



Case studies

5. Kiili Gümnaasium, Kiili, Estonia

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This is one of 25 case studies produced for STEPS, the Study of the impact of technology in primary schools, to illustrate the impact of ICT, on schools, teachers and learners, and to highlight barriers and enablers to its effective use in the school. Further information can be found at <http://steps.eun.org>.



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1. CONTEXT OF THE SCHOOL

The Kiili Gymnasium is located about 20km outside Tallinn city centre, in the residential area of Harjumaa. Many young people and families have moved to the area during recent years, so the number of pupils at the school is growing. The school has a strong educational tradition dating back to 1858. There is a strong focus on extracurricular activities such as sports (outdoor and indoor) and music, and this is one of the main reasons parents send their children to the school.



Kiili Gymnasium is an all-grade school, covering Grade 1 (age 7) to Grade 12 (age 19), meaning pupils receive their primary and secondary education within the same institution. This is very common in Estonia with comprehensive schools considered more appealing and successful than separate primary and secondary schools. Currently there are 417 pupils, of which 337 attend primary level and 80 attend secondary level. There are 40 teachers, with no distinction between primary and secondary level. The first four or five grades have class teachers, responsible for teaching mathematics, science and Estonian. There are separate teachers for English language, music and sports. From Grade 6 onwards, teachers teach across all years.

Kiili Gymnasium is situated in a brand new building of 6,500 square metres, provided by local authority funding in 2005. It is already too small due to increasing pupil numbers (now 417, compared to 340 when they moved into the new building four years ago). School facilities include a large sports hall (which is also used by the local community in the evenings and for sporting events), an auditorium (also used for local council meetings), a library, a computer lab, a music lab, an art lab, a handicraft lab (used mainly by boys), a knitting and cooking lab (used mainly by girls), a canteen offering a warm meal to all students every day, a cafeteria, and several teachers' rooms.

The local authority is responsible for the school's equipment and facilities (including extra-curricular activities). Teachers' salaries come from the state budget via the local authority, and depend on the number of students at the school. Big schools have enough money and some space for differentiation, but small ones struggle and can pay only minimum wages. All other school workers, including the headteacher and ICT staff, are paid by the local authority. The headteacher sits on the local council, where about 60 per cent of the budget is allocated to education. The headteacher is also responsible for hiring and dismissing teachers. There is currently a national shortage of mathematics and physics teachers, leading to problems with recruitment.

A key issue in Estonia is school budget, which is calculated per pupil: the more pupils a school has, the more money they are allocated. Demographic factors mean the overall number of children in Estonia is decreasing: countryside schools and island schools along

the east coast are particularly affected, where people tend to migrate towards bigger towns or the Tallinn area.

The school has a warm and positive atmosphere: children are free to play in the corridors during breaks where benches and small tables are provided. Children have produced two different funny bells for announcing the start and end of lessons. Skis and sledges are parked outdoors or in a dedicated area at the entrance of the building. Early grades attend school for half the day (from 08.00 until 12.00) and lessons are 45 minutes each, while extra-curricular activities take place till 15.30. Higher grades have lessons until 14.00 or 15.00. This year, after-school activities, and especially those attended by early grade pupils, have had to reduce opening times due to a reduction in funding by the local authority. This is causing difficulties for parents.

Primary grade classes have 18 to 20 pupils (the maximum per class is set at 24), while secondary grade classes have an average of 25 students (the maximum is set at 30). The nearby kindergarten (for children aged 2 to 7) opens from 08.00 until 19.00. It is also housed in a new, modern building with 120 places, but again this is already insufficient for the growing local community.

2. EXAMPLE OF PRACTICE

A national drive for home school-linking

The school uses an online learning platform, called Miksike, which is provided by a private company. It is used by primary grade pupils for mathematics, Estonian language, English language, and natural and social science lessons. Lessons take place in the school computer lab, which is also equipped with an interactive whiteboard. Pupils are assigned individual usernames and passwords for accessing the system both from school and at home, allowing them to do homework online or continue learning if they are absent from school.

Additionally all classes and teachers use the national eKool (e-diary) system for home-school linking and administration purposes (such as absence, marks, homework assignments, lesson topics, test planning, various communication to and with parents, email and statistics).

The photograph opposite shows 8- and 9-year-old pupils using individual desktops in the computer lab. Each pupil is working on different maths exercises using the Miksike learning platform. They can work at their own pace, move from one task to another once a problem is solved, and instantly get results and marks on screen. The teacher, whose computer is connected to the interactive whiteboard, can check what individual pupils are doing and see their scores and marks in real time. Pupils were very focused on their exercises, working quickly and independently,



and are perfectly at ease with both the computer and the e-learning system. The exercises are also preparatory for a national maths competition, hosted on the Miksike platform, in which last year the class ranked third. Every pupil was therefore very motivated to improve their maths skills as the final ranking is dependent on the whole class result. They currently rank 14th.

Similar behaviour was displayed during an observation of an Estonian language lesson. In this lesson two pupils played against each other to complete an exercise using the interactive whiteboard, while the rest of the class worked at their own pace on their own computers.

The school is also involved in international projects (such as Comenius and eTwinning), for which they use videoconferencing tools such as Skype. The school has also a website and several classes maintain a blog. Additionally, 85 per cent of the classrooms are equipped with a laptop and a projector. Once a month, the school organises a voluntary competition for pupils, which can be entered individually or, more often, as part of a team. Pupils are issued with a question sheet at the start of the school day, and must return it at the end of the day with answers completed. The questionnaire focuses on a different topic each month, such as maths or sport, and pupils are free to consult the internet, books or other sources to complete them.

3. IMPACT, BARRIERS AND ENABLERS

3.1 SCHOOL

ICT DEVELOPMENT PLAN, IMPLEMENTATION STRATEGY, ORGANISATIONAL CHANGES AND ATTITUDES

○ **Impacts**

- The school has an ICT development plan which consists of two parts: one with long-term objectives and the other with short-term objectives. The short-term plan is updated every two to three months. The long-term plan has set a target for installing a school server and terminals with a workstation in every classroom within the next year. The strategy is decided by the headteacher and the ICT team (formed approximately four years ago following an identified need by staff and management, and consisting of several teachers, with three leading the process). The equipment currently available in the classrooms comes from an initiative undertaken four years ago following a headteacher visit to a school in the UK in which similar technology was used, under the framework of a Comenius project.

○ **Enablers**

- The ICT team focuses more on the pedagogical aspects of ICT rather than technical support. They also organise free and distance training, for example in using learning platforms. ICT team members, who are teachers of various

subjects, are not given any incentive in terms of salary or career advancement, yet are very active and proactive. Although the headteacher is not an ICT supporter, teachers are given autonomy to use ICT in the school. A major source of inspiration comes from the Tiger Leap Foundation that provides programmes and initiatives concerning ICT equipment, along with learning resources, pedagogy and training.

RESOURCING

o Impacts

- o The school has a computer lab with about 25 desktops plus a teacher's PC and interactive whiteboard. Additionally, about 85 per cent of classrooms and all other labs have a laptop and a projector. Teachers' rooms have a computer and, in many cases, a printer also. There is free Wi-Fi throughout the school premises.
- o The school does not have any security or e-safety systems in place: the internet can be freely accessed with no limitations.
- o Teachers are free to use the learning tools and resources they prefer. In primary grades the most popular is Miksike, with a key advantage being that it is available in Estonian. The school pays a fee of €750 a year based on the number of pupils in the school. Every teacher and pupil has their own username and password, and can access the system from both school and home. In higher grades Moodle is the most common, with several training sessions organised by the ICT team. Other online learning environments used at Kiili include WebCT and VIKO. In higher grades LeMill is a popular web-based community used to find, share and author learning resources.
- o Primary teachers tend to make extensive and regular use of ICT during lessons due to the good availability of high-quality resources.
- o The e-diary system is a community learning network connecting teachers, students, parents, headteachers and other education stakeholders easily and securely over the internet, providing easy access to information to support learning. It mainly supports administration and home-school communication through an individual username and password system. Teachers enter grades (from one, the lowest, to five, the highest), per student per course. The system calculates the average grade per student per month and also gives a final mark. Teachers can notify parents about various aspects such as grades, absence or behaviour.

o Barriers

- o A key barrier is the fact that there is just one computer lab: all classes from Grade 1 to 12 share it, and booking is necessary even though secondary grade

classes only use it a couple of times a month. Also, many of the laptops are now becoming obsolete having been purchased several years ago.

- Pupils are allowed to bring their own laptops to school, but are not allowed to use them during lessons unless permitted by the teacher.
- All teachers have a laptop, thanks partly to the Tiger Leap Foundation programmes, and partly to a scheme which allows them to purchase a laptop half funded by the school and half funded by themselves over a three-year period. School equipment is funded by the local authority.
- Estonia is not running a 'one laptop per child' programme. However, the Tiger Leap Foundation is currently running a pilot providing one class in each of five different schools with laptops. The pilot is being observed by researchers from Tartu and Tallinn Universities, focusing on how they are using these computers, for what type of activities, and what kind of problems they encounter. The pilot schools have been selected to provide a differentiated sample including a big city school (12 grades), a small rural school (9 grades), a small comprehensive rural school (12 grades), a big Russian-speaking school (12 grades) and a school for children with hearing problems. So far just one laptop has had to be replaced out of 100 issued as part of the pilot.
- Secondary teachers say that they have real difficulty finding good digital content and therefore they use ICT much less. The final examinations starting from the end of Grade 9 present a further barrier: they have to cover a wide programme, and pupils ask to go back to traditional lessons with books. However, the subjects for which secondary teachers use ICT more frequently are physics, science and maths. ICT is particularly useful for physics and sciences, due to the lack of adequate labs for experiments. Teachers also share resources within the school: for example, one French teacher has translated a learning object into Estonian and made it available for the whole school.
- **Enablers**
 - Around 90 per cent of the students at Kiili have a computer with internet connection at home. Parents appreciate the e-diary system as it allows them to follow daily lessons, topics, homework, test planning, grades, absence and so on. They can also communicate with the teacher via email.
 - It is compulsory for teachers to use the e-diary system, which was introduced four years ago following a one-year trial and training period across one subject. All school administration is supposed to be managed electronically in Estonia although small rural schools and island schools often don't use the e-diary system. Around 80 per cent of Estonian schools use the eKool network.

THE CURRICULUM AND ICT

- **Impacts**
 - ICT is a cross-curricular competence aimed at enhancing skills in the main curricular subjects (Estonian, maths, natural sciences, social sciences, and English at primary level).
- **Enablers**
 - The school defines its own curriculum within the national framework, and is free to organise extra-curricular activities (prior to headteacher approval and funding from the local authorities), and so ICT can have a more or less prominent role depending on the school. At secondary level, students are offered targeted multimedia lessons on video, imaging, and sound editing tools and software twice a week. Primary pupils don't have a subject called 'ICT' but still acquire basic ICT skills from the very first grades: on average they have one lesson each week for each core subject in the computer lab using Miksike or similar learning platforms. They also improve their ICT skills through other cross-curricular activities such as blogs and international projects.

ASSESSMENT OF ICT AND ICT FOR ASSESSMENT

- **Impacts**
 - As ICT is not a core subject in the National Curriculum, there is no official assessment of pupils' ICT competences. On the contrary, ICT is used for assessing pupils' skills in the core subjects such as maths or Estonian using Miksike or similar learning environments, allowing children and teachers to get their scores immediately.
- **Enablers**
 - The ability to carry out assessments using ICT saves time for teachers, but is only one part of the overall assessment process. ICT is not used for official tests, and there are no national exams at primary level (the first one is in Grade 9).
 - The headteacher stresses that ICT, and the way it is currently used, may improve subject results as tested within the traditional curriculum, but this kind of framework doesn't test the competencies and new skills that ICT-enhanced learning can possibly support (such as problem-solving skills).

ORGANISATION OF SUPPORT

- **Impacts**
 - Pedagogical support is provided by the ICT team within the school (training, meetings, knowledge and resource sharing), as well as basic technical support.

- **Enablers**

- A large amount of assistance, in terms of programmes and initiatives targeting pedagogy and equipment, comes from the Tiger Leap Foundation. Otherwise equipment and maintenance are provided by the local authority.

3.2 TEACHERS

ICT AS A TOOL FOR COMMUNICATION AND COLLABORATION

- **Enablers**

- The e-diary system is primarily a communication tool between teachers, parents, school and administration. All the teachers have an email account for communicating specifically with parents. The e-diary is compulsory within the school, so all teachers use it. All pupils' families have a computer with internet connection at home and there is free Wi-Fi in school. Teachers also collaborate to exchange learning resources and experiences. In this sense, the ICT team play a major role, meeting regularly even if with no predetermined frequency. ICT also enhances the participation in international projects such as Comenius and eTwinning because it helps the communication process. It can, however, be a barrier for those teachers with a poor knowledge of English.

ICT AS A TOOL TO IMPROVE THE QUALITY AND EFFICIENCY OF PLANNING AND ADMINISTRATION

- **Enablers**

- In this respect the e-diary system is crucial, as every teacher has to update the system as to what has been done during the lesson, homework, pupils' absence and tests. In particular, tests and homework are better planned as every teacher (and parent) can see at once the whole schedule per subject and per day. As a rule, it has been stated that no more than two tests can be given each day.
- It is also a useful tool for statistics at pupil, class, school and national level. As it is a ministerial initiative (although run by a private provider), about 80 per cent of Estonian schools use it (100 per cent in the Tallinn area), with the exception being very small institutions located in the countryside or in isolated areas. Before being fully implemented, the e-diary system underwent a one-year trial period during which teachers were trained and used it in one subject area.

THE PEDAGOGICAL ROLE OF ICT TO IMPROVE LEARNING AND TEACHING

- **Impacts**

- Teachers use ICT as one tool at their disposal for improving teaching and learning. They are self-reflective and decide when and whether to make use of

ICT during their lessons in order to improve specific skills or to focus on certain aspects. On average, primary grade children use the computer lab once a week for each subject. In higher grades, the computer lab is used less often as teachers have access to fewer good learning resources. Additionally, older pupils tend to prefer books, viewing ICT as more of a leisure tool than a learning tool.

- **Enablers**

- The ICT team of Kiili Gymnasium plays an important role in developing the use of new tools, online platforms and resources as they focus more on pedagogical aspects than on technical issues. They train their colleagues, share experiences and knowledge, and keep in touch with the Tiger Leap Foundation for new initiatives, programmes and training. The headteacher has a traditional view of pedagogy, but understands that children today speak ‘another language’ and therefore educators have to speak it too. He therefore gives his teachers autonomy to integrate ICT in the teaching and learning process as needed.

ICT SKILLS

- **Impacts**

- Teachers are not required to have specific ICT skills, therefore they can widely vary. However, most of the teachers in the school make use of ICT and they have been trained in using educational ICT tools by the ICT team during ad-hoc or distance training sessions (for example, different modules over eight weeks with assignments focusing on one specific tool, such as Moodle). Many teachers (especially those from the ICT team) also follow training programmes provided by the Tiger Leap Foundation. The introduction of the mandatory e-diary system has been a strong driver for the use of ICT by teachers.

PARTICIPATION, MOTIVATION, CONFIDENCE AND PERFORMANCE

- **Impacts and enablers**

- Teachers see ICT as a personal professional development tool. With the exception of the e-diary system, no other ICT tool or skill is compulsory but is used on a voluntary basis. Although there is a lack of incentive in terms of salary or career advancement (the ICT team included), teachers are quite eager to use ICT and are very proactive in searching for and exploring new tools. Self motivation and training seems to be a key factor. When training is organised, teachers respond well: for example, the first distance training organised by the ICT team on the use of Moodle had 10 participants (of the 40 teachers working at the school).
- Teachers are confident and self-reflective about the use of ICT: they know when and how to use it for specific activities and truly integrate it with the whole teaching and learning process. About 60 per cent of teachers successfully use

ICT, but there is no official assessment of their performance. The best teachers were given a free laptop as part of a Tiger Leap Foundation laptops for teachers programme.

3.3 LEARNERS

ICT SKILLS

- **Impacts and enablers**

- Pupils have good ICT skills. During lesson observations they were perfectly at ease and autonomous in front of the screen. Almost every pupil has a computer with internet connection at home, and their parents (often fathers) have taught them how to use it. In many cases pupils (mostly boys) help teachers with ICT. At home they use the computer mainly for playing games (not educational), for chatting (MSN being more popular than Skype) and sending emails to their friends (some also have friends in other countries met via online games). They are all aware of the risks related to the web both in terms of privacy and personal information and photos, as well as dangerous behaviours including technical issues such as viruses. They have gained this information from parents and teachers, even if no specific e-safety initiatives or lessons are provided. All children also have mobile phones.

MOTIVATION, PARTICIPATION AND CONFIDENCE

- **Impacts and enablers**

- Pupils are really motivated when using ICT, and would like to use it more during lessons. They are very focused on their online exercises, completing them with speed and accuracy. They are eager to use ICT and, if asked by the teacher to accomplish a task during the lesson, their hands are all raised. They are not distracted by technology, but carefully follow the lesson and complete their exercises without playing around, surfing on other websites or chatting. They find lessons with ICT fun, but they are aware that it's not a game. Maths is the most popular subject learnt through ICT. Children play online games during breaks or at home. Sometimes some of them bring their own laptop to school, though it is more for their own leisure than for educational purposes (for example, to show pictures or drawings to their peers or to play games). Other motivational aspects of using ICT include collaborative learning and the discovery of other cultures.

PARTICIPATION IN ALL ASPECTS OF SCHOOL LIFE: ACADEMIC, SOCIAL, PERSONAL

- **Impacts**

- Teachers report that pupils have improved their skills in subjects where ICT is used, particularly in maths, but also in English and social sciences. Pupils have

gained a wider knowledge of other cultures and European countries, and are more aware of different traditions and lifestyles.

- **Barriers**

- As every pupil has their own desktop in the computer lab, and works individually to solve tasks, the group working dimension of ICT is not very enhanced. However, pupils will help each other if needed.

- **Enablers**

- Conversely, the national maths competition via Miksike is a strong driver for developing both individual competences and group spirit, due to the fact that the whole class score determines the final ranking. The e-diary system and online homework enhances the relationship between parents and their children, as they work together at home to surf the internet, review work completed at school or look at homework to be done.

4. REFERENCES

- **Sources:**

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- **Further information:**

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