ESTONIA

CASE STUDY

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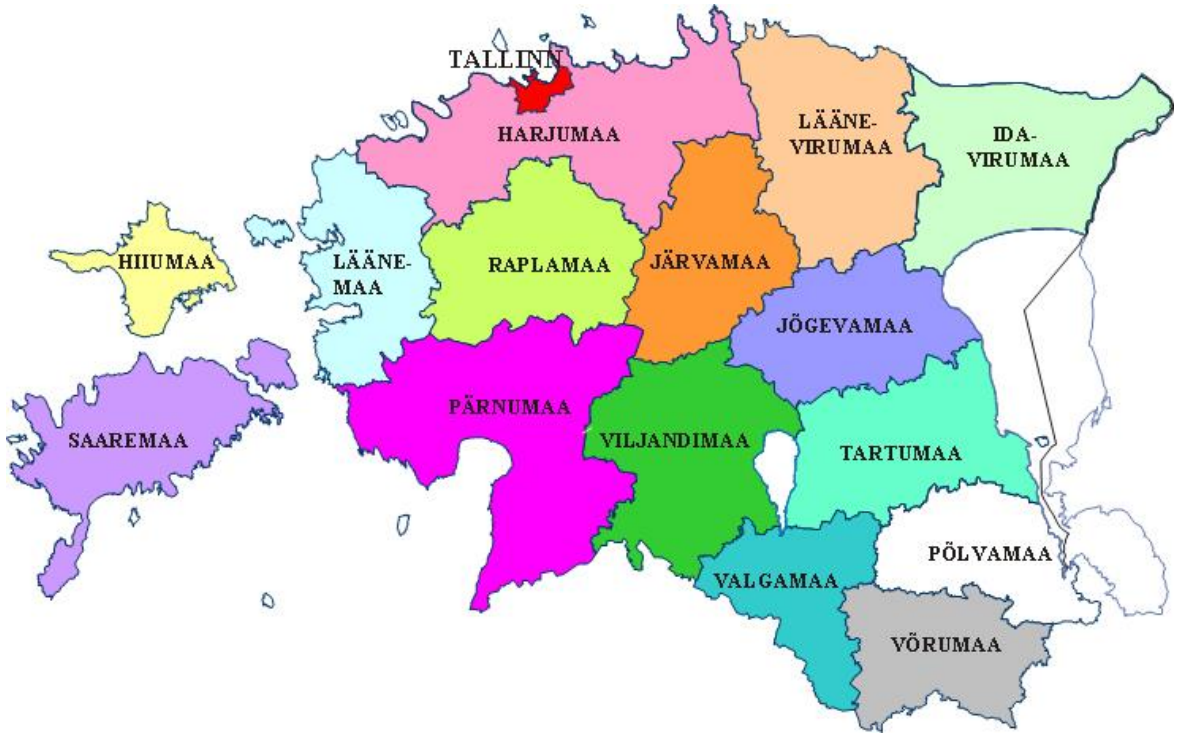
Case study content

1. Introduction and context: what, where and why?

1.1. Understanding the selected region/community/town/village/neighbourhood: key characteristics

Towns from two regions of Estonia were chosen for this study: **Jõgeva,** in Jõgevamaa, which is located in the middle of the country, and **Kiviõli,** in Ida-Virumaa, in the North-Eastern part of Estonia (see Figure 1). Both are small towns of less than 6,000 inhabitants, and are situated in poorer regions of the country. With this background in mind, an exploration will be made into mainstreaming innovation in two selected schools.

Figure 1: The counties of Estonia



The Estonian school system comprises of a non-compulsory kindergarten (ages 1.5-7), the compulsory basic school (years 1-9) and the non-compulsory upper secondary school, called "gymnasium" or "secondary school" (years 10-12)[1]. While gymnasiums primarily prepare students for higher education, vocational schools offer a practical alternative education for students after either basic school or gymnasium. Depending on the programme, vocational education can simultaneously offer secondary education or even be geared towards students without basic education.[2] Practical training at a workplace is also one form of vocational education. The general education is offered in primary schools (years 1-6), basic schools (years 1-9) or gymnasiums (years 10-12). However, the most common type of school in Estonia is a full-cycle gymnasium with years 1-12 where students are aged 7-19.

In the period 2005-2008, **Ida-Virumaa** was one of the most problematic regions in the country for dropouts at years 7-10 (IVEK, 2009, 31)[3]. In 2005, 46% of the national dropouts came from Ida-Virumaa. Although the rate fell in 2008 to 27% it was still higher than the national average. In 2008,

[1] See: https://www.hm.ee/et/tegevused/alus-pohi-ja-keskharidus
[2] See: http://www.innove.ee/et/kutseharidus/kutseharidus-ee
[3] There is a lack of current statistics on school dropouts for each county.

there were 36 students dropping out from the Ida-Virumaa county, from a national total of 131 students. However, the situation has much improved since then. Nationally, the dropout rate from basic schools was 0.5% (ca 150-200 students) in 2014 and 1.1% from gymnasiums. The highest drop-out rate in 2014 was in vocational education with 25.6% (Ministry of Education and Research, 2015, 17). In comparison, the percentage of students who did not continue their education after basic school was in 2015 slightly higher in **Jõgevamaa** (5%) than in **Ida-Virumaa** (3%) (HaridusSilm, 2015).

Jõgeva is a small town with 5,418 habitants[4] and three schools: Jõgeva Basic School (years 1-9), Jõgevamaa Gymnasium (years 10-12) and the Adult Secondary School (years 8-12). Jõgevamaa is not the poorest region of Estonia, but in comparison with the 15 counties, Jõgevamaa county has one of the lowest average salaries in the country: 800-845 Euros gross salary per month in 2015, versus 1,185 euros in Tallinn (Statistics Estonia 2016).

Jõgevamaa county ranks fourth from the lowest based on the relative poverty index (31% of the population), and first based on absolute poverty (12%), with the biggest percentage of people living in deep poverty. Single parents are at the greatest poverty risk, followed by single persons, mainly elderly, and families with many children (Statistics Estonia 2014). The unemployment rate in Jõgevamaa county is not high, (approximately 7%) but the participation rate in employment market is below the national average (Statistics Estonia 2016, p. 17). **Jõgevamaa Gymnasium** is located close to the town centre in a recently renovated school building. It is one of the three upper secondary schools in the county and the only one that specialises in upper secondary education (forms 10-12). The school has students from other parts of the county as well as neighbouring counties. The county of Jõgevamaa is certainly representative of other relatively disadvantaged regions.

While the population of **Jõgeva** have income from various sources such as retailing, service and lumber industry, **Kiviõli** is predominantly a mining town in the North-East of Estonia, also with less than 6,000 habitants. As part of the **Ida-Virumaa county**, it is the most socially deprived area in Estonia. The local population are heavily dependent on the oil shale mining and chemical industry represented by three companies: Kiviõli Keemiatööstus, Viru Keemiagrupp and Eesti Energia. Due to the low oil prices on the global market, these companies have recently laid off hundreds of workers. There is also a high concentration of people with a migrant/minority background, since 62% of the population in the county of **Ida-Virumaa** are not ethnic Estonians. Most of them came in from the 1960s onwards from Russia and other former USSR countries to work in Ida-Virumaa as industrial workers. The unemployment rate of Ida-Virumaa was the highest in the country at 13.3% in 2013-2015 while the average salary was at the same level as in most counties outside of the two largest towns, Tallinn and Tartu, ranging 850-919 euros per month (Statistics Estonia, 2016). Within the town limits of **Kiviõli** is located one of the largest artificial hills composed of the waste of oil shale processing and now being used as an adventure park, winter sports centre and motocross track.

There are two schools in **Kiviõli**: Kiviõli Russian School (years 1-9) and the Estonian speaking **Kiviõli I Secondary School** (years 1-12) which is a 20-minute walk from the city centre.

1.2. Getting to know the schools selected for the field study: a brief profile

1.2.1. School 1

The **Jõgevamaa Gymnasium** was chosen for this study because it is located in a somewhat socially disadvantaged area, and because it was recommended for its innovative practices. According to Mati Heidmets, head of the Educational Innovation Centre at Tallinn University, this school differs "from the

[4] See: http://jogeva.kovtp.ee/uldinfo.

average school in Estonia". A recent study of school cultures conducted by Tallinn University in the spring of 2016 indicated that this school has managed to implement, by several indicators, "the changed learning and teaching paradigm" as described in the Estonian Strategy of Life-long Learning (2014). These indicators include, for example, cooperation between teachers, cooperative learning of students and inclusive school leadership.

Established in 2013, **Jõgevamaa Gymnasium** became **a new state funded upper secondary school.** The establishment of a so-called 'pure' gymnasium for years 10-12 must be seen as a result of the gymnasium reform in Estonia. The reform aimed at creating at least one or more such schools in every county which differ from the predominant school form in Estonia (years 1-12) by offering multiple choices to students and a modern physical learning environment. In Jõgeva, before 2013, with a decreasing number of students at the upper secondary level there were two rivalling schools offering classes in years 1-12. Consequently, these schools could not afford many choices for students. The migration of students to bigger cities such as Tartu constituted another problem. Since the reorganisation of the school network in Jõgeva, there is one basic school (years 1-9) and one gymnasium (years 10-12). Many teachers from the former rivalling establishments have now been recruited by the new gymnasium.

In opposition to most schools in Estonia which are co-funded by municipalities, the Jõgevamaa Gymnasium is directly funded by the state. At the moment, this school has 207 students, 29 teachers and 8 other staff members. Based on the national graduation exams, the school usually ranks around the 30th out of 189 schools in the country, which is a great achievement since the school cannot choose its students from a large list of candidates as some very popular schools in Tallinn and Tartu are able to. In Estonia, over 70% of basic school graduates continue their education in a gymnasium. Usually, there is some selection process based on achievement in the basic school, entrance exams and/ or interviews. Jõgevamaa Gymnasium uses interviews instead of entrance exams, since they value more the general motivation and competences of students which are better to assess with an interview. The overall image of the school is good, according to the head teacher: "surveys that show the opinion of students and teachers show that the image is good." Another indicator of the enhanced school image is that students come to this school from other counties besides Jõgevamaa.

In line with the school's development programme, the purpose of the school is to a) implement, in the best way, the educational goals set by the state and b) to be the best school in Estonia[5]. According to the head teacher, this means that "if the students think that this is the best learning environment for them, the teachers think that this is the best environment where they can work, and the parents think that this is the best environment to which they can trust their children, then we can say that we have made the best choice for us." As stated by the head teacher, the school now has one of the best **instruction systems** in Estonia which has been copied by many schools. The instruction system is characterised by 75-minute long lessons, the year divided in trimesters and numerous elective subjects. As reported by the instructional leader (assistant head teacher), they already are the best school in Estonia.

1.2.2. School 2

The **Kiviõli I Secondary School** was chosen because it is located in one of the most socioeconomically disadvantaged areas in Estonia, and because the school also has many students with a migrant/minority background. Despite its difficult socioeconomic background, the school is famous for its emphasis on developing entrepreneurship. The school was recommended by a representative of the Ministry of Education and Research as a school "which always has something interesting to say" and "is worth

[5] See: http://jogevagymn.kovtp.ee/arengukava.

visiting". The representative of the Estonian Teacher Association also mentioned this school as a positive example of an entrepreneurial school.

The history of the Kiviõli I Secondary School goes back to 1932 when an Estonian elementary education class was opened in a Russian elementary school. After the WWII, the school grew into a primary and secondary school, and the Estonian school was separated from the Russian school. Since 1950 the school has been called **Kiviõli I Secondary School** (*Kiviõli I Keskkool*)[6]. It is a public municipal school with years 1-12. The 340 students are ages 7 to 19. Although the main instruction language is Estonian, the school has some language immersion classes for students with a Russian background. In the upper secondary school, there are classes where Russian students study 60% of the subjects in Estonian and 40% in Russian. The faculty consists of 32 teachers and 3 members of school leadership along with 27 other staff members. The school even has a swimming pool.

The overall performance of the school, measured by graduation exams, is average: the school ranks 100th among 187 schools according to unofficial results from 2015 (Delfi, 2016). However, according to the head teacher, obtaining a high position in ranking lists is not the priority of the school: "Our goal is not to prepare the students to be the best test takers, yet at the same time emphasising other things does not interfere with achieving normal results." **Kiviõli I Secondary School** emphasises **student-centred learning, real life connections and the entrepreneurial values** which involve developing courage and initiative in students to better cope with the changing environment. Since 2010, entrepreneurship is one of the cross-curricular themes in the Estonian National Curriculum (Government of Estonia, 2010a). Since 2006, the Kiviõli I Secondary School has been a member of the network of entrepreneurial schools and has launched many projects which include integration of subjects, active participation of students, parents, local municipality and youth centre. The school has appointed a special entrepreneurship coordinator who is responsible for coordinating school-wide projects apart from her subject teaching responsibilities. The school leadership and coordinators plan the activities together and distribute tasks between teachers and classes while helping with the implementation. The development of entrepreneurship takes place in the form of active learning methods and extracurricular activities[7].

2. Two perspectives on the school innovation process: what supports and what limits innovation?

2.1. School 1: Jõgevamaa Gymnasium

2.1.1. Innovations in school 1: presenting practised innovative approaches Jõgevamaa Gymnasium is distinguishable by its **innovative system of instruction**. According to the instructional leader, the school was the first in Estonia to apply a 3 x 11-week **trimester system** consisting of 10 weeks regular instruction while the 11th week is reserved for examinations. One trimester contains approximately 9-10 courses. Not all courses end with an examination, primarily the ones that have centralised exams at the end of the gymnasium. The idea is that students get used to taking examinations before the high-stakes test in the year 12. In the beginning of each trimester the schedule changes and new courses are offered.

In international comparison, Estonian schools have, according to most indicators, a very high level of autonomy (OECD, 2014, p.49). These indicators include staff and salary policies, budget allocation, student admission, discipline and assessment policies as well as choosing learning materials,

[6] See: http://www.k1k.ee/ajalugu.
[7] See: http://www.k1k.ee/ettev%C3%B5tlik-kool.

determining course content and deciding which courses are offered. Although a national curriculum exists, all schools are additionally required to develop their own school curricula.

Jõgevamaa Gymnasium offers a remarkable variety of **elective subjects**. Students choose between five general study directions: 1) sciences, with an emphasis on programming, robotics and technical drawing; 2) humanities, with an emphasis on literature and arts; 3) social studies, with an emphasis on economics, entrepreneurship, law and national defence; 4) foreign languages, including Spanish, Finnish and Chinese; and 5) natural sciences, which emphasise practical biology and chemistry.

However, students may also combine electives from several directions. Some of the elective courses are offered by universities as online courses, or by teachers as regular courses. Others are of more practical nature and are offered by local institutions or community members such as kindergarten pedagogy or yoga. Kindergarten pedagogy was an elective offered in cooperation with a local kindergarten. The course involved theoretical introduction in kindergarten pedagogy and practical activities with children planned and conducted by students. According to the focus group interview at this school, one of the most popular elective courses is the 'national defence course' during which students practice, among other things, survival in the wilderness. Additionally, once each year, the week of elective courses allows students to pass an entire course in one week. In the school year 2016-2017, there are 68 elective courses on the list. However, only those are offered which are chosen by enough students. "We have created something that resembles a market situation where everybody has come with an elective course offer to the market and students can choose," said the instructional leader. "If you can sell your course in an attractive way then you are a hotshot!"

The lessons are 75 minutes long so that students can concentrate on longer units and have time to practice what they have learned already in school instead of doing it as homework.[8] With 75-minute lessons both students and teachers have less daily preparation which eases their workload. While the traditional schedule usually contains 7-8 different lessons a day, each 45-minutes long, the block schedule of 75-minute lessons reduces the number of subjects to 5 lessons per day. So, instead of doing homework in 8 different subjects every day, students can focus on fewer subjects. The head teacher emphasised the need of easing the workload of students: "We try to keep it this way so that students could learn as much as possible in school and they don't have to study so much at home while having time for hobbies, and for resting. In addition, we give them credit for extracurricular activities as part of our instructional system so that those who are active outside of school don't get punished. Life has shown that students often find their future vocation through their hobbies." According to the instructional leader, the school has collected feedback from students for three years. One of the questions was whether students liked the 75-minute lessons and "almost 100% of the students, 98 or 99% confirmed that they did."

The school also offers some integrated courses. For instance, in order to take an integrated school exam in the field of culture or nature, students are required to take an integrated course in these fields which is co-designed and taught by several subject teachers. To make time for teachers to collaborate, develop the school and be engaged in professional learning, the school organises, 3-4 times a year, individual studying days where students stay at home to study and teachers meet at school.

[8] The length of the school day in Estonian schools varies, depending on the length of breaks. In Jõgevamaa Gymnasium, there are five 75-minute lessons with 10-minute breaks and one 40-minute lunch break. The lessons start at 8.30am and are over at 3.55pm. Other gymnasiums usually start the school day at 8.00am and have up to eight 45-minute lessons per day, finishing approximately at 3.45 pm.

The instructional system was mainly developed by the school's instructional leader (assistant principal) in the spring of 2013, having developed his ideas regarding the improvement of the instruction system in gymnasiums during his earlier career. As a new school founded in 2013, Jõgevamaa Gymnasium gave the school leadership a unique chance to innovate. According to the instructional leader, "the ambition to create something new was my motivation to take this job. If the school is very traditional or old, then it has developed certain habits and traditions already but when you start a new school you have the chance to develop completely new phenomena and processes". The instructional leader was supported by the school's first head teacher who left for another position in summer 2016.

The rationale behind developing the trimester system was to create a more stable learning environment. Most gymnasiums in Estonia have a modularised course system with five periods, each consisting of 35 lessons with the duration of 45 minutes. Every period is assessed with a summative mark. "The problem with the five-period system is that life is in constant change, there is change all the time. The (instructional) schedule is 6 weeks long, examinations take place in the seventh week and then there is a new schedule. This way you have 10 different schedules per year," he explained. Another reason for trimesters was that the 75-minute lessons best fit a trimester schedule. The instructional leader considered different alternatives before deciding for the length of 75-minutes per lesson concluding that the optimal length would be between 60 and 75 minutes while double lessons (90 min), which are practiced in many schools in Estonia, would be too long.

The variety of elective courses in the gymnasium can be explained by the need to help students discover their interests and future vocation. According to the head teacher, "the purpose of gymnasium education is (…) that students could try out lots of different possibilities so that everyone can recognise what it is they want to do in the future or the other way around, what it is they absolutely do not want to do."

In 2013 the new system was introduced to the teachers in small groups in May, and in June it was discussed with all teachers. This proved to be a sensible decision according to the instructional leader: "If you have a new school, don't organise the first big meeting where teachers come together for the first time, instead discuss the ideas and innovations first in smaller groups to avoid unexpected resistance to change." Nevertheless, the teachers did not understand everything to start with: "It seems that by autumn they finally understood though it came through experience." Regarding the integrated courses, the school leadership had to apply some pressure to motivate the teachers to cooperate.

For instance, the integrated culture course and school exam was designed and implemented by music, art, history and literature teachers. An equivalent course and school exam was developed by science teachers. Despite the existence of some integrated courses, they have not been mainstreamed by all teachers in school, although teachers' own initiative in this regard is appreciated and supported. The mainstreamed innovations include the schedule (the length of lessons and periods), the individual study days and the emphasis on developing a large variety of elective courses. All of these innovations were implemented within the first year of the new school. The steps leading to the adoption of these practices can be characterised as a phase of communication of the goals by the school leadership to the teachers and the learning and adjustment period of teachers. After first three years of implementing the new system, teachers must again "start filling some gaps in the content, for instance, we had some problems with assessment (focus group interview)." This could possibly mean that the school is, at the moment, going through the second turn of the innovation cycle where practices are evaluated and modified if necessary.

The development and implementation of the new instructional system did not require any additional resources. According to the instructional leader, Estonian schools can do anything new they want with

the current funding. “The question is only whether they *want* to do these things, because it is very convenient for them to keep doing what they are used to do.”

2.1.2. Innovations in school 1: what were/are the main supporting factors?

According to the instructional leader of **Jõgevamaa Gymnasium**, the main supportive factor was the newly recruited teaching staff who was motivated to implement innovations: “If there is a new school then people who apply for the job write a motivation letter where they reflect on why they want to work in this school. We did not take just anyone but took the best, because it is very important to have the right staff who would be ready for change.” All schools in Estonia have the freedom to select and hire their own staff.

The legislation and regulations of the state did not hinder their innovations nor interfered with creating the content for the new school, according to the instructional leader. “The main virtue of the state has been the fact that it did not stick its nose where it does not belong.” This indicates that Estonian schools are quite autonomous to develop pedagogical, content-related or organisational innovations because the State Curriculum (Government of Estonia, 2010b) and the Law of Basic Schools and Gymnasiums (Estonian Parliament, 2010) allow schools to develop their own curriculum based on national guidelines. One facilitator for the Jõgevamaa Gymnasium was that the ministry did not require a fully developed curriculum from a new state gymnasium in order to get a schooling licence as is usually the requirement for new schools. According to the instructional leader, “This is complete nonsense! (…) Before the school starts operating it is already supposed to hand in a complete curriculum. Where does it emerge from? (…) Because a curriculum is an agreement between people who start developing the school, most importantly the pedagogical staff.” However, the instructional leader pointed out that if the state would prescribe and regulate less, Jõgevamaa Gymnasium would be an even better school: “(…) the state should prescribe as little as possible but what is prescribed should also be monitored as to its implementation. Unfortunately, there is a practice of wanting to prescribe many things in a very detailed way while the bigger things are not checked. (…) These sentences in the law are being controlled that include numbers because they can be controlled, but the sentences without numbers which are much more important (e.g. the development of general competencies in the curriculum) are not monitored.” Nevertheless, the chance to create a new school with innovative practices was given due to the gymnasium reform which was initiated by the state in order to avoid internal student migration from rural areas and small towns to bigger towns (Kirss, 2015). “It was a political decision and part of the school reform,” explained a school board member who experienced the process from inside as a member of the town council (focus group interview).

The state provided a newly furnished and completely renovated school building for the Jõgevamaa Gymnasium and, by separating the gymnasium from the basic school, it ended the fruitless rivalry between the two full cycle (years 1-12) schools in the town. From the focus group interview one member of the school board explained the situation before the new school was established: “There was a competition and rivalry between the two schools, which was not always pretty” or could even get “quite ugly” at times, according to a teacher. Nevertheless, the people were accustomed to these schools and in the beginning, there was a strong opposition, as another teacher put it, “to destroying two well-functioning schools.” According to her, initially, the community expressed their fear of what would happen if teachers from two schools “who had never gotten along with each other” were joined in the new school. By now, reportedly, they have grown together in “one collective.”

One teacher from the focus group attributed the innovations mainly to the school leadership “who had the courage and the will to fight against old routines and to implement innovations which were even on

the ministry level considered as pushing the boundaries". According to this teacher, "After explaining their intentions to the ministry they could implement things that other schools did not have yet."

2.1.3. Innovations in school 1: what were/are main barriers encountered?

The main difficulty for the implementation of the new instruction system, according to the instructional leader, was persuading the teachers who were reluctant to change their practices. He considered persuasion a natural part of the tasks that needed to be performed by the school leadership. There was some scepticism among the community regarding the school reform and some opposition to change, particularly among those teachers from the former schools who were not hired by the new school. They disparaged the new school in the town but over time "the counter-propaganda" died because students, teachers and parents were generally spreading positive messages. The most important task was communicating with stakeholders in order to avoid problems and barriers to innovations as explained by the instructional leader, "because if you don't, people will start filling in the gaps with their own opinions and gossip which usually is not true." However, the teachers and a parent in the focus group represented the opinion that it is not possible to start something new if you are afraid of barriers and it is not possible to foresee and avoid all barriers. People learn from their mistakes.

2.1.4. Mainstreaming and transferring innovations in school 1

The instructional leader had developed most of the ideas while working in other schools. The idea of 75-minute lessons was not unique as other schools had experimented with different lengths of lessons. For example, Hugo Treffner Gymnasium in Tartu, where he had been working as a development director for two years already had this system. However, he came up with the idea to combine 75-minute lessons with trimesters to create a week of elective courses and the independent study days based on his former experiences and readings. His idea was not to duplicate something that other schools had done, rather create something new. In some form or other this instruction system quickly spread to most state-funded gymnasiums, notable examples: Tartu Tamme, Võru, Valga and Nõo Gymnasiums. Moreover, one municipal school from the same county as Jõgevamaa Gymnasium has taken on the trimester system. Yet the cooperation with municipal gymnasiums is impeded by the fact that many municipal schools are afraid that they cannot sustain an upper secondary school in the future due to the decreasing numbers of students, seeing the state-funded gymnasiums as competitors.

According to the instructional leader, "the project of state gymnasiums is doing the administrative reform in the education sector. It would have been logical to do the administrative reform first and then every bigger and stronger municipality can create its own bigger gymnasium...but they did it backwards: first the state gymnasiums. (…) This is a competition situation." The administrative reform which aims at reducing the number of local administrations and empowering the remaining ones for better service of local communities has been attempted by many Estonian governments since the 1990s. Until recently, most reform attempts have failed due to the strong opposition of local communities who fear a loss of jobs along with an increasing marginalisation as services accumulate in larger centres. Arguably, one way of quickening the reform has been the closure of smaller, unsustainable gymnasiums and concentration of educational services on upper secondary level in county centres. While the reform is still ongoing, it has provoked mixed reactions from school communities, although the mismatch between the rapidly decreasing number of school-aged children and the disproportionately large school network cannot be ignored (Kirss, 2015). It is not yet clear whether the state intends to take the entire upper secondary education under its control or will it continue to offer competition to municipal schools. However, the state gymnasiums which have been opened so far have certainly been given support for implementing innovations (expert interview with a representative of the ministry) and

therefore, the gymnasium reform can be considered as an entire Estonian school system-wide factor for promoting school innovation. Other state gymnasiums got ideas from Jõgevamaa Gymnasium because the state gymnasiums have a tight cooperation network and their leaders meet regularly. They are not competing institutions because there is generally only one of them in each county. According to the instructional leader, "Every year more state gymnasiums are created, and all of them have been success stories so far. But since we were one of the first, others have copied us."

According to the instructional leader, it is possible to copy the instructional system, but the concrete application in other schools cannot be identical. What works in one school may not work in another although the main aspects of the system, trimesters and 75-minute lessons, would probably work in every school. However, the way it is done in Jõgevamaa Gymnasium with its system of elective courses is harder to duplicate.

2.1.5 Innovations in school 1: what were/are main achievements (effects)?

According to the instructional leader, the effects of the instructional system are hard to measure. Cause-effect relationships are particularly difficult to determine because other factors may have been overlooked. Nevertheless, the school witnessed within the first year of operating a considerable increase of the school ranking based on state graduation exams. The two predecessors of **Jõgevamaa Gymnasium** had ranked somewhere between 120th and 140th place while the new school suddenly reached place 30. In spring 2016, Tallinn University organised a study among 38 schools in Estonia which showed that the students of Jõgevamaa Gymnasium experienced the least problems with overload of homework. This could be contributed to the 75-minute lessons and the school's principle of getting as much work done during school hours as possible so that students do not have an excessive amount of homework. Another study conducted by the foundation Innove[9] showed that the overall satisfaction level of students with their school and teachers is well above national average.

A teacher from the focus group said that this instruction system where students have to plan their schedules and choose their own curriculum has made them more active and responsible. A parent confirmed that her child and her classmates are now showing more courage to express their opinion and take responsibility. "They dare to take risks which they would have never taken before. For example, although the child has chosen the humanities as a curricular emphasis (…) instead of sciences which she is afraid of, she still chooses an elective from the direction of sciences. This is an example of a subject that the child is not good at but he/she is willing to take a risk, to try and pass it and actually she is quite happy afterwards." Another example showed how a usually shy girl suddenly offered to organise a Halloween party as part of her practical project and surprised all of her teachers.

2.1.6. Innovations in school 1: their sustainability

The innovative instructional system is sustainable because students and teachers are now used to it and approve it. Additionally, the system has been adopted by other state-funded gymnasiums as well. However, the instructional leader was not sure if the school would continue with exactly the same system if a new leader replaced him fearing every leader tends to implement systems in a slightly different way. The focus group was more optimistic about the sustainability. One teacher said that the sustainability is guaranteed by flexible responses of the school to the expectations of the society. "The expectations of society and students to education are in constant change and we are able to respond to these changing expectations by offering different courses." Another teacher emphasised that the system

[9] an educational research and development centre which is funded both by the government and the private sector

is very flexible, which enables to implement innovations as the need arises "so we can keep up with the times."

2.1.7. Innovations in school 1: monitoring, evaluation, learning loops and planning of innovative approaches

Jõgevamaa Gymnasium uses various monitoring tools while regularly collecting feedback from students, parents and teachers. For instance, every year it conducts satisfaction surveys among students, teachers and parents. After an event such as the independent learning day, students were asked to evaluate the assignments, the time spent and the effect of such learning compared to regular guided learning at school. The school has recently participated in some externally administered satisfaction and well-being studies such as the study of Tallinn University and the study of the foundation Innove in 2016. So far the evaluation results have been remarkably positive in the Estonian context[10]. Every Wednesday, the teachers and the school leadership gather to discuss current events, schedules and problems. Additionally, the independent learning days for students are used for teacher professional development and school improvement. For example, the staff has recently brainstormed about ways to improve the student appreciation system. Student holidays are also used for in-service training for teachers, according to a teacher from the focus group, and many teachers participate in online courses offered by universities.

2.1.8. Stakeholders' engagement into innovations in school 1

The instruction system was mainly developed before students arrived at the school in September 2013. However, students play a major role in deciding which elective courses are opened and they can make suggestions regarding new courses. According to a student in the focus group, at the end of each year, students are asked for feedback about the elective courses and to make suggestions for the coming year. The school tries to find instructors from outside of the school if necessary, in case students are interested in particular courses.

The school cooperates with local non-profit organisations. In the previous year (2016), the students had the chance to do an internship in different third sector organisations. The school has cooperated with a kindergarten that offered a course in kindergarten pedagogy where students could do practical activities with children. The course turned out to be very popular with 31 students choosing it. This year the school is offering a chance for students to do an internship in a school for handicapped students. Among people and organisations that offer elective courses are parents and universities. Since other state-funded gymnasiums have taken over many aspects of the instructional system in Jõgeva the schools can organise a student exchange during the week of electives, added one teacher from the focus group.

According to the instructional leader, the key people in promoting innovations are schools that have actually implemented innovations, and within schools, namely teachers. "If teachers are enjoying their work and doing bright-eyed interesting things, it tends to spread to others." The school leader's role in this case is to minimise obstacles for teachers' good work and motivate them. In addition, the ministry

[10] The study conducted by Tallinn University (2016) compared many aspects of school culture, the changing teaching and learning paradigm and the perceived workload of teachers and students. According to this study, Jõgevamaa Gymnasium was one of the leading schools in most aspects, having a good school climate and the least amount of perceived overload of work among students. The foundation Innove conducted in 2016 a school satisfaction survey among the students of Year 11 in Estonia regarding the satisfaction with school, teachers and relationships. According to this survey the students of Jõgevamaa Gymnasium gave higher than average marks to satisfaction with school, teachers and general satisfaction (Innove, 2016).

of education and universities have a role to play: "The support of the state is certainly important, the people who want to implement reforms and school innovations on the state level could be the key people, and also universities through the people who do research in the field."

2.2. School 2: Kiviõli I Secondary School

2.2.1. Innovations in school 2: presenting practiced innovative approaches

Kiviõli I Secondary School is known for promoting **entrepreneurial values** such as student initiative and responsibility through integrated curriculum and real life perspective. The head teacher said that the goal was to be "more learner friendly, learner centred and connected to real life" and in the future the aim is to engage the community and partners more effectively in the school work. The school has been a member of the network of entrepreneurial schools in Ida-Virumaa county since 2006, which has supported some of their projects. Currently, the school is offering a number of **integrated courses** such as a course that combines history, art history, literature and practical Estonian language for the year 10 , and is co-designed and co-taught by three different subject teachers, as explained by the head teacher and the entrepreneurship coordinator. For example, the school offered an integrated geography and mother tongue class for year 7 students, which was part of a sequence of lessons titled "The Graffiti Hunt". It was organised in the cooperation of two teachers. In the first lesson the students photographed, videoed and mapped the graffiti in the town and in the second lesson they were drawing maps of the exact location of the graffiti while using a geographical map legend. All the work was done in small groups. In the next lessons, an orientation game was planned in the town and the sequence was supposed to end with the presentation of each groups' work in the form of a photo or video session during which students also had to analyse experiences of their group work.

In another lesson, which integrated social studies with geography, year 9 students were preparing for a guest lecture about the Estonian dairy industry by finding relevant information on the Internet. Students were organised into groups and had the freedom to work anywhere within the school that they preferred, for instance in the library, in the classroom and in the computer class. Two teachers were walking from one group to another offering guidance where necessary. In the second half of the lesson the groups presented their information on posters.

According to the head teacher, the school's next big goal is to become a **community school** that involves the community more actively in school's events and practices. The first steps towards this goal have been taken. In the spring the school organised a day of cafés in the town's apple garden where all community members, citizens and town's institutions could visit. Since the event was very popular the school plans to continue this tradition outside of school in a way that integrates the preparation process more with the learning outcomes of the curriculum.

According to the head teacher, the trigger for change for the Kiviõli I Secondary School was the educational programme "entrepreneurial school", coordinated by the Entrepreneurship Centre of Ida-Virumaa county. It "helped to phrase what we wanted to do and gave a direction how to systematically organise it." In 2006, the head teacher had the chance to visit an entrepreneurial school in Scotland which gave her some new ideas. The initiators of applying the principles of entrepreneurial schools were the school leadership and a group of interested teachers. According to the instructional leader, the first teachers involved were the primary school teachers because they spend a lot of time with their class. The head teacher explained, what started as a mainly project-based activity involving only interested teachers has developed, step-by step, and reached new people. A problem that the entrepreneurial school is trying to solve was first phrased by employers about ten years ago. According

to them, schools were preparing people who were good at obeying orders but reluctant to think for themselves, lacking social skills and courage to use their own creativity. The head teacher opined that schools were "preparing excellent quiz players who could not manage their own lives."

The school was able to get some financial support from the Entrepreneurship Centre of Ida-Virumaa to buy equipment for their projects such as a photo camera and a colour printer. In addition, the local municipality helped to pay the participation fee in the network of entrepreneurial schools. The membership has enabled the teachers to visit other entrepreneurial schools in Finland, Sweden and Latvia in order to get acquainted with the system elsewhere, according to the head teacher. Another important source of support has been the programme "Noored kooli" [Young people to school], a third sector initiative which promotes a modern learner-centred paradigm to teaching, encouraging and preparing university graduates from different fields to teach in public schools. Over the years, the school has had many young, enthusiastic teachers from this programme contributing to active learning methods with integration of subjects. Here, an integrated curriculum is where the main organising principle for content is the interdisciplinary theme or project instead of the traditional school subject.

The mainstreaming within the school, according to the instructional leader, has not been easy taking about ten years to adopt the new student-centred entrepreneurial practices. "I guess we wanted to achieve it too fast so that everybody would join but as it happens leading people is not a quick process that leads to a quick result." It started step-by step: at first, teachers were required to plan one or two school wide major entrepreneurial events or experiences per year, later redefining the events to a smaller scale, making them an almost daily practice. Even now the head teacher could not say that everybody in school is 100% supporting and practicing its principles but at least there is no opposition any more.

2.2.2. Innovations in school 2: what were/are main supporting factors?

The main facilitators of the process to become an entrepreneurial school were, according to the headmaster, pressure from outside to change and the wish and will of people to do something differently. The entrepreneurship coordinator agreed: "I think the most important factor are the people who are interested. If they are interested, they will find the will and the time." Another important factor was support (both know-how and material support) with encouragement from the Entrepreneurship Centre of Ida-Virumaa county. The latter is a foundation that initiated the education programme "Entrepreneurial school" and is also supporting other schools in the area. The legal framework did not impede the innovation, however it is not noticed much unless it becomes an obstacle. For instance, for the next innovation that the school is planning (starting a school business) it needs legal advice. According to the instructional leader, a big step forward happened in mainstreaming the innovation when the young teachers from the programme "Noored kooli" ("Young people to school") arrived, bringing new blood and fresh ideas. The entrepreneurship coordinator said that their school stands out by the lower average age of teachers in a national comparison: "I think there needs to be a critical mass of younger teachers who tend to join innovations more easily…. The challenge is to come out of your comfort zone."

2.2.3. Innovations in school 2: what were/are main barriers encountered?

According to the head teacher, the main barrier that the school encountered was fear of the unknown by teachers along with the worry that they would not cover all the topics prescribed in the curriculum if they dedicated too much time to project-based, entrepreneurial learning. The instructional leader had to explain to the teachers, "You can cover the curriculum through integrated learning. You don't have to

cover the programme for the sake of the programme but it's the life skills that matter and the connections that students can create between bits of knowledge when they leave school."

Another problem was the lack of skills and know-how. Initially, the head teacher thought that lack of money was a problem, but now she has realised that very few innovations fail due to lack of money. The main obstacle is usually mindset. The head teacher said that it is possible to foresee some of the problems. In hindsight, she thinks that she could have dedicated more effort to managing fears and equipping the teachers with the necessary tools, though lack of tools forced the teachers to be creative. "You just have to talk to the people and manage their fears," said the instructional leader. It would have been easier to introduce innovations in the context of a new school that can choose its team rather than changing something "if you have to work with the people you have," said the head teacher. One problem in the beginning was that, according to the instructional leader, "We understood ourselves what entrepreneurship was but we could not define it and sell it to the others."

2.2.4. Mainstreaming and transferring innovations in school 2

The instructional leader (deputy head teacher) remembers the beginning of the entrepreneurial school programme as follows: "In 2006, our head teacher was invited by the Entrepreneurship Centre of Ida-Virumaa county to join an educational trip to Scotland to visit an entrepreneurial school. She saw how it worked and told us about it. (…) The head teacher asked who would be interested in dealing with it. I took a day to think it over and went to her next day saying that I was interested but I did not know what to do." Soon, it became possible for the instructional leader, who was at the time a primary school teacher, to visit an entrepreneurial school in Scotland, where she got an idea of what entrepreneurship actually was. This first impulse came through the Entrepreneurship Centre from a school in Scotland.

It quickly became evident that everybody had a different idea of what entrepreneurship was and it was clear that teachers needed some training. The training was provided by the Entrepreneurship Centre which some of the teachers attended and passed on their knowledge to the colleagues. Initially, the problem was that, according to the instructional leader, teachers operated independently without much cooperation since they felt that they were competing with each other.

The entrepreneurship coordinator stated that the network of entrepreneurial schools which started as the initiative of the Entrepreneurship Centre in Ida-Virumaa county has spread over the entire country in the past few years.

Now the school has gained a reputation for being a successful implementer of the integrated curriculum, active learning methods and real-life perspective on learning so that they often receive guests from other schools who want to observe their practices. According to the head teacher, 14 delegations from different schools and counties visited them in the last year. This year, a delegation of instructional leaders from Harjumaa county plans a visit to observe the school's practice of integrating subjects. According to the instructional leader, the school has also given workshops for other schools about integrated curriculum in cooperation with Tallinn University, the network of "Interesting school" and during the Education festival.

The mainstreaming to other schools has taken place through the network of entrepreneurial schools along with personal contacts. Although the network of head teachers shares some practices, the mainstreaming from school to school through networking is impeded by the competition between schools. The head teacher thinks that there is still a lot of room for improvement in sharing practices. Another system level factor for mainstreaming innovations to other schools has been the initiative "Interesting school" which was created by the ministry and some enthusiasts of school innovation.

Additionally, the network of language immersion schools to which Kiviõli school belongs and the financial support of the municipality have been helpful.

Concerning the transferability of the practices of the entrepreneurial schools, the head teacher said that all of them are possible to implement elsewhere. It only depends on what we value.

2.2.5. Innovations in school 2: what were/are main achievements (effects)?

According to the head teacher, the most visible change during the last five years is there have been no basic school drop-outs. The head teacher has noticed that students show more enthusiasm, joy of learning and demonstrate a greater desire to participate in decision-making in school. For example, the students suggested that none of the elective courses in upper secondary schools should be numerically graded. Based on the feedback from the graduates, the head teacher said that their students show more initiative, courage and better cooperation skills than some of their university mates. The indirect effects include a tighter cooperation between the institutions and businesses in the area and the school. The head teacher said the local centre for adventure tourism and a local museum have approached the school with the request to help design educational programmes that would interest students. The change in student's behaviour was certainly intended as part of achieving the general competences listed in the state curriculum. Furthermore, the school aims at a tighter cooperation between the community and the school even though there is still room for improvement in engaging the community included the head teacher

The instructional leader had already noticed positive changes in the students' attitudes after the first year of being in the programme of entrepreneurial schools, developing a tighter cooperation with parents and implementing more real life perspective on learning. She described two projects that she did with her students: one about the professions of the parents, another involved opening a bookshop at the school. During the latter students from the Year Four wrote to a bookshop in Rakvere and asked if they could come to see how a "real bookshop" operates. After taking a trip to the bookshop they tried to copy its operation in school, they developed and designed their own currency, divided the roles and played running a bookshop in school.

The instructional leader explained, "When at first I had to plan and prescribe myself class evenings and field trips (…) then in spring I understood that a change had taken place. I noticed it by small changes, when one child decided that he wanted to write a book. It had a gazillion spelling mistakes but it was the first time in my practice that a Year Three pupil wanted to write a book. He authored about five short, exciting, child-like fantasy stories which he bound in a book himself. Additionally, children started offering ideas for extracurricular class evenings." Another time students took the initiative when a printing problem caused a delay in the mathematics competition and the guests and students were left alone in the great hall. When teachers returned with the printed diplomas some 10 minutes later they were surprised to see that students had solved the problem of waiting on their own with organising a game for the guests.

When they are compared to students from other schools students from Kiviõli I Secondary School are more open to expression while having more initiative. The differences are particularly noticeable in Russian students who come to the gymnasium from a Russian basic school. It takes them a couple of years to fit in the new culture. "This is a problem," said the instructional leader. The Russian parents noticed the difference from the old school where their children were always given exact instructions on what to do and when to do it. Here, they had to take responsibility themselves, including time management.

2.2.6. Innovations in school 2: their sustainability

All interviewees said that the changes in the teaching and learning paradigm that are represented by the entrepreneurial school are sustainable. They have become a normal part of the teachers' and students' everyday experience. "I could not even imagine life differently anymore," said the instructional leader. Apparently, these things are not yet mainstreamed in all schools. Last year, a school delegation that visited Kiviõli I Secondary School was very impressed by their open-door policy and the way the students were open, were used to working in groups and analysing their work. "It was a surprise for me. I could not understand what they found so special because it is so normal to me, this is how things should be," explained the instructional leader. The head teacher noted that for some people these innovations really have become a normal part of life, but there are others for whom it is "still so-so, that they would do it but rather as a game for a change, usually they would take a more traditional path." The entrepreneurship coordinator related that it is not possible to turn back the clock once the students have gotten a taste of the new practices. The students often start putting pressure on more conservative teachers, "Why are we not doing what class X is doing?" The teachers who are used to working with active learning methods think that working with a textbook and a PowerPoint presentation is not exciting enough, so going back to "sitting in straight rows and being silent would be unthinkable."

2.2.7. Innovations in school 2: monitoring, evaluation, learning loops and planning of innovative approaches

The head teacher stated that the school conducts a self-evaluation every three years that is based on the entrepreneurship standard developed by the network of entrepreneurial schools. There are three levels of the standard: basic, silver and gold. At the moment, the school has reached the silver standard and is striving for the gold standard in the next evaluation. The school also collects feedback from parents, students and teachers. However, so far they have not been very satisfied with the quantitative data. Therefore, in the future, the head teacher plans to collect more qualitative data that include questions such as "describe" or "bring examples" to better understand the expectations and needs of the parents and students.

The school has been piloting the 360° feedback system to teachers that includes peer-review. The school applies the open-door policy which means that if a teacher has left the classroom door open, anyone can come and visit. In August, before the school starts, teachers and the school leadership gather to set goals for the coming year and to analyse the developments of the last year. To boost learning, professional development and formulate new ideas, teachers have the chance to shadow a colleague in another school. "Of course, this is a chance for the teacher not to be encapsulated in one environment only, especially after having worked for some years but to keep an open eye to what is happening elsewhere even if it means that it is something that I would never do," said the head teacher. For example, the entrepreneurship coordinator has recently written a project and received some funding for some teachers' professional shadowing trip to Greece and the Canary Islands while the instructional leader recently visited a school in Luxembourg. Most shadowing trips take place in Estonia and last for a day although teachers are not limited just being a shadow of another teacher.

The head teacher explained that new ideas "trickle down" from one person to another. If somebody sees or hears something, they discuss it with the colleagues and sometimes it will be put into action. However, it is a more spontaneous activity because life has shown that long plans are almost always subject to change.

2.2.8. Stakeholders' engagement into innovations in school 2

The head teacher and instructional leader ensured that the school has actively tried to involve parents in different projects (e.g. the café projects and the film festival) and invite guests to events such as "The night of scientists" in October, where 24 different guests appeared as teachers before students. Among them were famous artists and fashion designers. The programme "Back to school" has been a useful resource in bringing people with various professions and experiences to school for as guest teachers. During the last parent meeting, a small initiative group was formed among parents who wish to contribute more actively to school development. At the moment, the school is cooperating with Tallinn University in developing the school's community work. Further, the school has cooperated with a vocational education centre in Ida-Virumaa county where students had the chance to participate in a practical cooking lesson. For an IT topic, the students visited the College of Technology in Ida-Virumaa. They have also been able to take several field trips to the nature thanks to the projects funded by the Environmental Investment Centre.

The head teacher emphasised that the key role in mainstreaming innovation is currently held by the initiative "Interesting school" which was initiated by the Ministry of Education and Research. It is a blog where schools and "education friends" can share their best practices and ideas. Additionally, the network of entrepreneurial schools spreads information about innovative approaches. Meanwhile, the Estonian teachers' newspaper "Õpetajate Leht" has lately started showing more interest in writing about innovative schools like Kiviõli I Secondary School. "We were featured in the newspaper with our curriculum integration," noted the entrepreneurship coordinator.

The network of language immersion schools also includes schools that are examples for others. Moreover, the Educational Innovation Centre at Tallinn University and the Ministry of Education and Research were mentioned by the instructional leader among the key organisations in mainstreaming innovation. Within the school, leadership and teachers play the key role. The example of the Kiviõli school proves that innovations need strong support and leadership by school and teacher leaders who motivate and guide others. One way to spread awareness of the innovative practices by the school is to organise open door days for prospective students in the region who will continue to spread the word. In light of the self-determination theory (Vansteenkiste & Ryan, 2013), innovations tend to be reinforced by students if they accommodate students' basic needs, such as autonomy, belonging and competence. This was the case in Kiviõli where the school developed entrepreneurial values that emphasised these same basic needs.

3. Innovative practices in schools 1 and 2: lessons learned and policy pointers

3.1. Understanding the barriers: what negatively influences the school innovation process?

The schools mentioned, as the most important barrier to innovation, people's reluctance to change, "leaving their comfort zone" and **fear of the unknown** which can be exacerbated through poor communication. According to the school leaders, talking to the people, persuading them and managing their fears are the most important activities to avoid these barriers. The key word "fear" was repeatedly mentioned by the focus groups as well.

Allowing time to get used to new ideas and offering support and training for implementing new practices were also considered as important factors by the school leaders. One school implemented innovations quicker than the other because it was a new school with fresh and motivated staff. In the

other school it took almost 10 years to pull along the last sceptics among the staff. The head teachers expressed the opinion that innovations are usually not impeded by lack of money. The hardest factor to change is people's mindset and their values.

In this respect, the policy makers agreed with the schools that one of the biggest obstacles can be the **"attitudes, values and habits"** of the people including teachers, parents and the educational authorities in the municipalities. According to the representative of the ministry, school providers usually expect from school "what they have experienced themselves as students." In particular, parents can oppose change and demand that schools operate the same way as they did before. The ministry sometimes gets phone calls from parents who are confused by the changing learning paradigm. "'There is no learning taking place in schools. All they do is hanging around in museums and outside. The ministry has to set it right!' And then I have to explain to them for 45 minutes that this is learning." Yet, parents can also demand change and pressure schools into implementing innovations.

However, unlike the schools in the case study, the school board of the local municipality mentioned as an impeding factor the shortage of resources in terms of financial and human resources. As an example, there is a shortage of media specialists in the city of Tartu. The **lack of financial resources** was mentioned as a possible obstacle by the representative of the ministry. Another factor that can impede innovation is, according to the representatives of the local municipality, the very **crowded curriculum** and **fixation on standardised tests**: "Maybe schools don't have enough freedom (…). Even though schools are told to be creative, if they are and there is some kind of trouble afterwards…then there is a big problem."

Moreover, according to interviewees, there could be **less bureaucracy**. The local municipality was critical about the government institutions which offer funding for innovative educational projects in terms of their timing. For local municipalities, the accountability measures for European funding for projects are way too complicated requiring too much time and energy. They were also critical about the lack of sustainability in education policy: "When a new minister comes everything is changed around again. This is something that shocks the schools every now and then." The insecurity for municipalities concerns for instance the gymnasium education which the state has promised to take under its control.

3.2. Spotting the supporters: what facilitates school innovation process?

According to the school leaders, the most important factor for change are **people who are motivated** and willing to change by trying something new. The teachers added the keyword "interested" in new developments. The easiest way to ensure cooperation would be hiring motivated and able people as was the case with the new school. However, change is more difficult but not impossible if the school is older and has a certain *habitus*. Persuading people takes time and bigger steps forward take place when "new blood" comes to school as with new teachers. For teachers, the school leadership plays an important role in introducing and supporting change.

"Support" was another keyword used by school leaders which can take different forms. For school 1, support by the ministry meant having free hands to realise their own ideas. For school 2 support translated into guidance, training and financial support by the local Entrepreneurship Centre and the local municipality. Also, young teachers from the programme "Young people to school" turned out to be very helpful in mainstreaming innovation. It seems that the **age of the teachers matters**, according to one teacher, younger people are more open to change. Another motivator for change can be from outside **societal pressure** such as changing expectations to schools, said a head teacher.

Both the representatives of the local municipality and the ministry agreed that the attitudes and the enthusiasm of the people (teachers, school leaders, parents and town boards of education) is one of the

key factors in facilitating innovations. According to teachers from a focus group, innovations are supported by **teacher autonomy** which allows teachers to flexibly implement new ideas and react, for instance, to current events. This view was supported by the local municipality who also mentioned **leeway in the curriculum** as an important factor for innovation.

Additionally, the local municipality of Tartu has noticed that schools have started hiring development directors, which indicates that they are putting more **emphasis on school development** which has been supported by the school governors, "The schools have started to look further ahead. They don't just think of what is happening today in school but where will we be in some years and what are our goals." The ministry representative added that the educational initiative "Interesting school" was a facilitator. The initiative is supported by the ministry which sets the broad direction, however ideas come from schools and community members. Moreover, **the need to make the legislation more flexible** in order not to hinder flexible solutions was mentioned in the ministry.

Nevertheless, policy-makers and schools differed in their view on how important **financial resources** were for innovation. While schools expressed the view that most innovations are not hindered by lack of resources, policy-makers emphasised lack of money as a constraint. Although the representative of the ministry admitted that sometimes a shortage of financial resources forces schools to be more creative and plan their expenses more carefully. She brought the example of a small Russian-speaking school in the south of Estonia which had participated in a competition on the use of digital technologies in school organised by Samsung. The school happened to win the competition and as a result the whole school was equipped with the latest technology which they continue using in a creative way.

3.3. Reflecting on transferability of school innovations into the local contexts and their sustainability

The transfer of the innovations of both schools to other schools has already taken place to different extents. The instructional system of school 1 has been transferred, in its main features, to many state-funded gymnasiums such as Põlva, Viljandi, Hiiumaa and Haapsalu gymnasiums. According to the school leaders, it is possible to copy the **instructional system**. Nevertheless, the teachers from the focus group thought that the exact application of the system of electives with the same courses as in Jõgevamaa gymnasium would be very difficult since much depends on the personal contacts and negotiation skills of the school leadership and the available resources. In the second case, the principles of an entrepreneurial school have been applied by other schools in the region and during the last years the network of entrepreneurial schools has spread country-wide. The ministry representative agreed with the teachers from the focus group that elements of **school culture** are absolutely possible to transfer from one context to another. "Human attitude, trust, kindness and flexibility – these are most important," noted the teachers. "If we can do it in Kiviõli in a bilingual school, then anybody can do it."

Another factor of transferability mentioned by the ministry representative was the school leadership, in the large sense of "leadership culture and main principles, for example, engagement of parents, community and the third sector." The school leaders and the ministry representative mentioned the **networking of schools** on different levels, on the level of school leadership (school leaders' associations) and teachers (teachers' subject associations and work shadowing) as a way of transferring innovations. The municipality added to networking of schools **events that are organised by municipalities** such as "The Education Festival" in Tartu. Municipalities can learn from each other, "We have made presentations to other municipalities about our innovative projects such as ARNO (an electronic kindergarten information system for distributing kindergarten places)."

There were no major disagreements between the schools and policy-makers as to the transferability of innovations. However, policy makers added some new aspects. The municipality people said that the **IT solutions** that they have developed in the city of Tartu might be harder to transfer to other countries in Europe. "They have to start with acquiring the electronically readable ID cards." The municipality emphasised that innovations can spread even to other countries through **"friendship schools."** One school from Tartu (Raatuse Gymnasium) had offered to their students, during two project days, almost 100 different workshops from which to choose. After a visit the idea was copied by their friendship school in Lithuania. During the project days the students composed their own schedules experiencing out of the ordinary lessons such as learning math through crossword puzzles or building musical instruments.

Since both innovations in the studied schools overlap in their main features with the "Estonian Lifelong Learning Strategy 2020" regarding the changing learning paradigm, the changes were considered sustainable by both schools. "We are adjusting to the **changing expectations of the society**," said one participant in a focus group. This was reflected by one policy-maker who affirmed, "Education has no choice. It has to adapt to the changes in the wide world." Consequently, the factors that most support sustainability of innovations are the perceived need and pressure from the external environment.

3.4. Policy pointers

- **Policy pointer 1: school autonomy**: As the instructional leader of Jõgevamaa Gymnasium noted, "If the state would prescribe less we would have an even better school." This indicates that too precise regulations in educational legislation and the curriculum can be an obstacle for developing innovative content, pedagogies and organisational practices. It is important that teachers and school leaders take ownership of their innovations, therefore schools need to have autonomy. This is also backed up by research, according to the OECD PISA studies (2006), school autonomy mixed with accountability contributes to better educational outcomes. However, the policy makers noted that Estonian schools have already a great extent of autonomy which has led to eclectic developments since autonomy is not always used for innovations. To what extent school autonomy is used for developing innovative solutions depends on the school leaders.
- **Policy pointer 2: flexible legislation**: "On system level, our holy duty is to create legislation that supports, not impedes, the implementation of educational innovation in schools," emphasised the representative from the ministry. The education laws need to be regularly reviewed and even changed because sometimes schools develop faster than the laws allow. She exemplified this need by the following case of a **too specific law**: Currently, the Estonian Law on Basic Schools and Gymnasiums (2010) states that the school year begins September 1st. Should this day fall on a weekend the school starts on the following Monday. However, many schools have wanted to start the school year on a Monday preceding the first of September if it falls in the middle of the week. According to the current legislation they would be breaking the law. Another example about too rigid legislation was given during the workshop by the schools. It concerns the assessment practices. Currently, the legislation requires that all school subjects have to be assessed summatively at the end of the Basic School. Yet, many schools would like to implement in some subjects the grading scale "passed/not passed". These examples prove that laws should allow some flexibility and room for interpretation. If laws fail to do so schools should be at least allowed to request amendments to the law.
- **Policy pointer 3: coordination of the information about research, development work, conferences, workshops and networks on school innovation.** The participants of the workshop noted that currently there are too many competing activities that happen

simultaneously. "The problem is the fragmentation of initiatives," explained one group of teachers, school leaders and NGO representatives. Another group that involved researchers and policy makers added that different state institutions such as ministries do not effectively cooperate with each other. What is needed is a coordination of information about different activities. Additionally, one activity could serve as an input for the other: for instance research and development could inform teacher education and innovation initiatives.

- **Policy pointer 4: Media coverage of best practices**: "The key persons for mainstreaming innovations are those connected with the practice: innovatively thinking school leaders and teachers. If they would succeed to raise the media's interest who would give it some echo then this could contribute to mainstreaming innovation," added one policy maker. Apparently, there is a need for schools to market their innovations to a wider audience and become more visible on the education landscape. Further, the educational authorities and universities could help by collecting best cases and presenting them in their publications and professional development workshops.
- **Policy pointer 5: Supporting the networking of schools and teachers**: the Ministry of Education and Research funded teacher networks that involved teachers from different subject associations and suggested some topics that promote educational innovations. Instead of financially supporting any networks, those should be given priority which promote innovations that are in line with national education strategies. An idea offered by researchers and policy makers during the workshop was to establish exchange programmes for teachers and school leaders analogously to the student exchange programme "Veni, vidi, vici" which allows them to spend a week or two in another school in Estonia.
- **Policy pointer 6: Developing master teachers who would contribute to educational innovations**: the representative of the Teachers' Association said: "We would like to change the attitude towards teachers in the society by giving the master teachers the opportunity to contribute to education and to develop themselves, to give those who have achieved the rank of "master teachers" opportunities on the state level to expand their own knowledge, to create a network to learn from each other". These teachers would have the mission to be mentors for other younger or less experienced teachers. However, the workshop participants added that development work needs to be compensated accordingly and time needs to be freed for the master teachers to do it. They suggested that master teachers could either work part-time as developers and teachers or take off a year from teaching for development work and learning.
- **Policy pointer 7: addressing the needs of teacher continuous professional development:** The policy should not be targeted at the teachers as objects, rather it should be a reciprocal relationship explained by the representative of the Teachers' Association. As could be learned from Kiviõli I Secondary School, the providers of teachers' in-service education can also be local NGOs such as the Entrepreneurship Centre of Ida-Virumaa. Having autonomy is not simply enough; schools need guidance, training and support. Field trips to innovative schools abroad can be used as an additional motivation for undertaking change. Another resource that is becoming more popular are visits of other schools either as a group of teachers with the school leadership or as work shadowing trips to individual teachers, school leaders or representatives of other institutions. Moreover, teachers and school leaders should be better informed about alternative in-service education programmes for teachers that universities are currently offering, such as coaching of school development teams.
- **Policy pointer 8: sustainable policy environment:** The need was primarily expressed by the local municipality to avoid "shocking the schools after every election" but it also reflects the

needs of schools to develop long-term educational strategies. Following through on these long-term strategies by providing stable funding even after governments change should be a national priority. At the moment, Estonian municipalities are experiencing insecurity regarding the future of upper secondary schools. The state has not clearly revealed its plans for the gymnasium network or the role of local municipalities in providing gymnasium education. Another obstacle to sustainable development are the short-term projects. This concerns particularly the EU funded projects. Schools often apply for grant money without any long-term vision and drop the development as soon as the project runs out. It would be better if funding would be directed towards long-term development. In this case, less is more: less projects which last longer and allow for more systemic and sustainable developments.

- **Policy pointer 9**: **reducing bureaucratic accountability:** Both schools and local municipalities suffer from excessive bureaucratic accountability. For schools, it is the "accountability by numbers" that is most frequently perceived as a distracting, time-consuming, bureaucratic endeavour while the most important goals in the national curriculum such as "developing general competencies" are not emphasised enough. Although enriching educational opportunities are provided by the initiatives and projects funded by the EU the amount of excessive **paperwork** involved in applying for the funding is perceived both by schools and municipalities as unreasonable: "Often, the content and the requirements to the form of project applications are not balanced, "explained one school leader. The bureaucratic accountability should be reduced to a necessary minimum.
- **Policy pointer 10**: **curriculum and assessment guidance by the state.** The schools that participated in the workshop suggested that the state could simplify the work of teachers by pointing out the overlaps between different subject syllabi in the national curriculum which could be effectively taught in integration and cooperation between different subject teachers. "The teachers should not have to reinvent the wheel," added one teacher. The topics suitable for integration could be provided centrally. Additionally, the assessment system must be reformed because the numerical assessment of students on a scale of five where only the marks 3-5 are positive is neither sufficient nor informative enough. One school leader offered that all subjects could have centrally provided descriptions of competence levels which would provide teachers with assessment tools and students with more informative feedback to their achievements. An example could be the competence levels in the European Common Framework of Languages which has six levels. The developers of such assessment tool could be master teachers.

4. Annexes

Annex I: Wrapping-up matrix with closed-ended questions

Do you agree with the statements:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**	**Don't know**
There are insufficient **financial resources invested** in the development and implementation of innovative pedagogies and organisational practices in schools in this region			X			

The **financial resources are distributed poorly** inside schools in order to develop and implement the innovative pedagogies and organisational practices in this region				X		
Schools **lack autonomy** to make decisions regarding innovative approaches to pedagogies in this region				X		
Teacher education does not promote the development of capacities necessary for innovation in this region				X		
Institutional culture in the schools in this region is **not tolerant to mistakes**				X		
Working conditions in schools (in terms of available time, administrative support, etc.) are poorly adjusted to development of innovations in this region				X		
Education systems orientation towards **standardised testing** is an obstacle to innovation in this region		X				

Comments: The standardised testing only concerns teachers who teach the core subjects: Estonian language, mathematics and foreign language. They have compared to their peers in other subjects less autonomy and may feel pressure of time which can impede them experimenting with more time-consuming creative practices.

Annex II: A short review of carried-out field work

1st Interview programme (with national/regional/local stakeholders)	
Interview 1	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Pille Liblik
Position and represented organisation of interviewee:	Ministry of Education and Research, head of the Department for General Education
Type of interview:	Face-to-face / Telephone / Skype / Other (please specify)
Date of interview:	19.09.2016
Place of interview:	Tartu, Ministry of Education and Research
Duration of interview:	53 minutes
Interview recorded:	Yes/No
Additional notes:	We mainly discussed the initiative of the ministry "Interesting school" for mainstreaming innovations, and how external evaluations can support the acquisition of general competencies.
Interview 2	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Riho Raave, Kristi Aavakivi, Katrin Palu, Karin Pihl
Position and represented organisation of interviewee:	School Board of Tartu: 1) head of the Department of Education of the city of Tartu; 2) specialist for general education; 3) statistical analyst; 4) specialist for educational management.
Type of interview:	Face-to-face / Telephone / Skype / Other (please specify)
Date of interview:	19.09.2016
Place of interview:	Tartu City Government, Department of Education
Duration of interview:	1hour 7minutes
Interview recorded:	Yes
Additional notes:	We were discussing the many projects and initiatives that the school board of Tartu has initiated in the last years, such as the community school project TULUKE, the kindergarten place information system, the experiments with open classrooms and new physical learning environments.
Interview 3	
Name and surname of	Maria Erss

interviewer:	
Name and surname of interviewee:	Margit Timakov
Position and represented organisation of interviewee:	Estonian Teacher Association, chairperson
Type of interview:	Face-to Face
Date of interview:	20.09.2016
Place of interview:	Tallinn University
Duration of interview:	1hour 21 minutes
Interview recorded:	Yes
Additional information:	We discussed different concepts of school innovation and where they may be found in Estonia and also the role of Teachers' Association in mainstreaming innovation and supporting teachers' professionalism.
Interview 4	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Mati Heidmets
Position and represented organisation of interviewee:	Head of the Centre of Excellence in Educational Innovation at Tallinn University
Type of interview:	Face-to Face
Date of interview:	21.09.2016
Place of interview:	Tallinn University
Duration of interview:	44 minutes
Interview recorded:	Yes
Additional information:	We discussed the most important educational innovations in Estonia, the changing learning paradigm and a study of Tallinn University which identified schools with a student-centred and cooperative school culture.
Interviews with school leaders	
School 1: Interview 1	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Priit Põdra
Position and represented organisation of interviewee:	Principal of the Jõgevamaa Gymnasium
Type of interview:	Face-to-Face

Date of interview:	7.10.2016
Place of interview:	Jõgevamaa Gymnasium
Duration of interview:	49 min
Interview recorded:	Yes
Additional information:	
Interview 2	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Anti Alasi
Position and represented organisation of interviewee:	Instructional leader, assistant principal
Type of interview:	Face-to-Face
Date of interview:	7.10.2016
Place of interview:	Jõgevamaa Gymnasium
Duration of interview:	78min (1 hour 18 min)
Interview recorded:	Yes
Additional information:	
Interview 3	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Silja Piir
Position and represented organisation of interviewee:	Student councelor, Jõgevamaa Gymnasium
Type of interview:	Face-to-Face
Date of interview:	19.10.2016
Place of interview:	Jõgevamaa Gymnasium
Duration of interview:	
Interview recorded:	Yes
Additional information:	
Focus group discussion with school community in Jõgeva	Jõgevamaa Gymnasium
Name and surname of facilitator(s): Maria Erss	

Participants: name, surname, position and represented organisation	
	Participant 1: Jessica, student representer (Year 12 student) Participant 2: Terje Mikk, representer of the school board and parents Participant 3: Vello Mägi, physics and robotics teacher Participant 4: Nele Graverson , project leader and specialist for youth work Participant 5: Maarika Prave, the head of the local municipality's sports and education department, a yoga teacher at school, a representative of a NGO related to education
Date of the focus group:	October 19. 2016
Place of the focus group:	Jõgevamaa Gymnasium
Duration of the focus group:	1 hour 39 minutes
Recorded:	Yes/ No
Key topics discussed:	Topic 1: Instructional system (elective courses, credit for informal learning, the length of lessons) Topic 2: Cooperation between teachers, students and parents Topic 3: Feedback from students Topic 4: The launching of the new school and instructional system in 2013 Topic 5: Evaluation of the general competencies of students (project)
Additional notes:	A teacher said: "And we have this week of elective courses where every student chooses one elective that he/she passes during the week, seven hours a day. And you can do it also outside of our building, for example in the vocational education centre where our students have taken some courses in construction or car repair." One parent said: "The cooperation between teachers and students is very tight thanks to the electives and everything.[…] There is no such thing, if you ask a student to characterise a teacher that: 'I don't know, I did not have any contact to him/her.'" A student talked about the feedback collected from the students: "Every year there is a feedback questionnaire in Studium – that is the electronic learning information system where we are asked: 'How did you like the (elective) courses in the last year and what would you like to see next year?'" The launching of the new instruction system was described as follows by a teacher: "Since it was a new school a new leadership came who had lots of new ideas. We as teachers were at first waiting to see what is done to us, therefore I must say that the headmaster and the instructional leaders had done a huge preparation to start launching the new system immediately. And we were in a position to receive everything new." There were no major disagreements in the focus group.
School 2: Kiviõli I Secondary School, Interview 1	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Heidi Uustalu
Position and represented organisation of	Head teacher at Kiviõli I Secondary School

interviewee:	
Type of interview:	Face-to face
Date of interview:	October 12. 2016
Place of interview:	Kiviõli school building
Duration of interview:	64 min
Interview recorded:	Yes
Interview 2	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Pilvi Kuurmann
Position and represented organisation of interviewee:	Instructional leader, Kiviõli I Secondary School
Type of interview:	Face-to-face
Date of interview:	October 12. 2016
Place of interview:	Kiviõli school building
Duration of interview:	1 hour 20 min
Interview recorded:	Yes
Interview 3	
Name and surname of interviewer:	Maria Erss
Name and surname of interviewee:	Tiina Kilumets
Position and represented organisation of interviewee:	entrepreneurship coordinator at Kiviõli I Secondary School
Type of interview:	Face-to-Face
Date of interview:	October 12. 2016
Place of interview:	Kiviõli school building
Duration of interview:	54 min
Interview recorded:	Yes
Focus group discussion with school community in [school 2 – Kiviõli I Secondary School]	
Name and surname of facilitator(s):	Maria Erss
Participants: name,	Participant 1: Anu Vau, teacher of Estonian language and literature

surname, position and represented organisation	Participant 2: Marie Uuetoa, Estonian as a second language teacher, elective courses: media and career planning, Estonian language and literature for special needs students (Year 9) Participant 3: Helena Kivestu, coordinator of extracurricular activities and teacher of social studies Participant 4: Karl Kasepeet, graduate student (Year 12) Participant 5: Marleen Paist, graduate student Year 12)
Date of the focus group:	October 17. 2016
Place of the focus group:	Kiviõli I Secondary School
Duration of the focus group:	1 hour 29 minutes
Recorded:	Yes/ No
Key topics discussed:	Topic 1: Entrepreneurship in school (student activity and responsibility, teamwork, self-reflection, non-hierarchical relations between teachers and students, self-directed learning) Topic 2: The need to be entrepreneurial Topic 3: Mainstreaming innovation
Additional notes:	One teacher explained entrepreneurship in schools: "In the last few years it means mainly active learning methods and different lessons. In the past we had bigger projects during which activities were integrated with different lessons and something more grandiose was created. In the last years I think it is more giving responsibility to the students themselves so that they can organise school events and take more responsibility also for organising their own studying." For a student entrepreneurship means "yes, taking initiative yourself, it does not have to have necessarily anything to do with school, and improving something, this is for me at the moment entrepreneurial school." Another student confirmed: "I have gotten through the projects an experience about responsibility and leadership and also self-reflection: what went wrong, what could we do better the next time. Also teamwork is something that goes along with the projects and the success experience. Once you have achieved something big you are more motivated to repeat it." The problem that the entrepreneurial school was trying to solve was explained by a teacher as: "educating active citizens who would be involved, who would think along, would be interested in what is happening, the life, who would not expect that everything is taken care of by somebody else and who would do something if they see that something is wrong." Mainstreaming the practices of an entrepreneurial school has been a very long process, it has taken approximately 10 years until the last opponents gave up. One teacher said: "It is clear that every collective has people who don't like changes but even they don't say anything anymore. They have understood what is going on and why we are doing this. The time has come when they have started offering awesome ideas."
School visit to observe innovative practices in Kiviõli I. Secondary School	Kiviõli I. Secondary School
Name and surname of visitor(s):	Maria Erss
Other participants: names, surnames, positions and roles	Teachers Anu Vau, Estonian language teacher, Joosep Susi, Estonian language teacher, and Karin Pohla, Geography teacher

Date of a visit:	October 12. 2016
Place of a visit:	Kiviõli I Secondary School
Duration of a visit:	6 hours
Objects/activities/practices observed:	An integrated Geography and Estonian language lesson
Photos/other visuals attached:	See photos attached: 1. group work: mapping Graffiti in the town, 2. The product of the lesson: a Graffiti map
Other relevant material attached:	Yes/no. Please specify which:
Additional notes:	Yes/no. Please specify which:
Name and surname of visitor(s):	Maria Erss
Other participants: names, surnames, positions and roles	Teachers Jüri, history and social studies teacher, and Karin Pohla, Geography and Biology teacher
Date of the visit:	October 17. 2016
Place of the visit:	Kiviõli I Secondary School
Duration of the visit:	3 hours
Objects/activities/practices observed:	An integrated social studies and geography lesson
Photos/other visuals attached:	See photos attached: 3. students doing an information search about Estonian dairy industry, 4. Students presenting their posters
Other relevant material attached:	Yes/no. Please specify which:
Additional notes:	Yes/no. Please specify which:
School visit to observe innovative practices in Jõgevamaa Gymnasium	Jõgevamaa Gymnasium
Name and surname of visitor(s):	Maria Erss
Other participants: names, surnames, positions and roles	School's head teacher Priit Põdra and instructional leader Anti Alasi; teachers and students
Date of the visit:	October 7. 2016
Place of the visit:	Jõgevamaa Gymnasium
Duration of the visit:	4 hours
Objects/activities/practices observed:	The celebration of the Teacher's Day. The graduate students have prepared: 1. A quiz for teachers 2. A lip reading exercise for teachers 3. A graduate student gives a speech (in the role of the head teacher) for the entire school 4. Teachers' meeting in the teachers' lounge

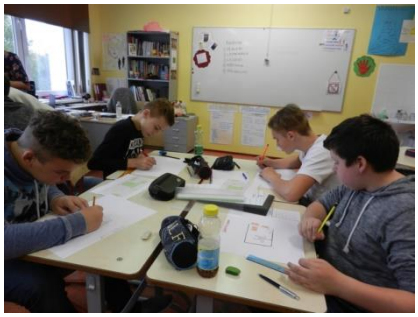
Photos/other visuals attached:	See above, photos 1-4
Other relevant material attached:	Yes/no. Please specify which:
Additional notes:	Celebrating the Teachers' Day is a tradition in every Estonian school, On this day (October 5) graduate students run the school and impersonate the teachers and the school leadership
Name and surname of visitor(s):	Maria Erss
Other participants: names, surnames, positions and roles	Priit Põdra, headmaster
Date of a visit:	October 19. 2016
Place of a visit:	Jõgevamaa Gymnasium
Duration of a visit:	8 hours
Objects/activities/practices observed:	An integrated and co-taught course "Introduction to learning" with the topic "memory techniques and a geography lesson.
Photos/other visuals attached:	Yes, photo 5: Freshmen in the biology lesson and 6: School's physical environment: a chess table in the corridor
Other relevant material attached:	Yes/no. Please specify which:
Additional notes:	Celebrating the week of freshmen is also a tradition in most schools in Estonia. During this week the senior students give the freshmen funny or sometimes also unpleasant tasks to do, so they can prove to be worthy of becoming a member of the student community. The freshmen are called "foxes" and the graduate students are "wolves".
The Workshop with schools and other stakeholders	
Name and surname of the workshop facilitator(s):	Maria Erss
Number of participants and their represented organisations:	Total number of participants: 43 Represented organisations: Organisation 1: Ministry of Education and Research Organisation 2: Educational Innovation Centre of Tallinn University Organisation 3: Ethics Centre of University of Tartu Organisation 4: Education Department of Tartu Organisation 5: Education Department of Tallinn University Organisation 6: Foundation Innove Organisation 7: Archimedes Foundation

	Organisation 8: District of Lääne-Nigula Organisation 9: Lasnamäe Basic School Organisation 10: Peetri Kindergarten and Basic School Organisation 11: Leisi Secondary School Organisation 12: Kõpu Basic School Organisation 13: Väike-Maarja Gymnasium Organisation 14: Konstantin Päts Open Air School Organisation 15: Lilleküla Gymnasium Organisation 16: Tallinn Technology Gymnasium Organasition 17: Tallinn Pae Gymnasium Organisation 18: Open School Organsiation: 19: Kiviõli I Secondary School Organisation: 20: Jõgevamaa Gymnasium Organisation 21: NGO Future Education PIRN Organisation 22: NGO Õpideemia Organisation 23: NGO Võti tulevikku (Key to the future)
Date of the workshop:	March 23, 2017
Place of the workshop:	Tallinn University
Duration of the workshop:	3 hours
Recorded:	Yes, on video
Key topics discussed:	Yes/ No
Additional notes:	Topic 1: school leadership and teacher leadership Topic 2: teacher education Topic 3educational legislation and national curriculum Topic 4: support, assessment, research and materials
	A major disagreement between policy makers and schools concerned school autonomy. While schools believed that the autonomy could be larger, particularly in the area of subject syllabi, the policy makers noted that Estonian schools already have a lot of autonomy. Whether the autonomy is used for implementing innovative practices depends on the school leaders whose capacity varies greatly. "Where there is a strong school leader, things are well, but where not, there are problems," commented a representor of a municipality. Other differences concerned the concept and scale of innovation. The schools were trying to find practical solutions to questions of assessment, teacher education, development work of teachers and sustainability of innovations. Whereas the people involved in research and policy making emphasised the need of looking at innovations

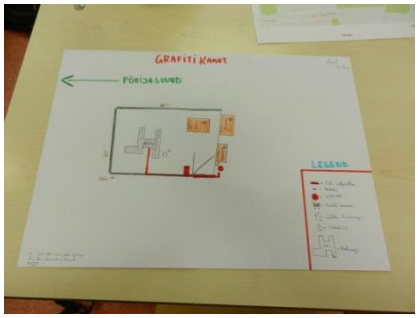
	broader than just applying new methods. According to them, attention should be paid to global developments such as "what does it mean for education that we now live in a post-truth society." However, the main conclusion made both by schools, policy makers, research institutions and NGOs was that the isolated efforts of promoting educational innovation (teacher education and school development programmes, research, conferences, projects and initiatives) should be better coordinated and information about them should be gathered and published centrally. Also, more attention should be paid to the sustainability of the innovations.

Annex III: Photos/visuals/other documents from schools representing the essence of practised innovations obtained during the field work (optional)

I Kiviõli I Secondary School



1. Year 7 students of Kiviõli I Secondary School working on the Geography and Mother tongue project: "Graffiti Hunt".



2. The product of the lesson: A graffiti map with a geographical legend

3. Year 9 students of Kiviõli I Secondary School doing an information search about dairy industry in the schools' library

4. Presentations about dairy industry in Estonia

Jõgevamaa Gymnasium

1. Teacher's Day: A quiz for teachers. Students have taken the role of teachers.

2. Teacher's Day: Lip reading exercise for teachers

3. A student impersonating the headmaster and giving a speech

4. Teachers preparing for the meeting in the teachers' lounge

5. Freshmen (Year 10 students) in the geography lesson

6. School’s physical environment: a chess table in the corridor

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