook and a workbook. According to students this lack of variability in activities strongly lowers their motivation to learn. In all the interviews there were students who advised the teachers to use a variety of methods. Students noted that if they already know beforehand that in every class they will have to do activities from a textbook and workbook with some tests in between, the motivation to learn lowers and they do not feel good going to those lessons.

S1: If making the workbook is a priority, that in my opinion it is... That there is nothing else, that the summative will come and then the workbook will be back again. It's the kind of subject where you just have to memorise, but sometimes it's a bit sad.

S2: Yes. Such a very monotonous activity. It makes the class boring and inevitably, if you don't have anything new to look forward to, it just becomes very ordinary over time.

S1: Not like in Estonian.

(Case A grade 7p)

Although students preferred a variety of learning engagements to take place during the lessons, they were also understanding if the same type of tasks had to be used in the learning process to teach content to everyone in class. For example, in school D grade 9, all students said that their teacher wants each student to understand Russian in depth, and therefore they practise with similar tasks until all have mastered each topic. Students said that they very much appreciate that the teacher does that, however, they also reported having been bored when there had been a few students who did not get the topic for a prolonged amount of time. They reported that they would have preferred that the teacher continued working with these students at a separate time, so that

the class could have started learning new content. This shows that students prefer learning engagements that take into account both their individual and other students' needs.

Students acknowledged that they would like to be given some autonomy when it comes to the learning engagements, like choosing the topic for group work. They all wanted to have an active involvement in the learning process, however, the way they preferred to be engaged differed. For example, some students indicated that they enjoy working in pairs, most participants noted that they do not like performing in front of the whole class. Students differed in the types of activities they preferred. Specifically, many did not want to do much writing tasks, some did not enjoy reading activities, while at the same time there were students who expressed their preference for these types of learning engagements. Thus, no clear pattern emerged regarding the kinds of learning engagements students wanted to take part in, however, what was the same for all students was that they did not want the lessons to be monotonous.

Something that students continually came back to was that they are alert to whether teachers are passionate about their work. They see the teachers' love for their job in what kind of learning engagements they choose, how they prepare for and conduct the lessons.

S2: She puts her soul into these lessons.

S1: Yes!

S2: When she gives us creative tasks, she always says that she thought for so long in the evening and that's what she does outside of work, it shows commitment.

S1: She loves this job and she loves working with children.

S2: And then she says that I really wanted to do a task that would educate you, but you would also have a lot of fun and like it.

S1: For example, she had on the wall "My lovely grade 6". It was also very nice that you can see that she really likes teaching.

(Case A grade 7p)

The classroom observations showed that various teaching and assessment methods are being used in lessons. Regarding formative assessment techniques, giving feedback and sharing lesson goals were applied most often. However, although there were a few examples, the study did not

record almost any self-evaluation and peer assessment activities during the classroom observations. This aligns with research that has shown that although these techniques have many important benefits for student development, peer and self-assessment are not used often enough in classroom settings (e.g., MacPhail & Halbert, 2010).

Overall, students self-reported that to build a positive teacher-student relationship they want teachers to provide activities that engage them, learning tasks to be dependent on their needs, to be given choices and have an active involvement in the study process.

DISCUSSION

This chapter covers the discussion on the summary of findings, implications for policy and research, limitations of the study and the contribution of this thesis.

Summary of findings

Importance of positive teacher-student relationships

Numerous researchers have noted that to implement formative assessment successfully there needs to be a change in teacher and student roles (e.g., Black et al., 2003; Harlen, 2007). The study showed that in connection to the political changes that have taken place in Estonia, like regaining independence and putting democratic practices in place, the education system has also moved from a more traditional teacher-centred approach to the one where students are at the centre of teaching and learning.

Notably, according to students, the relationship with the teacher underpins everything they experience at school. Research has shown that a safe classroom environment is essential for successful formative assessment implementation (Heritage, 2021). The interaction between teachers and students affects various aspects of the formative assessment process, for example how students receive feedback from teachers and whether they can build a growth mindset (Heritage, 2021). Overall, the students highlighted that they had positive relationships with their language and literature teachers, however, this was not the case in all other subjects. Students pinpointed that nurturing communication, supportive and fair assessment practices and engaging learning activities help build positive relationships between teachers and students.

Systemic barriers

The main systematic barriers of formative assessment implementation noted in this study were the lack of time due to the workload, ageing teacher demographic and too much classroom variability in student abilities and performance.

A recurring barrier brought out in the interviews with educators was the perception that formative assessment cannot be implemented due to teachers not having enough time. Research has shown that authentic formative assessment implementation requires a considerable investment in time and, thus, reallocation of time is needed to put this approach into practice (Cizek, 2010). However, in the Estonian context the barrier appears to be related to the practice of providing written summative feedback in the electronic daybook, rather than actual formative assessment implementation, showing a misunderstanding in what this approach entails. As there is a teacher shortage in Estonia, this only adds to the understanding that there is not enough time for formative assessment implementation.

Research shows that formative assessment is effective for SEN students, mainly because it helps them to work in the zone of proximal development (Heritage, 2021). This study highlighted that working with SEN students and participating in various workshops related to supporting them had helped with formative assessment implementation, however, some teachers said that formative assessment cannot be applied in classes with SEN students. This challenge appears to be related primarily to concerns about workload, class size and the level of support needed to understand how to use formative assessment methods in classrooms with various support needs.

Insufficient knowledge and professional development

Research shows that inadequate assessment literacy hinders formative assessment implementation (Popham, 2009). In this study it was highlighted by all leadership team members and most teachers that the professional development in formative assessment has not been sufficient for formative assessment implementation. The study showed that this had resulted in misunderstandings about formative assessment principles among the educators. This is reflected in overall discussions about formative assessment in Estonia. For example, in the latest official report about the PISA results (Puksand et al., 2023) it was stated that formative assessment is being used less than once a month, actually referring to written feedback.

Like in many contexts (Looney, 2011; Popham, 2009), a recurring issue that was unveiled in this study was that schools have not been able to put formative assessment into practice because it has been a narrowly defined practice, mostly written summative assessment feedback. This has made it an add-on to the existing school system. The study revealed attempts to implement formative assessment as part of other school-wide reforms by analysing the systems related to student-centred approaches and making changes accordingly, for example to how the school day had been set up. Also, the study showed that teachers use a variety of methods but mostly without realising that it is formative assessment. Thus, the study unveiled that while some positive changes have taken place, formative assessment has not been fully embedded in knowledge and pedagogy.

Leadership and professional learning communities

The findings in this study showed that educators see value in both within-school collaboration and external partnerships. There was a recurring discussion about the importance of

collaborations among the school staff that would help them learn more about formative assessment theory and how to put it into practice. This finding aligns with what is known from research regarding the importance of building a professional learning community to help teachers shape effective formative assessment practice (Stanley & Moore, 2013). In two schools it was highlighted that teachers are collaborating within their subject group to understand formative assessment better and figure out what techniques to use when teaching language and literature. This is important because as Bennett (2011) notes that although formative assessment can be implemented in all subject areas, work needs to be done to disseminate how to put formative assessment into practice within each subject domain.

Specific to the Estonian context were the examples from each school regarding how the school leaders have looked externally for projects with universities, professional development for staff in other areas, like language immersion, and resources that cover formative assessment theory. This has taken place as a result of limited formative assessment professional development possibilities within an education system context where schools work with a high level of autonomy. This search for external supportive sources, while there is a lack of an Estonia-wide approach for formative assessment implementation shows that schools have taken on the responsibility for policy implementation. Positively, the study highlighted that the school leaders are committed to formative assessment implementation. This has been shown as essential for leading whole-school change in the assessment culture (Black et al., 2003). However, currently there is a lack of the needed support in guidance and professional development from policymakers.

Issues with translating policy into practice

Research has shown that the larger educational context in which formative assessment is embedded affects the effectiveness of the process (Pellegrino et al., 2001). Although formative assessment has been part of the Estonian national curricula since 2011 (Government of the Republic, 2014a, 2014b) and it is obligatory to put this approach into practice in all of the general education schools, several policy- and legislation-related factors came out in the study. Whilst there are aspects in the policy that were considered enhancing, like having the student at the centre of teaching and learning, all educators do not understand the legislation in the same way. Many stakeholders implementing formative assessment, especially school leaders, had an understanding that formative assessment can be implemented only in the primary school and up to the end of the second stage of studies but after that formative assessment needs to have a grade equivalent. This is not the correct interpretation of policy and it is an example of how confusion with regard to the definition of formative assessment can create barriers in translating the curricula into practices at school.

Digital technology resources

The study showed that reforms in Estonia have been intertwined with the developments in digital technologies and there is good access to equipment and online resources at schools. School leaders highlighted that the one positive aspect of the Covid-19 pandemic had been the accelerated development of digital literacy skills among staff and students. Most teachers and students showed a good level of those skills and used various platforms and equipment for formative assessment implementation both during online classroom observations and those done in the physical school environment.

The teachers highlighted that during the Covid-19 pandemic they had started giving more timely targeted written feedback, an essential formative assessment strategy (Hattie & Timperley, 2007; Heritage, 2021; Leahy et al., 2005; Wiliam, 2018), in the school's electronic daybook or other online platforms. The study showed that educators considered the written feedback provided through these platforms as the main formative assessment technique, although the examples of written feedback in the daybook showed these are mostly summative comments. Many students noted that they got enough feedback through the online platforms, although this was not the case for all students. In addition to providing written feedback, some educators noted other ways of using online platforms for formative assessment application - goal setting and monitoring and reviewing students' learning progress, essential strategies of implementation (Hattie & Timperley, 2007; Heritage, 2021; Leahy et al., 2005; Wiliam, 2018), were some of the examples given.

Implications for policy and practice

The study showed that so far formative assessment implementation is in its first stages. At the same time, the policy narrative has moved on, while schools need support with formative assessment implementation. Some stakeholders acknowledged that at the time of carrying out this research, formative assessment had somewhat lost national importance and was no longer under the policymakers' spotlight. An Estonia-wide system of formative assessment implementation should be developed that includes professional development, examples of practice and monitoring.

Stakeholders would like better collaboration between universities and policymakers in order to support schools in understanding formative assessment implementation and reflecting on how

practice could be improved. They would like a system of monitoring to be set up that takes into account each school's individuality. There is low level of trust in leadership teams regarding possible monitoring from policymakers, however, there is high trust towards collaborations with universities. Thus, policymakers should include universities in developing an Estonia-wide approach for formative assessment implementation.

Formative assessment is part of the national curriculum, however, there is confusion as to whether it is obligatory to implement. Leadership teams see that legislation does not allow them to implement formative assessment all the way from primary to the end of secondary school, however, this is not correct. Policymakers should ensure that policy with regard to formative assessment implementation is clear to school leaders and teachers. All the limitations in legislation that were reported in this study were connected to some general gaps in understanding about the fundamental formative assessment principles. If sufficient professional development in formative assessment is provided to schools, these issues with legislation might be resolved.

The study showed that the level of digital literacy among staff and students and the amount of equipment schools have is sufficient to use technology-enhanced formative assessment. Notably, as more research is being conducted that focuses on the design and effects of formative assessment practices that are enhanced by technology, Estonia could re-assess how technology is used in general education schools to implement formative assessment. However, first professional development needs to be provided that would clarify the formative assessment principles for educators.

Limitations of research

In this thesis the qualitative thematic analysis results of interviews with school leaders, teachers and students were presented. Interviews with policymakers could offer valuable insights for understanding the enhancing and hindering factors reported by the leadership team members and teachers within the broader policy level context. Thus, it would be important to include this data in future research.

A notable limitation of this study is its reliance only on the data from interviews. This is self-reported information, and the data analysis results of other sources, such as classroom observations and documents that were collected, might suggest different issues. Future research should report the findings from these datasets. While the analysis focused solely on the interview data, other sources, such as classroom observations and examples of written feedback, were used in this study to add contextual depth to the results.

Another limitation of the study was that it involved only the schools from Tallinn. Although maximum location diversity within the capital and also language of instruction variability were ensured, the study did not involve schools located in different parts of Estonia, in the countryside and those with a small number of students. However, as there are more possibilities for professional development in Tallinn, it is unlikely that the situation with support for formative assessment implementation and actual practice is better in the rest of Estonia. Actually, the study could possibly show the best case scenario of formative assessment implementation. Within Tallinn the results regarding the issues in formative assessment implementation and the students' perceptions were similar across the four schools which suggests saturation, although without extending the data this cannot be fully known.

Baird et al. (2014) have highlighted that while many studies on formative assessment have a small sample and a qualitative design, involving only interviews with teachers and students, the body of quantitative research remains limited. Although findings obtained from a small-scale qualitative study, such as the one conducted for this thesis, can give valuable insights into issues related to formative assessment implementation, a large-scale quantitative study that involves schools from all around Estonia could give a more robust understanding of the enhancing and hindering factors and the students' perceptions. However, as the study showed confusion regarding what constitutes formative assessment, a large-scale quantitative research into the implementation process would be most beneficial only after policymakers provide the necessary professional development for relevant stakeholders and give reasonable time for new knowledge to translate into the classroom practice.

Although formative assessment strategies can be used with any age group of students in all subjects (Leahy et al., 2005), the techniques applied should still be tailored to specific subject domains (Bennett, 2011). This study involved conducting classroom observations in Estonian and Russian language and literature lessons. Given that the study centred on exploring the enhancing and hindering factors and the students' perceptions, it did not include the reporting on the subject-specific techniques used in lessons. In future research the data analysis results of the classroom observations could be reported to show what formative assessment practices are used in the subject of language and literature.

Contribution of thesis

Research that was carried out for the thesis adds to the limited number of studies conducted about formative assessment implementation in Estonian general education schools. Many of the

small-scale qualitative studies on formative assessment do not build upon previous research cumulatively, creating a pattern of widespread research (Baird et al., 2014). The motivation of this study was to add to the limited research on formative assessment conducted in Estonia, building on the previous studies.

The study gave insights into what further support is needed and how to tailor professional development to continue with formative assessment implementation in Estonia. It showed some country-specific aspects to formative assessment implementation, like the political and societal developments, issues with legislation and technological advancements. At the same time, although this study was conducted in a specific educational context, many of the issues were similar to what is known from research internationally (e.g. Looney, 2011; Popham, 2009), like the need for a sustainable well-developed approach to formative assessment implementation that provides sufficient professional development. Positive changes have taken place that can support the future developments in formative assessment implementation, however, it needs to be a priority for policymakers.

REFLECTIONS ON MY OXFORD JOURNEY

As the DPhil chapter comes to a conclusion, I find it fit to reflect on this journey with gratitude, so that I can move to the next stage in my life equipped with what I have found deeply meaningful during my time at Oxford. As noted in the introduction, I came to do this research from the position of a school leader and teacher at a general education school and a guest lecturer on education and leadership at university. I realised during my time at Oxford and conducting this research that with trying to become a better researcher, I was constantly reflecting on the essence of a good education through the lens of the different roles I was holding. Thus, this chapter summarises what has been most meaningful for a research student with my positionality, written not in a linear order in connection to each role, but as naturally as daily reflections came to life, connected to the essence of what I had lived before and taking a new form during the process.

Finding the topic of research

Before coming to Oxford, as Estonia was performing very well in PISA, I noticed at my job at school that this started to attract a constant flow of international visitors to learn from the practices in the Estonian education system. Having first-hand experience as an educator in Estonia, knowing many of the strengths and challenges of the education system in the country, I became interested in studying more about how PISA questions are put together, about the validity and reliability of the results, what can be said about the strength of an education system based on the PISA results, how we should reflect on these results as educators in Estonia. As the Oxford University Centre for Educational Assessment (OUCEA) was doing research on PISA,

this was one of the reasons I applied to do the DPhil here. Additionally, I was interested in learning more about assessment, both, on the level of educational philosophy and what research is showing about effective formative and summative practices. As in Estonia there are no university-level educational assessment centres, I was inspired to study at Oxford to continue developing as a researcher but also in my other professional roles. By that time I had gone deeper in my understanding about school-level curriculum development and implementation, also student-centred teaching practices. At the same time, as assessment practices are not a central focus of teacher education in Estonia, I saw it as necessary for my development as a lecturer on education, school leader and teacher to try to gain additional knowledge about assessment at Oxford. I am very grateful for the support through the Kristjan Jaak Scholarship in Estonia that made it possible for me to begin my studies at Oxford.

At a core of the process of defining my research topic at Oxford was my positionality: after Estonia's experience with the several cycles of good PISA results, I wanted to understand at a deeper level as an educator, based on international research, what would be essential to keep in the following decades and what are our education system's possible weaknesses. During the first year at Oxford I started learning more about PISA, wrote a literature review on international large-scale assessment, conducted a media study on how the good PISA results are explained in Estonia, and widened my scope of the strengths and weaknesses of international education systems. The latter came about largely with the help of the international community at Oxford – I could learn from the experience of faculty members and students. This I found to be invaluable and deeply moving and interesting. Additionally, I got great suggestions from my supervisors regarding studies and books that I could read. I remember "Finnish Lessons" by Pasi Sahlberg being one of the first books that inspired me.

Also, during that first year when I was trying to narrow my research focus, I was constantly coming back to my positionality and realised how much, in addition to the empirical research I was reading, the experiences that I have had through my work for over a decade at that stage defined my inspiration for research. Having had many discussions with my supervisors, focusing on researching formative assessment implementation, something related to my daily work, and case study research was decided.

I still consider each researcher's first hand experiences to be a strength when conducting research. Also, while I will never be able to fully step out of my positionality, I think that at the current stage as a researcher I feel more confident to take on research that is not as well related to my work experience as the research I conducted for this study. To me this is a testament to the education and all the support I got at Oxford to develop as a researcher.

Research ethics

I very much appreciate the work done at the University of Oxford with regard to helping students understand, develop and reflect on all aspects related to research ethics. Going through the CUREC process, having thought about all the possible nuances related to the ethical guidelines, developing information sheets, consent, assent and opt-in, opt-out forms, was a long and thorough process that helped me reflect on research ethics at a much deeper level than I had ever before. When I was conducting the research at schools and interviewing policymakers, I had a good feeling as a researcher because having gone through the CUREC process, I was able to hopefully make each participant understand that they have ownership of their data, have no obligation to participate, can withdraw at any time, can always get more information from me as a researcher. This made me feel that to the best of my ability, I was conducting the research in an

ethical manner and all of the ethical practices seemed to put participants at ease which in turn helped them participate openly.

In comparison, prior to Oxford, I had taken part in research led by university students that did not make me feel good as a participant because I did not have enough information before the interviews and did not know exactly how data would be used. Additionally, as a deputy headteacher, I often get requests from university students regarding possibilities of conducting research at my school, and often their ethical guidelines have not been fully developed. Since getting first-hand experience at Oxford regarding how to properly follow ethical guidelines, I have been better equipped to guide university students regarding following ethical principles when doing research and teaching research ethics to the upper secondary students at the school where I work.

Fully immersing myself into learning ethical principles at Oxford made me feel like a better researcher on a moral level when conducting the study. Thus, I realised that following ethical guidelines to the standard set at Oxford is not only essential for the participants' but also the researcher's mental health and moral core. At this stage I cannot imagine not following all the ethical principles I learned to the maximum of my ability when conducting research. And I am inspired to teach the students I work with to follow these guidelines to the same level because I am sure that when they don't, it is mostly due to the lack of knowledge, not deliberate ethical misconduct.

Data collection and analysis

I very much appreciated that I got to experience four different schools, with Estonian and Russian language streams, during the data collection phase. Conducting interviews with the

students, teachers, school leaders and policymakers, and carrying out classroom observations was inspiring to me as a researcher.

Data collection was somewhat challenging because it took place during the Covid-19 pandemic. As a deputy headteacher working through the pandemic my own workload increased, while there were some issues with getting access to schools and the data collection dates being postponed due to the constant changes schools were experiencing.

While conducting research during the pandemic was somewhat challenging to me as a researcher, I have immense gratitude to everybody who participated in the research and found the time to take part in the study during this difficult time. I found each participant to be an openly willing contributor to the research.

Had I not held a position as a school leader in one of the general education schools in Tallinn, I think it would have been much more difficult to gain access to schools during the pandemic. While I was mindful of approaching the schools through my role as a DPhil student at Oxford, the community of educators has knowledge of each other and it would have been impossible to fully separate the two while gaining access. Although, when I approached the schools and was carrying out the research, I did take the time to explain that I was in the role of a researcher, not somebody working in the education system at Tallinn.

While conducting the interviews and classroom observations, I took separate time for each data collection session to prepare mentally beforehand and write reflections afterwards because I did notice the tendency to want to listen to the school leaders through the lens of working in the same position. Equally, to listen to policymakers with an ear of a school leader and teacher who knows the challenges and what is being said at schools regarding what more is needed from the policymakers. Also, to listen to teachers through understanding their work and at the same time

knowing why school leaders have to make certain decisions. And most of all, while listening to the students, I felt the urge to provide everything they self-reported they needed from teachers, in my classrooms and through my work of collaborating with the teachers. During classroom observations I found myself wanting to analyse the lessons through the lens of a school deputy. While being very aware of the inclination to listen through the knowledge I have gained through my work experience, I took deliberate steps to work on myself to try to listen and observe as a neutral researcher to the extent that I could.

After data collection and during transcribing the data, although I had reflected on my role as a researcher constantly during the data collection stage, I was somewhat worried about my positionality and whether I had listened too much through my work role. I found that this worry subsided when doing qualitative thematic analysis. I had a lot of data to work with and while coding the transcriptions, I found that the vivid memories of specific people and what I had thought during the process through the lens of my work roles, went to the background and I was able to look for codes and themes by letting only the data speak for itself. I remember this feeling well when the influence of my positionality diminished, and I was fully immersed in the data itself. This was the first time I think I truly thought of myself as mostly a researcher, not as a school leader and teacher studying at the University of Oxford.

As I had conducted 35 interviews and 13 classroom observations, I found the stage that involved transcribing the data quite difficult as it took a long time to do it. At the same time I remember appreciating the fact that during the DPhil stage the students need to do every aspect of the research themselves, which, I thought, is essential to understand the workload and details of doing the research when they move to the next stage in their careers and perhaps work in a team, involving also research assistants. I had previously felt the same kind of appreciation for my

experiences in different roles when I had started working in the education system as a volunteer, nanny and teacher's aide first, then as a teacher, followed by the positions of the school leader and lecturer at university.

During thematic analysis, it was the first time I worked with this amount of qualitative data by myself. It took me time to make carefully considered decisions regarding whether all of the data analysis results should be included in the findings section. I coded and re-coded the dataset many times. I understood that the length of a thesis is not enough to answer all the research questions I had initially intended. Finally, as the results showed that overall the knowledge of formative assessment methods is not yet well-developed among the stakeholders, I made the decision to concentrate on the enhancing and hindering factors of the policy implementation and the students' perceptions, and leave out the descriptions of formative assessment methods used during the lessons.

Supervision, teaching and leadership

In this last stage of the Oxford journey, I find myself reflecting on my progress as a researcher, school leader and teacher. As I came to do this research from a position of a school deputy and teacher, also lecturing at university, I found myself looking for answers in all three areas: how to be a better researcher, teacher and school leader.

My dear supervisors, Professor Jo-Anne Baird and Dr Michelle Meadows, have represented everything I hoped Oxford education would be when I applied to do my DPhil here. My heart is filled with gratitude for them that I will carry with me into my future experiences. By being true role models to me, through their example they have gifted me with lessons on how to be a kind, inspiring, effective leader; how to be a hard-working, diligent, passionate educator and

researcher; and at the core of all that on how to be a humble, kind human being who is a champion of their students and everyone else around them.

Under Jo-Anne's leadership in the OUCEA, I loved coming to the Assessment Centre both for the supervision meetings and to work in the shared spaces. I experienced the happiness and elevated state she has been able to bring through her leadership role, while inspiring productive work and deep thought. I loved experiencing how hard work can be done with so much compassion for others, deep connection to the work, humour in the mix. This community felt like the family of which I wanted to be part. My experience with Jo-Anne has been that she is the kind of leader who can uplift somebody to do better and feel better in a matter of minutes. In my leadership role now I think daily about how working in such an atmosphere under Jo-Anne's leadership made me feel and it has inspired me to apply myself with more meaning. I aspire daily towards that example.

Before coming to Oxford my study and research write-up experience was much more structured and it took me time to get used to allowing myself to, together with diligent work, allow myself freedom of expression of my thought and creativity in how I approached my work. I remember, for example, how my dear supervisor Michelle suggested that after almost a year of transcribing and analysing data, I would, as a starting point, write the story of the results without checking every detail, trusting myself that I know it, and only then going back to the results. It was somewhat difficult for me to take those kinds of steps. Even writing this reflection represents that step for me. Or, I found it somewhat surprising that the expectation for the thesis structure was not as rigid as I had been used to before. I started slowly coming out of my shell of trying to do everything perfectly, which had somewhat blocked my creativity and deepest thoughts from emerging, I realised.

What helped me most with building trust to articulate the depth of my academic thinking was the way feedback was given during supervision and at the exams of each of the thesis stages, also in the seminars. Hereby, I would like to extend my sincerest gratitude to my examiner Dr Ian Thompson who supported me through all three stages of the thesis examination. Together with Ian, I would like to express my heartfelt gratitude to Professor Mary Richardsons who conducted the viva voce, Professor Trevor Mutton who guided me through the confirmation of status and Dr Liam Francis Gearon who supported me at the transfer of status. Their generous and thoughtful approach made the examination process an enriching experience that helped me to see my work through new lenses. At the University of Oxford, only with one exception, the content of the feedback has always been such that has helped my progress, while at the same time given with kindness, without any expression of artificial superiority. This to me has been an authentic implementation of formative assessment by those working at the Education Department that I will try to embed into my work as a teacher and school leader.

While my deepest belief in how great education can transform a person's life has stayed the same, I have gotten amazing opportunities during my studies to reflect on what really is at the core of this great education. Some of the most memorable moments for that were the seminars and discussions with Professor Richard Pring who guided the students to think deeply about who really is an educated person and whether graduating from the University of Oxford automatically means that. I carry reflections on his thoughts about the importance of a good moral compass as essential to being an educated person. I aspire to have a good moral compass as guidance for my daily actions.

Connection to nature and the write-up stage

Oxford has the most beautiful parks. One aspect of Oxford that has helped me immensely has been the connection to nature. I am grateful to the trees and flowers and birds and oxen and hare and dogs and deer and foxes that have all helped me be deeply connected to my understanding of what Oxford represents in the world, my belief in education, while being connected to my own core.

During the thesis write-up stage I reflected most on what had truly supported me in the Oxford setting itself. It is a university city where you can walk a few minutes and be truly immersed in nature, should a student need that connection. And I definitely did. And it was not only the parks, I loved that colleges have pets, the beautiful magnolia tree in front of the Education Department, the fox who kept coming by the St Catherine's college library, the beautiful roses in front of the Botanical Gardens and so on. During the thesis write-up stage, so much of which happens in solitude, I came to fully realise just how important nature and animals had always been in my life. I tried to be with nature as much as I could. When I was away from Oxford, I spent a lot of time in the countryside in Estonia, on my grandma's terrace remembering how I loved that scenery and all the farm animals as a child. And three years ago I got my first dog and her little sweet soul, the way she looks at me with her deep soulful eyes, has been of immense support during my studies. I would like to thank her with all my heart for coming into my life and supporting me in the way that she has done. I have loved when my supervisor Jo-Anne has come to the office with her dear dog Lewis or talking to Michelle about her cats. I realised fully just how important nature and animals are for me to feel connected to the world, for my mental health, ability to do deep thinking and trying to be a better person for anybody I come in contact with in my life. I knew it was important before but the write-up stage was a prolonged period of

time when I could experience just how much truly immersing myself in nature daily helps me go deeper into my authentic self. And I carry this knowledge forward with me. Even the walks I take with my dog now, I try to be as present as I can, the same way I was present with nature during thesis write-up. And those moments make me also feel connected to Oxford - this is a true gift that this place has given me.

The University of Oxford setting

I think many come to Oxford with somewhat of an imposter syndrome and I was no different. However, very quickly, Oxford starts to feel like a communal supportive city that is shared both as a home and workplace by so many. This is mostly to do with the people who welcomed and supported me throughout the journey. With very few exceptions, I felt a deep level of respect between the community members. It reminded me of what a grade 7 student said she appreciates about her teacher, relevant also to what I appreciated as a grown-up student:

S1: She's so respectful, she's not the type to say that I'm the centre of the world, that you're just students, that you don't mean anything, that I'm just here to teach you. But she just identifies with us and that's how it is nice that it makes you feel so good that someone who is so much bigger than you is still the same as you. (Case A grade 7p)

However beautiful and historic so many of the buildings in Oxford are, at the same time the living and teaching spaces were often very modest. I appreciated that so much. I reflected on how in Estonia there is a tendency to build new luxurious school buildings with all possible technological and other advancements in the classrooms but I got first-hand experience in Oxford of how deep learning in the classrooms and lecture halls is done by the people and integrating technological and architectural advancements into the classrooms will not make the learning better unless there is real intention behind those decisions.

Initially it took some time to get used to the living conditions somewhat far from the main site of my college with very simple small rooms, shared bathrooms and kitchens. However, with time I realised how much I appreciated how this setting cultivated discipline and deep intellectual thought. Similarly to the simple settings in the classrooms, the living conditions together with the excellent guidance by supervisors and lecturers supported me in going deeper in my thinking and allowing the study process to take place at a deeper level than I had experienced before.

At the same time Oxford has the most grand mesmerising historical buildings. The walls of these speak of everything that has been before. The appreciation for these buildings elevated my whole DPhil journey because I felt like the historical context and architecture invited my soul to more creativity and freedom of thought. Studying at the old library buildings helped me experience the historical significance of the university. This historical setting made me feel not that I was getting only the education of this moment in time but also the education connected to everybody who has worked and lived here during the previous centuries. This historical context gave studying at Oxford a deeper meaning while at the same time being relevant in its present and making me feel appreciation for the importance of carrying it into the future. It also made me realise just how important it is that each graduate carries the values of this education into the context where they want to have an impact in the world. This is because the education does not live on only in Oxford itself but also in the people who carry it into their life and work around the world.

Who I aspire to be going forward

I came to Oxford with certain dreams and they have been realised: to think deeply, to experience kindness and the essence of education for the better good of the world, to develop into a better

researcher, to gain more knowledge about assessment and to be immersed in the historical context of this university. Every time I physically left Oxford, due to Covid or as I was working also in Estonia, the core of the Oxford education kept growing its roots in me. And now, back to my life in Estonia, I feel the education I was given, and the heart of the community, city and nature I experienced as part of me, alive in my soul. At Oxford graduation ceremonies the following message is given to students, “Put more into the world than you take out.” I truly feel that I want to keep trying to do better for the world than I have done before. I want to try to live as a testament to the education I got here, the people I met, everything in the buildings and nature and libraries and history that inspired me. And inspired me not in the way of materialistic gains, a “better” career, but how to be a more diligent, thoughtful, kind, compassionate human in this world who devotes their abilities to creating positive change in the world. To me that is the power that great education can have on us at any age. This is something that Oxford has truly given me and I am immensely grateful for the DPhil journey.

In addition to everybody who has supported me at Oxford, I would like to express my love and gratitude to my family, friends, work colleagues and students who believed in me and cared about me throughout this stage of my life. It felt like a shared journey and I appreciate all of you so much. To my dog and partner - you are the Oxford of my life and I love you.

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APPENDICES

Appendix 1. Interview protocols

Interview protocol for “Implementation of Formative Assessment in Estonian Basic Schools”

Time of interview:

Date:

Place:

Interviewee name and position:

Guidelines

Opening comments: The interviewer informs the interviewee of the aims of the study and the interview, how the data will be used in the thesis, confidentiality, how the interview will be recorded and stored, the expected length of the interview, transcription and the possibility to clarify any question. Interviewee is asked to sign a letter of consent regarding participation in the study.

Closing comments: The interviewer asks whether there is anything else the participant would like to add to what has been spoken about during the interview. The interviewer thanks the participants for sharing their thoughts and experience and for their time.

1.1. Ministry of Education and Research interview questions

1. Can you please briefly describe your background?

2. What has been your role in implementing the change in the approach to learning, especially formative assessment?
3. Can you please explain when and why has the change in the approach to learning and with that formative assessment become a focus in Estonian education policy?
4. According to the Ministry of Education and Research, what are the key ideas in formative assessment? What are the benefits of implementing these ideas? In your view, can there be any negative outcomes from implementing these ideas?
5. Could you please briefly explain the process, starting from the idea of using formative assessment, to the practices that you currently have in place at general education schools in Estonia?
6. What are the most positive changes the implementation of formative assessment has brought?
7. What have been the main challenges experienced in the process? To what causes do you attribute these challenges? Were they overcome? If yes, how?
8. What level of interaction with the general education schools and municipality education departments has the process involved? What are the major positive aspects and challenges in these collaborations?

9. What do you think of the current situation? How would you describe the implementation process so far? Do you have any indications or research evidence so far of success or failure?

10. How did schools implement formative assessment during distance learning? Did you have to make any changes? If yes, what changes did you make and why did you make these changes?

11. How does the Ministry of Education and Research monitor formative assessment implementation in general education schools? How should and do the schools themselves and municipality education departments monitor this process?

12. Who do you think should be accountable for successful implementation of an educational reform, like the transition to using formative assessment?

13. To what extent is formative assessment incorporated into leadership activities at the Ministry of Education and Research?

14. Do you think the culture of your organisation has changed through the implementation of the change in the approach to learning?

15. Looking back, if you could start all over again, would you change anything in how the Ministry of Education and Research has supported the formative assessment implementation process in general education schools?

16. Given your experience in the Estonian education system, what are the main competencies we already have that help us implement educational reforms? What are the competencies that are needed and lacking?
17. What does the Ministry of Education and Research expect from schools and municipality education departments in order to successfully implement formative assessment practices in general education schools around Estonia?
18. What kind of support are you planning to provide to general education schools and municipality education departments in order to continue with the formative assessment implementation process in general education schools?
19. What do you predict will happen within the next few years with this reform?

1.2. Education Department interview questions

1. Can you please briefly describe your background?
2. What has been your role in implementing the change in the approach to learning, especially formative assessment?
3. In your view, when and why did the change in the approach to learning and with that formative assessment become important in the Estonian national curriculum for general education schools?

4. According to the Tallinn Education Department, what are the key ideas in formative assessment? What are the benefits of implementing these ideas? In your view, can there be any negative outcomes from implementing these ideas?
5. Could you please briefly explain the process, starting from the idea of using formative assessment, to the practices that you currently have in place at general education schools in Tallinn?
6. What are the most positive changes the implementation of formative assessment has brought?
7. What have been the main challenges experienced in the process? To what causes do you attribute these challenges? Were they overcome? If yes, how?
8. How did schools implement formative assessment during distance learning? Did you have to make any changes? If yes, what changes did you make and why did you make these changes?
9. What kind of interaction with general education schools and the Ministry of Education and Research has the formative assessment implementation process involved?
10. What do you think of the current situation in general education schools in Tallinn? How would you describe the implementation process so far?

11. How does the Education Department monitor formative assessment implementation in general education schools of Tallinn? How should and do the schools themselves monitor this process?
12. Who do you think should be accountable for successful implementation of an educational reform, like the transition to using formative assessment?
13. To what extent is formative assessment incorporated into your Department's leadership activities?
14. Do you think the culture of your organisation has changed through the implementation of the change in the approach to learning? Do you have any examples of how a school culture has changed through the implementation of the change in the approach to learning, especially formative assessment?
15. Looking back, if you could start all over again, would you change anything in how the Education Department has supported the formative assessment implementation process in general education schools of Tallinn?
16. What do you predict will happen within the next few years with this reform?
17. Given your experience in the Estonian education system, what are the main competencies we already have that help us implement educational reforms? What are the competencies that are needed and lacking?

18. What kind of support does the Tallinn Education Department need to continue with the implementation of formative assessment in general education schools of Tallinn?

19. What kind of support are you planning to provide to general education schools in Tallinn so that they could continue with the formative assessment implementation process?

1.3. General education school interview questions

1.3.1. Interview questions for the headteacher and the deputy

1. Can you please briefly describe your background?

2. What has been your role in implementing the change in the approach to learning, especially formative assessment?

3. In your view, when and why did the change in the approach to learning and with that formative assessment become important in the Estonian national curriculum for general education schools?

4. According to your leadership team, what are the key ideas in formative assessment? What are the benefits of implementing these ideas? In your view, can there be any negative outcomes from implementing these ideas?

5. Could you please briefly explain the process, starting from the idea of using formative assessment, to the practices that you currently have in place at your school?

6. What are the most positive changes the implementation of formative assessment has brought?
7. What have been the main challenges experienced in the process? To what causes do you attribute these challenges? Were they overcome? If yes, how?
8. What kind of interaction with the Tallinn Education Department and the Ministry of Education and Research did the formative assessment implementation process involve?
9. What kind of training have the leadership team and teachers had in order to implement formative assessment at your school? Have you gotten support from any university?
10. Who do you think should be accountable for successful implementation of an educational reform, like the transition to using formative assessment?
11. How do you monitor formative assessment implementation at your school? How do the governing bodies of your school monitor formative assessment implementation?
12. How is formative assessment incorporated into your school leadership activities?
13. How did you implement formative assessment during distance learning? Did you have to make any changes? If yes, what changes did you make and why did you make these changes?

14. Do you think your school culture has changed through the implementation of the change in the approach to learning?

15. Looking back, if you could start all over again, would you change anything in the formative assessment implementation process at your school?

16. What do you predict will happen within the next few years with this reform?

17. Given your experience in the Estonian education system, what are the main competencies we already have that help us implement educational reforms? What are the competencies that are needed and lacking?

18. What kind of support does your school need to continue with the implementation of formative assessment at your school?

1.3.2. Interview questions for the language and literature teacher

1. Can you please briefly describe your background?

2. What has been your role in implementing the change in the approach to learning, especially formative assessment?

3. In your view, when and why did the change in the approach to learning and with that formative assessment become important in the Estonian national curriculum for general education schools?
4. What are the key ideas in formative assessment as you have understood them? What are the benefits of implementing these ideas? In your view, can there be negative outcomes from implementing these ideas?
5. Could you briefly explain the process, starting from the idea of using formative assessment, to the practices that you currently have in place in your teaching?
6. Was it easy to understand how to implement formative assessment into your assessment practices or did you need support? If yes, what kind of support did you need? What kind of support have you received at your school and through teacher training?
7. What are the most positive changes the implementation of formative assessment has brought for you as a teacher and for the students?
8. What have been the main challenges experienced in the process? To what causes do you attribute these challenges? Were they overcome? If yes, how?
9. How did you implement formative assessment during distance learning? Did you have to make any changes? If yes, what changes did you make and why did you make these changes?

10. How are the teachers at your school working together to implement new strategies? What are the major positive aspects and challenges in these collaborations?
11. Given your experience in the Estonian education system, what are the main competencies we already have that help us implement educational reforms? What are the competencies that are needed and lacking?
12. Who do you think should be accountable for successful implementation of an educational reform, like the transition to using formative assessment?
13. How do you monitor formative assessment implementation and how is it monitored at your school? Is the implementation of formative assessment also monitored at municipality and state levels?
14. Do you think your school culture has changed through the implementation of the change in the approach to learning?
15. Looking back, if you could start all over again, would you change anything in the formative assessment implementation process in your work?
16. What do you predict will happen within the next few years with this reform?

17. What kind of support do you need to continue with the implementation of formative assessment in your language and literature lessons?

1.3.3. Interview questions for students

In case of / delete as appropriate. When asking question 2, remind the students of what activities took place in the lesson that was observed.

1. Please tell me, in your own words, what kind of learning activities do you mostly do in your Estonian/Russian language and literature lessons?

2. What do you think were the learning goals of today's lesson/the lesson I visited? (Guideline: Remind the students what took place in the lesson that was observed.) How do you know whether you achieved these learning goals?

3. Who sets the learning goals for your Estonian/Russian language and literature studies? How and when are these learning goals set?

4. In addition to today's lesson/the lesson I visited, how do you know whether you have achieved the learning goals of your Estonian/Russian language and literature studies?

5. How is your progress assessed in Estonian/Russian language and literature lessons? What kind of feedback do you get during your language and literature lessons and in the school electronic daybook? What information do assessment activities give you? Is there additional support or information you would like to have to understand your progress in your Estonian/Russian language and literature studies?

6. What motivates you most to learn during and for your Estonian/Russian language and literature classes?
7. Are there any teaching methods, learning or assessment activities that make you feel like you do not want to study during and for your Estonian/Russian language and literature lessons?
8. Do you use a portfolio in your Estonian/Russian language and literature lessons? If yes, how does it help you to learn and understand which learning goals you have achieved?
9. Did you do/Have you been doing the same kind of learning and assessment activities in your Estonian/Russian language and literature lesson as at school? What have been the main differences?
10. Does your Estonian/Russian language teacher ask for your feedback about the learning and assessment activities you are doing during and for your lessons? If yes, when and how is this feedback taken? Does the teacher make any changes to your studies based on this feedback?
11. If you were asked to give Estonian/Russian language and literature teachers in another school some advice about what kind of learning activities students your age like to take part in and how best to assess student learning outcomes, what would you suggest to them?

Appendix 2. Observational protocols

2.1. Observational protocol for “Implementation of Formative Assessment in Estonian Basic Schools”

Name of school:	
Date, observation start and end time:	
Subject:	
Grade:	
Number of students:	
DESCRIPTIVE NOTES	REFLECTIVE NOTES

2.2. Observational protocol based on Eddy et al. (2017)

The classroom observation protocol is based on AssessToday observation protocol that has been developed to measure how teachers use formative assessment in a short cycle during one lesson (Eddy et al., 2017).

School:

Date and time:

Teacher:

Lesson:

Grade level:

Activity/task	Reflective fieldnotes
Learning Target	
Question Quality	
Nature of Questioning	
Self-assessment	

Observation and Student Affect	
Instructional Adjustment	
Evidence of Learning	

Appendix 3. Letter to the Headteacher

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Researcher contact: marja.popov@education.ox.ac.uk



[Name of the headteacher]

[School name and address]

[Date]

Implementation of Formative Assessment in Estonian Basic Schools

Ethics Approval Reference: [insert]

Dear [name of the headteacher],

I am writing to enquire about conducting some research in your school during [insert] academic year. I am a doctoral research student at the University of Oxford, supervised by Professor Jo-Anne Baird and Professor Therese N. Hopfenbeck, and funded by the Republic of Estonia Education and Youth Board. In my research study, “Implementation of Formative Assessment in Estonian Basic Schools”, I will explore how general education schools in Estonia have

implemented formative assessment as set in the Estonian national curriculum for basic and upper secondary schools.

I am not aiming to change what or how the school conducts its practices regarding teaching and learning, and will not be making any judgments about these practices. My research focus is on the implementation of the change in the approach to learning through formative assessment. By participating in the research, your school would be contributing to research that will explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO) and there is a possibility that I will write project outcomes into an academic journal article at the end of research. In addition, as the Republic of Estonia Education and Youth Board funds my studies, I will be writing a summary of my work in Estonian and English for their webpage.

The research will take place in language and literature lessons in grades 7-9. The commitment from the school would be to allow me into one language and literature lesson per grade level, thus three lessons all together. I would audio-record the lessons, observe and take notes. In addition, I would conduct the following interviews: individual interviews with teachers whose lessons I would be visiting (three interviews in total), focus group interviews with up to four students from each lesson I would be visiting (three interviews in total), one paired interview or one-to-one interviews with the headteacher and the deputy. Also, I would collect the interviewed students' 2020/21 school year language and literature lesson formative assessment feedback data from the school electronic daybook.

University of Oxford has strict ethical procedures on conducting ethical research with teachers and students, consistent with current British Educational Research Association guidelines. Before beginning the research, I would inform parents/guardians about the research and offer the students and parents/guardians the opportunity to refuse to participate. Throughout the research, the school leadership team, teachers, students and parents/guardians will be able to refuse to participate at any time. Your school and research participants would be reported anonymously or

against a pseudonym in all research outputs. The data collected would be kept strictly confidential, available only to my supervisors and myself and would not be used in other ways than specified without the further consent of all involved being obtained. All recordings and field notes would be destroyed at the end of the research period, and kept in anonymised, encrypted and password-protected conditions until then. I have attached copies of information sheets for the headteacher and the deputy, teachers, parents/guardians and students to the e-mail.

If your school would like to take part in the study, or you need more information about what is involved, please contact me. Whether or not you feel it would be appropriate for your school to participate, I would be grateful if you would complete the pro-forma below, and return it to me by e-mail.

Thank you for your time and attention. I look forward to hearing from you.

Yours Sincerely,

Marja Popov

Implementation of Formative Assessment in Estonian Basic Schools

Marja Popov

Department of Education

[School name]

[School address]

[Headteacher name]

- ☐ We do not wish to participate in this project.
- ☐ We would like to find out more about this project.
- ☐ We would like to take part in this project.

If you would like further information, or are interested in taking part, please give the name of a contact person for your school, and details of the best way to contact him or her.

Contact name: _____

Contact email: _____

Contact telephone number: _____

Please return this form via e-mail addressed to marja.popov@education.ox.ac.uk.

Thank you for your help!

Appendix 4. Information sheets

In case of / delete as applicable.

4.1. Information sheet for the Ministry of Education and Research leaders managing the field of general education, the Tallinn Education Department specialists, the general education school headteachers, deputies and grade 7-9 language and literature teachers.

In case of answers to questions 4 and 7 information irrelevant for stakeholder will be deleted.

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Implementation of Formative Assessment in Estonian Basic Schools

PARTICIPANT INFORMATION SHEET

Central University Research Ethics Committee (CUREC) Approval Reference: [Insert]

1. Why is this research being conducted?

Estonian national curricula for basic and upper secondary schools aim to implement a change in the approach to learning in schools around Estonia that would support each student's developmental process to the fullest. One aspect of this change in the approach to learning is the implementation of formative assessment, an assessment practice that supports learning, in general education schools.

The aim of the research at hand is to explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons.

2. *Why have I been invited to take part?*

The research involves the general education school, the Education Department and the Ministry of Education and Research levels of the Estonian education system. You have been invited to take part because you work at a general education school/Education Department/the Ministry of Education and Research and your participation would inform the understanding of formative assessment implementation in the general education system of Estonia.

3. *Do I have to take part?*

No. You can ask questions about the research before deciding whether or not to take part. If you do agree to take part, you may withdraw yourself from the study at any time, without giving a reason, by advising me of this decision. The deadline by which you can withdraw any information you have contributed to the research is June 30, 2022. Until the point of withdrawal and the data you have provided for research will be analysed together with the rest of research data, the results of data analysis will be written up in the format of doctoral thesis.

4. *What will happen to me if I take part in the research?*

Participants from the Ministry of Education and Research and the Tallinn Education Department: You will be asked to take part in a semi-structured interview. The interview will take place one time at the location of your choice at your work/online via Google Meet. Before the start of the interview, I will talk you through the study procedure and give you the chance to ask any questions. If you are still happy to take part, I will ask you to sign a consent form. The interview session should take about 60 minutes. You can also ask to pause or stop the interview at any time. With your consent, I would like to record the interview with a sound recorder/via Google Meet video-communication service, so that I can have an accurate record of your thoughts. The interview will be transcribed and the recording destroyed.

The headteacher and the deputy: You will be asked to take part in a semi-structured one-to-one/paired interview that will involve the headteacher and the deputy. The interview will take place one time at the location of your choice at your work/online via Google Meet. Before the start of the interview, I will talk you through the study procedure and give you the chance to ask any questions. If you are still happy to take part, I will ask you to sign a consent form. The interview session should take 45-60 minutes. You can also ask to pause or stop the interview at any time. With your consent, I would like to record the interview with a sound recorder/via

Google Meet video-communication service, so that I can have an accurate record of your thoughts. The interview will be transcribed and the recording destroyed.

Teacher

You will be asked to take part in one semi-structured interview and allow a researcher to observe one of your Estonian/Russian language and literature lessons. A focus group interview with about four students from that class would be conducted. The researcher will also ask to collect 2021/22 formative assessment feedback given to those students in the school electronic daybook.

If this suits your schedule, the interview will be conducted at least a day before the classroom observation. The interview will take place one time at the location of your choice at your work/online via Google Meet. Before the start of the interview, I will talk you through the study procedure and give you the chance to ask any questions. If you are still happy to take part, I will ask you to sign a consent form. The interview session should take 45-60 minutes. You can also ask to pause or stop the interview at any time. With your consent, I would like to record the interview with a sound recorder/via Google Meet video-communication service, so that I can have an accurate record of your thoughts. The interview will be transcribed and the recording destroyed.

The researcher will be observing a lesson in either grade 7, 8 or 9. The school will choose the lesson for observation. You can ask any questions about the classroom observation procedure before and after the interview, by sending an e-mail to marja.popov@education.ox.ac.uk and we can also schedule a meeting. We will discuss the best way of ensuring how the students who will not be taking part in this research can take part in the lesson chosen for observation without any disruption to their studies. If you are still happy to take part in this research, I will ask you to sign a consent form. On the day of the research, I will attend the lesson without disruptions. With your consent, I would like to audio record the lesson, so that I have an accurate record of lesson interactions, and write down notes. The classroom observation will be transcribed from the recording. After that the recording will be destroyed.

I am not aiming to change what or how the school conducts its practices regarding teaching and learning, and will not be making any judgements about these practices. My research focus is exploring the implementation of the change in the approach to learning through formative assessment in the Estonian education system.

5. *Are there any potential risks in taking part?*

The study has been set up to minimise any potential risks. You can assess potential risks by reading this document carefully and by asking the researcher to clarify any doubts you have about potential risks.

6. *Are there any benefits in taking part?*

By participating in the research, your organisation would be contributing toward a better understanding of the formative assessment implementation process in the general education school system of Estonia.

7. *What happens to the data provided?*

The information you provide during the study is the research data. Any research data from which you can be identified is known as personal data. All data will be kept in an encrypted format on a password-protected computer or in a locked filing cabinet. Recordings will be destroyed as soon as they are transcribed. Other research data will be stored for three years after publication or public release of the work of the research.

For research at the Ministry of Education and Research and the Tallinn Education Department: The research data that you provide will only be accessed by the researcher and the supervisors. Responsible members of the University of Oxford may be given access to the data for monitoring and/or audit of the research. I will not be using your name in research outputs, instead, I will be describing your work role. I would like your permission to use direct quotes in any research outputs.

For research at general education schools: I will change the names of the school, the headteacher, the deputy, teachers, and all the students when I write about my research. Results are kept strictly confidential, and only the researcher and supervisors will have access to the research data. Responsible members of the University of Oxford may be given access to data for monitoring and/or audit of the research. I would like your permission to use direct quotes in any research outputs.

8. *Will the research be published?*

The research will be written up as a student's thesis. On successful submission of the thesis, it will be deposited both in print and online in the University archives to facilitate its use in future research. If so, the thesis will be openly accessible. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO) and there is a possibility that I will write project outcomes into an academic journal article at the end of research. In addition, I will be writing a summary of my work in Estonian and English for the webpage of the Education and Youth Board. If I want to

use the information for anything else, I will ask for your permission. Should you be interested to read the full thesis, you are welcome to have access to it.

9. Who is funding the research?

My studies are funded by the Education and Youth Board in Estonia.

10. Who has reviewed this study?

This study has been reviewed by and received ethics clearance through the University of Oxford Central University Research Ethics Committee, [insert CUREC reference number].

11. Who do I contact if I have a concern about the study or I wish to complain?

If you have a concern about any aspect of this study, please contact Marja Popov at marja.popov@education.ox.ac.uk or supervisors Professor Jo-Anne Baird and/or Professor Therese Hopfenbeck by calling +44(0)1865274024 or sending an e-mail to general.enquiries@education.ox.ac.uk and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible: Education DREC Chair Dr Liam Gearon; e-mail: research.office@education.ox.ac.uk; postal address: 15 Norham Gardens, Oxford OX2 6PY.

12. Data Protection

The University of Oxford is the data controller with respect to your personal data, and as such will determine how your personal data is used in the study.

The University will process your personal data for the purpose of the research outlined above. Research is a task that is performed in the public interest.

Further information about your rights with respect to your personal data is available from <http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/individualrights/>.

13. Further Information and Contact Details

If you would like to discuss the research with someone beforehand or if you have questions afterwards, please contact:

Marja Popov

Department of Education

15 Norham Gardens, Oxford OX2 6PY

marja.popov@education.ox.ac.uk

Thank you for reading this – please do not hesitate to let me know if you have questions.

4.2. Information sheet for parents/guardians (classroom observation)

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DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Implementation of Formative Assessment in Estonian Basic Schools

INFORMATION SHEET FOR PARENTS / GUARDIANS

Ethics Approval Reference: [Insert]

In support of DPhil in Education studies at the University of Oxford, your child's school has agreed to take part in a study investigating formative assessment implementation in general education schools in Estonia. I would like to invite your child to be part of this study. I very much hope you would like your child to take part, but before you decide, it is important that you understand why the study is being done and what it will involve.

What am I trying to find out?

Estonian national curricula for basic and upper secondary schools aim to implement a change in the approach to learning in schools around Estonia that would support each student's developmental process to the fullest. One aspect of this change in the approach to learning is the implementation of formative assessment, an assessment practice that supports learning, in general education schools.

The aim of the research at hand is to explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons.

Why has my child been invited to be involved in this research?

I am inviting your child to take part in this research because they are either in grade 7, 8 or 9, and studying the subject of Estonian/Russian language and literature. All students in their class are invited to be involved in this research.

Does my child have to be involved?

No. You can ask questions about the study before deciding whether or not to allow your child to participate. If you do agree that your child participates, you may withdraw your child and his or her data from the study at any time, without giving a reason and without penalty, by advising the researcher of this decision.

If your child is not involved in the research, they will receive alternative provision of equivalent educational value, or be placed where they cannot be observed or recorded.

What will my child be asked to do?

Your child's class will be involved in the research for one Estonian/Russian language and literature lesson. The teacher will run a normal Estonian/Russian language and literature lesson. A researcher will be present during the lesson. The researcher will listen to and watch what the teacher and students are doing during the lesson. The researcher will write down notes and will make an audio recording of the lesson. The teacher might give the researcher copies of examples of student work without providing the name of the students whose work it is. The focus of the researcher is not on any specific student but on the lesson activities the teacher has chosen and student responses to these activities. The lesson's audio recording will be transcribed and the recording deleted.

What are the advantages / disadvantages of taking part?

By taking part in this research, your child would be contributing toward a better understanding of the formative assessment implementation process in general education schools around Estonia. There are no direct personal advantages to your child when they take part in this research.

What happens to the data provided?

The information your child provides during the study is the research data. Research data is kept strictly confidential. I will not use the name of your child's school and will change the name of the teacher and all the students when I write about my research. Only a number will be used to identify your child's class, a pseudonym will be used instead of your child's name and all information will be kept in an encrypted format on a password-protected computer. Parent/guardian opt-out forms will be retained by the school. Responsible members of the University of Oxford may be given access to data for monitoring and/or audit of the research. Recordings will be destroyed as soon as they are transcribed. Other research data will be stored for 3 years after publication or public release of the work of the research.

No one will know that your child has taken part unless you or your child tell them yourself.

Will the research be published?

The research will be written up as part of a student's work. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO). I also aim to publish my findings in scientific journals, but this may be two to three years from the end of the study. In addition I will be writing a summary of my work in Estonian and English for the webpage of the Education and Youth Board. If I want to use the information for anything else, I will ask your permission.

At the end of my research, I will write to your school about what I found out in my study. You are welcome to read this summary or the full thesis if you are interested.

Who is conducting this research?

The research project is organised by Marja Popov of University of Oxford, who is a doctoral student. My studies are funded by the Education and Youth Board in Estonia. This study has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee, [insert CUREC reference number].

What if there is a problem?

Research with students will be conducted with care and sensitivity. Some students might feel shy about having a researcher in the classroom, and they might feel concerned about being recorded. Please discuss any matters of concern with your child's teachers or the school's deputy

headteacher. They will contact me to discuss the concerns. Additionally, you are welcome to contact me directly by sending an e-mail to marja.popov@education.ox.ac.uk, and I will do my best to answer your query. I will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible: Education DREC Chair Dr Liam Gearon e-mail: research.office@education.ox.ac.uk; postal address: 15 Norham Gardens, Oxford OX2 6PY.

Data Protection

The University of Oxford is the data controller with respect to any personal data collected, and as such will determine how this personal data is used in the study.

The University will only process personal data for the purpose of the research outlined above. Research is a task that is performed in the public interest.

Further information about your rights with respect to personal data is available from <http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/individualrights/>.

What should I do next?

Please fill in the enclosed form and return it to your child's class teacher if you DO NOT want your child to take part in this study. Please remember that you may withdraw your child at any time, without affecting their education and without giving a reason, by notifying the researcher.

If you would like to discuss the research with someone beforehand or if you have questions afterwards, please contact:

Marja Popov

Department of Education

15 Norham Gardens, Oxford OX2 6PY

marja.popov@education.ox.ac.uk

Thank you for reading this – please do not hesitate to let me know if you have questions.

4.3. Information sheet for parents/guardians (focus group interview, formative assessment feedback secondary data collection)

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Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Implementation of Formative Assessment in Estonian Basic Schools

INFORMATION SHEET FOR PARENTS / GUARDIANS

Ethics Approval Reference: [Insert]

In support of DPhil in Education studies at the University of Oxford, your child's school has agreed to take part in a study investigating formative assessment implementation in general education schools in Estonia. I would like to invite your child to be part of this study. I very much hope you would like your child to take part, but before you decide, it is important that you understand why the study is being done and what it will involve.

What am I trying to find out?

Estonian national curricula for basic and upper secondary schools aim to implement a change in the approach to learning in schools around Estonia that would support each student's developmental process to the fullest. One aspect of this change in the approach to learning is the implementation of formative assessment, an assessment practice that supports learning, in

general education schools.

The aim of the research at hand is to explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons.

Why has my child been invited to take part?

I am inviting your child to take part in this research because they are either in grade 7, 8 or 9, and studying the subject of Estonian/Russian language and literature. Four students from each of these grade levels are invited to take part.

Does my child have to take part?

No. You can ask questions about the study before deciding whether or not to allow your child to participate. If you do agree that your child participates, you may withdraw your child and his or her data from the study at any time, without giving a reason and without penalty, by advising the researcher of this decision.

What will happen if my child takes part?

Your child will be involved in the research for one focus group interview that will last approximately 45 minutes. About three other students from your child's class will take part in the same interview. The interview will take place at your child's school/online via Google Meet. When we meet in the interview room/in Google Meet, I will talk your child through the study procedures and give him or her the chance to ask any questions. If they are still happy to take part, I will ask your child to sign an assent form. Your child can ask to pause or stop the interview at any time. With your and your child's consent, I would like to record the interview with a sound recorder/via Google Meet video-communication service, so that I can have an accurate record of your child's thoughts.

In addition, I will ask the deputy headteacher to provide me with the formative assessment feedback from the electronic daybook that your child has received in Estonian/Russian language and literature lessons during the school year 2020/21.

What are the advantages / disadvantages of taking part?

By taking part in this research, your child would be contributing toward a better understanding of the formative assessment implementation process in general education schools around Estonia. There are no direct personal advantages to your child when they take part in this research.

What happens to the data provided?

The information your child provides during the study is the research data. Any research data from which your child can be identified is known as personal data. The child's assent form will be retained by the researcher in a locked cabinet or in an encrypted format on a password-protected computer. Parent/guardian opt-in form will be retained by the school. The child's assent form and parent/guardian opt-in form that contain your child's name will be stored for 3 years after publication. Recordings will be destroyed as soon as they are transcribed. The hard copy or pdf-file of formative assessment feedback will be destroyed as soon as the data is transferred into an encrypted Microsoft Word file on the researcher's computer. Other research data will be stored for 3 years after publication or public release of the work of the research.

Only a number will be used to identify your child, and all information will be kept in an encrypted format on a password-protected computer or locked filing cabinet. I will not use the name of your child's school and will change the names of the teacher and all the students when I write about my research. No one will know that your child has taken part unless you or your child tell them yourself. Responsible members of the University of Oxford may be given access to data for monitoring and/or audit of the research.

Will the research be published?

The research will be written up as part of a student's work. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO). I also aim to publish my findings in scientific journals, but this may be two to three years from the end of the study. In addition I will be writing a summary of my work in Estonian and English for the webpage of the Education and Youth Board. If I want to use the information for anything else, I will ask your permission.

At the end of my research, I will write to your school about what I found out in my study. You are welcome to read this summary or the full thesis if you are interested.

What will happen to any samples taken from my child?

The school's deputy headteacher will give me a hard copy or pdf-file of the formative assessment feedback. The hard copy or pdf-file will be destroyed as soon as the data is transferred into an encrypted Microsoft Word file on the researcher's computer. This formative assessment feedback data will be analysed together with the rest of the data collected at your child's school. Any examples of feedback used in research outputs will be reported against a pseudonym.

Who is conducting this research?

The research project is organised by Marja Popov of University of Oxford, who is a doctoral student. My studies are funded by the Education and Youth Board in Estonia. This study has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee, [insert CUREC reference number].

What if there is a problem?

If you have a concern about any aspect of this study, please contact Marja Popov at marja.popov@education.ox.ac.uk or my supervisors Professor Jo-Anne Baird and/or Professor Therese Hopfenbeck by calling +44(0)1865274024 or sending an e-mail to general.enquiries@education.ox.ac.uk and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible: Education DREC Chair Dr Liam Gearon e-mail: research.office@education.ox.ac.uk; postal address: 15 Norham Gardens, Oxford OX2 6PY.

Data Protection

The University of Oxford is the data controller with respect to your child's personal data and, as such, will determine how your child's personal data is used in the study.

The University will process your child's personal data for the purpose of the research outlined above. Research is a task that we perform in the public interest.

Further information about your rights with respect to your child's personal data is available from <https://compliance.web.ox.ac.uk/individual-rights>.

What should I do next?

Please fill in the enclosed form and return it to the school's deputy headteacher/language and literature teacher if you would like your child to take part in this study. Please remember that you

may withdraw your child at any time, without penalty and without giving a reason, by notifying the researcher.

If you would like to discuss the research with someone beforehand or if you have questions afterwards, please contact:

Marja Popov

Department of Education

15 Norham Gardens, Oxford OX2 6PY

marja.popov@education.ox.ac.uk

Thank you for reading this – please do not hesitate to let me know if you have questions.

4.4. Information sheet for students (classroom observation)

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general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Implementation of Formative Assessment in Estonian Basic Schools

Information sheet for students

Ethics Approval Reference: [Insert]

My name is Marja Popov and I am a DPhil student at the University of Oxford in the Department of Education. I am doing some research and would like you, together with the rest of your language and literature class, to join in this study, which is focused on the lesson, not individual students.

Before you decide if you would like to join in, it is important to understand what the study is about, why I am doing it and what it would involve for you. Please read and think about this leaflet carefully.

The school has also written to your parents/guardians to tell them about this research and think about whether you should be included. Please talk to your family, friends, teachers or me as a researcher about what you would like to do and, if you are unhappy, let me know. If anything isn't clear or you have more questions you can ask your parent/guardian to write me an e-mail at marja.popov@education.ox.ac.uk and I can discuss it with you and your parent/guardian.

Why am I doing this research?

I am researching formative assessment implementation in general education schools of Estonia.

Why have I been invited to take part?

I am asking you if you would like to join in because you are in grade 7, 8 or 9, and studying the subject of Estonian/Russian language and literature. I am asking all the students in your class to take part.

Do I have to take part?

No - it is up to you.

You are free to stop taking part at any time during the research without giving a reason by telling your teacher, the researcher or your parent/guardian. You do not have to say why and this will not affect your education.

If you decide to stop, no one will be upset with you. If you decide to stop, I will not use the information I have already collected from you.

If you do not wish to join in, you will be seated where you cannot be observed/recorded.

What will happen?

Your class will be involved in the research for one Estonian/Russian language and literature lesson. Your teacher will run a normal Estonian/Russian language and literature lesson. A researcher will be present during the lesson. The researcher will listen to and watch what your teacher and class are doing during the lesson. The researcher will write down notes and will make an audio recording of the lesson. The teacher might give the researcher copies of examples of student work without providing the name of the students whose work it is. The focus of the researcher is not on any specific student but on the lesson activities your teacher has chosen and student responses to these activities. The lesson's audio recording will be transcribed and the recording deleted.

Are there any advantages/disadvantages in taking part?

The study will not help you but it might help other students in the future.

What happens to the information provided?

The information you provide during the study is the research data. Research data is kept strictly confidential. I will not use the name of your school and will change the name of your teacher and all the students when I write about my research. Only a number will be used to identify your class, a pseudonym will be used instead of your name and all information will be kept in an encrypted format on a password-protected computer. No one will know that you have taken part unless you tell them yourself.

The research will be written up as part of a student's work. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO). I also aim to publish my findings in scientific journals, but this may be two to three years from the end of the study. In addition I will be writing a summary of my work in Estonian and English for the webpage of the Education and Youth Board. If I want to use the information for anything else, I will ask your permission. At the end of my research, I will write to your school about what I found out in my study. You are welcome to read this if you are interested.

All research data and records will be stored for a minimum retention period of 3 years after publication or public release of the work of the research. Third parties may be given access to research data for monitoring and/or audit of the study, or for data storage purposes.

What if I don't want to take part in the research anymore?

Just tell your parents/guardians and the people carrying out the research that you don't want to take part. You don't have to give a reason and no one will be annoyed with you. It is YOUR choice.

Who is organising and funding the research?

The research is organised by Marja Popov of University of Oxford, who is a doctoral student. My studies are funded by the Education and Youth Board in Estonia.

Who has reviewed the study?

Before any research involving people can start, it has to be checked by a Research Ethics Committee to make sure that it is OK for the research to go ahead. The University of Oxford Central University Research Ethics Committee has approved this study.

What do I do now?

Please tell your parents/guardians and teacher whether you are happy to take part.

What if there is a problem or something goes wrong?

Please tell me if you are worried about any part of this study, by contacting me at marja.popov@education.ox.ac.uk. You may also talk to your teacher/parent/guardian who will let the me know. If you are still unhappy or wish to make a complaint, either you or your parent/guardian can contact the chair of the Research Ethics Committee at the University of Oxford: Education DREC Chair Dr Liam Gearon e-mail: research.office@education.ox.ac.uk; postal address: 15 Norham Gardens, Oxford OX2 6PY.

Data Protection

The University of Oxford is the data controller with respect to your personal data, and as such will determine how your personal data is used in the study.

The University will process your personal data for the purpose of the research outlined above. Research is a task that we perform in the public interest.

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Contact details

If you would like to discuss the research with someone beforehand or if you have questions afterwards, please contact:

Marja Popov

Department of Education

15 Norham Gardens, Oxford OX2 6PY

marja.popov@education.ox.ac.uk

Thank you for reading this – please do not hesitate to let me know if you have questions.

4.5. Information sheet for students (focus group interview, formative assessment feedback secondary data collection)

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general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Implementation of Formative Assessment in Estonian Basic Schools

Information sheet for students

Ethics Approval Reference: [Insert]

My name is Marja Popov and I am a DPhil student at the University of Oxford in the Department of Education. I am doing some research and would like you, together with some other grade 7-9 students taking the language and literature class, to join in this study.

Before you decide if you would like to join in, it is important to understand what the study is about, why I am doing it and what it would involve for you. Please read and think about this leaflet carefully.

The school has also written to your parents/guardians to tell them about this research and think about whether you should be included. Please talk to your family, friends, teachers or me as a researcher about what you would like to do and, if you are unhappy, let me know. If anything isn't clear or you have more questions you can ask your parent/guardian to write me an e-mail at marja.popov@education.ox.ac.uk and I can discuss it with you and your parent/guardian.

Why am I doing this research?

I am researching formative assessment implementation in general education schools of Estonia.

Why have I been invited to take part?

I am asking you if you would like to join in because you are in grade 7, 8 or 9, and studying the subject of Estonian/Russian language and literature. I am asking 4 students studying in each of these grades to take part in the study.

Do I have to take part?

No - it is up to you. I will ask you to sign a form to say that you agree to take part (an assent form). You are free to stop taking part at any time during the research without giving a reason by telling your teacher, the researcher or your parent/guardian. You do not have to say why and this will not affect your education.

If you decide to stop, no one will be upset with you. If you decide to stop, I will not use the information I have already collected from you.

What will happen to me if I take part?

You will be involved in the research for one focus group interview that will last approximately 45 minutes. About three other students from your class will take part in the same interview with you. The interview will take place at your school/online via Google Meet. When we meet in the interview room/in Google Meet, I will talk you through the study procedures and give you the chance to ask any questions. If you are still happy to take part, I will ask you to sign an assent form. You can ask to pause or stop the interview at any time. With your consent, I would like to record the interview with a sound recorder/via Google Meet video-communication service, so that I can have an accurate record of your thoughts. After the interview the recording will be transcribed and then deleted.

In addition, I will ask the deputy headteacher to provide me with the formative assessment feedback from your electronic daybook that you have received in your Estonian/Russian language and literature lessons during the school year 2020/21.

What happens to the information provided?

The information you provide during the study is the research data. Any research data from

which you can be identified (your name, recording of the interview), is known as personal data. The assent form that contains your name will be stored for 3 years after publication. Recordings will be destroyed as soon as they are transcribed. Other research data will be stored for 3 years after publication or public release of the work of the research.

Only a number will be used to identify you, and all information will be kept in an encrypted format on a password-protected computer or locked filing cabinet. I will not use the name of your school and will change the names of your teacher and all the students when I write about my research. No one will know that you have taken part unless you tell them yourself. Results are kept strictly confidential, and only the people doing the research, or helping with the research, can look at the data.

The research will be written up as part of a student's work. The publication of research will involve making an electronic copy of my doctoral research thesis available to the University of Oxford libraries online search engine (SOLO). I also aim to publish my findings in scientific journals, but this may be two to three years from the end of the study. In addition I will be writing a summary of my work in Estonian and English for the webpage of the Education and Youth Board. If I want to use the information for anything else, I will ask your permission.

At the end of my research, I will write to your school about what I found out in my study. You are welcome to read this if you are interested.

What are the advantages / disadvantages of taking part?

The study will not help you but it might help other students in the future.

Will anyone else know I'm doing this?

I will keep your information private. This means I will only tell those who have a need or right to know, such as my supervisors and your parent/guardian. I will only share information that has your name removed.

What will happen to any samples I give?

The school's deputy headteacher will give me a hard copy or pdf-file of the formative assessment feedback. The hard copy or pdf-file will be destroyed as soon as the data is transferred into an encrypted Microsoft Word file on the researcher's computer. This formative assessment feedback data will be analysed together with the rest of the data collected at your school. Any examples of feedback used in research outputs will be reported against a pseudonym.

What if I don't want to take part in the research anymore?

Just tell your parent/guardian and the person carrying out the research that you don't want to take part. You don't have to give a reason and no one will be annoyed with you. It is YOUR choice.

Who is organising and funding the research?

The research is organised by Marja Popov of the University of Oxford, who is a doctoral student. My studies are funded by the Education and Youth Board in Estonia.

Who has reviewed the study?

Before any research involving people can start, it has to be checked by a Research Ethics Committee to make sure that it is OK for the research to go ahead. This study has been approved by the University of Oxford Central University Research Ethics Committee.

What if there is a problem or something goes wrong?

Please tell me if you are worried about any part of this study, by contacting me at marja.popov@education.ox.ac.uk. You may also talk to your teacher/parent/guardian who will let me know. If you are still unhappy or wish to make a complaint, either you or your parent/guardian can contact the chair of the Research Ethics Committee at the University of Oxford: Education DREC Chair Dr Liam Gearon e-mail: research.office@education.ox.ac.uk; postal address: 15 Norham Gardens, Oxford OX2 6PY.

Data Protection

The University of Oxford is the data controller with respect to your personal data and, as such, will determine how your personal data is used in the study.

The University will process your personal data for the purpose of the research outlined above. Research is a task that we perform in the public interest.

Further information about your rights with respect to your personal data is available from <https://compliance.web.ox.ac.uk/individual-rights>.

Contact details

If you would like to discuss the research with someone beforehand or if you have questions afterwards, please contact:

Marja Popov

Department of Education

15 Norham Gardens, Oxford OX2 6PY

marja.popov@education.ox.ac.uk

Thank you for reading this – please do not hesitate to let me know if you have questions.

Appendix 5. Consent, opt-in, opt-out and assent forms

In case of / delete as applicable.

5.1. Consent form for the Ministry of Education and Research leaders managing the field of general education, the Tallinn Education Department specialists, the headteacher and the deputy of the general education school.

UNIVERSITY OF OXFORD

DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Participant Consent Form

Central University Research Ethics Committee (CUREC) Approval Reference: [Insert]

Implementation of Formative Assessment in Estonian Basic Schools

Purpose of the study: Explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons.

Please initial
each statement

- 1 I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

- 2 I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without any consequences.
- 3 I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee.
- 4 I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.
- 5 I understand how this research may be written up and published.
- 6 I understand how to raise a concern or make a complaint.
- 7 I understand that the researcher will conduct an interview, as detailed on the information sheet, and discussed and agreed with the researcher.
- 8 I consent to being audio recorded with a voice recorder/either audio or video recorded via Google Meet.
- 9 I understand how the recording will be used in research outputs.
- 10 I give permission to be quoted directly in research outputs against a pseudonym.
- 11 I agree to take part in the study.

	<u>dd / mm / yyyy</u>	
Name of Participant	Date	Signature

5.2. Consent form for teachers

UNIVERSITY OF OXFORD

DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Participant Consent Form

Central University Research Ethics Committee (CUREC) Approval Reference: [Insert]

Implementation of Formative Assessment in Estonian Basic Schools

Purpose of the study: Explore what has enhanced and what challenged the implementation of formative assessment in the general education of Estonia and how formative assessment has been implemented in grade 7-9 language and literature lessons.

Please initial
each statement

- 1 I confirm that I have understood the purpose and the procedure of the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
- 2 I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without any negative consequences.
- 3 I understand that the University of Oxford Central University Research Ethics Committee has reviewed this project and given it ethics clearance.

- 4 I understand who will have access to personal data provided, how the data will be stored and used during this research and what will happen to the data at the end of the project.
- 5 I understand how this research may be written up and published.
- 6 I understand how to raise a concern or make a complaint.
- 7 I understand that the researcher will observe a lesson as detailed on the information sheet, and discussed and agreed with the researcher.
- 8 I consent to being audio recorded during the classroom observation.
- 9 I understand that the researcher will conduct an interview with me, as detailed on the information sheet, and discussed and agreed with the researcher.
- 10 I consent to being audio recorded/recorded via Google Meet during the interview.
- 11 I understand that the researcher will collect student formative assessment feedback from the school electronic system, as detailed in the information sheet.
- 12 I understand how recordings and formative assessment feedback will be used in research outputs.
- 13 I give permission to be quoted directly in research outputs against a pseudonym.
- 14 I agree to take part in the study.

_____	<u>dd / mm / yyyy</u>	_____
Name of Participant	Date	Signature

5.3. Opt-in form for parents whose children participate in a focus group interview and formative assessment feedback data collection

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DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



PARENT/GUARDIAN CONSENT FORM

CUREC Approval Reference: [Insert]

Implementation of Formative Assessment in Estonian Basic Schools

- Your child's school has agreed to take part in a study run by the University of Oxford looking at how a change in the approach to learning with a focus on formative assessment has been implemented in general education schools in Estonia.
- If your child takes part, a researcher would conduct a focus group interview where your child would be interviewed together with other students from his/her class. Also, the researcher would collect language and literature formative assessment feedback that the teacher has written into the school electronic daybook during the school year 2020/21.
- If you are happy for your child to take part, please fill in the form below and return it to the deputy headteacher/your child's language and literature teacher as soon as possible.
- To find out more about the study, please read the attached information sheet. You can also e-mail me at marja.popov@education.ox.ac.uk if you have any questions.

Name of child: _____

Forename

Surname

Name of school: _____

I have read and understood the details of the above study, and have had the opportunity to ask questions and discuss the study. I have received satisfactory answers to my questions. I understand that the project has received ethics clearance through the University of Oxford's ethical approval process for research involving human participants, and I understand who will have access to the data, how it will be stored and what will happen to the data at the end of the study. I understand that participation is voluntary and that my child and I are free to withdraw at any time without giving any reason and without my child's education being affected in any way. I understand how to raise a concern or make a complaint.

I agree for my child to be audio recorded with a voice recorder/video recorded via Google Meet.

Yes

No

I understand how the interview recording will be used in research outputs.

Yes

No

I give permission for my child's 2020/21 school year language and literature formative assessment feedback to be collected from the school electronic daybook.

Yes

No

I understand how the formative assessment feedback will be used in research outputs.

Yes

No

I give permission for my child to take part in the above study.

Name of parent/guardian: _____

Signature: _____ Date: _____

5.4. Opt-out form for parents whose children participate in the classroom observation

UNIVERSITY OF OXFORD

DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



Implementation of Formative Assessment in Estonian Basic Schools

OPT-OUT FORM

Ethics Approval Reference: [Insert]

If you **DO NOT** want your child to be included in the above-named research study, please fill out the form below and return it to the school by [dd/mm/yyyy].

If the school does not receive an opt-out form from you by this date, your child may be included in this study, as described in the accompanying information sheet.

I, the undersigned, hereby DO NOT give permission for my child to be included in the study titled "Implementation of Formative Assessment in Estonian Basic Schools".

Name of child: _____

Name of parent/guardian: _____

Signature: _____

Date: _____

Name of researcher: Marja Popov

**5.5. Assent form for students participating in a focus group interview, formative assessment
feedback data collection**

UNIVERSITY OF OXFORD

DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY

Tel: +44(0)1865 274024 Fax: +44(0)1865 274027

general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Researcher contact: marja.popov@education.ox.ac.uk



ASSENT FORM FOR STUDENTS

Implementation of Formative Assessment in Estonian Basic Schools

Student to circle all they agree with:

- | | |
|---|--------|
| • Has somebody explained this project to you? | Yes/No |
| • Do you understand what this project is about? | Yes/No |
| • Have you asked all the questions you want? | Yes/No |
| • Have you had your questions answered in a way you understand? | Yes/No |
| • Do you understand it's OK to stop taking part at any time? | Yes/No |

- Are you happy to take part? Yes/No
- Are you happy for this interview to be recorded with a voice recorder/
via Google Meet? Yes/No
- Are you happy to be quoted directly against a pseudonym? Yes/No
- Are you happy for your 2020/21 school year language and literature
feedback to be collected from the school electronic system? Yes/No

If any answers are “no” or you don’t want to take part, that’s OK! No one will be cross with you and your studies at school will not be affected in any way.

If you do want to take part, please write your name below.

Your name _____

Date _____

Appendix 6. CUREC

CENTRAL UNIVERSITY RESEARCH ETHICS COMMITTEE (CUREC)

Form CUREC 1A Checklist for the Social Sciences and Humanities



The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics clearance procedures have been established to ensure the University is meeting its obligations as a responsible institution. They start from the presumption that all members of the University take their responsibilities and obligations seriously and will ensure that their research involving human participants is conducted according to the established principles and good practice in their fields and in accordance, where appropriate, with legal requirements. Since the requirements of research ethics review will vary from field to field and from project to project, the University accepts that different guidelines and procedures will be appropriate.

- Please check "[Where and how to apply for ethical review](#)" and the [CUREC flowchart](#) first to see if you need ethics approval.
- Please complete this form using a word processor and email it, together with your [supporting documents](#), to your [Departmental Research Ethics Committee \(DREC\)](#) (if applicable). If you don't have a DREC please email this form to ethics@socsci.ox.ac.uk using your official [ox.ac.uk](#) email address. **Only type-written, emailed applications will be accepted.**

SECTION A: Filter for CUREC 2 application

This section determines whether your study raises more complex issues requiring the completion of a full application for ethical review, known as the CUREC 2 application. **(Please mark 'X' in the Yes/No column.)**

1. Are research participants classed as people whose ability to give free and informed consent is in question? (This may include under 18s (although see “competent youths”), prisoners, or adults “at risk”.) Your attention is drawn to the University’s Safeguarding Code of Practice and its implications for researchers involving children or adults at risk. This includes the need for the work to be risk assessed and for researchers to undertake related training. (Note: If any of your participants are aged 16 or under, answer ‘Yes’ here and also answer question 5 below.)	Yes ☒ ☐	No ☐
2. By taking part in the research, will participants be at risk of criminal prosecution (e.g. by providing information on drug abuse or child abuse)?	Yes ☐	No ☒ ☐
3. Does the research involve the deception of participants?	Yes ☐	No ☒ ☐
4. Does your research raise issues relevant to the Counter-Terrorism and Security Act (the Prevent duty), which seeks to prevent people from being drawn into terrorism? Please see advice on this on our Best Practice Guidance web page.	Yes ☐	No ☒ ☐
If you answered ‘No’ to <u>all</u> the questions above, go to Section B. If you answered ‘Yes’ to <u>any</u> question above, continue to question 5 below.		
5. Is your project covered by a CUREC Approved Procedure (formerly known as “CUREC Protocols”)?	Yes ☒ ☐	No ☐
If yes, give the specific Approved Procedure number(s): AP15, AP25		
If you answered ‘Yes’ to ANY of questions 1-4, and answered ‘No’ to question 5, stop completing this checklist and do not submit it for ethical review. Instead, complete the CUREC 2 application form from the CUREC website, then submit that for ethical review. If you answered ‘Yes’ to ANY of questions 1-3, and answered ‘Yes’ to question 5, go on to Section B.		

SECTION B: Contact details and project description

Contact details:

1. Principal investigator OR supervisor (if student research) (give title and full name)	Professor Jo-Anne Baird & Professor Therese N. Hopfenbeck
2. Name of student (if student research)	Marja Popov
3. Degree programme (if student research), e.g. BA, BSc, MSc, MPhil, DPhil	DPhil
4. Department or Institute name	Department of Education
5. Address for correspondence (if different from above)	
6. University (not private) e-mail address and telephone number	marja.popov@education.ox.ac.uk Supervisor contact: email: therese.hopfenbeck@education.ox.ac.uk Phone: +44 (0) 1865 274017
7. Name and status of others taking part in the project (e.g. third year undergraduate; postdoctoral research assistant)	

Project description:

12. b) In the case of international or collaborative research, will you submit or have you submitted this project for ethical review or consideration elsewhere (e.g. collaborator's/local ethics committee, or other local approval)?	Yes ☐ No X ☐ If 'Yes', please attach ethics or other approvals and give more details below. If 'No', please explain your reasons below. Please also refer to the Best Practice Guidance on Ethical Review of social-sciences based research conducted outside the UK (BPG 16), which includes an Ethics Issues Checklist for International Research (Appendix A) In Estonia, social science research that is done on humans is approved by Research Ethics Committee of the National Institute for Health Development. I checked the Institute's ethical requirements for conducting the study and found that the University of Oxford CUREC covers those requirements.
13. External organisation funding the research (if applicable)	My studies at the University of Oxford are funded by Foundation Archimedes in Estonia
14. a) Title and brief description of research (about 150 words) in lay language. When describing the research, include your methodology, how you are applying professional guidelines, and the use to which results/data will be put. Please also declare any conflicts of interest here.	
This research will be conducted for doctoral thesis in education. Title: Formative assessment in the general education system of Estonia: a multiple-case study of a change in the approach to learning The aim of the research is to explore how the general education schools in Estonia have implemented formative assessment. To address the aim, the study investigates the possible factors that have enhanced and challenged the implementation process, as well as the experience that the grade 7-9 students have had with formative assessment in their language and literature lessons. The participants of this study are different level stakeholders: the Ministry of Education and Research leaders in general education, Education Department specialists, school headteachers and deputies, grade 7-9 language and literature teachers and their students. The overarching research question of the study is: How have general education schools in Estonia implemented formative assessment as set in the national curriculum for basic schools? The method of inquiry will be a multiple-case study (Yin, 2018). The unit of inquiry (case) will be a	

general education school together with its governing body at municipality level. After conducting the study in each case, research will be conducted at the central government level of the Ministry of Education and Research. The data will consist of general education schools' curricula and assessment policies; semi-structured one-to-one and paired, and focus group interviews; classroom observations; assessment feedback given to students; municipality education departments' education strategy documents; the Ministry of Education and Research policy documents that support formative assessment implementation in general education schools. The data will be collected in three stages:

1. Data collection of policy documents available online

I will gather school curricula and assessment policy documents from the general education school websites; policy documents, like municipality education development plans, from municipality education department websites; and policy documents that support formative assessment implementation from the Ministry of Education and Research website.

2. Data collection in general four education schools and their governing municipality education departments (four)

In each general education school: one-to-one or paired interview with the headteacher and the deputy, semi-structured interviews with three grade 7-9 language and literature teachers, three language and literature classroom observations (grade 7, 8 and 9), three focus group interviews with four students per interview (grade 7, 8, 9), collecting formative assessment given to grade 7-9 students from the electronic daybook. In each of the municipality education departments a paired interview with the head of department and a general education specialist will be conducted.

3. Data collection in the Ministry of Education and Research.

A semi-structured interview will be conducted with the Head of General Education Department and with Deputy Secretary General for General Education, Language Policy and Youth Affairs.

The study will generate the following data to be analysed: policy documents, interview transcripts, observation transcripts, assessment feedback transcripts. Firstly, I will conduct within-case analysis (Yin, 2018) in order to find out what is distinctive in each case. The data analysis of each case will be done in two stages: 1. analysis of data from general education school, 2. analysis of data from the municipality education department. I will prepare the data for content analysis by dividing the data according to data collection method and participant and analyse each set of data separately. Content analysis will be both inductive and deductive as both data- and theory-driven codes will be used. I will collapse the codes into themes (Creswell, 2012) related to the research questions. Data analysis will be followed by detailed case write-ups that will be guided by research sub-questions.

After within-case data analysis, I will conduct cross-case search for patterns (Yin, 2018). Cross-case analysis will be conducted across the same data collection techniques and same level

stakeholders. Cross-case analysis will be conducted separately for each research subquestion by looking for commonalities and differences across cases. In research outputs commonalities and differences will be compared to the formative assessment framework in academic literature.

After conducting the analysis of the data collected in each case, the interviews conducted at the Ministry of Education and Research will be transcribed and analysed by using thematic content analysis (Creswell, 2012). The coding manual will involve theory-, case-study data-analysis, and the Ministry interview data-driven codes intended to answer research subquestions. The results of the data analysis will be written up as a comparative discussion guided by the results of the cross-case analysis.

14.b) Description of participants and how you will [obtain informed consent](#) to take part in the research
(about 200 words in total)

1. Description of participants **and** your criteria for inclusion/exclusion

2. Your method(s) of recruitment

3. Your processes for obtaining consent from participants

Please **attach separate supporting documents (in Word)** if appropriate for your research (English language versions only). Tick those you are submitting below. If appropriate supporting documents are not submitted, you will be asked to provide these separately, which may delay the ethical review process.

- | | |
|-------------------------------------|--|
| ☒ | Recruitment and advertisement material (e.g. a poster, social media recruitment text, or brief invitation letter/ email) |
| ☒ | Information for participants to read (or hear) before they agree to take part (e.g. written information or, if applicable, an outline oral information script). |
| ☒ | A document to record informed consent. Templates for written consent forms and/or oral information scripts (in case of an oral consent process) are available from the CUREC website |
| ☒ | Questions to be asked of participants (e.g. interview questions, or a preliminary scope of questions, or a sample questionnaire) |
| ☐ | (If relevant) debriefing document after participants have taken part |

☐ If you feel the above approaches are not appropriate for your study, provide details on how you will obtain consent from participants

☐ Please complete section 15 if you cannot obtain informed consent

Please add any further details here.

15. If you cannot obtain informed consent from participants according to CUREC guidelines and good practice in your discipline, please give a brief explanation and justification of this decision below.

16. What are the ethical issues connected with your research and what steps have you taken to address them? **Please do not answer 'none'.** We need to see evidence that you have identified potential ethical issues with respect to your research and have taken steps to address them. If applicable, please address:

- Participant burdens and/or risks

- Your own physical and psychological safety as a researcher or of fieldworkers you may employ (see the [University's](#) and [Social Science Division's Safety in Fieldwork guidance](#))

- Data protection/ confidentiality (also see Section 18).

For more guidance on ethical issues, please see <http://researchsupport.admin.ox.ac.uk/governance/ethics/resources>

Discuss other ethical issues here

Extra attention will be given to obtaining consent from participants who are underage. The study will involve participants who are younger than 16 years old as I will be conducting classroom observations and focus group interviews with students in grades 7-9 (Grade 7 students are 13-14, grade 8 students are 14-15 and grade 9 students 15-16 years old). These are participants who might not be able to provide informed and free consent. The project is covered by approved procedure numbers AP15 “Research on Teachers and Teaching in Educational Settings” and AP25 “Non-Invasive Methods with Children as Participants in Institutional and Non-Institutional Settings”.

I have chosen AP15 for classroom observations because the research will focus on normal mainstream lesson activities where language and literature teachers implement formative assessment into their lessons, thus, the students will not be asked to do anything out of the ordinary educational practice at their school during the research and are participants only because they are part of the language and literature lesson context in their regular school life. The classroom observation conducted in this research can be classified under AP15 group B research activity because in addition to the focus on the teacher, this research will also involve focusing on the students in their regular classroom interactions and, thus, both the teacher’s and students’ voices will be audio-recorded. However, the unit of analysis is the lesson itself, not individual students. For this reason, while writing down field notes during the lesson and transcribing the data from the lesson audio recording, each student will be identified with a code, not name, and pseudonyms will be used in research outputs. Any names mentioned during the lesson will not be written down as a field note or transcribed. Once the classroom observation data is transcribed, the audio recording will be destroyed.

AP25 will be used for audio-recorded focus group interviews with students and semi-structured interviews with teachers. Opt-in recruitment will be used for choosing research participants who would participate in student focus group interviews and allow for their formative assessment feedback to be collected – student’s parent or guardian will need to actively agree to their child’s participation in research by signing a consent form to be returned to school. In addition, students whose parents have agreed to their child being interviewed and for their child’s formative assessment feedback to be collected, will be asked to sign an assent form during the introductory stage of the interview. I will be conducting the student interviews as a focus groups to lower the possible level of stress that students could have if they had to answer all questions alone.

17. Will your research involve discussing sensitive issues?	Y e s ☐	No x
This could be information relating to race or ethnic origin, political opinions, religious beliefs, physical/mental health, trade union membership, sexual life or criminal activities.		
If you answered 'Yes', make sure you include some supporting information (as directed in Section 14 b.) above, showing the range of questions covering these issues.		

18. Management and handling of personal and other research data	
For the purpose of completing this section, all information provided by participants is considered research data. Any research data from which participants can be identified is known as <i>personal data</i>; any personal data which is sensitive is considered <i>special category data</i>. Management of personal data and special category data of human participants, either directly or via a third party, must comply with the requirements of the General Data Protection Regulation (GDPR) and the Data Protection Act 2018, as set out in the University's Guidance on Data Protection and Research. In answering the questions below, please also consider the points raised in the Data Protection Checklist. For advice on research data management and security, please consult with the University's Research Data Team (researchdata@ox.ac.uk) and/or your local IT department, and the University's web pages on research data management.	
a.) Please mark 'X' against the data you will collect for your research	
Consent records (written consent forms, audio-recorded consent, assent forms (for research involving minors) including participant name X	☐
Online consent (may be anonymous)	☐
Opt-out forms X	☐

Contact details for research purposes only (destroyed when no longer needed for this research) X	☐
Contact details kept for future studies	☐
Audio recordings (preferably using PIN-protected audio recorder and stored on device's hard drive)	X ☐
Video recordings	☐
Transcript of audio/video recordings X	☐
Photographs	☐
Task results (e.g. paper/online tasks, diary completion)	☐
Questionnaire answers	☐
Field notes X	☐
Other (please specify below) X	☐
Assessment feedback teachers have written to students in the school electronic system	
b.) For each of the types of data selected above, state how this will be physically transferred from where it is collected to a local secure storage site (and backed up as necessary). This includes paper records and data captured electronically.	
Consent records, field notes and formative assessment feedback teachers have given to students will be first taken from research site to my home in Estonia to be stored in a file in a locked drawer. Field notes and formative assessment feedback will be typed into an encrypted Word file on my password-protected	

computer and destroyed in a hard copy format. Consent records will be transported to Oxford in a locked carry-on suitcase to be stored in a file in a locked drawer in a locked room. Parent opt-out forms will be stored at school site in a locked cabinet by the headteacher.

Audio recordings will be transferred from the recorder to my password-protected laptop and encrypted the same day recordings are made. After the encrypted file is saved, it will be deleted from the recorder.

In addition to my laptop, all electronic data will be stored on a Sharepoint site.

c.) How and where will **each type of data** be stored during the research (until the end of all participant involvement)? Describe the arrangements for ensuring confidentiality, i.e. location of storage (e.g. [Nexus 365 OneDrive for Business, SharePoint](#)), security arrangements and de-identification of such data. Do not store unencrypted data in freely available cloud services or unprotected USB drives.

All electronic files will be anonymised before saving. Interview, classroom observation and formative assessment feedback data (audio recordings, transcriptions, field notes) will be stored on a Sharepoint site, with encrypted copies on my password-protected laptop. Contact details will be stored as an encrypted file on my password-protected laptop. Any hard copies of the data (consent records, opt-out forms) will be stored in a file in a locked drawer in a locked room.

d.) Will you use a unique participant number on research data instead of a participant name?

If **yes**, state whether or not you will retain a list of participant names against numbers (i.e. pseudonymisation via a linkage list). Where will the list be stored, and when will it be destroyed?

All electronic files will be saved under unique participants numbers in an encrypted format. I will keep a Word file pseudonymised list of participants against numbers saved in an encrypted format on my laptop-protected computer.

e.) Who will have access to the research data?

The researcher and supervisors will have access to the research data.

f.) If research data is to be shared with another organisation, how will it be transferred / disclosed securely?

NA

g.) When and how will identifiable data (including audio/video recordings & photos) be destroyed or deleted?

Note: Records of consent should be retained for a minimum of three years after publication or public release. Some funders may require longer periods (see http://www.dcc.ac.uk/resources/policy-and-legal/overview-funders-data-policies). If you wish to retain contact details in order to re-approach participants about future studies, you must detail this in information provided to them and obtain specific consent for this.		
Audio recordings will be destroyed after they are transcribed (names will not be written down into transcriptions). Records of formative assessment feedback will be destroyed as soon as they are written into an encrypted file on the computer. All research data, including consent records and assent forms will be retained for 3 years after thesis completion. The Ministry of Education and Research participants will be asked if their interviews can be kept because they are public servants and their interviews have historical interest. If the participants at the Ministry do not consent, their interview transcripts will be deleted three years after thesis publication together with the rest of the data.		
h.) Please confirm that you will store other research data safely for at least 3 years after final publication or public release and adhere to any additional research funder policies. For more information about the University policies, please see the University's web pages on research data management.	Yes ☒	No ☐
If 'Yes', please give details of who will store the data and on storage format, location and security. Note that open science is encouraged. If 'No', please provide further details below.		
Interview and classroom observation transcriptions and formative assessment feedback data will be stored as encrypted files on my password-protected laptop for 3 years after thesis completion.		
i.) Does your research involve the use of secondary (i.e. previously collected) data? Common sources of secondary data include censuses, information collected by government departments, organisational records and data that was originally collected for other research purposes (If "No", please go to section 19.)	Yes ☐	No ☒
j.) Do you have data access agreements for the use of this secondary data? (If so, please attach these.)	Yes ☐	No ☒
k.) Is your use of this secondary data compatible with what data subjects/participants agreed that their data should be used for?	Yes ☐	No ☒

1.) Could this data be linked back to an individual or individuals? If yes, address how securely any personally identifiable data will be transferred to you, and where and for how long it will be stored during or after the research. Who will have access to it?	Yes ☐	No ☒
I will be collecting secondary data in the format of feedback that teachers have written to students in electronic daybooks. I will be collecting formative assessment feedback of students who participate in focus group interviews. The school's deputy headteacher will provide me with the formative assessment feedback. Opt-in recruitment will be used for choosing research participants who would participate in student focus group interviews and allow for their formative assessment feedback to be collected – a student's parent or guardian will need to actively agree to their child's participation in research by signing a consent form to be returned to school. In addition, students whose parents have agreed to their child being interviewed and for their child's formative assessment feedback to be collected, will be asked to sign an assent form during the introductory stage of the interview.		
19. Publication and dissemination of research data		
How will you disseminate and feedback project outcomes at the end of the research?	Research will be written up in the format of DPhil thesis. The publication of research will involve making an electronic copy of the thesis available on SOLO and there is a possibility that I will write project outcomes into an academic journal article at the end of research. In addition, Foundation Archimedes in Estonia requires me to write a summary of my work in Estonian and English for their webpage because Foundation Archimedes funds my studies. All participants will be informed during data collection stage of how the research will be published. Once the summary of my research is published on Foundation Archimedes' website, I will send the link to the summary to the following research participants: headteachers of general education schools (to be shared with participants from the school according to the headteacher's decision), heads of education departments, Head of General Education Department at the Ministry of Education and Research, Deputy Secretary General for General Education, Language Policy and Youth Affairs at the Ministry of Education and Research. All participants will be informed during the data collection stage that they are welcome to an electronic copy of my thesis upon their request.	

SECTION C: Methods and procedures to be used	
Method used: Please ensure you have addressed any potential ethical issues related to these methods in Section 14 and in your Participant Information Sheet	Please mark 'X'
1. Analysis of existing records	☒
2. Snowball sampling (recruiting through contacts of existing participants)	☐
3. Use of casual or local workers e.g. interpreters	☐
4. Participant observation	☒
5. Covert observation	☐
6. Observation of specific organisational practices	☐
7. Participant completes questionnaire in hard copy	☐
8. Participant completes online questionnaire or other online task	☐
9. Using social media	☐
10. Participant performs paper and pencil task	☐
11. Participant performs verbal or aural task (e.g. for linguistic study)	☐
12. Focus group	☒
13. Interview	☒

14. Audio recording of participant (you will generally need specific consent from participants for this)	☒
15. Video recording of participant (you will generally need specific consent from participants for this)	☐
16. Photography of participant (you will generally need specific consent from participants for this)	☐
17. Others (please specify below)	☐

SECTION E: Signatures or email endorsements (The SSH IDREC Secretariat accepts either option below. If you have a [DREC](#), check which signature option it prefers.)

- **Option 1:** Email confirmations from a University of Oxford email address can be accepted. Separate emails should come from each of the relevant signatories as outlined below, indicating acceptance of the relevant responsibilities. **Pasted images of signatures cannot be accepted.**
- **Option 2:** Handwritten (wet-ink) signatures. Please scan them and the rest of the checklist pages to create a single PDF document and email to us.

Please ensure this checklist is signed by:

For staff research:

For student research:

1. <u>Principal investigator</u>	1. <u>Principal investigator</u> (project supervisor)
2. Head of Department (or nominee)	2. Head of Department (or nominee)
	3. Student researcher

1. Principal Investigator signature/supervisor signature (if student research)

I understand my responsibilities as [principal investigator](#) as outlined in the CUREC glossary and guidance on the CUREC website.

I declare that the answers above accurately describe the research as presently designed, and that a new checklist will be submitted should the research design change in a way which would alter any of the above responses so as to require completion of CUREC 2 (involving full scrutiny by an IDREC). I will inform the relevant IDREC if I cease to be the principal investigator on this project and supply the name and contact details of my successor if appropriate.

Signature (or email endorsement using the above declaration):

.....

Print name (block capitals):

Date:

THERESE N. HOPFENBECK.....

17th March 2020

2. Departmental endorsement signature

I have read the research project application named above. On the basis of the information available to me, I:

- (i) consider the principal investigator to be aware of her/his ethical responsibilities in regard to this research;
- (ii) consider that any ethical issues raised have been satisfactorily resolved or are covered by relevant professional guidelines and/or CUREC approved procedures, and that it is appropriate for the research to proceed (noting the principal investigator's obligation to report should the design of the research change in a way which would alter any of the above responses so as to require completion of a CUREC 2 full application);
- (iii) am satisfied that: the proposed project design and scientific methodology is sound; the project has been/will be subject to appropriate [peer review](#); and is likely to contribute to existing knowledge and/or to the education and training of the researcher(s) and that it is in the [public interest](#).

Signed by Head of Department or nominee (example nominees for student research include the Director of Graduate Studies/ Director of Undergraduate Studies):

Signature (or email endorsement using the above declaration):

.....

Print name (block capitals):

Date:

.....

.....

3. Student signature ([if student research](#))

I understand the questions and answers that have been entered above describing the research, and I will ensure that my practice in this research complies with these answers, subject to any modifications made by the principal investigator properly authorised by the CUREC system.

Signature by student (or email endorsement using the above declaration):

.....

Print name (block capitals): MARJA POPOV

Date: 11 March 2020

Appendix 7. Codebooks

7.1. Codebook “Enhancing Factors in Formative Assessment Implementation”

Themes	Sub-themes	Definitions	Examples from transcripts
New approaches to learning	Shifts in society and students' needs	School leaders and teachers believe that society has become more open, liberal and based on Western ideology; that students are more independent, goal-oriented, creative, and have a smaller attention span. Also, that there are more students with special educational needs.	Now, with so many things going on around us, learning is one of the small little elements in students' lives. You feel it in the students as a teacher, and it's a different audience. Now the school has to do something amazing to at least get their attention. Otherwise they won't be interested in you. They will switch you off from their attention and if we don't change, then the school will be separate, the children will be separate, and this will be a huge problem. (Grade 7 teacher from school D)
	2011 national curricula and school culture changes	School leaders and teachers believe that the ideas in the 2011 national curricula where formative assessment was first introduced created a change in the approaches to learning and overall school culture from teacher-centred to student-centred with nurturing teacher-student relationships present and meaningful collaboration taking place among staff members.	Everything at school is focused more on the student, as opposed to, for example, 20 years ago (grade 9 teacher from school D).
	Implementation of additional learning models	School leaders and teachers believe that with support from additional well-researched and effective approaches and programmes, like inclusive education, IB programmes, CLIL and KiVa, the school gains more ideas, techniques and training for formative assessment implementation.	SEN students have a completely different learning process and in this respect they need a different approach and formative assessment, I think, helps such children even more than so-called regular children... Certainly, the training and experience of working with SEN students also gives benefits to teaching in the mainstream classroom. I mean, how I worked, for example, 15 years ago, if I applied that

			knowledge of working with SEN students, the process might go differently with a more difficult student. (Deputy headteacher of school C)
Experiencing positive outcomes	Positive outcomes for students	School leaders and teachers believe that with the help of formative assessment implementation, the students have become more independent and self-directed, understand why they are learning something, receive feedback and develop self-analysis skills, have higher motivation, better mental health, potentially higher achievement levels and a more supportive school environment overall.	For the learner's side, what I've noticed is that students are basically paying attention to their feedback and analysing the feedback and want to understand. If they don't understand something, they want to ask the teacher or want to find out more. So, there've been instances where students have said, "What can I do to improve? I saw that the feedback was there, but I don't understand something." I see that they are focusing on what is being said to them, and if they don't get the feedback that they are used to getting, then they also verbalise it quite quickly. So, it's important for them to understand what they are doing wrong. Or, maybe, not wrong but where they can improve. (Deputy headteacher of school A)
	Positive outcomes for teachers	School leaders and teachers believe that teacher professionalism has increased with formative assessment implementation because they have learned new skills that have made them better at their work. Teachers believe that the following positive outcomes are supporting continued implementation process: increased teacher motivation, multifaceted interesting work and positive teacher-student relationships.	It brings tears to my eyes to see their progress... I'm no longer afraid to enter three or five or two or whatever I used to put in the journal. I can write to them in a human way about how they did or what they need to do better, what they need to pay attention to and by now I'm used to the system. If somebody continues to have problems, I engage with them individually and talk to them. The person understands if you speak to him or her... Of course this individual approach, really, this formative assessment, we don't always get to do as much as we would like to because there are too many students and too many lessons. But, if the students are as motivated as they are, it makes the teacher work. I really work like crazy and I ask myself sometimes if it's worth it or what I'm doing. They

			inspire me to give that feedback. (Grade 8 and 9 teacher from school A)
	Positive outcomes for parents	School leaders and teachers believe that as a result of formative assessment implementation, parents are better informed of their child's development, can support their children better and have better mental health.	Yeah, I think the parents also get a more positive and systematic picture of their child's development, rather than the anonymous numbers, which say very little, usually (headteacher of school A).
	Positive outcomes for leadership team members	School leaders and teachers believe that gaining new theoretical and practical knowledge, getting positive feedback about the changes in school culture and putting some formative assessment methods into practice in the leadership team are the positive outcomes for leadership team members that motivate them to continue with the formative assessment implementation process.	Our learning coordinators and the head of studies, they've been educating themselves in this area of formative assessment for ten years and they've gathered materials... by now, we already have experts at school who are then in charge of this. (Grade 8 teacher from school B)
In-school collaboration	Vision from the leadership team	School leaders and teachers believe that the vision for formative assessment implementation is essential for authentic practice.	I would say that it really all starts with the leadership team. How the leadership team promotes the need for change, how the leadership guides, how executes - a lot depends on that. (Grade 7p teacher from school A)
	In-school professional development	School leaders and teachers believe that collaborative planning, mentorship and sharing of learning materials is essential for formative assessment implementation.	A key factor's definitely the in-school service, in-school training sessions for the teachers. Without those, you can hardly achieve full implementation. (Headteacher of school A)
External support	Collaborating with educational institutions and authorities	School leaders and teachers believe that support from universities, other schools, programmes and to some extent from the Ministry of Education and Research are important in	First of all, I think the uppermost stage should be the universities, the University of Tartu, Tallinn University, to educate students as concretely as possible, to make them understand

		formative assessment implementation	exactly what formative assessment is. (Grade 7 teacher from school A)
	Information technology resources	School leaders and teachers believe that access to the internet, the electronic school journal, other online platforms (e.g., OPIQ) and IT equipment are important for formative assessment implementation.	How I measure it, I have looked at the teachers' electronic journals and have analysed what they write in the formative assessment feedback... For me, as a teacher, it's also evidence of student learning but as an administrator, it's also seeing whether the formative assessment data that the teachers provide is enough or adequate for there to be any learning. (Deputy headteacher of school A)

7.2. Codebook “Hindering Factors in Formative Assessment Implementation”

Themes	Sub-themes	Definitions	Examples from transcripts
Absence of a systematic approach for implementation across all schools	Autonomy of schools and a lack of systematic centralised support	School leaders and teachers believe that autonomy of schools is essential but it becomes a hindering factor for formative assessment implementation when there is no systematic centralised support from policymakers, leaving each school to figure out the fundamentals of formative assessment and the implementation on its own.	Formative assessment has been on the agenda, I think, for more than 10 years, but I doubt the fact that it has been in the focus consistently and that there has been a systematic approach to the implementation of formative assessment in schools. It very much depends on the focus the school has, or each individual school, or each individual teacher has, rather than the systematic approach from the Ministry regarding the whole-country approach perspective. (Headteacher of school A)
	Insufficient professional development in formative assessment	School leaders and teachers report that policymakers have not provided sufficient training in formative assessment methods, either as part of university studies or ongoing professional development, even though it is essential for a successful implementation process. Also, that open-access online resources in Estonian and Russian are not sufficient for educating oneself on formative assessment.	In practice, if you start looking for formative assessment workshops, you'll find that they are virtually nonexistent at the moment (deputy headteacher of school B).
	Absence of a system for monitoring formative assessment implementation	School leaders and teachers report that there is no systematic approach to monitoring the implementation of the formative assessment reform at any stage of the process. These stakeholders believe that systematic monitoring of formative assessment implementation by researchers and policymakers, that is supportive and takes into account each school's autonomy, is needed. These stakeholders report about some existing attempts to monitor formative assessment implementation, like national	I do not know that it [formative assessment] is measured at all, because, on the basis of our school's example, on the basis of our school, I do not know that there has been any measurement carried out on formative assessment - either the system we have created, or the success of it, or about the relationship of the formative assessment to the outcomes and the knowledge and skills of the students, or the stress level of the students, or whatever aspect you take from the approaches to teaching and learning. Yeah, I don't know that it has been

		satisfactions surveys, headteachers' assessment by the Tallinn Education Department, lesson visits, assessment of the quality of feedback in the electronic journal, teachers' participation at collaborative meetings, feedback from students and parents.	measured. (Headteacher of school A)
Issues in educational policy and structure	Limitations in legislation	School leaders and teachers believe that the legislation does not support formative assessment implementation and highlight the following aspects of it as hindering: descriptions of formative assessment in the national curriculum and its supporting documents are not detailed enough, the use of formative assessment is not obligatory, there is a requirement to give marks in the third stage of studies and it is mandatory to convert summative assessments into grades. Their reporting reflects gaps in understanding about the fundamental formative assessment principles.	The one aspect is that the Ministry wants the schools to use formative assessment, but formative assessment is allowed until form seven, and then the school basically can't even use formative assessments. They should be using the five-grade system instead. So the point is, then, and I think it's the right question many schools or school headteachers ask, "Why should we bother with implementing formative assessment if we have to switch over from the middle of the studies, and then start using the five-grade system instead?" And the schools, they must convert the formative assessment systems into a five-grade system. The converting table is necessary. I agree with that, but the school should be given the autonomy, then, to use formative assessment all through the compulsory education and also in the upper secondary, if necessary. (Headteacher of school A)
	Ageing teacher demographic	School leaders and teachers highlight that there is a serious issue of shortage of educators because there are not enough teachers to replace those who have reached retirement age. They believe that this is hindering formative assessment implementation because current teachers have to step in to cover for the shortage of staff by working overtime, thus they do not always have the possibility to implement new approaches to assessment. Some of these stakeholders believe that the	I think the biggest problem is a shortage of teachers. Yes, well, teachers. And, as there's a shortage of teachers, the teachers that we have in school, they're very busy. But as a result of that, because teachers are overworked, a lot of things are left undone or, or, as they say, done incompletely. (Grade 8 teacher from school C)

		younger teacher demographic takes to the reforms more easily and as there is a shortage of those teachers, this is hindering formative assessment implementation. At the same time others highlight that there are individual differences among teachers and the older generations can be more hard-working, thus they put more effort into formative assessment implementation and when they retire, there will be an even bigger shortage of teachers willing to invest the time into this reform.	
	Workload	School leaders and teachers believe that workload can be an issue when implementing formative assessment, especially in the following aspects: too many students in class and lessons per week, low salary. Among the formative assessment methods, these stakeholders highlight that written feedback contributes most significantly to the increase in workload. increases workload the most.	The challenge, that is, is certainly time. What I would say is that if somebody wants to do the work with heart, wants to assess in a formative way, 35 hours a week, forget it. Forget the weekends, forget the evenings with the family. It was a shock really. Before I thought that even grading papers takes a lot of time. But now it's feedback in the e-school. How much time it takes and there's no extra money on top of that, or well, and it has to also fit into that 35 work hours. How? (Grade 7 teacher from school B)
Challenges in adapting to change	Lack of buy-in from teachers	School leaders highlight that there is an issue with a lack of buy-in from teachers. Teachers pinpoint that resistance to formative assessment implementation is connected to increased workload, lack of understanding about what the methods entail and how to put them into practice, however there are individual differences and those who are more knowledgeable and have a high level of autonomy are more inclined to use formative assessment methods. Teachers and school leaders believe that some of the initial resistance to formative assessment implementation has been	But there are still those who are stubborn and do not go along with it. But they get double feedback regarding this, both from us, when we let them know that this kind of feedback is not appropriate, and also arguing with parents. I said, "I'm not your public relations manager anymore. If you decide not to implement what has been agreed, you are also responsible." (Headteacher of school C)

		overcome.	
	Lack of buy-in from parents	School leaders and teachers believe that among parents there is a lack of buy-in and understanding of formative assessment methods due to the following reasons: they prefer that the same assessment methods are applied as those used during their school years, there is worry about a possible decrease in the level of learning outcomes, they do not take the time to analyse written feedback and there is too little overall focus on the responsibility of parents in the society.	Parents as well, they are not used to having a different system than what they grew up with. It's hard for them to adapt to this system, and they don't yet see any benefits with this system, or the majority of them at least. For the parent it's difficult to adjust to it or it can be difficult to adjust to it for some parents, especially parents whose connections to school are from years back and whose understanding of school was based on their own experience or their own school experience and they expect, in many instances, to... if the school "worked for them," then they expect a similar experience for their kids and then, if they get something different, it's very much to how open-minded they are in terms of accepting this and learning from it as their children are. (Deputy headteacher of school A)
	Covid-19 pandemic	School leaders and teachers believe that in order to manage the various aspects of formative assessment implementation, constant focus and work is needed, however, a crisis, like the Covid-19 pandemic had been disruptive to that process in various ways (e.g., fewer possibilities to obtain evidence of student learning).	So, I think that coronavirus probably limited some formative assessment practices because there wasn't any observation practice possible and the feedback, the formative assessment that the students were given was mostly written. And, it therefore was probably more narrow than it should have been. (Deputy headteacher of school A)
Pedagogical mis-alignments	Subject-centred rather than student-centred approach	School leaders believe that a student-centred approach is needed in order to implement formative assessment, however, not all educators are using it and some are applying a subject-centred approach instead. Also, that the national curriculum is heavily focused on subject outcomes, making summative results more important than the child's overall development.	And since it was not common for the approach to be learner-centered, but rather for the focus to be on the subject, in a subject-centered system where learning skills were not supported separately, it became possible to assign numerical grades, and there was no need for formative assessment (deputy headteacher of school B).

		Teachers do implement a student-centred approach, using different methods to do this with one teacher believing that schools are catering too much to each individual student.	
	Assessment practices that are focused on grades	School leaders and teachers believe that formative assessment implementation is hindered by the teachers', students' and parents' focus on summative outcomes, especially grades, also medals at the end of the upper secondary school, rather than the learning process.	When you're constantly assigning grades, the student might notice them, but in the case of formative assessment, motivation works differently. With traditional grading, we're not really talking about intrinsic motivation - it's more of a <i>carrot-and-stick</i> approach. But is a grade even real motivation? I don't think so, because often, it's just about short-term manipulation to achieve a certain mark. True motivation—you can see it. You see it in how a student engages in class, how they think, how they work. (Grade 7p teacher from school A)
	Difficulties in supporting diverse educational needs in the classroom	School leaders and teachers believe that formative assessment works better for some students (e.g., who are more self-directed and have better critical thinking skills) than others. In two schools school leaders and teachers believe that it is challenging to implement formative assessment because there are a lot of SEN students and overall there are big differences in academic capabilities among students, which makes it difficult to support each student's learning journey through formative assessment implementation.	And then, of course, when it comes to students with special needs, there are those who are more gifted than others, and then there are those whose cognitive abilities are weaker. When you have many of these students in a class, you simply can't physically reach the more gifted students, and you also can't engage with the average ones. All your energy goes into working with the students with special needs. (Grade 9 teacher from school B)

7.3. Codebook “Students’ Perceptions of Formative Assessment Implementation”

TEACHER-STUDENT RELATIONSHIP

Themes	Sub-themes	Definitions	Examples from transcripts
Assessment that enhances learning and well-being	Importance of effort	Students believe that it is important for their progress, motivation and well-being that teachers recognise effort.	S1: For me, for example, the reward is that if you are active in class, the teacher notices it. And I would suggest that, I don't know if it's necessary to assess so much of the classroom activity all the time, but it's a very sensible thing to do, even if it's only occasionally, as this gives important feedback to the students. (Case B grade 9)
	Teachers welcome questions from students	Students believe that it is important to receive enough information about progress, ask the teacher additional questions when necessary and get clear supportive answers.	S1: And we can certainly go ask any time we don't understand some feedback (Case B grade 9).
	Small-scale assessment	Students believe that when the teacher administers small-scale assessments that are manageable, students get timely feedback and are more motivated at school.	S3: What I would suggest is to assess small-scale work, because it can add a lot. And not too harshly, because the teacher also has to understand the students. (Case A grade 7p)
	Possible negative effects of assessment	Students believe that teachers should never use assessment methods to punish them, as this affects well-being and ability to learn.	S2: During tests you don't have thoughts in your head that you can't do it, of what if. In this case you have only positive thoughts in your head, you don't have much worry. It seems to me that you're then always better at performing and figuring it all out. S3: You don't get punished, for example, for your one mistake with a bad grade. This also affects you. (Case D grade 8)

Supportive communication		Students believe that to feel and do well at school, they need supportive communication from teachers, which includes the teacher being caring, friendly, helpful, encouraging, honest, respectful, understanding and empathetic. The teacher should give students praise, share personal stories and use humour, make students feel equal to the teacher and create a light and stress-free environment in the classroom.	S1: She's so respectful, she's not the type to say that I'm the centre of the world, that you're just students, that you don't mean anything, that I'm just here to teach you. But she just identifies with us and that's how it is nice that it makes you feel so good that someone who is so much bigger than you is still the same as you. (Case A grade 7p)
Engaging learning activities		Students believe that to build a positive teacher-student relationship they want teachers to provide activities that engage them, that learning tasks would be dependent on their needs, that students would be given choice and have an active involvement in the study process.	S1: Her tasks are always very creative and this in turn brings our creative side out as well (case A grade 7p).