

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

WP2/D2.2

**SUPPORT MECHANISMS FOR ENGAGEMENT
AND SUSTAINABILITY**

V.2

WP2 Leader: HarNo



I-HUB4SCHOOLS





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

D2.2 Support mechanisms for engagement and sustainability, improved version, M18

Project Acronym	iHub4Schools
Project Full Title	Accelerating Digital Innovation in Schools through Regional Innovation Hubs and a Whole-School Mentoring Model
Project Number	Grant Agreement:101004676
Type of Action	Coordination and support action (CSA)
Topic	DT-TRANSFORMATIONS-21-2020
Project Coordinator	Tallinn University (TLU)
Project start date / duration	01.01.2021/30 months
WP/ Result	WP2 / D2.2
Title	Support mechanisms for engagement and sustainability, v3
Result Type	Report
Lead partner	HarNo
Due date	M18
Author(s)	Kairit Tammets, Pirgit Sillaots, Heli Aru-Chabilan, Linda Helene Sillat
Dissemination level	Public



Table of content

Table of content	2
Executive summary	3
1. Introduction	4
2. Pillars of iHub4Schools approach to stakeholder engagement	5
2.1 Engaging stakeholders	6
2.2 The participatory methodology	9
2.3 Value creation approach	15
3. Support mechanisms	17
3.2. Regional Innovation Hub's conception and the value creation approach	20
3.2.1. Motivation & Incentives	20
3.2.2. Engagement events	21
3.2.3. Feedback loops	22
3.2.4. Community knowledge	23
3.3. Structural support	23
4. Conclusion	27



Executive summary

D2.2 provides an improved and updated version of the Support mechanisms for multi-stakeholder community engagement and sustainability. In this deliverable, we introduce the main pillars of our project approach to engaging stakeholders and to create sustainable Regional Innovation Hubs - the participatory methodology and value-creation approach. Value-creation approach is needed to Through our participatory approach, we propose support mechanisms for sustainable development and adoption of digital innovation taking into consideration different cultural and contextual factors.



1. Introduction

iHub4Schools core idea is to establish a systematic collaboration through Regional Innovation Hubs to decrease the isolation between digitally enhanced and less enhanced schools. Such Regional Innovation Hubs bring together *co-creation networks* that support school teams to design, implement, monitor and share digital innovation. To scale up the innovation creation process in co-creation teams, *National Stakeholder Networks* build synergies between the evidence-informed practice and policy making. However, for the knowledge created to be systematically disseminated, change agents are needed - teachers and mentors who scale the knowledge across the project boundaries by presenting at the seminars, participating in the teacher training events as the mentors, organizing regional thematic workshops.

The aim of WP2 in the iHub4Schools project is to explore the mechanisms which contribute to the sustainable and scalable adoption of digital innovation in different educational systems with diverse backgrounds and experiences. The purpose of this document is to present an improved and updated description of the support mechanisms for stakeholder engagement and the sustainability of national stakeholder networks. In this report, we present the general principles of stakeholder engagement that will be implemented in the project in order to facilitate the interaction between stakeholders and networks. The principles have been developed in collaboration with members of iHub4Schools partner country networks, involving stakeholders from different levels: teachers' network members, network leaders and policymakers.

The **first section** of this report will present the main pillars of iHub4Schools approach to stakeholder engagement - the importance of existing partnerships, participatory methodology and value creation approach in the sustainable development of networks. The importance of building shared understanding and continuous dialogue to promote mutual learning is central in iHub4Schools.

The **second section** will introduce the support mechanisms based on the experiences of iHub4Schools' partner experiences. In this section, we will discuss the core aspects needed to



establish sustainable regional innovation hubs, the importance of dialogue and the technology's role in promoting the collaboration between the stakeholders. Finally, we propose in our deliverable initial policy level messages, which enable policy-makers to make decisions, allocate resources, and involve stakeholders so that digital innovation is holistically implemented, evidence-based, leveraged across schools and supports the professional development of teachers.

As the methodology of iHub4Schools is built on stakeholder involvement and the growth of networks through an iterative implementation scenario, this document is dynamically updated during the lifetime of the project based on the collaboration with stakeholders from Estonia, Finland, Norway, Lithuania and Georgia. These education systems provide a good opportunity to analyze the acceleration of digital innovation through different approaches, dimensions and levels of stakeholders. By joining forces from different cultures, regions, and national policies, it is possible to offer a holistic pan-European view on sustainable support mechanisms for stakeholder engagement.

2. Pillars of iHub4Schools approach to stakeholder engagement

A number of initiatives have recently been launched focusing on building partnership models between educational institutions, research institutes, policy makers and other public and private institutions. Most of them highlight the importance of engaging the stakeholders in the project activities from the beginning of the project and to promote the dialogue between stakeholders.

For instance, **SALL** ('Schools as Living Labs') project proposes the living lab methodology as a technique for the development of open schooling activities linked to science learning through the participatory methodology, which interweaves dialogue and mutual learning processes. **OSOS** ('Open Schools for Open Societies) project aims to promote a dynamic framework and a hub for school leaders and teachers to engage, discuss and explore how schools need to transform to facilitate open co-creation and use of educational content for student-centered learning and how schools can become innovation incubators and accelerators. **The Hypatia** project aimed to bring together schools, science museums, research institutions and industry and to create National Hubs in order to engage teenage girls in STEM across Europe. All of these initiatives have emphasized



the importance of participatory approaches, continued involvement of stakeholders and the need to build a platform for mutual learning, dialogue and discussions.

iHub4Schools will follow the similar approach by bringing together school communities, teachers' networks, research institutions and policy makers and engage them in dialogue and creation of new knowledge in the field of adoption and scaling of digital innovation in education. Our aim is to **pilot our mentoring model** in national stakeholder networks, **study the practices** and the effect of the mentoring activities in different European countries and **propose a ground** to establish Regional Innovation Hubs for scalable adoption of digital innovation.

2.1 Engaging stakeholders

One of the characteristics of iHub4Schools is that multiple stakeholders work together on a joint educational challenge or a goal. Engaged stakeholders is a key strategic objective for iHub4Schools. Stakeholders in iHub4Schools are external organisations and individuals who have a professional interest in what the project does or who might want to be involved in some of our activities. The depth of involvement can range from simply getting information on project activities and results, over collaboration in mentoring, piloting and scaling activities, all the way to more stable joint partnership development in the field of educational innovation.

Stakeholders - teachers, school leaders, teacher trainers, researchers, policymakers, and industry partners are the network members who are actively involved in a specific iHub4Schools project. Stakeholders can be either individuals (teachers, leaders, trainers) or organisations (policymakers, industry partners, schools) who are interested in the project process or affected by the project's outcomes. Engagement is the process of communicating to, learning from, and collaborating with local actors to acknowledge the unique needs and strengths of the local actors involved. Stakeholder engagement is seen in iHub4Schools as the process by which we bring stakeholders into the project and keep them engaged with our work to support the scaling up of digital innovation in schools. Stakeholder engagement events are emergent, which are being developed in collaboration with different stakeholders. The main change agents in iHub4Schools are mentors who are fostering the school teams, leaders, and teachers to be digitally more experienced and



adopt whole-school level innovation. Teachers and leaders, on the other hand are seen as the multipliers of the innovation process who share their knowledge in and across the schools.

The principles to guide Stakeholder Engagement in iHub4Schools are:

- **Inclusive** - Engage a wide range of people and organizations: practitioners, researchers, policy makers, trainers;
- **Accessible** - Make it easy for people to participate, to understand what is happening, and to build ownership and meaningful relationships;
- **Ongoing** - See stakeholder engagement as a continuous process involving ongoing dialogue – not as a one-time, static event.
- **Well-informed** - Ensure information shared is clear, accurate and timely through a pool of engagement formats. Put feedback loops in place, monitor the process.
- **Focused** - Use opportunities to engage as a stepping-stone toward building long-term partnerships that can help education systems improve and sustain innovation.

These aspects will be addressed in iHub4School throughout the project in different educational systems.

In iHub4Schools project, stakeholder engagement has several levels (see Figure 1).

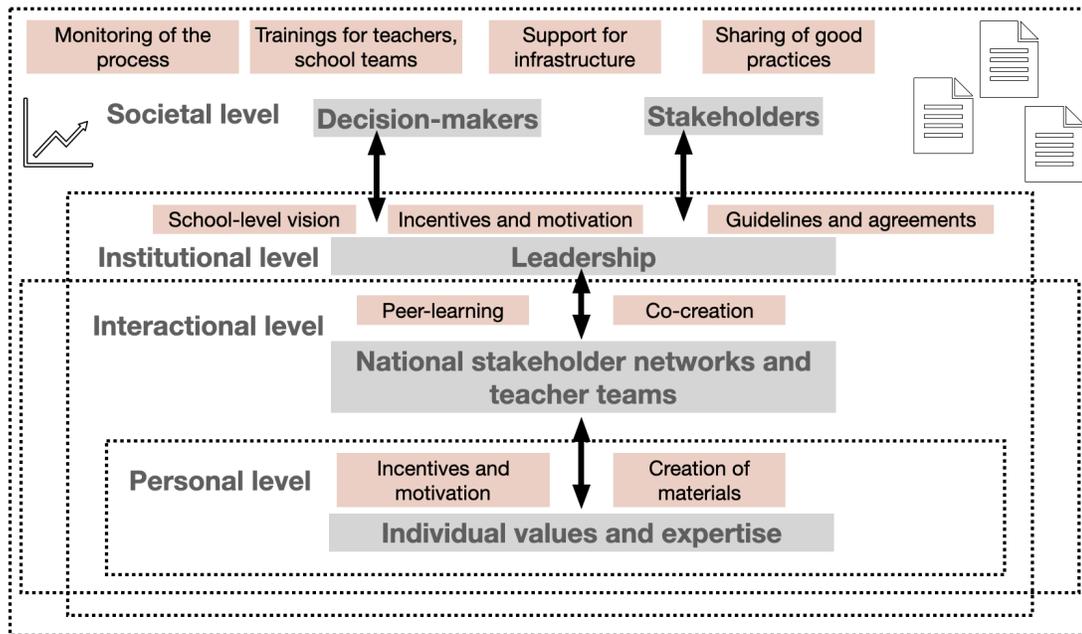


Figure 1. Engagement levels of iHub4Schools

On a **personal level**, it is foreseen that teachers, leaders, teacher trainers, researchers and other individuals have their personal interests, values, motivation and need to join the networks, but they also bring in their own practical, pedagogical, technical or strategic expertise to the network.

On an **interactional level**, the focus is on local national networks, co-creation teams or other professional communities where the new knowledge is co-created, documented, shared and scaled up. National stakeholder networks are usually between individuals inside different institutions.

On an **institutional level**, the role of the leadership is crucial to create conditions for the individuals and networks and communities to adopt digital innovation in practice. It includes visions and strategies, support mechanisms, motivation schemes to support and sustain the adoption of digital innovation in schools.

The societal level is the broadest level where decision-makers and additional stakeholders are involved to benefit from and contribute to the activities carried out by the stakeholders at different levels. The ultimate goal of such networks is to share, sustain and scale up the knowledge created by the individuals so that all schools - even those with little experience or lack of interest - have a chance to benefit from good practices, support mechanisms, funding and motivation schemes. The latter one can be supported by the engagement platform.



2.2 The participatory methodology

iHub4Schools brings together different stakeholders and promotes their active participation through co-design and peer-learning approaches to adopt and exploit the iHub4Schools approach for scaling up whole-school level digital innovation.

For example, in the **Estonian** context, such networks are the Estonian Association of Educational Technologists (EHTL), the Network of Estonian Teachers of Informatics and Computer Science and the Estonian STEM Education Union. For schools, EHTL has the biggest impact as it brings together teachers from all education levels and has a membership of 215 professionals, including pre-primary, primary, secondary, tertiary and hobby education. On an individual level, the membership of these networks may overlap. However, these are different associations at the level of aims and actions. Based on these structures, an informal network of Harno's digital trainers has been operating for many years, with about 100 members. In cooperation with these trainers, Harno as a central training provider operates as a platform that, on a project-bases, provides training to about 3,000 teachers annually. These teachers/ educational technologists are also the trainers/ practitioners that are commissioned to develop new training and development programs according to the needs of schools.

Concerning **Finland**, we describe here those networks whose focus of action relates to schools and digital technology and who are part of the national stakeholder network of Finland. **Tutor teachers' network** (about 2200 teachers) initiated by the Ministry of Education and Culture and Finnish National Agency for Education with the aim to create a supporting network of tutors working in schools. Although the network as a project is finished, the tutors continue working and collaborating , and they have been asked to provide input for the outcomes developed in iHub4Schools (e.g. School mentoring model). Similarly, [DigiErko](#) network (government funded project) was created with the aim to provide training teachers to be digital pedagogical experts and build a nationwide network of teachers and tutors specialized in advancing the use of digital technology in teaching and learning in primary and secondary schools. This is the group of stakeholders who have been involved in developing iHub4Schools outcomes. **HY+** is a continuing education organisation of the University of Helsinki which provides training to various teachers and educational staff in general and through this organisation, iHub4Schools have created contacts to schools and teachers.



Finland does not only focus on teacher networks, but also builds the activities on the collaboration with local educational administrators. In the City of Porvoo, in collaboration with schools and with the ICT responsible joint activities have planned to support the development of national stakeholder networks to adopt the methods developed in Ihub4Schools. Similar set-ups have been planned in collaboration with the City of Espoo to introduce the School mentoring model to teachers whose task is to support schools and teachers with innovative use of digital technology. In the City of Vantaa, the School mentoring model has been introduced and the plans to apply the iHub4Schools outcomes in implementing the DigiOne ecosystem in schools are made. In Päijät-Häme seutu, a network of several communities, the School mentoring model is introduced to ICT-teachers in their training events.

In **Lithuania**, various networks are being established at different levels to promote the creation and development of innovative educational practices and schools are divided into **state (founded by the state), municipal (founded by the municipality) and non-state schools**. Non-state schools are not founded or owned by the State or municipality(ies). Non-public schools can also be referred to as private schools. The founders are responsible for the quality of education together with the school. It is important to note that it is the municipalities that are the founders of the majority of general education schools in the country. At the municipal level, the management and administration of education is the responsibility of the municipality's representative body (the municipal council) and the executive body (the director and deputy director of the municipal administration). Schools have the autonomy to decide what activities they carry out, the networks they join and the partnerships they form. In Lithuania, general education institutions interact not only with their founders (i.e. the municipality or the Ministry) but also with other public or private institutions, public bodies, universities, etc. to improve the quality of education. Cooperation between general education institutions takes the following forms:

Schools cooperate with the founder of the school, i.e. the municipality or the Ministry of Education, Science and Sport. In cooperation with the founder, schools seek to ensure quality through various projects, training and other initiatives.

As the Ministry of Education, Science and Sport is responsible for education policy making, both political and managerial cooperation is inevitable;



Schools cooperate with universities, especially those involved in teacher training. There are two main teacher training centres in Lithuania (Vilnius University and Vytautas Magnus University). So pre-school and primary education institutions, schools and gymnasiums in Lithuania sign cooperation agreements with Vilnius University and Vytautas Magnus University. The cooperation includes the development of educational professional activities, student internships, the development of teacher and manager professional development programmes, advice for teachers and managers on various professional development issues.

Schools cooperate and network between schools in Lithuania and/or abroad. Recently, Lithuanian schools have started to come together to form national and international school networks, and some schools have formalized their partnerships or cooperation with other partners through agreements. The possibility of concluding joint activity agreements is enshrined in the Civil Code of the Republic of Lithuania, but is not widely used. Such agreements are used to implement various education projects funded by Lithuania or the European Union. For example, the national project "Networks of Learning Schools" was implemented in Lithuania in 2006-2012 to promote the improvement of collaborative school activities. As part of the project, schools learned how to create networks within their own schools and between schools in the regions. Through networking, schools learned to collectively identify the most important and pressing problems in their schools and their causes, and to work together to find ways to solve them. Current school networks in Lithuania:

(a) **Integrity Schools Network.** The Network is an informal initiative launched in 2014. The aim of the Network is to provide Lithuanian schools that promote the values of honesty and transparency in the daily lives of their students with an opportunity to facilitate the planning and implementation of honesty initiatives, to find peers and to share good practices. The network is open to any Lithuanian school that promotes the values of integrity and transparency.

(b) **Health Promoting Schools Network.** The main objective is to bring together the health promoting school communities for joint activities and to develop health promoting schools in the country. In Lithuania, 430 schools from 57 municipalities are part of this network, which is managed by the Centre for Health Education and Disease



Prevention. The network has been accepted into the European Network of Health Promoting Schools, which includes 43 countries and more than 34 000 schools.

(c) **ECO Schools Network.** In 2016, the network was founded by the President Valdas Adamkus Gymnasium, a pioneer of environmental education. The Lithuanian ECO Schools Network brings together pre-school and general education schools which, by mobilising their communities, strive for harmony with the environment, fostering the ideas of creating an ecological environment, and the development of the community's ecological competences. In cooperation, ECO schools exchange information, disseminate valuable work experience, look for cooperation partners abroad on ecological and environmental issues and organise joint activities.

(d) **UNESCO Associated Schools Network.** This is an international network of schools working together, bringing together more than 8,000 schools and other educational institutions in 175 countries around the world, in the interests of peace, mutual understanding and international tolerance. The programmes developed by the network's members improve the quality of education, raise awareness of the ills of the modern world, such as the destruction of nature, globalisation and urbanisation, and offer tools to develop the intercultural communication, peaceful coexistence and adaptive skills needed for the future.

(e) **The 'Millennium Schools' program** is currently being developed in Lithuania, with the aim of ensuring that all children have the best possible conditions for learning, regardless of where they live. It aims to narrow the achievement gap and create an inclusive, optimal and quality learning environment.

1. Recently, Lithuanian schools have been actively cooperating with private companies specializing in educational innovation to improve and innovate educational practices. For example, schools are particularly active in cooperation with Biznis machine company, which is targeting innovation in general education institutions through projects funded by the National Agency for Education (subordinated to the Ministry of Education, Science and Sport of the Republic of Lithuania). EduSensus, which is aimed at working with pupils



with learning difficulties and developmental disabilities. Various robots and other smart technologies have been and are being promoted by private initiatives.

2. Lithuanian schools are creating or contributing to networks based on scientific knowledge and education. Beaver is an international initiative that aims to promote computer science (or computer studies or computing) and computational thinking - not only among teachers and students of all ages, but also among the general public. The Eduten learning platform is also relevant. Eduten is based on Finnish pedagogy. It's exercise library has been co-designed and validated with thousands of Finnish teachers.
3. Schools cooperate with various associations and public bodies. For example, schools are expanding cooperation networks with institutions that develop digital educational content in virtual space (e.g. lesson packs developed on the Minecraft platform). There are also networks of associations based on the level of education a school provides. For example, since 2015, there is the Lithuanian Association of Representatives of Primary Schools or the Lithuanian Association of Pro-Gymnasiums. On the other hand, alternative education is very popular in the Lithuanian education system, and networks of representatives of this type are also emerging. For example, the Lithuanian Waldorf Schools Association has been set up to unite Waldorf schools in Lithuania. At the same time, school networks also include the Catholic community, with the establishment of the National Association of Catholic Schools. All of the above-mentioned associations have approved statutes, according to which they organise the activities of their schools. Such associations allow for targeted action in response to the challenges facing society.
4. Schools work closely with the Education Exchanges Support Foundation, which helps to build partnerships with European educational institutions in Erasmus+, eTwinning and Nordplus projects.
5. It is important to note that a network of STEAM Public Access Centres has opened in Lithuania. The first 6 regional STEAM Open Access Centres in Lithuania will be gradually launched in Alytus, Marijampolė, Panevėžys, Šiauliai, Tauragė and Telšiai. They will be joined later by the regional STEAM centre in Utena. In 2022-2023, methodological centres will be opened in the country's major cities - Vilnius, Kaunas, Klaipėda - which will be open to schools in these cities and will provide support to the regional STEAM Open



Access Centres.

6. There many other non-formal schools networks. Vilnius University team is working with so called 'ViLLE schools' network (schools who are using virtual learning platform ViLLE for teaching computational thinking and math). Also the Bebras schools network is one of active networks among IT teachers focusing on informatics and computational thinking education.

In **Georgia** different kinds of networks and collaborations are established on different levels. Ministry of Education, Sciences Culture and Sports of Georgia, Local Ministry of Education, different resource centres and universities connects and supports schools for their active participation in different projects, professional development trainings and activities in order to promote teachers whole-school level digital innovation. Batumi Shota Rustaveli State University Participate in a project funded by the United States Agency for International Development. USAID Basic Education Program Objectives is to Introduce student-centered teaching approaches at the elementary level of secondary school. Program Objectives are to Support and implement student-centered reform in primary schools; Promoting teacher training and professional development; Promoting research-based education policy and learning; Understand the key challenges of the New School Model and facilitate the introduction of a third-generation national curriculum; Facilitate the formation, organization and management of teacher training groups in schools. USAID Basic Education Program Activities, Goals and Objectives are based on modern pedagogy and focus on developing literacy, mathematical thinking, problem solving and critical thinking skills in elementary school students. Within the framework of the program, BSU cooperates with 229 public schools of the Autonomous Republic of Adjara and 97 public schools of the Guria region (326 public schools in total). 978 leading teachers of primary classes (Georgian language and literature, mathematics) are involved in the program. Leading teachers have a responsibility to establish teacher training groups in schools and to disseminate information obtained through training / coaching throughout the school. 16 staff from BSU are involved in the program (including both academic staff and invited trainers - school teachers). Batumi Shota Rustaveli State University provides training to various teachers and educational staff in general and through this organisation, iHub4Schools have created contacts to schools and teachers.



2.3 Value creation approach

Through iHub4Schools activities, we are guided by the principle that participation in national stakeholder networks is guided by the understanding of the value that community members find through participation in the networks. Studying the values of the members of the different networks and participants gave us a broader perspective on the Regional Innovation Hub's conception (see Figure 2), and its sections developed and presented in the D2.1.

Value creation approaches are often studied in the research of organizational management (Pang, Lee & DeLone, 2014) but also in the context of online communities of educators (Booth & Kellogg, 2014) and in communities and networks in general (Wenger, Trayner & De Laat, 2011).

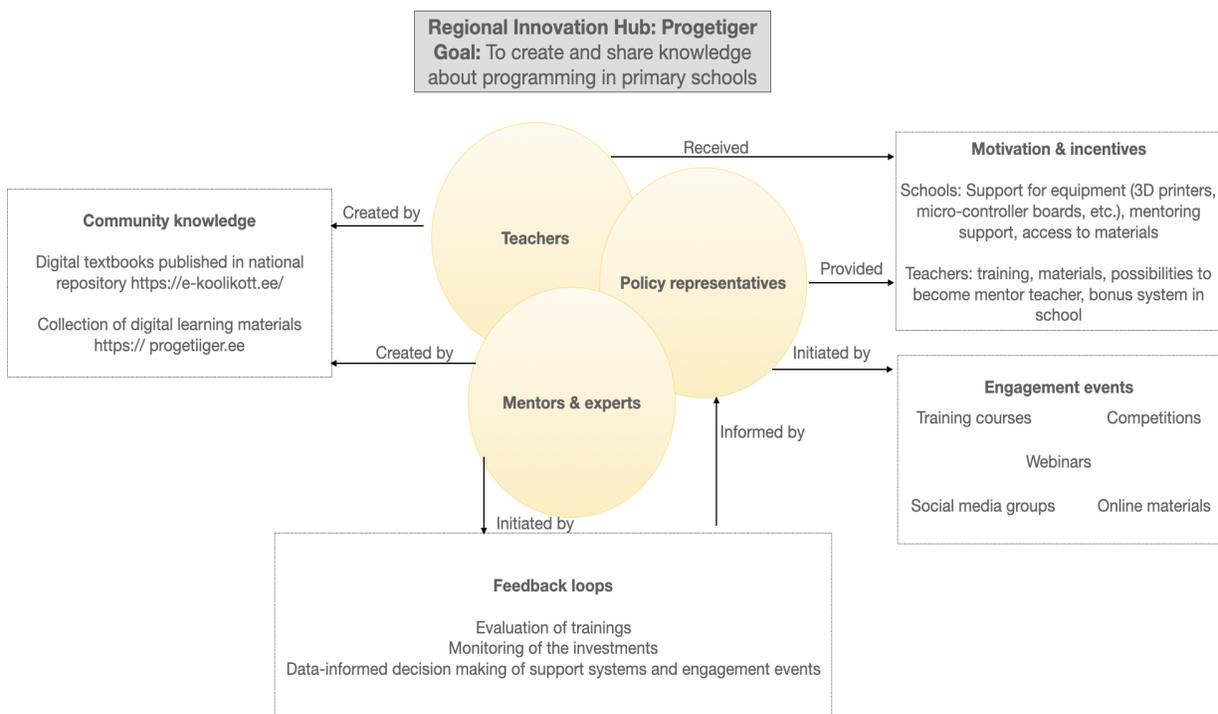


Figure 2: Components of the Regional Innovation Hub.

iHub4Schools is not focusing on online communities; however, the role of digital technologies in supporting the engagement of the stakeholders is an important focus of the project. In iHub4Schools, we expect that the participation in national stakeholder networks is strongly driven by the interest to learn, which is enabled by the participation in the network through accumulated knowledge, which is leveraged to develop and redefine successful practices. The five cycles of



value creation framework proposed by Wenger et al. (2011) help to better understand how the participation in the networks contributes to the value creation of the network members to co-construct individually and collectively valuable new forms of meaning and understanding:

- **Cycle 1: Immediate value:** activities and interactions produce value in and of themselves, through these activities, network members often find answers to a question, a solution to a problem, or help with a challenge. In the context of iHub4Schools, teachers' online networks and webinars targeting teachers to share experiences to acquire new perspectives are examples of supporting the creation of immediate value
- **Cycle 2: Potential value:** activities and interactions produce various forms of knowledge capital that have the potential to be realized later. Potential value could be reflected in personal assets or *human capital* (new skills e.g.), relationships and connections, which can be seen as *social capital* (building a common understanding to solve problems), *tangible resources* (materials, lesson plans, learning materials) or *intangible collective resources* (collective voice, reputation) and *transformed ability to learn (learning capital)* to transform the experience to learning situation. In the context of iHub4Schools, networking events, seminars and trainers serve the potential to create a joint meaningful understanding.
- **Cycle 3: Applied value:** activities and interactions in which knowledge capital is leveraged lead to changes in practice. In this phase it is important to apply the new knowledge or re-use existing resources in your own practice - reusing learning resources, implementing new methods, leveraging collective voice in other channels. In the context of iHub4Schools, teachers and leaders' readiness to apply and adapt new knowledge serves the potential to leverage and accelerate knowledge capital of the network.
- **Cycle 4: Realized value:** application of knowledge capital results in performance improvement. In this phase it is not important to only apply knowledge capital, but to monitor and reflect the performance of the implementation and to understand the effects the application of knowledge is having on the performance. iHub4Schools has proposed an evaluation toolkit for different stakeholders in different levels to support the reflective mindset and evidence-informed decision-making.



- **Cycle 5: Reframing value:** social learning causes a reconsideration of the ways in which success is defined. Understanding and acknowledging such cycles can be helpful to design interventions to increase and support value creation among members of networks. In this phase redefining success on an individual or collective level can happen, which could mean transforming the existing structures, visions and frameworks. iHub4Schools addresses this cycle through reconceptualizing how teachers' learn, organisations develop and how new knowledge is embedded into the structures and processes.

Value-creation cycles are addressed at different engagement levels (as illustrated in Figure 1). The immediate value is inherent for the individual teachers who are informed about potential innovations, and the engagement is mainly happening on a personal level. Potential and applied value is built on more collaborative practices and occurs at an interactional level of engagement. Realized value and reframing cycles require the existence and leadership of certain structural support elements; therefore, the engagement levels at institutional and societal levels need to be addressed. This approach explains why the project has chosen to follow a value-creation approach in different engagement levels because innovation adoption should be meaningful on a personal level. Still, the change will be hard to implement without structural support mechanisms and leadership.

3. Support mechanisms

By support mechanisms in iHub4Schools, we mean different measures that promote the sustainable adoption and scaling of digital innovation in and across the networks. The support mechanism helps to facilitate the work of the different stakeholders involved in the process of mentoring the schools. The central role in the process of sustainable and scalable adoption of digital innovation is on mentors who are responsible for motivating and encouraging school leaders and teachers to be engaged in the process of adopting digital innovation and, therefore, the link between the support mechanisms, value-creation cycles and support mechanisms are needed especially through the lens of mentors.

The support mechanism will be based on the presentation of techniques on how schools can make use of the whole-school level mentoring model and individual methods proposed in the WP3 and



the evaluation toolkit proposed in the WP4.

3.1 Engagement platform

The engagement platform in the iHub4Schools approach is a broad label for the collection of tools and services that has an impact on adoption of digital innovation. OSOS project proposed categorization in four different but complementary areas according to their impact on the innovation process which is represented as a “chain reaction”:

1. Community building tools to “**increase the mass**” of the innovators. iHub4Schools partner countries are experienced in creating online communities for the teachers. In Estonia Facebook group for teachers have created (e.g. wider community of digital innovations ([Õpiruum](#)) or thematic [networks](#) in computational thinking for instance). Similarly in Finland a [group](#) of ICT in Education has been created on Facebook, in Lithuania a group of Technology-interested teachers and STEAM [network](#) and a [network](#) in Georgia. Such local platforms are very relevant for en
2. Authoring tools to exchange ideas and experiences - “**increase density**”. iHub4Schools partners have also made sure that the teachers have possibilities to share their knowledge in the form of created materials, artefacts and resources. In Estonia, teachers can create and publish the learning materials in a national repository [eSchoolbag](#) and [Library](#) of Open Educational Resources in Finland. Similar platforms are created for Lithuanian teachers [here](#) and [here](#) for instance, in Georgia [here](#), [here](#) and [here](#), and in Finland teachers and other creators of learning materials can share them in [Library of Open Educational Resources](#). These are just examples of nationally promoted authoring tools, but teachers obviously also use a variety of learning technologies, social media tools, and open source services to create materials. As the contexts where teachers are acting are culturally and contextually all different, in reality, there could be a selection of platforms depending on the national features, but in any case such platforms help to make sure that knowledge is shared within the community.
3. Innovative scenarios that meet their educational needs - “**increase temperature**”. In order to have new knowledge practices around the materials created with authoring tools, piloted and evaluated pedagogical scenarios should be created, documented, shared and reused.



- Access and reflect on their practices and provide guidance for future actions - “**Increase Reflectivity**”. In order to promote the evidence-informed change and adoption of digital innovation at the school, school practices should be enriched with reflective mindset to understand the impact of their interventions. For this variety of tools are made available in the iHub4Schools project.

It can be said that most countries worldwide now have solutions for raising teachers' awareness of innovative teaching methods and authoring tools for creating teaching materials. Especially the situation caused by the Covid19 created the need for most education systems to look at their own learning technologies infrastructure and teachers' access to those technologies. Much less attention has been paid to how to support the creation of new pedagogical practices and reuse of such knowledge in the form of lesson plans and learning designs and how to promote the evidence-informed adoption of innovation.

In iHub4Schools we have adapted for ourselves pan-European platform [Graasp](#). In our project, we do not only consider the engagement platform as a tool to share materials for the local communities , but the engagement platform could be seen as a tool that fosters the creation of a knowledge base in multi-stakeholder communities. The aim to use Graasp in the project is to establish a common partnership communication platform to support the different stakeholders: mentors, leaders, teachers, teacher trainers, researchers. To reach that goal, Graasp is used to collaboratively create a knowledge base (e.g., made of networking schemes, mechanisms to bring in new schools to the partnerships, tools, instruments, lesson designs, policy recommendations). This will enable sharing of good practices and collective artefacts, allowing these materials to feedback into future learning and scaling-up activities.

As already argued the importance of understanding how networks function and how the values are created, we see that online community partnership platforms can help to monitor these processes. As a support mechanism for the project, the Graasp will provide partners with community analytics about the engagement observed at the national level and per innovation hub. Examples of potentially useful community analytics are indicators of the number of stakeholders and their



participation throughout the project. Such community analytics will help partners monitor the effectiveness of the engagement events, and inform their decision-making (e.g., refining those events, or proposing new ones based on the emergent needs of the project or the hubs).

3.2. Regional Innovation Hub's conception and the value creation approach

In the following, we present a generalization of the partner countries' interviews and surveys with stakeholders. The Regional Innovation Hub's conception was validated with those partner countries' networks which were brought out in the application as those who are concentrating on researching the national stakeholder networks. The value creation approach was used as a framework to study the networks in Estonia, Lithuania, Georgia, Finland and Norway. There were 26 stakeholders involved in the study: 14 teachers, four mentors/teacher trainers, three educational technologists, two school heads, one head of studies, one policy maker and one researcher.

The information collected from the members of national stakeholder networks involved in iHub4Schools project help to describe what individual and collective values the stakeholders create.

3.2.1. Motivation & Incentives

Analysis of the partner country cases demonstrated that there are several motivating factors and different incentives for the members, why do they belong to the national stakeholder networks. The following subsection describes those motivations and incentives through the lens of the value creation approach and its cycles.

Cycle 2: Potential value:

Networks provide possibilities for professional growth - **to learn about concrete methods but also to become a leader**. The focal point of the development of the iHub4Schools Support Mechanism, it is essential to make sure that teachers are supported to get new knowledge and skills. This can be achieved through training, networking and sharing experiences with other teachers and through a more personal approach such as mentoring and counseling, which is the most meaningful for teachers with fewer skills or who are reluctant for changes. An essential part



of professional growth is the possibility to share stakeholders' experiences, knowledge and skills.

It is important that networks provide possibilities **to gain recognition** by other stakeholders and also people outside the networks (co-workers, leaders, students, parents). The **provision of the certifications** is as important in some cases.

Networks often contain stakeholders with **inner motivation to evolve and learn** and an inner need to **act as change agents**. Networks provide different possibilities to promote those features, such as training, mentoring and networking. Also, networks offer the mechanisms to acquire **more confidence, inspiration and affiliation** through the possibility of networking, but it is important for stakeholders to have enough time to gain merit from network participation.

Accumulated community knowledge in the form of best practices offers the possibility for the teachers to understand colleagues' best practices and **adapt them to their professional practice**. Networks provide opportunities to **develop valuable contacts**, which are also often developed further to create cooperation and collaboration in and outside the network. Network contacts are often sufficiently valid to turn directly to in case of any problem or concern in participants' professional life.

Networks provide access to **new recourses** which participants would not have had to access: new equipment or the knowledge and possibility to participate in initiatives to receive new equipment, all kind of teaching and learning materials and valuable sources of information.

Cycle 4: Realized value:

Networks allow stakeholders to **spread the knowledge, methods and tools** with other stakeholders in educational institutions, which is an important guarantor of digital sustainability.

3.2.2. Engagement events

Analysis of the partner country cases demonstrated the **Cycle 1: immediate value** of the engagement events as networking processes. The main engagement events considered important



to support the exchange between individual and collective knowledge are thematic training and networking events. Individual and isolated training is not valued as highly as the networking events, including training, co-creation and collective reflection. Organising events where teachers participate with their students adds another valuable layer because, through such activities, teachers can understand how students have developed.

3.2.3. Feedback loops

Cycle 3: Applied value & Cycle 4: Realized value:

It is evident that when teachers participate in networks, their acquired new knowledge and created practices should also support the development of their schools as learning organizations. In iHub4Schools, we have learned that there is an increased possibility of **getting the new infrastructure** in some networks. Commonly, teachers share and accelerate new knowledge among their colleagues. **New knowledge is spread to the collective level.** Often, schools become **regional leaders** who share their experiences with other schools.

In some cases, acquiring new knowledge and skills can lead to a **new form of formalized knowledge** embedded into the curriculum or even **organizational changes** like establishing new positions or rearranging existing ones. However, the reform work can be slow and require a lot of perseverance, so the networks act as a strong support motivator and refiner for the rearrangements in institutions. Networks also provide influence at a policy-making level when stakeholders ask for advice from networks. Which can be influential in large strategic policies and smaller everyday choices.

Networks participants feel **the ownership** of the network's activities and initiatives and are ready to defend those features in case of unjustified criticism. The emergence of a sense of ownership significantly impacts the initiative's sustainability (Durall Gazulla et al., 2020). Although participation in the networking process does not guarantee a sense of ownership, it shifts the focus from the results to the process (Ind & Coates, 2013).

Cycle 5: Reframing value:



Networks help to **raise awareness** in a particular community, **adjust vision**, and the **ability to set priorities** correctly. Also, to provide an opportunity to **reframe and redefine work** and the way of thinking about digitalization and innovation - to value more about the options provided by the networks but also to realize the importance of the direct contact between people, which can not be underestimated in the sense of networking.

3.2.4. Community knowledge

Cycle 2: Potential value:

Participating in the networks gives a **good reputation** in the community and promotes initiatives in the broad field. Stakeholder institutions are gaining a good reputation in their area, are recognised as experts, and are invited to share their experiences in different initiatives. **Setting simple common values** for the network members to follow is essential to creating a common way of thinking and acting which help keep the focus and, through that, ensures the initiative's sustainability.

Best practices in networks for exchanging information are **social media groups and chats** because through those channels exchanging information is relatively easy and is not time-consuming, and allows finding needed information later or following activities at a person's own pace. Although, the **real-life connection** can not be underestimated, especially sometimes in a non-formal environment.

Networks **Cycle 3: Applied value** is to **provide different materials** for teachers to use in their everyday practice. Also, the knowledge and skills acquiring from networking are used in stakeholders' work-related environments. It can also not be underestimated the possibility of obtaining usable equipment through the different initiatives of the network.

3.3. Structural support

Finally, it was important to understand the role of the policy representatives in developing support mechanisms to engage the stakeholders into national networks and develop sustainable Regional Innovation Hubs. Based on the analysis of the policy representatives from five partner countries -



Estonia, Finland, Georgia, Lithuania and Norway - following things need to be considered to provide sustainable digital innovation in our educational system:

1. Schools need autonomy to have the best solutions suiting their needs and priorities to become digitally innovative:

Previously published research articles by researchers involved in the project indicate the importance of school autonomy for successful digital innovation to happen in schools. Detecting and understanding the interplay between key factors such as teachers' digital competencies, learning organization culture, participatory management, inclusive leadership, structural changes and network, and IT-manager involvement in structural changes play a crucial role. In our interviews, we did not go into detail on these issues. However, cross-country comparisons made it clear that traditional top-down management does not create good enough prerequisites for improving teachers' digital literacy. In the Georgian case, for example, we learned that there could be big a problem with the self-assessment method as such because teachers tend to think that this is something that is done for the Ministry, and there is very little readiness to be open about the real development needs. Schools should have the right and means to address such issues at the most appropriate level - at school teams.

2. National level focus on improving the teachers' digital competence:

There is still a lack of systematic assessment of teachers' digital competence. To anecdotal evidence, teachers' digital competence may vary considerably, both between schools and within schools. At the same time, there are several examples of tools that are made available for assessing teachers' digital skills, which are introduced in D1.1 of iHub4Schools project (e.g. Opeka in Finland, the self-assessment questionnaire based on DigiCompEdu model in Estonia, or some simpler reflective questionnaire at school level). However, whether and how these questionnaires are used depends to a large extent on the school headmaster. In Norway, studies for school leaders by the Ministry of Education are implemented that include some questions about the digital competencies and digital readiness at the school level, but these are self-declared responses. It is also important to keep in mind that self-assessment may not work in all educational systems; for instance, in Georgia, the challenge of using the self-assessment method was considered to be



difficult as teachers may judge assessment to be external with possible punitive effects. Therefore, we suggest that there is a need for national-level initiatives to assess teachers' digital competence, but this assessment should also be meaningful for the school leaders and teachers.

3. School leadership is a crucial in preparing school teams for adopting digital innovation:

For leading schools' digital transformation, there needs to be someone to offer visionary leadership, awareness of digital management and support from all stakeholders. Often this is a headmaster role, but our interviews also revealed that school owners have an important role to play. In Rauma (FIN), a decision was made to switch to using Chromebooks and Google Workspaces just before the COVID pandemic. This political decision was followed by a provision of training and technical support on how to use Google in classrooms and improve their students' digital skills. As a result, organizing learning processes during COVID was somewhat more accessible. Anecdotal evidence from the implementation of the Digital Accelerators program suggests that the role of the school leader is decisive in whether a school systematically uses the opportunities of digital technologies. In the conditions of extensive school autonomy, it is the school leader who leads the development of the vision, involves the team members, creates the necessary processes, ensures the achievement of results, etc. Norway offered the best example of strategically developing leadership qualities to lead digital innovation in schools, as there is a clear understanding that without school leaders involved, there will not be any systematic change at schools.

4. Support schools to improve the technological infrastructure:

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. In Finland, examples of such procurement are more related to software and implemented on a local government level. In Rauma municipality, for example, a decision was made before COVID-19 that all primary schools need to switch into use of Chromebooks and Google Workspace. Simultaneously, in Vantaa, a new digital platform is under construction that will combine all aspects needed in school life. Infrastructure issues are not the focus of this project, but it was clear from the interviews that this is **the threshold theme** that



needs to be catered for. Also, we learned that Finnish municipalities use innovative approaches to organize the use of newer technological tools for learning purposes by setting up local renting services for robotics tools, for example. It is also quite common to divide ICT support staff work time between several schools in one municipality to ensure the functionality of infrastructure.

5. Networks are the key: make sharing and learning of good practices explicit:

As also discussed above, the role of the national stakeholder networks is important to make the innovation more visible and support the sharing of good practices. There have been state-level initiatives in most of the countries involved in iHub4schools. Finnish tutor program, where 1-3 teachers in every school were paid to tutor digital skills of other teachers, has been considered to be a successful approach, and after finishing the program, local governments have taken over the funding responsibility and continue with their schools. For teachers that take part in these programs, usually, some smaller bonuses are offered, like getting an hour less workload, but mostly it is voluntary based. In Georgia, the New School Program has recruited and funded centrally professional teachers to work with schools in implementing a new national curriculum (focusing on problem-based learning, algorithmic thinking, and programming basics). In Estonia, the Digital Accelerator Program serves as a good example to help schools that have rated their use of digital technology as lagging behind. The program uses a methodological approach to pair expert teachers to work with school teams and consciously collects and shares good practices among participants, both from teacher to teacher and from school to school. Lithuania has run an internship program where teachers go from one school to another to see and learn how colleagues from other schools are dealing with challenges and succeeding. It is important to highlight that there is a need to support the bottom-up type of networks which have really contributed to changing the educational system and supporting teacher-to-teacher and school-to-school peer learning by local or national institutions to sustain and scale.

6. Support for teachers' networks is needed because as communities they are more resilient and can act faster:

All countries have publicly funded networks for teachers which are aimed towards professional development of its members. In Finland and Estonia, there are teachers' networks to share



knowledge and skills for robotics and programming, in Georgia within the Future School program networking activities are foreseen to support each other. Teachers' voluntary networks proved to be very beneficial during the distance learning period. Especially, in the spring 2020 when the first wave of epidemic broke. All countries had examples of teachers organizing themselves in Facebook groups to help each other learn how to direct learning processes and facilitate communication via online methods. The fact that there were other teachers available to share the experience made the response much quicker. In Estonia, there were subject specific social media groups created where different solutions were discussed. Those groups have stayed active even now when all teachers have gained considerable experience. There are many examples of such sharing, i.e. Google Workspace for Finland or ICT teaching in Finland. Public sector organizations need to realize that such networks are very helpful in disseminating new ideas and good practices, and therefore it pays off to support them.

4. Conclusion

This deliverable presented updated support mechanisms and sustainability actions to support the establishment of national stakeholder networks and Regional Innovation Hubs. iHub4Schools heavily focuses on participatory methodology - dialogue between the stakeholders and value creation approach. In our improved report we illuminate ways that network members find value through their participation in teachers' communities and we examined the stories through the lens of the work of Wenger et al (2011).

The experiences of iHub4School partner schools and teachers highlighted the importance of expertise that networks provide and the possibility to co-create new forms of understanding of novel technology-enhanced learning methods and strategies in a way that these are valuable individually and collectively.

It is also clear that the role of policymakers is unavoidable to ensure that teachers' networks are sustainable and scalable. These are the stakeholders who can channel resources to ensure that value creation is supported through different cycles.



References

OpenSchools project. <https://www.openschools.eu/wp-content/uploads/2018/01/D3.1-Support-Mechanism.pdf>

Pang, MS., Lee, G. & DeLone, W. IT resources, organizational capabilities, and value creation in public-sector organizations: a public-value management perspective. *J Inf Technol* 29, 187–205 (2014). <https://doi.org/10.1057/jit.2014.2>

Pata K, Tammets K et al (2021). The Patterns of School Improvement in Digitally Innovative Schools in Technology, Knowledge and Learning, <https://link.springer.com/article/10.1007/s10758-021-09514-5>

Wenger, E., Trayner, B., & De Laat, M. (2011). Promoting and assessing value creation in communities and networks: A conceptual framework.



TWITTER

@IHub4schools



FACEBOOK

@iHub4schools



WEBSITE

ihub4schools.eu/



This project has received funding from the European Union's
Horizon 2020 research and innovation programme
Project Number: 101004676

