Enhancing public-private partnership and the role of EdTech in advancing inclusive education in the Baltics

Policy brief

Eve Mägi, Elisabeth Kendrali, Hanna Siarova, Justinas Didika

Context

The advancement of digital technologies is transforming the world at an unprecedented pace, reshaping how people live, work, and learn. This transformation affects many different parts of our lives as digital technologies are increasingly integrated in all sectors of the economy. As noted in the recently adopted Digital Education Action Plan 2021-2027, connected devices and intelligent systems support us in terms of access and exchange of information, collaboration and communication, modes of work, business operations and finally yet critically, learning opportunities (European Commission, 2020[1]).

In recent years digital technologies have indeed been increasingly integrated into school practices, including smartphones applications for learning, game-based learning, online learning systems, virtual worlds, online peer and self-assessment tools (European Commission, 2018b[2]; Baker et al., 2016[3]). Despite this, researchers for some time already noted the relatively low uptake of technologies in education and education system's slow reaction to the digitalisation trends highlighting that the learning environment, the digital capacities of teachers and learners as well as the quality of education have not kept the same pace (PPMI, 2019[4]; OECD, 2014[5]). The Covid-19 pandemic has taken the importance of this question to another level as educational systems world-wide faced sudden and large-scale shift to online or distance learning and thus were forced to use a variety of digital solutions to address the difficulties. Simultaneously, only 39 % of teachers in the EU felt well or very well prepared for using digital means in their daily work, with significant differences between Member States[6].

In the Baltic region the rapid transition to distance learning has faced its challenges as well. The experience of remote learning during the pandemic in Lithuania and new directions for the next school year were discussed at the remote learning community forum "Learning Community: Towards Digital Education" held

[1] Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Digital Education action Plan 2021-2027 Resetting education and training for the digital age {COM(2020) 624 final}

[2] European Commission (2018a). *Proposal for a Council Recommendation on Key Competences for LifeLong Learning*. Commission Staff Working Document. Accompanying the document SWD (2018) 14 final). Brussels: European Commission.

[3] Baker, R. S., Clarke-Midura, J. & Ocumpaugh, J. (2016). Towards General Models of Effective Science Inquiry in Virtual Performance Assessments. *Journal of Computer Assisted Learning*, 32(3), 267–280.

[4] PPMI (2019). *Prospective Report on the Future of Assessment in Primary and Secondary Education*, Unpublished report.

[5] Burns, T. and Kovacs, R (2014), Infinite Connections: The Digital Divide, OECD Education and Skills today. Available at: https://oecdedutoday.com/infinite-connections-the-digital-divide/

[6] OECD (2019), TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners. Paris: OECD Publishing.

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in June[7]. It was noted that a wide variety of virtual learning environments and digital tools are available to schools and that most schools have prioritized some rather than others. The Ministry plans to continue developing new support tools for school leaders and teachers. Such support includes a remote learning guide for schools, remote learning didactics for teachers as well as digital tools for assessing student progress that are currently being developed. The forum was presented as a foundation for the development of a national digital education strategy. The remote learning experience also formed recent updates to general education programs. The general curricula are supplemented with a new section on the organization of the educational process in remote settings, there is a provision that the schools may decide to organize education by combining the usual and remote learning methods. In July, the Government also adopted more detailed measures, in terms of technical requirements and digital means, in the new *Criteria for organising the educational process in remote learning* (2020).

In Estonia, digital competences are part of the eight key competences of lifelong learning and they are included in the national curricula of basic and upper secondary schools since 2014. The Digital Turn programme, part of the Estonian Lifelong Learning Strategy 2014-2020 (the national educational strategy) focused on creating a comprehensive approach for the development of digital skills and for targeted use of digital solutions in study processes. Digital Mirror, a tool for self-evaluation of the school's digital innovation maturity is available since 2017. An interim evaluation of the Lifelong Learning Strategy highlighted that the key remaining challenges of the Digital Turn programme are the following: improving teachers' digital skills, providing educational technology support for teachers, and improving teachers' and parents' awareness on the benefits and opportunities offered by digital tools[8].

Consultations with parents, students and teachers in the region also revealed various challenges associated with sudden transition to remote education using digital tools (see **Table *1*** below).

Table 1. Challenges associated with digital education:stakeholder views in Lithuania and Estonia

STAKEHOLDER	REFLECTION
Teachers and schools	Public-private partnership initiatives during the remote learning enabled to have access and enough devices for all students not lag behind in schoolwork. There have been many courses and support offered to teachers related to digital literacy No clear guidance from the Ministries and municipalities on the most preferred platforms and programmes, Lack of coherence in the usage of various tools and materials, which is not always aligned with learning objectives – linked to lack of clear assessment of needs in specific contexts Quality control and evidence-based approach is needed.

[7] Educational News, 'Įvyko švietimo bendruomenės forumas' [An educational community forum was held], June 18, 2020. Retrieved at: http://www.svietimonaujienos.lt/ivyko-svietimo-bendruomenes-forumas-nuotolinio-mokymo-rezultatams-aptarti-bei-pasiruosti-naujiems-mokslo-metams/.

[8]Haaristo, H.-S., Räis, M. L., Kasemets, L., Kallaste, E., Aland, L., Anniste, K., Anspal, S., Haugas, S., Jaanits, J., Järve, J., Koppel, K., Lang, A., Lauri, T., Michelson, A., Murasov, M., Mägi, E., Piirimäe, K., Põder, K., Rajaveer, K., Sandre, S.-L., Sõmer, M. 2019. Elukestva õppe strateegia vahehindamine. Tallinn: Poliitikauuringute Keskus Praxis, Rakendusuuringute Keskus CentAR.

Students	Not enough diversity of digital learning materials and tools used in the classrooms No clear relevance of the employed tools for the learning programmes
Parents	The goals of child development and age-appropriateness (especially when using different tools) is not always at the centre of digital education and new digital learning materials developed Lack of family involvement and suitable learning environment at home for meaningful learning remotely

Source: SIRIUS Digital education policy workshop, joint Lithuanian-Estonian discussion, December 3, 2020.

Developments of EdTech sector in the Baltics

Looking at future education, EdTech solutions and digital materials are increasingly seen as the base for learning and educational communication system. Accelerated by the pandemic, EdTech is pushing the boundaries of traditional teaching. Emerging technologies like Virtual Reality (VR), Augmented Reality (AR), and innovative gamification techniques are creating an entirely new learning environment, underpinned and supported by the teaching excellence. Public-private partnership initiatives during the remote learning period in Spring 2020 enabled access and enough devices for most students not to lag behind in schoolwork. **Creative ways and innovation potential demonstrated** in Estonia and Lithuania for sustaining educational continuity in partnerships between different sectors and civil society organizations **must continue and be supported for improving education delivery for vulnerable groups** in a systematic way. However, experts in the education sector have noted that children with diverse educational needs, including children with special educational needs, newly arrived migrant children and refugee learners, struggled the most because there were little or no digital learning solutions appropriate for them.

Importantly, **lack of personalised support and access to professional support specialists** in the context of remote learning applies to all students, not only vulnerable students. Different stakeholders expressed that during the remote learning period, access to support services was not adequately (if at all) addressed which illuminates broader issues with study support in digital learning. Estonia is already facing a serious shortage of qualified school support personnel[9]. The situation is similar in Lithuania. Thus, **utilizing the existing capacity in both face-to-face and remote learning and implementing digital solutions for study support specifically are of great importance.**

Estonian public sector and the EdTech community have already **taken important steps to foster the collaboration between the state end EdTech companies**. Startup Estonia, a governmental initiative, is already running their **EdTech-focused programme** which provides startup incubation programmes for students, develops and supports the EdTech community through meet-ups and a network of schools for piloting their services[10] etc. Moreover, EdTech Estonia, an NGO established in December 2020 and representing Estonian EdTech startups, has just formalised their cooperation with the Education and Youth Authority in order to ensure the development and sustainability of innovative digital services for Estonian learners.

[9]Mets, U., Viia, A. 2018. Tulevikuvaade tööjõu- ja oskuste vajadusele: haridus ja teadus. Uuringu lühiaruanne. Tallinn: SA Kutsekoda. https://oska.kutsekoda.ee/wp-content/uploads/2018/11/OSKA-Hariduse-ja-teaduse-uuringuaruanne-2018.pdf

[10]Startup Estonia. Edtech Focus https://startupestonia.ee/focus-areas/edtech-focus

The cooperation between the state and EdTech start-ups in Lithuania has not progressed to the same degree as in Estonia. However, the newly created EdTech Lithuania, a community initiative, aims to enhance education innovation sector in Lithuania and transform national education system in the long-term perspectivr[11]. During the pandemic, Lithuanian EdTech companies opened up their online classroom platforms for Lithuania and other countries to use as solutions for remote learning[12]. The Lithuanian government also recognizes the importance of systematic and long-term integration of EdTech solutions into education provision (it should not be seen as an emergency response) and therefore, foresees pursuing more systematic collaboration with EdTech sector in the future. New governmental programme in Lithuania on collaboration and digitalisation of education covers such areas as more coherent selection on technological tools for schools, more freedom to schools to organise part of their work remotely and improving schools' capacity to use EdTech[13].

Leadership in Digital Education in Lithuania

The aim of this project is to establish a digital direction in Lithuanian education and to create a modern school in order to supplement traditional educational methods with the latest technologies. It is essential for a modern person to be able to work and learn with the help of information technology. In addition, we must be prepared for the fact that, in the event of any pandemic, the educational process will not be interrupted and will not affect student achievement. Under this project, we will implement a national program to reduce the digital divide and strengthen the digital literacy of students and educators.

Key initiatives:

1. Consolidation of the latest educational technologies. We will ensure that the latest educational technologies become an integral part of general education. In order to achieve equal starting opportunities in all schools, we will provide teachers and students with access to all digital teaching / learning content created by the Lithuanian EdTech sector that meets high quality criteria, not only during a pandemic, but continuously. We will expand the opportunities to acquire and, if necessary, adapt high-quality digital content created in other countries.

2. Blended learning. In preparation for possible crises (epidemics, heat waves, etc.) or in response to local challenges, we will introduce blended learning in schools. We will establish the possibility of choosing schools up to 25 percent. carry out the educational process remotely. We will use the opportunities of remote learning to address the lack of quality services in geographically remote areas or areas that are experiencing difficulties for other reasons. By bringing together the best teachers and researchers, we will invest in the creation and dissemination of digital content. This will help both Lithuanian schools and pupils, as well as Lithuanian schools operating abroad, to use the remote learning content of Lithuanian general education schools.

3. A package of technological solutions for schools. We will prepare and offer to schools specific simple and user-friendly combinations of technological solutions (communication tools, video conferencing tools). We will encourage municipalities to ensure that teachers and students have access to the necessary technological tools and online access in schools and at home (with a special focus on children growing up in families at social risk). In order to improve the provision of ICT, we will increase the share of funding for the purchase of IT tools, digital content creation and distribution platforms in schools.

4. National STEAM program to reduce the digital divide. At the national level, we will implement the national program by strengthening the digital literacy and digital subject development of various groups in society, especially teachers and students. One of the goals of the program is to make IT the language of Lithuanian students. In order to enable children to develop the skills necessary for future success, we will integrate IT into the curriculum of all subjects and make the most of technological and digital tools from an early age. We will agree on the basics of technological literacy and the level of English language skills necessary for a teacher. We will strengthen and advance the development of digital literacy and computational thinking competencies, we will start it in kindergartens.

5. Pandemic Education Loss Compensation Program. Together with the municipalities, we will provide individualized assistance to schools in implementing technological tools, and we will organize additional assistance for children whose educational results have not reached the required level. We will create an effective education compensation program - first

[11] See e.g., https://edtechlithuania.com/mission-and-goals

[12] Lithuanian EdTech Solutions for Remote Learning Amid COVID-19 Quarantine, see at: https://www.bitdegree.org/edtech-lithuania

[13] The Seimas of the Republic of Lithuania draft resolution No. XIVP-90 'On the Programme of the Government of the Republic of Lithuania', published on 2020 December 07.

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for quarantined students and, in the future, for children dropping out of the educational process. The system of targeted compensation for educational losses due to coronavirus will primarily target the most sensitive and vulnerable groups of students.

Source: The Seimas of the Republic of Lithuania draft resolution No. XIVP-90 'On the Programme of the Government of the Republic of Lithuania', published on 2020 December 07.

Currently, there **are very few digital learning solutions in Estonia and Lithuania which have the potential to benefit migrant learners specifically**. Üleilmakool (Global School) is a digital solution which provides learners, no matter their location, the opportunity to take courses from the Estonian national curriculum. Learners can also access individual classes through Skype. Üleilmakool has been recognised as a valuable service for returnee students or learners who temporarily reside abroad. No specific inclusive EdTech solutions have been identified in Lithuania. Another EdTech solution from Estonia, ALPA Kids, is a game directory focused on culture and language. However, some stakeholders argue that a solution like this which focuses on the visible aspects of culture (e.g., traditions, symbols, dress) does not integrate the principles of culturally responsive teaching sufficiently. Therefore, despite these very positive developments and initiatives (especially in the context of foreign language learning), the field is facing several challenges regarding the development of solutions for students with diverse backgrounds and needs. There is a degree of uncertainty of identifying the needs for students with diverse background to create an avenue for EdTech solutions to be created to address these challenges.

Increasing the export capacity of EdTech companies is a very clear need driven by the small size of the Estonian and Lithuanian market. Regarding inclusive EdTech solutions, stakeholders have identified several challenges: little information about the needs of learners with diverse backgrounds (e.g., migrant learners) and an insignificant demand for these highly specialised solutions on an already small market. State funding and incentives for these complex solutions are needed but stakeholders are also voicing concerns about the possibility of state intervention resulting in decreased market competition. Estonian practice of the state buying digital solutions as a tender has highlighted another shortcoming: continuous development and long-term support are rarely part of the tender. Consequently, the state-bought solutions, even if targeted at specific issues or groups of learners, are not viable long-term.

The positive trajectory that has characterized public-private partnership in EdTech is challenged by financial opportunities. While **EdTech companies are incentivized** to be actively involved in educational support development, there is a **cost for services and currently, it is rather arbitrary which further limits sustainability.** For instance, there is no tradition in the Baltic countries for schools to buy their own tools or pay for EdTech solutions. Sometimes teachers use their own financing, but this is rather exception than a rule. Yet, sustainable funding would enable EdTech companies to increase the quality of solutions and cover the costs for constant development and updating materials. This would open up funds to pay for the EdTech services and enable hackathons, accelerators which are crucial to further develop EdTech products. The question of capability and willingness of school owners' contribution was raised in the discussion followed by the possible share of family/student share. For students with diverse background, the market is rather small, and the ability of paying is questionable. Obviously, for the state it is important to bear in mind the need to comply with competition rules when contemplating various financial options. There have been tenders organized by the state but tenders cannot ensure **long-term support.** State-bought solutions might end up dead due to **a constant development-needed field** as mostly EdTech solutions do not comply with concrete beginning and end.

Considering all of the above raises the question if **only international cooperation can incentivise EdTech companies to develop complex solutions required for responding to the needs of small groups like migrant learners.** The questions that the Baltic education stakeholders need to explore and answer: Are there any other courses of action? How can each stakeholder group – EdTech companies, ministries, schools, and teachers – contribute? What capacity do schools have for choosing relevant and suitable EdTech solutions and tools?

Advancing public-private partnership in inclusive education in the Baltics: cooperation between EdTech and the public education sector

Possible roadmap: case of Estonia

Startup Estonia started a cocreation programme involving Tallinn University and EdTech companies in order to together create solutions which would suit Estonian students and be justified scientifically. It was funded through Startup Estonia and included only a few companies. These cocreation platforms should be available much more widely and there trend is already moving towards better collaboration between universities and EdTech companies. In LT, research on digital educational solutions is encouraged by the new governmental strategy. Estonian universities are struggling to cooperate with EdTechs because of their project-based funding and inadequate connections with the EdTech sector. **Possible solutions:** EdTech needs to attract investments for their projects but they can only do that if they can show the market potential – this is the starting point for funding the cooperation between EdTech and researchers too.

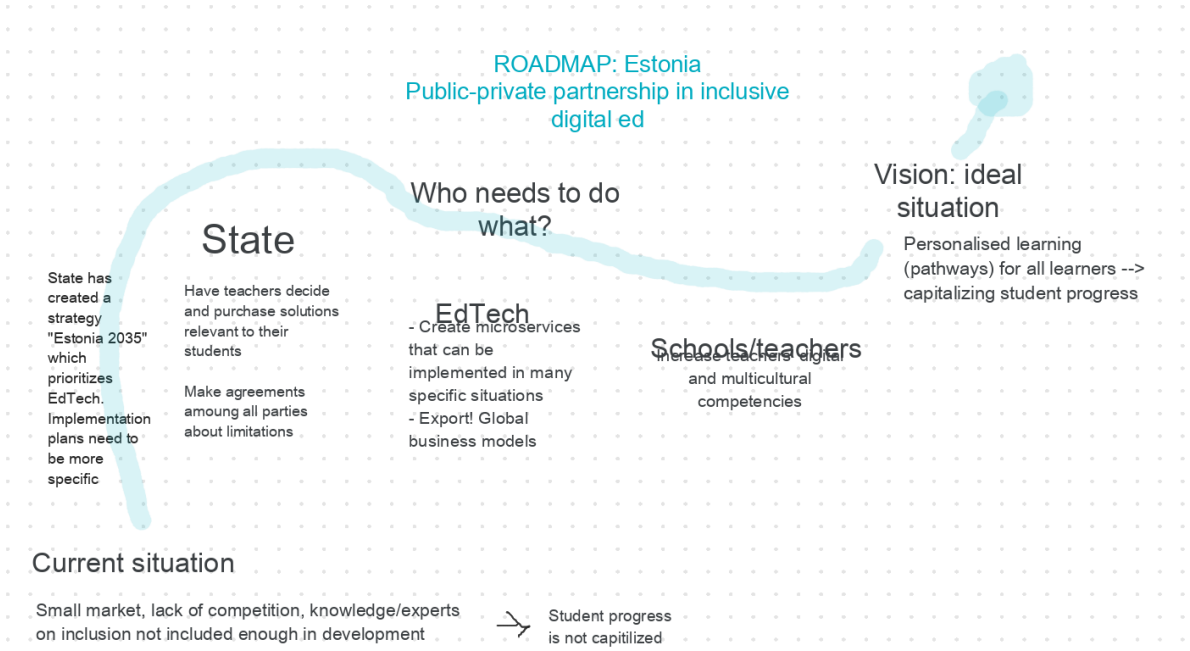
Currently, the **role of teachers and other stakeholders (students, parents)** in education community is unclear. It was voiced in the discussions that teachers should be co-creators of materials and active partners in EdTech solutions development. At the same time, the capacity and procedure to take that role is blurry for various reasons. Not all teachers are motivated to take that role and/or they might lack digital competence. However, teachers need and are the users of digital tools and EdTech solutions today (largely also due to the remote education need) and ideal for the future inclusive education is to increase their role as co-creators. Teacher training among other components plays a crucial role here. The key priority in this context should be teachers' continuous digital skills development. It is important not only to foster basic digital literacy of teachers but also to think about how the different tools can be applied and how they can help address the context-specific issues. The context-specific approach is particularly important in ensuring the inclusiveness of digital education as it is also known that teachers often feel they need more support and innovative solutions working with vulnerable groups. Professional development thus needs to go hand-in-hand with the development of competences for working with pupils from diverse and/or socially-disadvantaged backgrounds. This would allow remote or blended learning to involve more targeted digital tools and additional social support that is required to ensure the well-being of all learners.

A practical solution for addressing the indicated challenge would be creating and maintaining **effective continuous digital competence development system** for teachers. Such a system should include both the methodological application of digital means in teaching as well as digital communication competence development. It could work as a short-to-mid term practical solution that would involve broader community, including teachers, students, parents, development psychologists, municipalities, NGOs, researchers and EdTech representatives. This could be fostered by governmental mobile groups that would support the community collaboration and digital transformation of individual schools not only by providing

teaching to a few selected teachers but by building necessary capacity within schools, helping them develop school digitalisation strategies. It would allow forming the necessary foundations on which the context-specific developments towards more inclusive digital learning would take place. At the same time, it was noted that digitalisation in schools should not be an end goal in itself but rather a tool to foster better collaboration between the different groups in the community, which would make the learning process more inclusive. **Possible solutions**: in application of EdTech solutions, it would be important to focus on continuity vs. single-time uses which is relevant in both the context of usages and teacher preparation (both pre- and in-service training). A development of EdTeach solutions, supporting training (for teachers and parents) has to consider students with diverse background in order to achive culturally sensitive teaching and learning process.

Student and students´ developmental needs and motivation is in the centre of inclusive education. All solutions and approaches must consider it as basis. It was found that to put student needs in the centre is a shared responsibility and students must be included in the process. Currently, student role and ways to enable student to be a co-producer/co-creator in this process is not specified. Parental viewpoint reflected importance to place a student development and age-appropriateness in the centre but perceived that sometimes EdTech development is a goal of its own rather than focusing on student needs. More specifically, student´s self-organizational skills are important in the context of EdTech. New education strategy Education 2035 has a strong focus on individualized learning paths. **Possible solutions:** Schools and municipalities can take initiative, not to wait for the state initiative. EdTech cooperation with state, municipality and school level can support individualized learning paths.

Enhancing public-private partnership and the role of EdTech in inclusive education raised **a question of quality assurance.** It is expected that EdTech solutions are evidence-based and constantly updated. Yet, as it was voiced it is time-consuming task for EdTech developer to gather all the evidence on the topic. Especially in cases when partnerships with academics and researchers are not in place and finances are scarce. The question of responsibility of **evidence-based approach** emerged. Is it a responsibility of EdTech developer, state control, autonomous teacher or a parent?



The limit to personalised teaching is often teachers' capacity. EdTech needs to move towards a business model that can support realising this. Before this, however, the state needs to create infrastructure for the movement of data. Schools and teachers need to upskill (digital competences).

In order to reach situation where EdTech supports individualised learning pathways for all students, it is important to:

1. Identify the responsible party in the process
2. For EdTechs to implement a global business model from the start
3. Ensure a balance between profit and providing education (public good)
4. Increase teachers' role in developing EdTech solutions

Possible solutions: Universities' increased role in product validation. As another solution, the idea of two-way validation (the role of universities and the market) emerged from the discussion. This would guarantee that the digital solution is sensible and justified from a pedagogical point of view and useful for teachers.

Possible roadmap: case of Lithuania

In the light of the discussion above, there is a significant need to think about EdTech application in schools in the future. Although the movement to remote and blended learning was sudden and forced in the context of the pandemic, we have to think about the broader picture using this experience after the crisis. This notion is supported by the newly presented governmental programme, which aims to allow schools to implement up to 25 % of learning curricula using remote methods.

Goal: to come up with and maintain a network for continuously monitored and updated **package of technological solutions presented to schools.** The first ideas for the Roadmap were sketched during

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the SIRIUS Baltic workshop with representatives of the Ministry of Education and EdTech community in Lithuania.

Participants indicated that such a package consisting of both digital tools used for communication purposes and tools used for implementing educational programmes could be presented **on the website of National Agency for Education**. For keeping the given package monitored and updated, **there is a need to establish a regular dialogue in the form of a network of all related stakeholder representatives**. Th**e National Agency for Education should be the main initiator of this partnership** as it has a department working with technological solutions, professionals in the educational content application and educational support specialists who, together with ministerial officials dedicated for this issue, could form the ground basis and act as coordinators of the network.

Participants agreed that **the network should consist of all related stakeholders**, including EdTech companies, higher education representatives, Research Council of Lithuania, teacher trainers, parents and student association representatives, related NGOs and associations of educational stakeholder specialists. With educational experts from municipalities, who would know the local context and needs, **regular municipal/regional level meetings and catch-ups should be established to discuss policy processes and new EdTech solutions development**. Rules and responsibilities in the network should be clearly outlined.

Regarding the tools used for implementing educational programmes, a team of experts would be needed in the network to **assess the quality and monitor whether the presented digital solutions are in line with the general education programmes and if they are suitable for its implementation**. In addition to acting as a monitoring and quality insurance body, the network would also help in creation of new tools as the representatives from EdTech companies would have the information from all related stakeholders on the market needs.

Participants noted that **one of the first steps would be mapping and assessing what digital tools are actually used and applied in schools and whether they are suitable** for implementing inclusive educational programmes. For this reason, research would be an essential part of the network. **Universities and the Research Council of Lithuania should be encouraged to conduct such studies**. Having research-based conclusions about the products and processes in schools could then be useful for both users and also for EdTech companies to prepare tools that would be more appropriate and responsive to the needs.

EdTech community representatives expressed that it is indeed in companies' interests to have such research as it allows to think about potential solutions in creating new tools or further improving the existing ones. However, in many cases, local EdTech communities are small and do not have sufficient funds to undertake such research themselves, therefore, partnerships with universities are crucial. **A positive example of cooperation between the government, research bodies and EdTech communities is one of the 'Startup Estonia' programmes**, which helped to foster the partnership between Tallin University and several EdTech companies for joining forces in creating solutions that would suit the needs of students in Estonia and would also be justified scientifically.

In the Lithuanian context, **local universities and/or the Research Council of Lithuania, which is already producing studies on digital education issues, could help find doctoral students and researchers who have the necessary experience and skills to participate in the network**. This would allow cooperation with EdTech companies in terms of providing external research-based expertise in digital education and relevant for the local contexts.

In terms of financing, **both private and public funding should be encouraged**. Fundraising was highlighted as one of key functions of the network. It was suggested that a possible venue **for targeted use of public finances could be the provision of additional funding to schools that use the tools from the package**. This would encourage schools to become more digitalised as well as incentivise EdTech companies to make their tools suitable and in line with the school needs.

While monitored in terms of their quality and compliance with educational programmes, the presented package of technological solutions should have a relatively **flexible administrative system that would allow to keep it updated and include new digital solutions**. A potential solution can be creating a **school feedback system** where schools would leave their feedback after using a certain platform / digital tool. After a tool/platform is positively evaluated by at least several schools (e.g. 5 different schools) and given that it is in line with all quality requirements assessed by the experts in the network, it could be added to the platform.

Finally, it was agreed that such a system would be too demanding to start already at the national level. The initial step would thus be **piloting this network/community in a few volunteer municipalities**, which would be keen to apply such measures and test how it works and how it can be developed further. **Jonava, Klaipėda region, Taurage and Vilnius** were indicated as potential piloting municipalities. The selected municipalities represent both rural and urban educational contexts and already have a background in proactively applying and testing innovative digital education measures.

Figure 1. The Roadmap created during the discussion

Source: Baltic Round-table discussion on 'Public-private partnership in inclusive education and EdTech'. December 9th, 2020

The key points to keep in mind when developing such a roadmap are: (1) the sources of financing for the network, (2) developing a smart system of classifying and quality assure existing EdTech solutions, (3) sustainable funding, flexibility and support for schools to invest in digital solutions, (4) research on specific needs of schools, in particular in the context of inclucived education of students with diverse learning needs.