

REPORT 2023

The future for the next generation of teachers

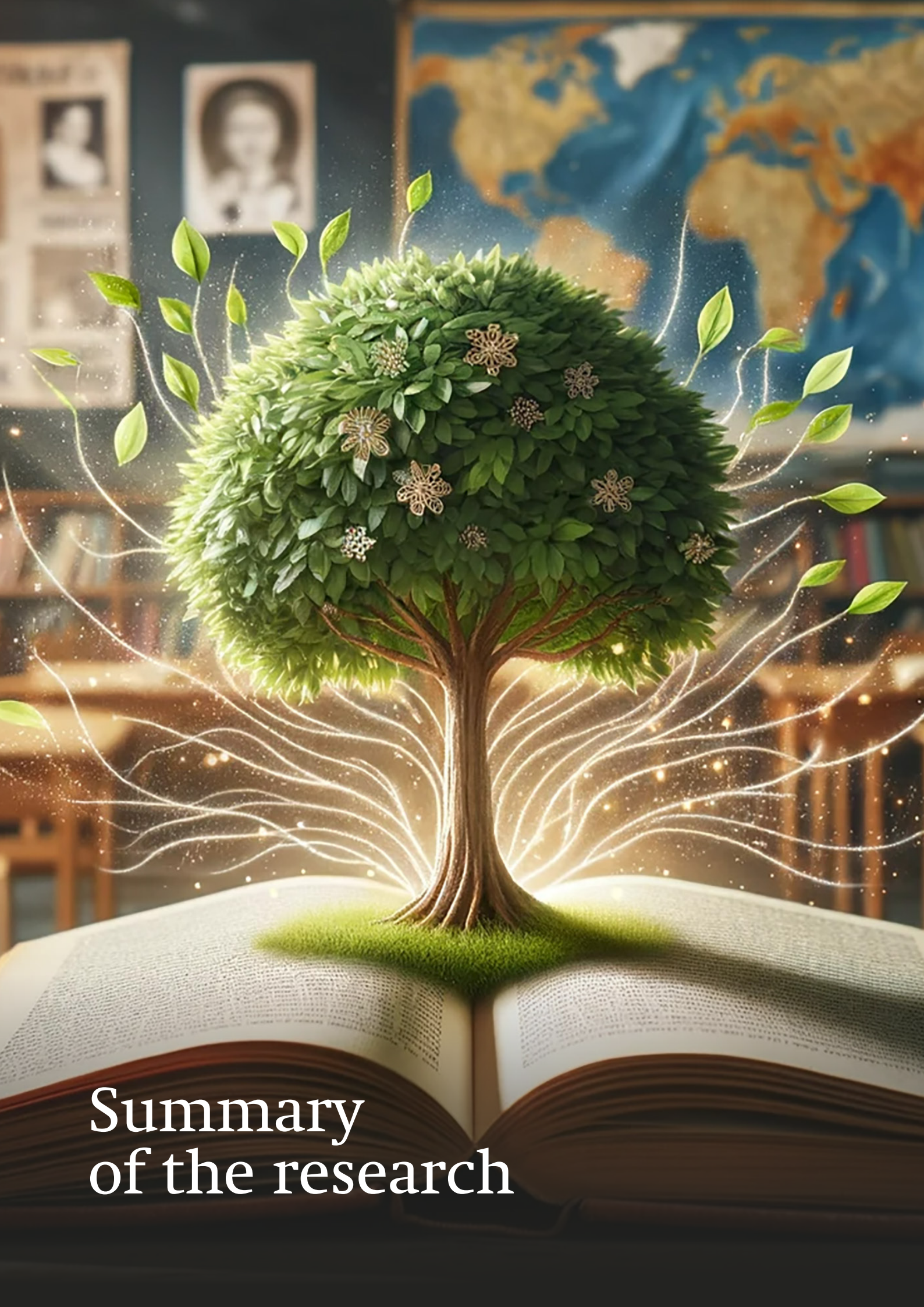
Trends and scenarios up to 2040

Summary



FORESIGHT
CENTRE

An independent think tank at the Riigikogu



Summary of the research

Current research highlights key uncertainties and critical factors that will influence the supply of teachers in Estonia up to the year 2040. In a future perspective, it is most important to recognize those trends that are currently underestimated but have the potential to significantly disrupt the entire education system as they grow.

Student educational outcomes in Estonia are much influenced by the socio-economic background. In Estonia, schools are frequently evaluated based on exam outcomes, without adequately accounting for the significant differences in their starting points, environments, and available resources. The effectiveness of schools is influenced by factors beyond their control, extending outside the school premises. Specifically, various elements such as the size of Estonian schools, the student-to-teacher ratio, expenditure per student, the socio-economic backgrounds of students' families, and the proportion of students with special educational needs contribute to significant disparities among schools.

Academic outcomes are much influenced by the socio-economic backgrounds of the students' families, particularly the mothers' income. In Estonia, there are schools where the median family income falls below 1,000 euros per month, while in others, families' incomes exceed 4,500 euros per month. The median income of mothers shows a positive correlation with students' final exam scores in mathematics. For every additional 1,000 euros earned annually by the mother, there is an improvement of 0.8 points in the exam results. While the funding approach for general education in Estonia offers considerable compensation for challenges arising from regional disparities and special educational needs, it largely overlooks the connection between socio-economic background and educational outcomes.

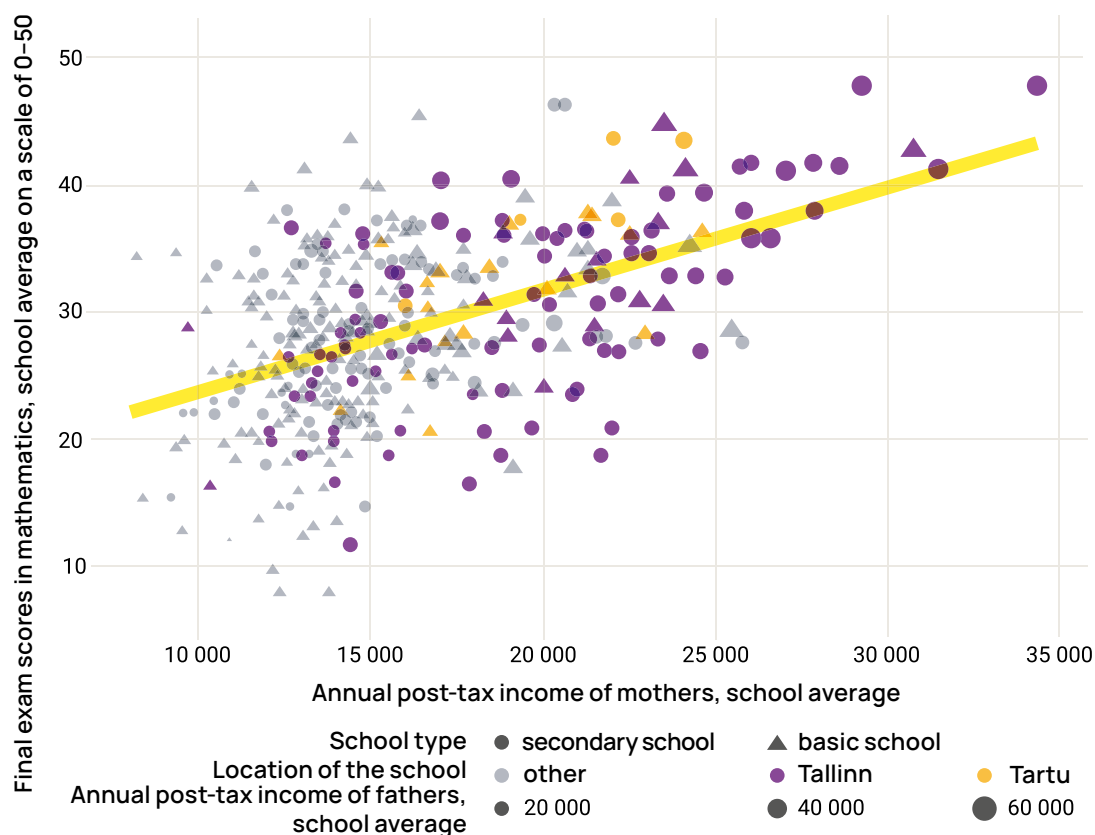


Figure 1. Correlation Between Final Exam Scores in Mathematics and Mothers' Income in General Education Schools, Academic Year 2021/2022

Source: Pöder et al. 2023

Trend 1: Falling demographics. The number of school pupils will continue to fall in Estonia, but that will not offset fully the shortage of teachers.

According to Eurostat, there will be 150,631 school pupils aged 7–18 in Estonia in 2040, which is 13% fewer than in the 2022/2023 academic year. The future demographic changes in Estonia will reduce the need for teachers, and if regional differences are ignored, the shortage of teachers would be resolved by 2035. However, **numbers will not decline equally across all of Estonia**, and Statistics Estonia forecasts that the birth rate will rise in Harju and Tartu county, creating demand not only for more teachers, but even for more schools. Moreover, the principle of inclusive education will create a need for smaller classes and personalised learning. Consequently, a decrease in the number of students will not necessarily result in reduced demand for teachers.

Trend 2: The current school network is outdated and requires further optimization. The Estonian school network was established several decades ago, and due to changes in the population, schools are not always located in close proximity to where children reside today.

A third of Estonian schools are half-empty. The school network requires rationalization; however, this does not necessarily imply the closure of small schools. Instead, it involves exploring innovative methods of operation. One forward-looking solution for sparsely-populated areas could be multi-functional and energy-saving community centres that combine a small school with other services that are impor-

tant for the community. Similarly, the quality of teaching should not be contingent on the school leaders' success in recruiting a physical teacher. Testing new models of education such as online learning or sharing teachers between schools will need schools to work together with local authorities to harmonise timetables, provide IT solutions, or organise the mobility of pupils between various schools.

Trend 3: A rise in the number of pupils with special educational needs will increase demand for teachers. One out of every five students in general education schools has special educational needs, and the proportion of such students has generally been on the rise over time¹.

This means an increase in the need for specialist support staff, but in the academic year 2022/23 only 46% of Estonian schools had a speech therapist, 51% had a school psychologist, 57% had a special education teacher, and 67% had a social pedagogue². The shortage of support staff places an additional burden on teachers. The problem is most acute in large urban schools that also have shortages of space and cannot set up additional small classes.

Trend 4: Educational technology will free up time for teachers and adapt learning methods to suit the learners.

As education becomes more personalized and classrooms become more diverse, the workload of teachers, such as creating individual learning paths and teaching materials, increases. Therefore, greater reliance on technology in the future becomes inevitable.

¹ Ministry of Education and Research (2023). Tulemusaruande analüütiline lisa 2022 (*Analytical appendix to the performance report 2022*, in Estonian only). Tartu: Ministry of Education and Research.

² Ibid.

Although technology cannot replace the teacher, technological advancements are beginning to change the nature of a teacher's work. It is estimated that 20–40% of the routine tasks that teachers currently do could be automated, freeing up that much time for the teachers³. A significant barrier to implementing these solutions in schools is the prevailing lack of collaboration and a project-based mindset. This approach creates uncertainty regarding the sustained funding for these solutions once the initial project concludes. Particular attention and leadership is needed for adapting teaching materials to inclusive education, and for creating options for asynchronous learning at different times in different places, and applying them in schools.

Trend 5: School leaders must prepare for the challenge of managing a workforce comprising five generations of teachers and adapt to shorter employment durations for staff compared to previous times.

Teaching staff prioritise flexibility and freedom over working stably for a long time in one subject area or one institution, and they would often like to work part-time for several employers⁴. Planning of career models for teaching staff needs to consider that teachers are from various generations. The labour market for teachers in the future will need to be tilted towards multiple development pathways rather than a single and constant career model.

Trend 6: Individualized value propositions for teachers are on the rise. In the teachers' job market, there are both very young teachers who are just starting their careers and older teachers who have reached the status of grandparents. It is evident that their needs and preferences, including job benefits, vary.

In other words, the teacher's career stage strongly influences the types of benefits that are most expected from the teaching profession.

There are regional disparities in the competitiveness of teachers' salaries, with lower wages (in comparison to the county's average salary) in urban areas such as Tartu and Tallinn, while higher salaries are found in rural regions. Higher salaries are effective for attracting teachers to work, but they are unfortunately not enough on their own to keep them in work, especially in unattractive regions⁵. In addition to salary, there are other benefits that enhance the competitiveness of the teaching profession compared to other occupations. These include favorable home loans for teachers, official accommodation, the opportunity for self-improvement with a (partial) sabbatical, flexible work schedules, and more. Many countries are not able to raise salaries for teachers enough to make them competitive, and so help in buying a house⁶ or compensation for a study loan⁷ can be a notable competitive advantage for the job of teacher.

³ Bryant, J., et al. (2020). *How artificial intelligence will impact K-12 teachers*. McKinsey & Company.

⁴ Templer, A. J. and Cawsey, T. F. (1999). *Rethinking career development in an era of portfolio careers*. *Career Development International*, 2(4), 70–76.

⁵ See, B. H., et al. (2020). *What works in attracting and retaining teachers in challenging schools and areas?* *Oxford Review of Education*, 6(46), 678–697.

⁶ Araj, V. (2023). *Home Loans For Teachers: A Guide To Teacher Home Buying Programs*. <https://www.rocketmortgage.com/learn/home-loans-for-teachers>

⁷ Feng, L. & Sass, T. R. (2015). *The Impact of Incentives to Recruit and Retain Teachers in „Hard-to-Staff“ Subjects: An Analysis of the Florida Critical Teacher Shortage Program*. CALDER Working Paper.

Trend 7: Expanding access to teacher training in different regions will help ensure a more equitable distribution of qualified teachers across the country.

Research around the world has shown how newly-qualified teachers primarily choose to work in the same area where they just finished their teacher training.^{8,9} This is primarily because they find the town appealing or have established a network of friends and family there during their studies.¹⁰ The highest percentage of teachers under the age of 40 is located in Tallinn and Tartu, where teacher training institutions are also situated. Making teacher training less centralised and moving it out into more remote areas could be one

way of securing the future supply of teachers to schools located in remote areas. Practically, this could involve elevating the status of regional colleges, offering distance learning opportunities in rural areas, or expanding initiatives like “Noored Kooli,” a program that allows young graduates to teach in a school for two years.

There are different possible scenarios for the teachers in 2040 that consider the different working environments of schools and the conditions they operate in. The study distinguishes between three different types of school, which are schools in Tallinn and Tartu (large schools), other town schools, and rural schools.



Future scenarios for schools in Tallinn and Tartu: the central issue for the future of large schools in and around Tallinn and Tartu is how fast and how far educational technology can successfully normalise the workload of teachers, which is currently excessively high. A second crucial issue is ensuring that the professional compensation, including salaries and other benefits, for teachers remains competitive in the local labor market, especially in areas where there are more attractive job opportunities compared to other towns and regions in Estonia.



Future scenarios for town schools: one of the most important issues for schools in towns other than Tallinn and Tartu is the cost of the school network, which affects the next generation of teachers because half-empty classrooms tie down more teachers than are actually needed. A second key issue is the working culture within schools and ways it could be improved.



Future scenarios for rural schools: the main issue shaping the future for rural schools in Estonia is whether schools or classes with small numbers of pupils will in future be closed, or whether an alternative to closures can be found. A second key issue found in the analysis is access to teacher training in the local region.

⁸ Reininger, M. (2012). *Hometown disadvantage? It depends on where you're from: teachers' location preferences and the implications for staffing schools*. Educational Evaluation and Policy Analysis, 34, 127–145.

⁹ Krieg, J. M., Theobald, R. & Goldhaber, D. (2016). *A foot in the door: exploring the role of student teaching assignments in teachers' initial job placements*. Educational Evaluation and Policy Analysis, 38, 364–388.

¹⁰ Bjarnason, T. & Thorarinsdottir, B. (2017). *The effects of regional and distance education on the supply of qualified teachers in rural Iceland*. Sociologia Ruralis, 4(58), 786–804.

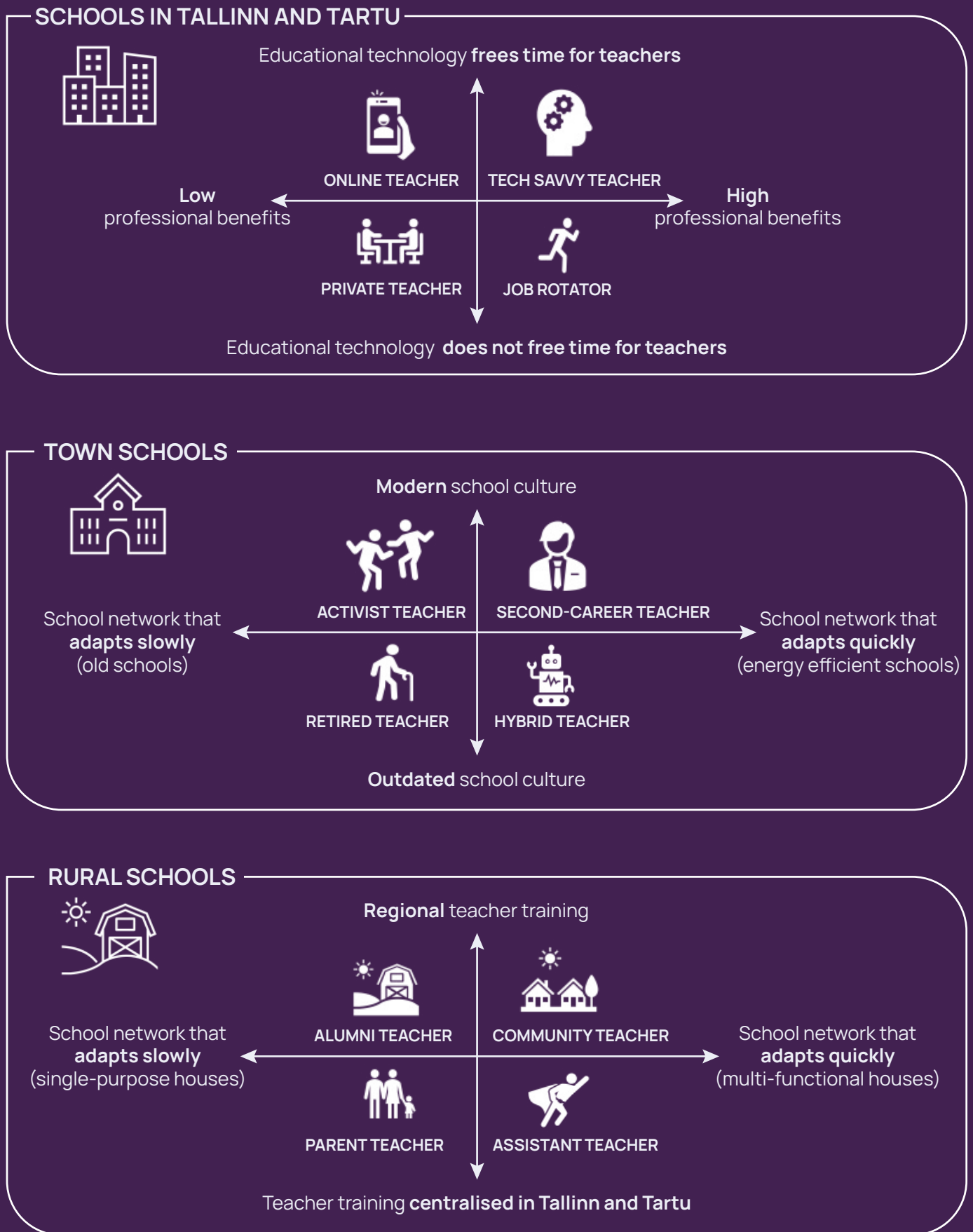


Figure 2. Future scenarios for the next generation of teachers

Source: Foresight Centre 2023

Teachers in 2040 in large city schools like Tallinn and Tartu will be ...

... Tech Savvy Teachers

Estonia leads in educational technology with a strategy that has eliminated the teacher shortage by 2040 through the use of adaptive textbooks, virtual realities, and educational apps, allowing a focus on social skill development. Schools cater to tech-savvy generations, with “Tech Savvy Teachers” addressing psychological and special needs with technology as their aide. Legal adjustments have made teaching attractive with smaller class sizes, higher salaries, and housing benefits, enhancing the profession's appeal in urban centers.

... Job Rotators

Estonia faces a critical teacher shortage due to inadequate educational technology support and escalating teacher burnout, with professionals leaving the field rapidly. Urbanization worsens the situation in the cities by increasing class sizes, adding to teachers' workloads. Despite higher salaries and benefits like subsidized home loans, these measures are short-term fixes, failing to retain teachers who prefer better working conditions in suburban schools. Teachers circulate among schools, seeking the most attractive offers and healthier working conditions.

... Private Teachers

Attempts to reduce teacher workload with technology in Estonia have not succeeded, leading to larger schools and classes in urban areas like Tallinn and Tartu. This situation, coupled with a lack of support for students with special needs, results in high teacher turnover. Teachers are migrating to private schools for better conditions, creating an educational divide where quality education is available mainly to the affluent. Furthermore, a rising demand for private tutors, driven by increasing failures in state exams, is drawing teachers away from the public sector, exacerbating the issue. This represents a continuation of current trends, with no significant technological progress or sufficient increases in teacher salaries to make the profession competitive.

... Online Teachers

Estonia's shift to a web based teaching model has dramatically reduced its teacher workforce to 6,000 virtual educators, prioritizing digital education and making teaching a highly sought-after, well-paid job. This model has led to an educational disparity, favoring students in wealthier areas with access to physical teachers. The emphasis on virtual and asynchronous learning across schools aims to provide equitable education, including for special needs students, facilitated by technological advancements. By 2040, virtual presence and adaptive learning systems have streamlined education, minimizing teacher workload and focusing physical schools on developing social skills, with teacher training centered on mastering virtual teaching.

Teachers in 2040 in town schools will be ...

... **Second-Career Teachers**

Estonia has revamped its school system into a “green” network with multifunctional, low-cost buildings, attracting events and activities beyond traditional schooling. This integration has improved the appeal of teaching, with modern work culture preventing teacher poaching and making the profession more attractive. Teacher training is now regionally available and flexible, encouraging career changes and ensuring all teachers are qualified, even in remote areas. Small class sizes and educational technology help manage workloads, making teaching more focused and personalized. These reforms have elevated local schools, making teaching an appealing career choice locally and reducing the draw to larger cities for education and employment.

... **Hybrid Teachers**

By 2040, urban schools have modernized, embracing technology to address space and teacher shortages. Virtual learning platforms enable efficient management of students with special needs and support multilingual education without the need for physical teachers. The hybrid teaching model, which combines digital resources with fewer in-person educators, addresses the lack of physical teachers but contributes to a stagnant work culture. As a result, newer teachers gravitate towards larger cities or innovative state-run schools, leaving a gap filled by experienced teachers nearing retirement. This shift challenges the development of a modern educational work culture in urban schools.

... **Retired Teachers**

The “Retired-Teacher” scenario for 2040 predicts stagnant urban school systems with deteriorating infrastructure and schools operating at 30% capacity, largely staffed by retired or returning pensioner teachers due to insufficient full-time positions. Lacking state support for educational technology, teaching methods remain outdated, failing to meet the digital proficiency and learning expectations of new generations. This contrasts sharply with the dynamic work culture in major cities like Tallinn and Tartu, attracting both new teachers and students and deepening the educational disparity with peripheral areas.

... **Activist Teachers**

The “Activist-Teacher” scenario in 2040 features urban schools revitalized by local activists and parents doubling as teachers, driven by a desire for community preservation and a better balance of urban life. These individuals transform schools with voluntary efforts, creating a supportive and modern work culture despite the buildings’ disrepair. The initiative’s success depends on leadership and the community’s ability to foster a collaborative environment, crucial for integrating technology and contemporary teaching practices. The growth and sustainability of such schools are uneven, with success largely tied to attracting new, engaged families, in contrast to the centralized focus of teacher training in major cities.

Teachers in 2040 in rural schools will be ...

... Community Teachers

By 2040, Estonia's rural schools collaborate through community centers, emphasizing green practices and financial self-sufficiency by renting out space. This network approach enables specialization across schools, with shared resources and coordinated schedules facilitating diverse educational offerings like specialized labs and language programs. The system ensures full employment for teachers and financial independence for schools, eliminating the need for state subsidies. Educational technology, including virtual and hologram teachers, supports remote learning, ensuring all students have access to quality education. Teacher training is customized to local needs, promoting community engagement and making rural teaching positions desirable. This model transforms rural education from facing closure to becoming a beacon of educational innovation, with a strong emphasis on community involvement and environmental sustainability.

... Assistant Teachers

By 2040, rural education in Estonia evolves into a network of multi-functional community centers, combining educational and other services to adapt to demographic changes and reduce costs. As teacher training continues to be centralized, rural areas experience a shortage of qualified teachers. To address this gap, Assistant Teachers step in to fulfill the teaching roles. Rural schools maintain quality education through significant investments in educational technology and virtual teaching, enabling students from various locations to learn together online. Local Assistant Teachers, crucial for personalized student support, address the growing needs of smaller classes and special education.

... Parent Teachers

By 2040, rural Estonian schools face a critical challenge due to centralized teacher training and financial constraints, leading to a threshold for minimum student numbers and difficulties in maintaining small, aging school buildings. In rural areas, a significant portion of teachers are unqualified local career switchers or Parent Teachers. This scenario risks educational quality, heavily reliant on the parents' educational backgrounds. The crisis deepens teacher succession issues, highlighting educational stratification and forcing parents to seek better education elsewhere. The parent-teacher model, intensifying from current trends, suggests rural schools may become quasi-private family ventures, heavily dependent on parent-led instruction.

... Alumni Teacher

In the "Alumni Teachers" scenario, the traditional physical school building remains a symbol of community pride – a school in every village. Local parents wish for their children and grandchildren to attend the same schools they did, with alumni returning to their hometowns, starting families, and valuing the proximity of local schools. The school network is driven by strong nostalgia, and the succession of teachers is ensured by those schools that have successfully fostered alumni-teachers from within their community. The school network is static – schools remain open despite declining student numbers, as regional policy aims to ensure the provision of local schools.

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