**Accelerating Digital Innovation in Schools
through Regional Innovation Hubs
and a Whole-School Mentoring Model**

WP5/ D5.3

POLICY RECOMMENDATIONS

WP5 Leader: HARNO

I-HUB4SCHOOLS

iHub4Schools - Accelerating Digital Innovation in Schools through Regional Innovation Hubs and a Whole-School Mentoring Model

D5.3: Policy recommendations

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Executive Summary

In this deliverable we present policy recommendations that emerged from our project work. Recommendations are based on the interviews with policymakers and experts from Finland, Estonia, Georgia, Lithuania and Norway; input from Delphi survey that was carried out among consortia members, and lessons-learned from piloting. Recommendations mainly focus on the core themes of the iHub4Schools project. But given the complexity of the topic are actually broader and touch also framework issues as infrastructure and overall government policies.

We came up with seven recommendations and they are following:

1. Advance teachers' digital competences through meaningful whole-school level initiatives.
2. Prioritize school leadership and value school autonomy
3. Ensure access to professional learning and development opportunities for teachers
4. Foster multi-stakeholder collaboration for digital innovation in education
5. Support the transfer to evidence-informed approach, access to evaluation instruments and strengthen the culture of reflection and monitoring
6. Invest in digital infrastructure for all schools and school networks
7. Create awareness regarding the benefits of digitalization and digital skills to enhance teaching and learning as well as change policies

Under each recommendation there are more specific guidelines presented, also including the references to deliverables where themes are discussed in detail.

Introduction

The main aim of the iHub4Schools project was to propose and validate the School mentoring model in peer-learning settings to enhance the evidence-informed adoption of digital innovation. Additionally, the project aimed to create five Regional Innovation Hubs across Europe to support the project activities and expect the project to have an impact on individuals (teachers and students) and organisations (schools, associations, networks, local policy bodies). Regional Innovation Hubs established in the project will promote the expansion of digital innovation and will be built upon existing or emerging initiatives and networks involving schools, universities, and industries in the field of educational and digital innovation. An additional objective is to incorporate **the project's outcomes into a comprehensive set of policy recommendations.** We engaged policymakers and experts iteratively through interviews, a Delphi survey, and diverse engagement events (e.g. policy-briefing events conducted on a national scale, an international-level policy event during the final conference). By highlighting the key findings of our project's reports, we developed the iHub4Schools policy recommendations to ensure that the **findings of the project are utilized in the decision-making process at the national policy level**. The deliverable for this task (D5.3) aims to influence policy decisions at the national level and facilitate the integration of the project's results into existing policy frameworks.

The aim of this deliverable is to **present a summary of key findings derived from our project work and to provide insights for policymakers** on various levels to support enhancement of teachers' digital competences and professional development in pedagogies with digital technology. It is important to bear in mind that the four participating countries in this project exhibit notable diversity, encompassing disparate educational systems, varying degrees of national wealth available to invest in their respective education systems, and varying levels of maturity in implementing digital technology related agendas. Nonetheless, despite these disparities, we also have identified numerous shared challenges, experiences and lessons across the participating countries. Therefore we believe that our findings hold potential to inspire and inform policies also across borders. To compile this deliverable we conducted a Delphi study among the consortium members. The subsequent text has been put together by summarizing the main messages that emerged from Delphi study, and also from mentoring pilots, training and other developmental work, along with interviews with a diverse range of individuals. Furthermore, the contents of this chapter are enriched by the deliberations and exchanges that were exchanged during the final conference in Tallinn, April 2023.

Policy recommendation 1

Advance teachers' digital competences through meaningful whole-school level initiatives

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All policymakers in the project's five partnering countries reported **uneven levels of teachers' digital skills.** Similarly **our report D1.3** (Report on teacher digital competence and school digital maturity) pointed out the importance of integrating assessment of teachers' competence and schools' digital maturity) should be embedded into wider professional development and school improvement practices.

It is common in schools to have a mix of teachers who are proficient users of digital technologies and, at the same time, teachers who may lack the necessary digital skills and experience. Very often support programs for advancing teachers' digital competences development suffer insufficient resources and limited duration. Hence, implementation of change at a grassroots level remains slow. Following policy pointers were raised from the interviews and piloting work:

1.1. Create teachers' engagement for pedagogical transformation

Throughout the project, it became evident that governments often prioritize investments in hardware, software, and internet connectivity, overlooking the crucial aspect of cultivating digital practices that foster pedagogical innovation. But research of various scholars and our work shows the **importance of a teacher's agency.** To ensure lasting and impactful changes, it is essential for teachers themselves to have a chance to assess their own competence and recognize their individual needs. In successful professional development experiences, **teachers demonstrate enthusiasm for the new technological opportunities that have the potential to transform teaching and learning**. Teachers can become change agents that can effectively harness this motivation and enthusiasm to drive sustainable change for the benefit of students. Our deliverables offer a comprehensive toolbox that includes pilots, case studies, and descriptions of various approaches. These resources are intended to be valuable references for school leaders and teachers, providing them with opportunities to learn and draw inspiration from.

1.2. Holistic implementation is important

Efforts to develop efficient pedagogical practices in using digital solutions are more effective when **implemented at the whole-school level,** rather than at the level of individual teachers. It is collective responsibility within an organization, influenced by various contextual factors that exist both within and beyond the broader school setting. The „digitalization agenda" should be embedded within school development processes and integrated into subject teaching, emphasizing how digital technology supports student learning and prepares them for the digital society. While national-level initiatives are crucial to advance teachers' digital competences, **these efforts must resonate with school leaders and teachers to ensure meaningful engagement.** When participation in digital skills training is forced upon schools by external entities, such as school owners – i.e. municipalities or national governments – without genuine interest from school leaders, it undermines teachers' motivation and hinders meaningful change at the school level.

1.3. Avoid top-down approaches

In light of the varying digital skills levels among teachers, policymakers may be tempted to expedite the process through top-down regulations, such as mandatory testing or enforcing required training hours. However, the insights gained from the project have revealed the limitations of such approaches. Teachers are often resistant to forced innovations, and instead, new initiatives should be collaboratively planned at the school level, with plans communicated and shared understanding created collectively. This participatory approach helps teachers embrace innovation. But it is also important to note that the mere integration of technology alone will not drive substantial change. Rather, it is essential to **foster the co-creation of pedagogical practices** that take into account learning principles, didactical knowledge, and domain-specific expertise. This holistic approach ensures that technology is integrated effectively to support meaningful and impactful teaching and learning experiences.

Policy recommendation 2

Prioritize school leadership and value school autonomy

Experiences in iHub4Schools has shown that a clear vision, common understanding of goals, collaborative culture, and effective management are crucial for sustaining school innovation. For that important system-level requirement is a school autonomy that allows appropriate rights and responsibilities on a right level. We found also that school owners play a vital role in setting directions and providing guidance for schools to navigate the opportunities and challenges presented by digital technology. Regarding more specific recommendations we would point out the following:

2.1. Move towards greater autonomy for schools

Autonomy enables schools to integrate technology in ways that are most suitable for their local and contextual needs. School leaders in collaboration with staff members can decide on the best digital tools and practices to enhance teaching and learning, distribute roles and responsibilities to develop digital competence and implement new practices. Distribution of roles and responsibilities for all subjects' teachers, educational tutors/ technologists and management for shaping the digital competence of students through different subjects' learning outcomes is the most effective way to enforce digitally innovative schools. This flexibility is key to creating digitally innovative schools that can effectively respond to the rapid changes in technology and society.

2.2. Train leaders for digital innovation in schools

School leaders play a critical role in promoting whole-school level digital innovation. By being well-trained, they can make informed decisions, implement effective strategies, and foster a culture of innovation in their schools. There is a need to provide school leaders with training, guidance, and mentoring to understand and manage methods for promoting sustainable digital innovation within their schools. In iHub4Schools one of the methods 'Digital Accelerator' aimed to address this challenge (see D3.3).

2.3 Advocate distributed leadership for developing innovative digital practices

Support from the school leadership is one of the key support mechanisms to develop an innovative digital school. As noted earlier, school improvement efforts are more effective in the long run if they are prepared and implemented by involving a larger team. That requires school leaders to include teachers in strategy and goal-setting, taking a proactive approach in teacher professional development, promoting teamwork among teachers, and distributing tasks to design appropriate improvement measures. Leadership style should support a culture of innovation and experimentation within schools, encouraging teachers to explore new pedagogical approaches with digital tools. Collaboration should be integrated into teachers' everyday work to ensure its practicality and effectiveness. By emphasizing school-level involvement, the development efforts can better address the unique needs of each school and yield long-term changes.

Policy recommendation 3

Capacity building: Ensure access to professional learning and development opportunities for teachers

In the outputs of our WP2 project (D2.2 and D2.3), it clearly emerged that supporting **capacity building** is one of the key values that regional innovation labs can offer. Through the developed School mentoring model and 16 individual methods proposed in D3.3, we engaged over 600 teachers and leaders into our activities to promote their capacity building. These outcomes provide practical examples about activities that can be used to actualise the mentoring process phases in schools. From this work several recommendations emerge for school-level guidance:

3.1. Make the development of teachers' digital competence a systematic effort

This can be supported by school-wide agreements on developmental goals, pedagogical practices, and funding to facilitate it. Make sure that within school teams, there are expert teachers (tutor teachers/ education technologists, name can vary) who are more knowledgeable and skilled in using digital tools in pedagogically meaningful ways. These teachers usually are change agents to encourage using digital learning environments and provide colleagues with new information on digital solutions.

3.2. Implement mentoring programs that offer support for teachers who need assistance or guidance in integrating technology into their teaching.

Mentoring can foster trust, connection, and the sharing of effective technology use and best practices. It can be organized to individual teachers or to groups of teachers or all teachers in the school. Mentoring and developmental activities should be based on the specific needs of each school, with schools and teachers themselves being best positioned to define those needs and benefits. There are no standardized solutions or models that can be uniformly applied. To ensure sustainable changes, mentors should be actively involved in the initial stages and reduce their support gradually over time.

The process model (presented in D3.3) provides guidance for the planning of mentoring initiatives aimed at promoting digital innovation. It helps in identifying essential elements to consider during the process. We also have compiled the description of individual methods for mentoring that were used in the project's pilots.

3.3. Involve external expertise

Teaching in digitally innovative schools entails changes in pedagogical practices rather than just the use of new technological tools or solutions. From a practical point of view collaboration with mentors gives schools also new ideas, knowledge, tools and resources. Having an opportunity to use external expertise can be useful also from the perspective of change management. New pedagogical practices can be a somewhat sensitive issue to many teachers because it challenges their existing teaching practices, and even their pedagogical approaches. Reflecting about one's weaknesses and challenges in digital competences can be easier with the expert from outside.

3.4. Promote different capacity building activities

There are a variety of effective activities promoting capacity building. In iHub4Schools we focused on activities fostering teachers' collaboration, peer-learning, co-creation and hands-on experimentation, reflection and knowledge sharing (see more in D2.2), which were promoted in Regional Innovation Hubs (see D2.3) or through School mentoring model (see more in D3.3). Such activities led to greater value creation in networks and potentially to sustainability of digital innovation in schools.

3.5. Be aware that change requires resources

Mentoring for a meaningful change does not happen without additional resources. These resources may vary depending on the specific intervention, depending on the intensity, length and scope of the mentoring initiative. We have presented estimations of financial costs for each piloted intervention in D2.3. appendix. Not only financial resources are important: motivation and incentives should be in place for leaders and teachers and other involved stakeholders (see the next recommendation).

3.6. Be realistic about the pace of change

Change happens gradually, and not all expected changes may be observed within the mentoring period. Continued collaboration through capacity building events and networking is crucial for sustained progress and school development efforts. It is crucial for schools, teachers, and responsible teams to comprehend the gradual nature of change and avoid expecting rapid solutions. Teachers' adoption of innovations occurs at different paces, with some serving as pioneers and examples for others, while others follow suit in due course. It would be wise to take that into account from the very beginning of the process.

Policy recommendation 4

Foster multi-stakeholder collaboration for digital innovation in education

Multi-stakeholder networks bring together different expertise, experience and starting points to make the implementation of digital innovation sustainable and scalable. The key stakeholders for our project are described in report D2.3 (Regional Innovation Hubs): mentors, teachers, leaders, teacher trainers, researchers, but also policy makers, programme developers, as well as external stakeholders such as the EdTech sector, are crucial. Especially we highlight the importance of integrating research competence to foster the evidence-informed development of the Regional Innovation Hubs and adoption of digital innovation. Collaboration among diverse stakeholders fosters innovation, professional growth, resource accessibility, and policy influence in advancing digital innovation in schools. National networks support showcasing of innovation and sharing good practices, as seen in iHub4schools' state-level initiatives. Bottom-up networks also require support due to their crucial role in transforming education and promoting peer learning, requiring institutional support for sustainability and scalability.

For this, we recommend to:

4.1. Create platforms for multi-stakeholder collaboration

When formulating policy programs and measures, it's essential to ensure that diverse expertise is incorporated during the initiation phase. Collaboration can foster the development of a comprehensive

evaluation framework that assesses the effectiveness of practices enriched with digital technologies in enhancing teaching and learning outcomes. This framework should incorporate both quantitative and qualitative indicators and involve various stakeholders and enable schools and networks to self-analyze their activities and make informed improvements. In our project we learnt that all countries have publicly funded networks for teachers which are aimed towards professional development of its members. Public sector organizations should recognize the significant value of utilizing networks to disseminate new ideas and best practices. Investing in and supporting these networks ultimately produce beneficial outcomes.

4.2. Establish or fund organizations/ units that take lead in facilitating different capacity-building for teachers and leaders

There are different models of how this can be done. In two partner countries that have longer experience running teachers' networks, Lithuania presents the bottom-up model of leading these activities under Vilnius University, mostly on a project basis. In Estonia, digital competences have been the governmental focus already from mid-90-s when the Tiger Leap Foundation was created by the government, ICT companies and universities. Currently, the activities of education technologists are supported by the Education and Youth Board of Estonia with earmarked funds from the Ministry. In both instances, **involvement of inspirational leaders** that are often leading experts on the field or expert-teachers themselves is crucial. In our 2.2. and 2.3. deliverables we lay out different design specifications and present a toolkit with practical steps that are useful to consider for sustaining network activities in the long-run.

In these support organizations it is important to reach a critical mass of experts and early adopters who can serve as role models for other educators. It is important to actively seek out and engage with experienced and knowledgeable individuals who have successfully implemented digital technologies in educational settings. By showcasing best practices and providing practical advice, these experts can inspire and guide other educators, helping them to overcome challenges and embrace digitalization effectively.

4.3. Create capacity-building events for stakeholders

These can be occasions for educators to connect with peers who share similar interests and challenges, exchange ideas, and collaborate with digital projects. Promote collaboration and best practice-sharing among teachers within schools and across different schools. Organize events of different formats to encourage in-person interaction and inclusion of participants with a wide range of expertise. Offer hands-on activities and collaborative problem-solving exercises.

4.4. Set-up motivation schemes and incentives for teachers to encourage active participation in networks.

These can vary but in our lessons following motivation and incentives were considered important: opportunities for professional development, access to new knowledge and novel teaching practices, certifications, networking opportunities, public recognition, financial support and media coverage were all cited as relevant in our interviews. For experts outside the school system, the interest can be the participation in the initiative that is important for the society, sharing their expertise or other more specific reasons.

4.5. Establish on-line engagement platforms for information sharing and receiving support from other members.

Platforms provide an opportunity for network members to engage in meaningful discussions, share information, and remain connected during or after more formal network activities. From the project implementation point of view platforms can be an effective system that allows the efficient documentation and organization of all resources in a reliable manner. More specifically we address this topic in D2.3

4.6. Support university-school collaboration

Promote evidence-based practices among the education community. This involves conducting research, monitoring implementation, and continuously assessing the impact of digital technologies on teaching and learning outcomes. By basing everyday practice on solid research findings educators can make informed decisions and continuously improve their digital teaching practices.

Establishing clear criteria for selecting and adopting digital technologies in schools is very important. These criteria should consider factors such as alignment with learning objectives, ease of use, scalability, cost-effectiveness, and compatibility with existing pedagogy, infrastructure and systems.

Integrate digital competence into initial teacher training. From early stages of their professional development, teachers should receive comprehensive training on incorporating digital technologies into their instructional practices.

The latest research findings should be shared with education communities to inform practice and decision-making.

Policy recommendation 5

Support the transfer to evidence-informed approach, access to evaluation instruments and strengthen the culture of reflection and monitoring

One of the lessons of iHub4Schools project was that countries use different solutions to analyze digital competences and capabilities of schools (see D1.3). A variety of assessment tools are available to measure digital competences of teachers and digital maturity of schools (DigiCompEDU, SELFIE for teachers, or national level frameworks like OPEKA in Finland and Digital Mirror in Estonia). These self-assessment instruments can be useful for schools and education authorities for planning interventions, identifying areas of improvement, and determining the development needs. But assessment results are a delicate theme and the exercise should not lead to public labeling of schools (or individual teachers) into good and bad, particularly based only on self-assessments. In the project, we aimed to delve deeper into this question and explore strategies for tackling these situations tactfully. Broader recommendations that emerged are:

5.1. Support the school's own understanding of how to analyze, support and monitor its development.

For schools, a comprehensive overview of different evaluation instruments and scenarios on how to utilize these tools in different contexts is helpful.

At the center of this project is the concept of a digitally innovative school which integrates technological possibilities into various levels of practices, including pedagogical practices in classrooms, collaboration practices and leadership practices within the organization. Implementing digital technology in teaching and learning significantly transforms the roles of teachers and students, as well as the teaching and learning processes themselves. The experiences gained from the school level implementations highlight the importance of a shared vision among the entire school team, including leaders and teachers, to achieve sustainable results in using digital technology.

5.2. Lead by evidence-informed planning and monitoring

Assessment tools are usually reflective and hold value as long as they guide improvement of practices. Self-assessment of digital competences and digital leadership should be embedded in the school level evidence-informed planning and monitoring or teachers professional development to promote the meaningfulness of competence assessment. Leaders and teachers should be equipped with the skills to work with these assessment tools collaboratively, valuing collective reflection and shared understanding that guides improvement practices. School owners must incorporate assessment information into broader management practices and support improvements through various means.

5.3. Promote culture of sharing and collaboration among teachers and leaders

Evidence from mentoring and training events within the project emphasizes the significance of shared trust and effective communication when implementing self-assessment instruments. Teachers need to understand how the generated information is used and perceive it as an opportunity for self-improvement, rather than a form of control or punishment. In an innovative school setting, teachers demonstrate flexibility, collaboration in planning and teaching, and engagement in continuous learning together and from one another.

Policy recommendation 6

Invest in digital infrastructure for all schools and school networks

Countries have very different ways of keeping school infrastructure up to date. In Estonia, all schools have been able to modernize their local school internet networks through a central procurement funded by the EU. Infrastructure development is not the focus of this project, but it was clear from the project that this is **the threshold theme** that needs to be catered for.

6.1. Reliable internet connectivity is a fundamental requirement for effective digital learning. High-speed internet access will enable seamless integration of digital technologies in classrooms and enable access to online learning resources and collaboration platforms.

6.2. Necessary digital devices such as computers, laptops or tablets in schools are needed to ensure that all students have equal opportunities to use digital tools, engage with digital content and participate in

online activities. This is especially important for students from disadvantaged backgrounds who may not have access to personal devices at home.

6.3. Make digital learning resources accessible to all schools and educators

Digital learning resources play a significant role in supporting and enhancing the educational experience. Investments in creating and curating a wide range of high quality digital learning resources that align with the curriculum is important. These resources should be accessible to all schools and educators, regardless of their geographical location and financial capacity.

6.4. Guide schools on selecting appropriate digital infrastructure and tools that align with schools' needs and requirements

Assisting schools in assessing their technological needs, recommending suitable hardware and software solutions, and ensuring their compatibility and scalability meet evolving digital demands, are important roles.

Policy recommendation 7

Create awareness regarding the benefits of digitalization and digital skills to enhance teaching and learning as well as change policies

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To maximize the potential of digitalization in education, it is crucial to create awareness among stakeholders about the effects (including benefits and obstacles) of teaching in a technology-enhanced learning environment and development of digital competence. This includes informing teachers, schoolmasters, policymakers as well as the public at large about the challenges and opportunities presented by digitalization.

7.1. Promote ethical and responsible AI.

The increased use of AI in education necessitates prioritizing the development and deployment of ethical, transparent, fair, and accountable AI technologies. Governments and organizations should establish ethical AI principles and guidelines specifically tailored to the education content. It is imperative to invest in AI research and development in education and create regulatory frameworks that address the societal impact and risks associated with AI. By promoting ethical and responsible AI, policymakers can harness its potential while safeguarding students' rights and ensuring equitable access to education.

7.2. Prioritize digital inclusion policies to bridge digital divide

Ensure equitable access to digital technologies, particularly among marginalized and underserved communities. Governments should implement initiatives that aim to provide affordable internet connectivity, improve existing infrastructure, and invest in digital skills training programs. It is crucial to onboard not only schoolmasters and teachers but also parents to prevent the creation of a digital generation gap within families.

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