

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

**WP3/ D3.2
INFORMED MODEL
M12 / M15**

WP3 Leader: University of Helsinki



I-HUB4SCHOOLS





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

D3.2 (30.3.2022)

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EXECUTIVE SUMMARY

According to the proposal of the project, the task planned for months 7 to 12 was to improve the model based on the first round pilots during months 1- 6 and give general guidelines for the mentoring process. As decided during the first reporting period, we have created individual models and methods instead of only one model. The reason for this was to give schools different opportunities to choose between different models, taking into account how schools are different in management, structure and culture. The project decided to divide the process into several sub-models and methods to better support various innovations and processes in schools with digital tools. Thus, we have provided mentors and schools with a) one conceptual model, b) two models about the mentoring process, and c) a group of *Individual methods*, for the mentors and schools to apply for practical development actions. This change of work has caused more work, hence a delay in getting feedback about the models and methods.

The work for creating and developing models and methods has advanced well. The whole package of models and methods are called the *School Mentoring Model*. Till M12, we had a draft of the *Conceptual model*, a *Dynamic process model* (renamed in M15 as *Process model for school mentoring*) and seven individual methods. The different individual methods were developed within partners' previous projects, but in this project, the models and their description are improved for being used in practice. After the review feedback, we have created a process model for school-to-school mentoring, named *Process model for school-to-school peer learning* and it is also described in this deliverable.

The piloting partners, *Tallinn University*, *University of Bergen* and *University of Helsinki*, have worked with the piloting schools and with two other partners, while *Vilnius University* and *Batumi Shota Rustaveli State University* have started the collaboration with the local schools. However, it is too early to get any specific feedback about the *School Mentoring Model*, but we have some first comments about the use. During the autumn 2021, we started to ask feedback about the outcomes from the external partners from Finland and Estonia (till M12). Till M15 the project held a workshop with all piloting partners about piloting and the use of the *Conceptual model* and the two *Process models*. In WP4 we have designed the plans for supporting the pilots, and the first steps of these activities took place in 1st of March in a WP3 workshop. We have also started to scaffold individual partners organizing pilots, and the first one is the Georgian pilot. In addition, we have made plans about how to continue creating individual methods with the partners.

WP3 has collaborated with other WPs because of the internal dependence of work in the different WPs. With WP1, WP3 participated in doing the review, which was useful also for the development of individual methods, with WP4 for creating ideas for feedback and with WP5 for creating the *School Mentoring Model* available for external use. However, the collaboration has been natural because the WPs consist of the same partners; the responsibilities within various WPs just differ.



In general, the work conducted in WP3 has been successful and all partners have participated in it actively, and, based on the review feedback, we revised the work somewhat till M15.

1. Introduction

The aim of Deliverable 3.2. is to

- Clarify the three sub-models of the *School Mentoring Model* which have been developed during the project, it especially focuses on the *Conceptual model* and the content of the two *Process models* (*School-to-school peer learning*, *School mentoring*).
- Provide a clear set of directions for how the piloting takes place, including the different pathways for inter- vs. intra-school mentoring.
- Address the question of motivation and incentives for teachers to take part and provide different approaches that can be evaluated as part of the piloting.

2. Development of the School Mentoring Model, sub-models and methods

The work for developing the sub-models and methods started from the beginning of the project. First, we started to create an overall understanding about the outcome as well as getting an overview of various expertise partners have about digi-pedagogical methods and tools. We also concluded that instead of creating only one model we create three sub-models (the *Conceptual model*, and two *Process models*) in addition to the several individual methods. This choice expanded the work in the work package. Because of creating the sub-models and individual methods, we did not yet have the possibility to collect feedback from piloting the models and the individual methods. The sub-models and methods have been discussed in three workshops (two till M12, one at M15), meetings, and in continuous emails between various partners. STePS, though not being a member of the work package, still actively participated in the work by taking care of the visual design of the models and methods as well as creating a design template for creating the presentations. During the autumn 2021, we started to publish the sub-models and methods on the website, also for the external audience. The overall outcome was named the *School Mentoring Model*. Its various elements are described in Figure 1 below.

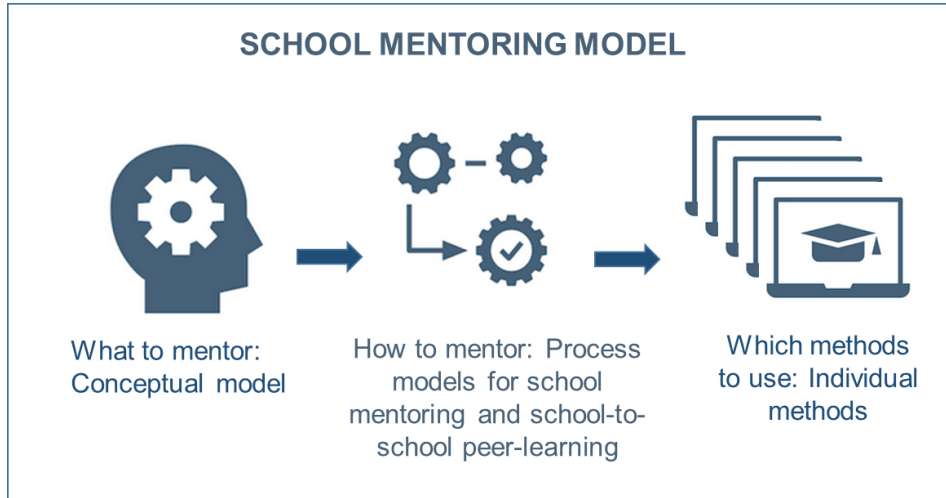


Figure 1. The School Mentoring Model

The *School Mentoring Model* includes the following elements:

- a) *Conceptual model* (what to mentor) targeting researchers, school leaders and policy makers to conceptualize digitally innovative school that fosters school-level peer-learning and mentoring.
- b) *Process models* (how to mentor) targeting school leaders, teachers, mentors and teacher trainers by providing a sub-models of organising development processes inside and between schools.
- c) *Individual methods* (which methods to use) providing descriptions of practical methods that can be used to implement school-level digital innovation through peer learning and evidence-based development inside and between schools. The methods can be used as toolbox tools from which mentors and schools choose the appropriate approaches based on their needs and goals.

The sub-models and methods are available in <https://www.ihub4schools.eu/mentoring-model/>, hence they will only get a short description in this deliverable. The models and methods are constantly being improved and revised during the spring and summer 2022.

One result of the piloting is, e.g., an active discussion between partners about what we mean by mentoring. It seems that the mentors of each partners' pilots *learn* how to mentor schools and teachers through the discussions about the *School Mentoring Model*. We have noticed that the *Process models* have already function as good tools for the mentors in the iHub4Schools project, because without such a support mentors with less experience might, e.g., trust too much on the teachers' spontaneous and self-directed activity, be somewhat afraid to comment and guide teachers, or leave some necessary steps off from the mentoring process. Unguided development might lead to some positive results, but maybe not to sustainable changes in the practices of teachers and schools.



2.1. Conceptual model

The first version of the *Conceptual model* (which describes the elements that constitute the digitally innovative school and what to mentor at schools) was first presented in the D3.1. Based on the in-depth analysis of the T1.1 (State of the Field review of research on digital innovation), the improved version of the *Conceptual model* is presented in this D3.2. for which it was developed further (see Figure 2). This model is targeting researchers, school leaders, mentors, and policy makers to conceptualize a digitally innovative school that fosters school-level peer-learning and mentoring and make conscious plans and decisions about what are the main focuses of mentoring in each case. The model will be adjusted based on further empirical work done in the project and the final model will be presented by the end of the project in D3.3.

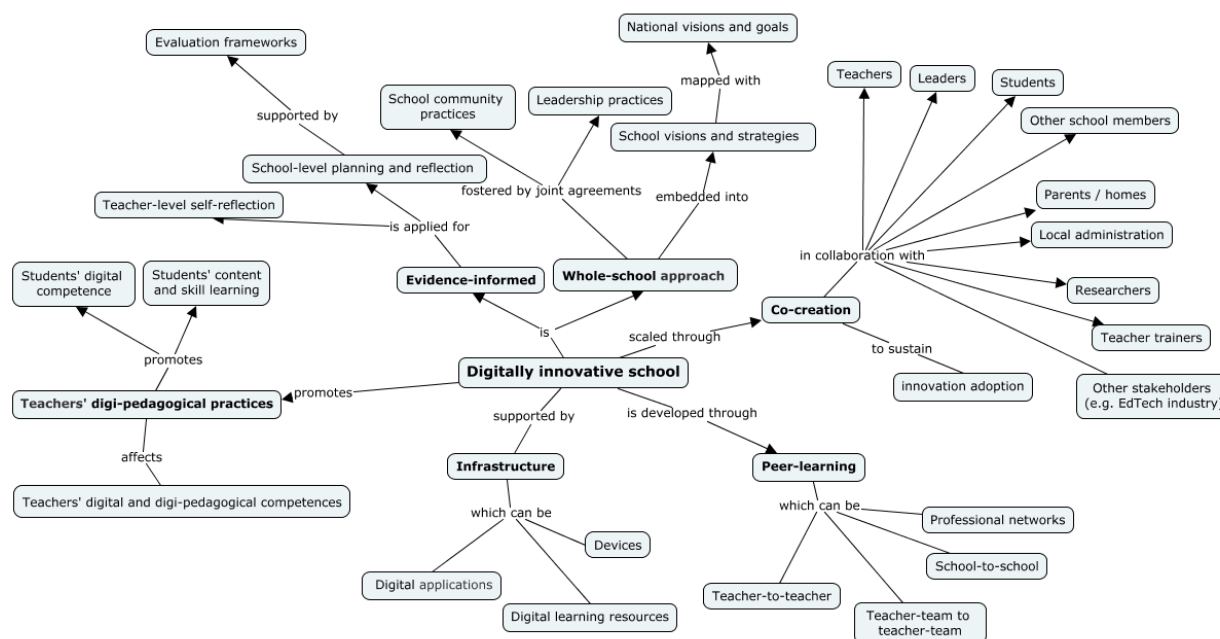


Figure 2. The Conceptual model of the Digitally innovative school in the iHub4Schools project

2.1.1. The focuses of the Conceptual model

In the following, we explain the key basics of the *Conceptual model*.

- Whole-school approach.* Many studies indicate that for improving students' learning, the key is to improve whole school, not only, e.g., some individual teachers' content-related or



pedagogical competencies. Schools should become *learning communities*, in which all members, including students, participate in the school development, following the commonly agreed visions and strategies. The whole school community is responsible of the vision, collaborative practices, ways of working with digital technology, etc. For this reason, in the project the focus is on supporting the whole teacher community of a school and working closely with the management of the school.

- b. Evidence-informed.* Schools need reliable evidence for making decisions about their improvement and development needs. In some countries, official school assessments give feedback to schools and teachers. There are also tools for self-reflection, e.g., of digital skills (such as SELFIE, national tools like OPEKA in Finland). Some of the individual methods in this project include templates, which help teachers and schools to reflect on their competencies and practices, and through that decide together their development needs. Such templates are, for example, in the Digipeda workshop method. Also Digital Acceleration Program in Estonia have developed instruments for the schools to evaluate their digital innovation and the development of teachers' digital practices after the training.
- c. Co-creation.* For the digital and digi-pedagogical innovations in schools to be relevant and applicable, the teachers themselves should participate as actors in developing and creating new solutions and practices together with other stakeholders. Co-created ideas, plans, pedagogical scenarios and teaching/learning materials work as boundary objects between various parties to combine their expertise and develop innovations iteratively. In addition, co-creation methods that engage all teachers in the participating schools encourage bottom-up diffusion of innovation.
- d. Teachers' digi-pedagogical practices.* Teachers' digi-pedagogical practices are based on several factors. Some of them have a background in teachers' professional education, some in the national aims and curriculum, some in teachers' own pedagogical thinking and some in the practices that are used and fostered in the school where the teachers work. We know that changing practices is a profound process and a short-term training does only seldom have a sustainable effect on them. In the iHub4Schools project, we focus on teachers' digital and digi-pedagogical competencies. Because teachers have different competence in these matters, mentors and the school community together decide which methods they will use for improving the digital-related competencies of their staff. Teachers' digi-pedagogical practices are very essential for students' learning. In the project, we focus on such pedagogical practices, which are based on students' activity and participation, students' collaboration and co-creation, and innovative use of digital technology.
- e. Peer-learning.* Peer learning can take place in different levels and forums: between individual teachers or teacher teams in one school or across schools, between whole



schools in organized benchmarking or sharing events, or in professional networks catering together teachers with similar interests or backgrounds. Digital platforms enable sharing and dissemination of knowledge and materials more widely. It is relevant to promote peer learning in organized ways, not relying on teachers' spontaneous collaboration. We especially recommend implementing peer-learning activities between digitally advanced and less advanced teachers and schools.

- f. *Infrastructure* is, naturally, one of the key cornerstones for a digitally innovative school. However, in this project we will not focus on the issues of the technical infrastructure because the aim is to promote collegial and school-to-school practices that are applicable and improvable regardless of technical resources. Of course, individual schools might have technical infrastructure as one of the elements that they need or want to improve during the mentoring process.

2.1.2. Teacher motivation and incentives to promote digital innovations

We suspect, of course, that some teachers do not participate in these learning and development processes voluntarily, for various reasons. There are teachers with low digital and digi-pedagogical competencies and some of them can be reluctant to do any changes. For this reason, it is necessary to have the whole-school approach in the development actions, meaning that leaders and school managers are actively contributing to the process; for example, by leading the decision making about the aims, methods and teacher participation. The process should be based on evidence-informed decisions about the needs for development in both teacher and school levels, and the leaders should have a key role in this work. Participation in actions that aim at digital innovation is one element in teachers' continuous professional learning, which needs to be planned and organized together with superiors. In addition, it is necessary to have many kinds of supporting and training methods and events.

According to our understanding, teacher motivation lies in the key issues, mentioned above in the *Conceptual model*. By collaborating with colleagues in their own school, they get new ideas and learn new skills, and by visiting other schools and benchmarking the best practices, again together with colleagues, they learn as a team. Teachers should not be working alone, trying to improve their personal digital competencies and pedagogical practices, but they are members of a team or school community that work for the improvements. Teachers participate in co-creation activities and by this, they will be engaged and motivated to improve their personal competencies.

From previous research and practices we know that competent teachers with high motivation learn by participating in development projects and training events with teachers from other schools and



even abroad. The less competent and less motivated teachers usually benefit the most from mentoring and training which is close to their own workplace, in their own school and with personal hands-on training. Through iHub4Schools, the schools, leaders and teachers together decide what they need and how they want to continue. The project offers mentoring models and individual methods to support these processes. In addition, WP2 aims to investigate the motivation and incentive schemes of the teachers participating in national stakeholder networks, in order to understand their motivation to be part of them; that work will be part of D2.3.

2.1.3. Key elements of the Conceptual model in the first pilots

In the WP3 workshop 1st of March, 2022, we focused on one pilot (= a case in which 1-3 schools participate) of each piloting partner and discussed about their relation to the *Conceptual model*, in order to help partners align the pilots with the key element of a digitally innovative school. For this, we used a common template, which will also be used for reporting the outcomes of piloting (WP3, WP4). By going through the pilots one by one, the common understanding about the piloting became clearer and the next pilots are easier to start. Table 1 summarises, how the first pilots of each piloting partner focus on the key elements depicted by the *Conceptual model*.

Table 1. Focus of each pilot associated with the Conceptual model of Digitally innovative school.

Name of the pilot / Country	Focuses of the Conceptual model
Collaboration between two schools in developing digital practices / FI	Whole-school All development actions focus on the whole-school approach (digital path etc.). Coordination teams from both schools represent the whole school and make plans concerning all teachers. Events and workshops mainly organized for all teachers. (FI) All development actions focus on whole-school decisions that is based on the national goals of general education, school mission and strategy. Coordination team from both schools represent the whole school and make plans concerning all teachers. Events and workshops mainly organized for all teachers. (GE) All development actions focus on whole-school decisions including national and school vision, and school action strategies. Teams of school representatives coordinate school's community plans, initiate joint activities within the school and presents the school's results in the innovation field for other school communities. Coordination team from the schools represent the whole school and make plans concerning all teachers. Events and workshops mainly organized for all teachers. (LI) All development actions focus on whole-school decisions. Improvements are coordinated by the leadership team and all the teachers of the schools will be included into the development actions. Mentors will mentor leadership members and trainers will train the
Collaboration between two schools in developing digital practices / GE	
Collaboration between primary Lithuanian schools in developing computational thinking practices (LI)	



Accelerating Whole-school Digital Innovation / EE	staff of the school. Leadership teams from five different schools are involved in inter-school learning and sharing of good practices. (EE) Evidence-informed approach - data collection for what purposes The development aims were recognized and decided based on a workshop where all teachers reflected on their school's digital practices and needs for improvement in them. Follow-up data collection to be decided. (FI) The development aims were recognized and decided based on mechanisms in the country of teacher professional development and monitoring, school development policy, to determine digital competencies (observation of the learning process, survey of teachers, students, teacher self-reflection). (GE) Teachers are encouraged to assess their digital competences (using SELFIE4Teachers). Teachers can estimate their digital competencies and to think how they can improve their teaching and to use them as a basis for development activities. Also, the digital innovations development aims were recognized on a whole school (the main focus for teachers), workshops where the whole school community (including school's administration staff) reflected on their school's digital practices and needs for improvement. (LI) The development actions are defined based on the leader team's self-assessment of digital maturity of the schools. Self-assessment helps to define the school level gaps, which helps to set the goals. Teachers' training will be designed based on the self-assessment of teachers' digital competences. During the training, teachers' are asked regularly to monitor the implementation of new pedagogical practices to reflect the experience, using also digital solutions for data collection. After the training, evaluation will be carried out based on the success criteria. (EE) Co-creation Digital path and related library of hints and examples to be developed in workshops and shared online forums for all teachers. (FI) Digital path and related tip library to be developed in different types of activities and shared with school administration, teachers, leader teachers, teacher training groups, students, other school staff and stakeholders. (GE) Workshops are based on teachers collaborating to share their experiences in digital innovation. In the pilot phase we informed about the steps of the <i>Conceptual model</i>: co-creation, especially other schools, teacher trainers, researches. (LI) Teacher training follows the co-creation approach where new practices are co-created in teachers' collaboration and with the mentor support. (EE) Teacher's digi-pedagogical practices The curriculum for supporting students' digital skills and related tip library is expected to support teachers to improve their pedagogical practices with digital tools. (FI) The National Curriculum in the Georgia focuses on teachers' digital competence skills and their application through a variety of learning activities. The development of teachers' digi-
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	pedagogical competencies is facilitated using complex assignments introduced as part of the New School Model at all levels and subjects of the school. However, teachers' digital-pedagogical competencies are insufficient / unequal not only within one school, but also its level varies between schools. (GE) Teachers' pedagogical practices are blended with the digital competence defined in the national level digital competency model designed for the Estonian teachers by embedding digital tools in the pedagogical practices. (EE) Peer learning Plans made together between the coordination teams of two schools. School 1 has more experienced teachers in the coordination team. Digital path and tip library created to support all teachers to be aware of and improve their pedagogical practices with digital tools. (FI) Plans made together between the coordination teams of two schools. School 1 has more experienced teachers in the coordination team. In addition to the teachers' competence, access to resources and technical resources is important for the school and the teachers. To achieve a successful result, the leader school will share best practices, support less-experienced schools / teachers in enhancing the practice of using digital technologies in the planning of the learning process. Various activities (workshop / training / seminar / workshop / webinar, etc.) will be held to support this process. (GE) School development plans are created individually, but during the development actions, school leaders are encouraged to support each other and share good practices. Teachers' peer learning is supported inside of one school. Good practices and outcomes of the interventions are made available for the other schools via online platforms, webinars and final conferences. (EE)
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2.2. Process models

The second sub-models are the two *Process models* for school mentoring (how to mentor); they are aimed to support the structuring of the development process inside schools and in school-to-school collaboration. Some mentoring efforts are aimed at supporting one school to adopt digital innovation, others are focusing on peer-learning and dissemination of digital innovations between schools or teachers from multiple schools. Through discussions with partners about the first pilots in the iHub4Schools project, it is obvious that internal development work (such as defining initial development aims) inside one school often precedes the school-to-school peer learning activities.

For this reason, the mentoring process often consists of these both approaches. In this deliverable, we have described the processes of inside school mentoring and school-to-school peer learning separately in two sub-models to make it easier to understand the different processes. In addition, we have started to collect partners' experiences about the mentoring processes and the sub-models and these will have an effect on revising the sub-models.



2.2.1. Process model for school mentoring

The first sub-model of the process models, being improved from D3.1, is the *Process model for school mentoring*

Process model for school mentoring is targeted for school leaders, teachers, mentors and teacher trainers. The aim of the model is to support the organising of development processes in schools and to foster the adoption of digital innovation at an individual school level. The focus is on teachers' understanding of digital technology and practices to implement digital technology in a pedagogically meaningful way. The model promotes practices that support teachers' professional learning with peers, and school management to create the culture and practices for evidence-informed implementation of digital innovation.

The model was created in close interaction with the experiences of mentoring processes in Norway and Finland, and examples from Norwegian and Finnish pilot schools are used in the model description. In addition, all piloting partners have participated in the discussions about the model.

The model is ready for use, but future feedback, especially with all schools and mentors, in addition to the piloting schools, are needed to improve the model, and, as a matter of fact, we have collected the first experiences from the pilots in March 2022. The structure, explaining the process of the development phases, is presented in the following Figure 3.

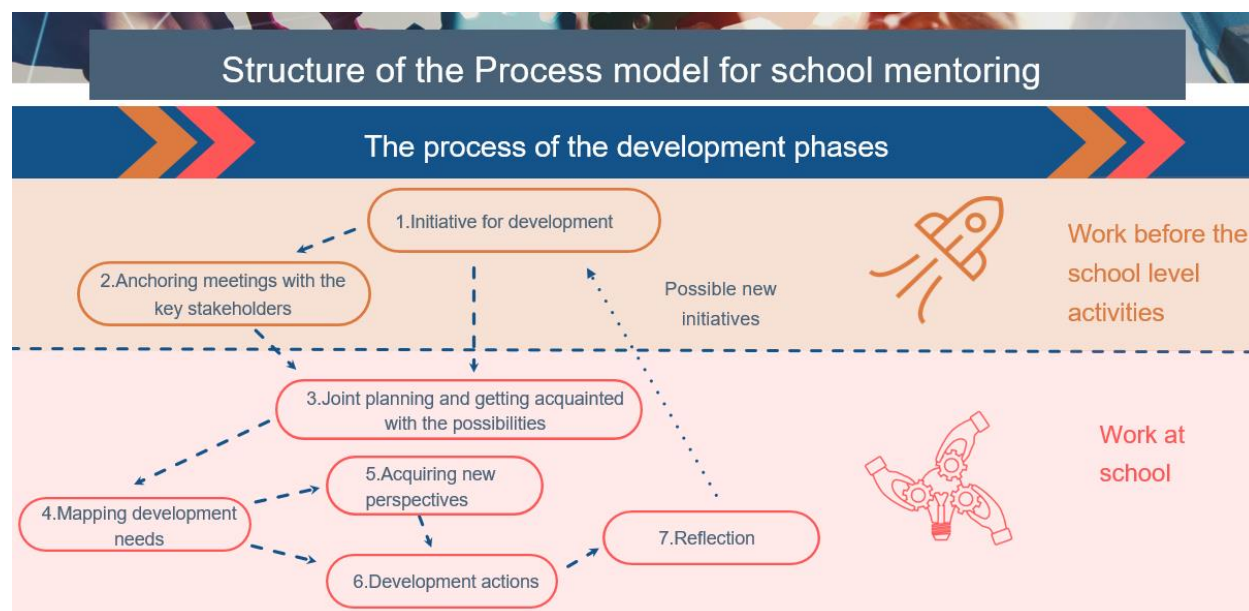


Figure 3. Process model for school mentoring in the iHub4Schools project



2.2.2. Process model for school-to-school peer learning

The second sub-model of the process models is the *Process model for school-to-school peer learning*.

Process model for school-to-school peer learning is meant for situations where two or more schools collaborate to learn from each other or develop their practices together related to digital innovation. School-to-school collaboration needs to have mentors who take care that the process is progressing as well as provide models and support mechanisms for structured collaboration; the mentors can be external experts (e.g., trainers or municipal ICT coordinators) or members from the school (e.g., principals or digital tutor teachers). The aim of the model is to support the organising of collaboration activities between schools and to foster peer learning related to digital innovation. The focus could be on supporting the collaboration between digitally more advanced and less advanced schools, but often there are different competence levels and varying expertise among teachers in all schools, and everybody benefits from peer learning and collaboration.

The model is a modified version of the *Process model for school mentoring* created earlier. Individual methods especially suitable for school-to-school peer learning in different phases of the process are under construction; they will be developed in and collected from the pilots from different partner countries. The steps, explaining the process of the development phases, is presented in Figure 4.

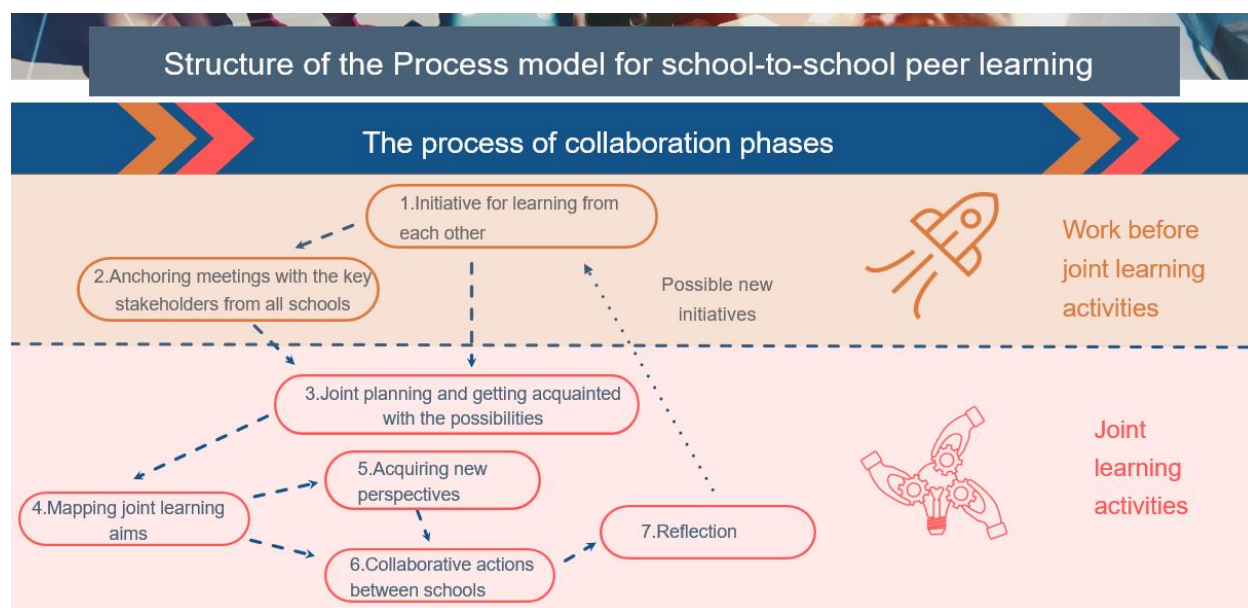


Figure 4. Process model for school-to-school peer learning in the iHub4Schools project



2.3. The individual methods

The *Individual methods* consist till now of seven methods. These methods are ready to use, like the *Process models*, which will be revised and improved based on future feedback. The *Individual methods* have been developed by partners in previous projects; the descriptions for implementing the methods have been further improved in this project, by the developing partners. The method descriptions can be used as toolbox tools from which mentors and schools choose appropriate approaches based on their needs and goals. Some of the methods (e.g., Digipeda workshop, Collegial tutoring, Teacher inquiry into Student learning) describe individual, small-scale methods that are easy to implement as part of wider set of methods during the school mentoring or peer-learning processes. Other methods (e.g., Future school,) cover a more longitudinal procedure, which itself contain many phases of the process, and may need more resources to implement as such. We wanted to include this wide variety of examples, because all methods have proven useful in practice and they can be used as an inspiration. Experts who mentor the development actions inside or between schools are in a key role to apply the methods flexibly depending on the situation and context. The individual method descriptions can be found from here: <https://www.ihub4schools.eu/mentoring-model/>.

2.3.1. Digipeda workshop

Authors: Minna Lakkala and Liisa Ilomäki (UH)

The aim of the *Digipeda workshop* is to start reflecting and discussing among teachers how to improve the pedagogical use of digital technology in the school. The workshop is meant to be a beginning for further development actions. The method is suitable to be used in *Phase 4. Mapping development needs/Mapping joint learning aims* of the *Process models*. The structure of the short, 3-hour workshop is presented in Figure 5.

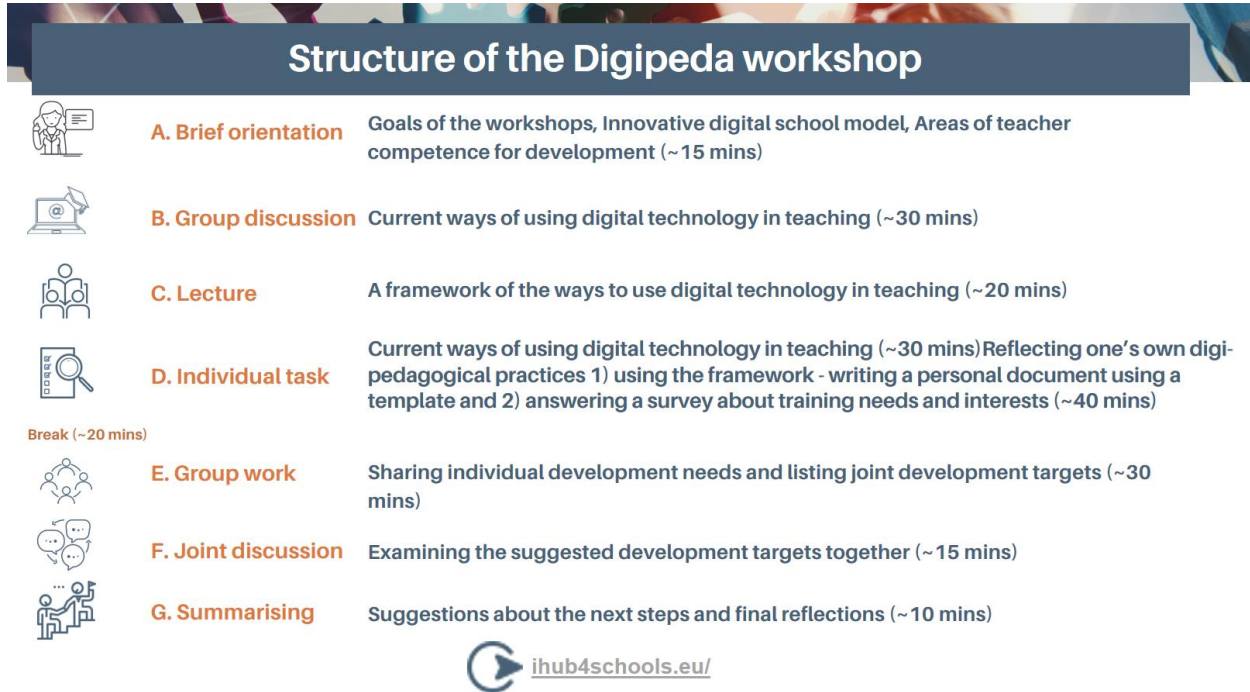


Figure 5. The structure of the Digipeda workshop

2.3.2. Future school - Evidence-informed School Improvement

Authors: Eve Eisenschmidt and the team (TLU)

The aim of the *Future School* program is to help schools to implement changes in their organisation so that the change is scalable, sustainable and evidence-informed. The method includes elements that can be used to actualise *Phase 4. Mapping development needs*, *phase 5. Acquiring new perspectives* and *phase 6. Reflection of the Process model for school mentoring*. The structure of the Future school process is presented in Figure 6.



Structure of the Future school process



A. Introduction workshop (6h)

- Analysing the gap in the organisation based on the evidence (e.g. need for developing teachers' digital competences)
- Formulating school's development needs
- Development of action plan and identification of performance indicators
- Forming the school development team



B. Development actions (9 months)

- Implementation of change management activities
- Implementation of development activities
- Monitoring of the development actions and data collection: observations, surveys, tests etc.



C. Reflection seminars (1x month, 6 h)

- Workshop on change management and evidence-informed school management topics
- Collaborative reflection



D. Final event

- Presentation of development project and achievement of change in the school culture



Figure 6. Future school - Evidence-informed School Improvement

2.3.3. Teacher Innovation Laboratory - Adoption of digital innovation through co-design

Authors: Tobias Ley and the team (TLU).

The aim of the *Teacher Innovation Laboratory* is to support teachers' adoption and scaling up of the educational innovation in classroom settings in school-university partnerships. The method is suitable to be used in *Phase 6. Development actions/Collaborative actions between schools* of the *Process models*. The structure of the Teacher innovation laboratory process is presented in Figure 7.



Structure of the Teacher Innovation Laboratory



A. Introduction workshop (6h)

- a. Introduction to the digitally innovative method with the focus on integrating novel technologies and pedagogical approach (e.g. Digital Learning Resources enhancing students' engagement, Educational Robots for Motivation in Math; Outdoor learning technologies for conceptual understanding in science)
- b. Introduction to the theoretical underpinnings of students' learning processes



B. Development actions (3-12 months)

- a. Co-design of the lesson designs
- b. Iterative piloting, monitoring of the lesson designs in own practice
- c. Reflection about own experience



C. Reflection seminars (1x month, 6 h)

- a. Co-design sessions between teachers, researchers and university didactics to create lesson designs based on the didactic, psychological and technical underpinnings
- b. Collective reflection based on the individual piloting experience together with other teachers and university researchers



D. Final event

- a. Presentation of the final lesson designs



Figure 7. Teacher Innovation Laboratory - Adoption of digital innovation through co-design

2.3.4. Teacher Inquiry into Student Learning method

Author: Cecilie Hansen, University of Bergen.

The aim of the *Teacher Inquiry into Student Learning method* (TISL) is to improve awareness of teachers' professional development through systematic, intentional, self-critical, planned investigations of their own teaching practice. The method is suitable to be used in *Phase 6. Development actions/Collaborative actions between schools* of the *Process models*. The structure of the Teacher inquiry process is presented in Figure 8.



Structure of the Teacher Inquiry into Student Learning method



A. Introduction workshop*

Introduction by the facilitators: Goal of the workshops: What is TISL.
Group work: In groups, the teachers will investigate the 7 steps of the TISL method and together prepare and decide on a TISL project.



B. Inquiry phase

The groups will conduct projects during the semester. This is the inquiry phase. The groups will have one session with guidance for each project.

- The groups plan how to be able to conduct the project
- The teachers conduct the project in accordance with their plan.
- The groups that need guidance will get this from the facilitators, during the inquiry phase



C. Sharing session

The groups will present and share their work for the other groups in a sharing session. The groups will reflect on the process and findings.

*The groups can conduct several inquiry projects during the semester. Schools should have time during the week for collaboration. Time spent depends on the project.



Figure 8. Teacher Inquiry into Student Learning method

2.3.5. Collegial tutoring

Authors: Minna Lakkala and Liisa Ilomäki (UH)

Collegial tutoring provides a method to disseminate experienced teachers' pedagogical practices with digital technology. The method is designed to be a practical and easy method for organizing collegial support inside school embedded in everyday schoolwork. It can also be applied between teachers from different schools; short reflection meetings can, for example, be organized as online sessions. The method is suitable to be used in *Phase 6. Development actions/Collaborative actions between schools* of the *Process models*. The structure of the Collegial tutoring process is presented in Figure 9.



Structure of Collegial tutoring



A. Orientation

Tutee examines Tutor's pedagogical practices with digital technology



B. 1st meeting

Tutor helps Tutee to start planning the teaching experiment



C. 2nd meeting

Tutor provides help for improving the plan and preparing for implementation



D. Supported implementation

Tutee runs the lessons in classroom with the help of Tutor



E. Final discussion

Evaluating the success of the teaching experiment and lessons learned



ihub4schools.eu/

Figure 9. Collegial tutoring method

2.3.6. Co-Creation Program for Educational Technology Innovation

Authors: Kairit Tammets, Pirgit Sillaots and the team (TLU)

The *Co-Creation Program for Educational Technology Innovation* aims to enhance the collaboration between teachers and industry to create high-quality and evidence-based digital solutions for teaching and learning. The method is suitable to be used in *Phase 6. Development actions* of the *Process model for school mentoring*. The structure of the Co-creation process is presented in Figure 10.



Structure of the Co-Creation Program



A. Selection of participating EdTech's and matchmaking with schools

- a. Introduction of EdTech's and evaluation and selection of participants.
- b. Opening seminar and matchmaking between schools and EdTech's. Introduction of the program and co-creation method.



B. Development actions

- a. Co-creation of the solution and integrating technical, pedagogical, didactical and psychological knowledge.
- b. Piloting, monitoring and testing with teachers and/or students.



C. Reflection- and co-creation sessions, workshops

- a. Co-creation sessions between start-ups, teachers and university mentors. Reflection sessions to learn from others and own experiences.
- b. Workshops to support the acquisition of needed skills to form the high-quality, evidence-based digital solution and ensure its sustainability.



D. Final event

- a. Presentation of the final results.



Figure 10. The structure of the Co-creation program.

2.3.7. Digital Accelerator Program

Author: Kerli Požogina, HarNo - Education and Youth Board

The aim of the *Digital Accelerator Program* is to support the digital capability and overall readiness for digital and distance learning of school teams through intensive training and educational technology mentoring. The method includes elements that can be used to actualise *Phase 4. Mapping development needs*, *Phase 5. Acquiring new perspectives* and *Phase 6. Reflection of the Process model for school mentoring*. The structure of the Digital accelerator process is presented in Figure 11.



Structure of the Digital Accelerator Program



A. Focus

Preparation phase to put in place the main focus of trainings and mentoring for each school team in general and for each individual teacher.



B. Empower

Main phase for mentoring and trainings in each participating school with the special attention to the cooperation and digital safety.



C. Extend

Follow-up phase for final mentoring seminar with the local government to assess the overall progress in each school.



D. Impact

Conclusion phase to analyze the survey results of all participating schools to make changes for the program and additions for the compendium of best practices.

Figure 11. Digital Accelerator Program

3. Presenting and collecting feedback of the School Mentoring Model

We have started to collect feedback from the piloting schools in various ways described below.

3.1. WP3 Workshops for project partners

We have organised three workshops for the project partners. The first was in February 2021, focusing on creating a shared understanding on how to proceed to develop the model and for getting to know the expertise of the project partners. The second workshop in October 2021 aimed for explaining the *School Mentoring Model* and its sub-models and methods to other partners, and for getting feedback about them. In March 2022 we organized one more workshop in which we investigated one pilot from each country, also reflecting on the *Conceptual model* and the *Process models*. In addition, we started to “mentor mentors”, that is, University of Helsinki has started guiding individual partners in order to collect feedback about the *Process models* and to support the partner in their mentoring processes.



3.2. A questionnaire for collecting feedback from mentors

WP3 and WP4 created together a questionnaire for collecting feedback from mentors of the pilot cases and from other pilot school stakeholders as well as professionals in the field. Till now, the feedback has been asked from project partners and, in Finland, from external stakeholders (teacher trainers of a university organisation, other teacher trainers, and a tutor teacher network coordinator in the Finnish National Agency for Education). A link to the questionnaire template is here: <https://docs.google.com/document/d/1rBFZvWjYOnc9NeyKxAo-A9eMGVUMkV3eVBd38-8pa18/edit?usp=sharing>. The aim is to create an electronic form for feedback from a wider audience based on the experiences of the questionnaire.

The very first feedback was positive, but there is not yet enough data to make any conclusions. The project members have presented the different models and methods also in various events; for example, in Finland it was presented in a teacher tutors' training event. The participants (about 20 in all) were teachers finalizing a training where they were educated to act as digital tutors in their school and local community. They were given an introduction of the *School Mentoring Model* elements, and the written feedback collected at the end of the presentation was very encouraging. The material on the website about the models was regarded as useful and important. Below are examples of the comments written in a *Flinga* wall (digital collaborative whiteboard tool) to the question *How useful do you find the iHub4Schools projec's School Mentoring Model and methods presented:*

- Very important in order to make better use of resources.
- The mentoring program sounds very interesting. It would be good to have the resources targeted and to spread the culture of knowledge sharing.
- Sounds good and the school can also choose what method to use.
- Mentoring sounds good, as do the Digipeda workshops in particular.

In Estonia, based on the experiences with schools, it turned out that the proposed *School Mentoring Model* works effectively with the school teams, but some adjustments are needed when working with individual teachers (as the case with the Co-creation program or Teacher Innovation Laboratory was). During the next period Estonia will carry out a few more studies to validate the model with the programs targeting individual teachers (Teacher Innovation Laboratory method for instance), but also to develop a shortened, light-weight version of the Digital Acceleration program that focuses more on inter-school learning aspects.

In addition, we discussed in various project meetings about the outcomes, and these discussions were valuable informal feedback.



4. Pilots

4.1. Supporting the pilots

First of all, the project has started to make a clearer plan for piloting the *School Mentoring Model*. We decided that WP3 is responsible for providing practical support for the piloting partners. For this task, we organised a workshop in 1st of March, in which we examined one pilot of each partner and provided a template to report the setting and the progression of piloting. The aim was to connect the *Conceptual model* and its focuses into every pilot (reported in chapter 1.2.2.).

The two *Process models* are also used as guidelines for the mentors who organise pilots. The mentors plan and report the progression of the piloting process, following the steps of the *Process models*. This is useful for three purposes: first, it helps the mentors to organise the mentoring process; second, it is a way to collect data about the pilots for evaluating their success, and third, by using the model directly in planning and reporting, we can easily collect experiences about the models and know how to improve them.

In addition, we have agreed on a webinar about mentoring practices later in the spring 2022 as well as about online meetings with individual partners. The series of workshops / webinars will continue, based on the needs of the piloting partners. The aim is that the first pilots are so well supported and reported that the next pilots are easier for the mentors to conduct.

While describing several individual methods we knew that within this project it is not possible to compare different methods. We have pilots as cases and the resources for scientific research are limited. We will mainly report how the methods were used in the various pilots, and their strengths and shortcomings.

The evaluation of the success of piloting relates to evaluation methods and success criteria defined in collaboration with WP4. The evaluation takes place in different levels. In the level of mentoring activities, the mentors report the progress of the mentoring processes and their experiences of the support that the *School Mentoring Model* provided for that, which provides information for revising the model. In schools, the evaluation focuses on the amount and nature of activities conducted during the mentoring process in the participating schools (e.g., number of participants and events), and outcomes of mentoring in school-to-school, inside school, teacher team and teacher levels (e.g., experienced benefits and changes, new digital practices and materials created). Detailed evaluation framework is developed in WP4.



4.2. The ongoing pilots

4.2.1. Finland

Two primary schools agreed on participating in the project, and the piloting started with them in March 2021. In fact, this is a school-to-school peer learning process: the school both collaborate for creating joint practices and they learn from each other. We followed the *Process model for school mentoring* phases by starting with an *anchoring meeting* with the principals and key ICT teachers from each school. We have had several *joint planning* meetings with the coordinating teams where we have introduced the *School Mentoring Model* and made together decisions of the development steps. We also introduced the project and the *development possibilities* shortly in online teacher meetings in both schools in May 2021. The schools have to change to a new digital learning and working environment based on Teams and O365 applications at the end of 2021, and they wanted to use the iHub4Schools mentoring process to improve their pedagogical and knowledge practices in this situation.

For *mapping the development needs*, in September 2021 we organized an online workshop (1.5 hours through Team channels and meetings) for all teachers in both schools where the participants evaluated their schools' digital practices in small groups using the Innovative digital school model (Ilomäki & Lakkala, 2018) as a framework. We provided a Word template (see Figure 12) for each group to write down their thoughts on 1) the current good practices, 2) needs for improvement and 3) ideas and suggestions for new practices (see the picture of the first page of the template below). The participants had a possibility to continue writing in the documents two weeks after the workshop. After the workshop, we had a meeting with the schools' coordination teams where we examined the workshop outcomes based on a summary and recommendations made by the mentors/researchers. Two main development areas for schools turned out to be 1) to define a teaching bath for improving students' basic digital skills, 2) make a digital communication plan for the schools. We decided to have the next meeting in January 2022 and organize two events (format and methods to be decided) as *development actions* for teachers in the spring 2022 focusing on these two areas.



Digital practices evaluation workshop - iHub4Schools

Template for evaluating digital practices in the schools

Gropu x

Please evaluate the changes and needs for improvement in digital technology in relation to different areas of school practices.
Write as practical issues as possible.

VISIONS OF THE SCHOOL	Current good practices	Needs for improving the practices	Suggestions and ideas for new practices
Visions of using digital technology			
Consensus about the vision			
Intentional development orientation			

I

LEADERSHIP	Current good practices	Needs for improving the practices	Suggestions and ideas for new practices
Shared leadership			
Networking of the principal			
Role of the principal			

Figure 12. Template for evaluating schools' digital practices through the Innovative digital school model.

4.2.2. Norway

The work in Norway was informed by previous research on *Teacher Inquiry into Student Learning* (TISL) (Hansen & Wasson, 2016) and *The practice inquiry model* (Hansen et al., 2019). *Teacher Inquiry into Student Learning* (TISL) is a model and a method first developed in a previous EU-research project (Hansen & Wasson, 2012).

One Norwegian school is participating in the iHub4Schools-project, this is Knappskog primary school. The school participated in a national partnership program initiated by the Ministry of Education, focusing on collaborative competence development during autumn 2018 and spring 2019. Teachers in this school conducted collaborative competence development, working with the TISL-method, now presented as one of the *Individual methods* in the iHub4Schools project.

University of Bergen is at the moment working with two municipalities (school owners) and their eight Schools (four in each municipality). This work is part of the same national program as the above-mentioned with Knappskog primary school, focusing on Professional digital Competence (PDC) through collaborative competence development processes. Still, UiB have used the experience to inform iHub4Schools on how UiB initiated the *TISL method* and *The practice inquiry method*, when working with municipalities and schools. The process was part of informing the development of the *Process model for school mentoring* (see Figure 3). UiB draws on experiences made with the two municipalities and the eight schools during spring 2021, carving



out a model with 4 different phases: 1) *The initiation phase*, 2) *The Anchoring phase*, 3) *The best practice Inquiry phase*, and 4) *The whole school Inquiry phase*. The mentioned national partnership has not been a part of the iHub4Schools project, since this is a partnership with no ability to include time for research. Still, all eight schools have been working with collaborative competence development of professional digital competence, through the *Teacher Inquiry into Student Learning* (TISL), now mentioned as one of the *Individual methods* in the iHub4Schools project. Further plans are to use the *School Mentoring Model* in a school-to-school mentoring phase, to support the eight schools in their internal collaborative processes for the enhancement of digital competence starting in April 2022.

4.2.3. Estonia

In Estonia, several pilots were carried out: Five schools participated in Digital Acceleration Program (started May 2021), six schools participated in Future School program (started August 2021) and teachers from six schools and six educational technology (edtech) industry partners participated in Co-creation program (started March 2021).

Process model for school mentoring was followed in those pilots, but some adjustments were also made based on the local needs. In the case of Digital Acceleration and Future School Program an *anchoring meeting* with the principals and leading teachers from each school were organised, however in the co-creation program it was slightly differently organised, because there the focus was on establishing co-creation teams between teachers, mentors and edtech stakeholders. In all of the cases, regular *joint planning* meetings with the teams were organised to plan together actions for improvement. In the case of the Digital Acceleration Program, schools have finished the process and they have raised their awareness on how to empower their teachers to use digital technologies in teaching, learning and leadership. In the case of Future School, teams are still working on their improvement plans, but they have gathered tools and methodologies on how to carry out whole-school level improvement more evidence-based. In both cases, the mapping of the development needs was the most important phase teams had to do and different templates were provided for the teams (due to some of the contextual differences of the programs). Through regular joint reflection events (sometimes face-to-face and sometimes online seminars) school teams *acquired new perspectives* from mentors, researchers and other school teams. All teams carried out their *development actions* throughout the program based on the development needs, and the whole process was iteratively *reflected* (based on the collected evidence). During the next period, Estonia will carry out few more studies to validate the model more with the programs targeting individual teachers (Teacher Innovation Laboratory method for instance), this pilot will start from April 2022. In August 2022 modified whole-school program Digital Acceleration will be launched to pilot inter-school aspects of accelerating digital innovation in schools.



4.2.4. Georgia

The process of choosing schools started in June 2021. Initially two primary schools were selected for participating in the project. The school selection was agreed with the Minister of Adjara region; one school from the central part of the city and the other regional. We started using the *Process model for school mentoring*, and at the *anchoring meeting* (online) with the Minister of Education, Culture and Sports of Adjara the aims of the project were introduced. The meeting with the IHub4schools local team was held to define the methods relevant for Georgian reality. After discussing and analyzing the methods the team decided to use *Collegial tutoring* method with the minor adjustments. The third meeting was held with the principals of the selected schools and the project aims and activities were introduced. School needs were communicated by principals and agreements were made on future collaboration. Further work is carried out from the beginning of January 2022, specifically the meetings will be held with the teachers and ICTs of the selected schools and initially their IT competence will be measured by DigCompEdu and then the tutoring method development will be introduced and carried out.

4.2.5. Lithuania

In two schools from different cities (a lower secondary school, and a primary school) the piloting has started, and the first steps were the identification of the situation of the schools, and an analysis of the *School Mentoring Model* and preparation for teachers, schools and principals. We had an informal discussion with headmasters and several teachers from these schools about digital innovations in their schools. Both schools are interested in improving their teaching methods and looking for digital innovations. An example of the technological innovations is that Vilnius University translated XLogo to Lithuanian language and are going to fill with many types of activities: <https://xlogo.inf.ethz.ch/release/latest/>

With these two schools Vilnius University is going to apply elements of the *Teacher Innovation Laboratory - Adoption of Digital innovation through co-design* method.

We are going to involve more schools in the year 2022. One day workshop with five schools was organized in December 29, 2021. We are going to give an overview of the iHub4Schools' suggested models and methods with more focus on the *Process models*. We also know that schools are interested in collaboration with business companies. We invited CEO of BMK (Business Machine Company: <https://bmk.lt>) to participate in the workshop December 29 and start the collaboration with schools. Thus, we are looking forward to using the *Co-Creation Program for Educational Technology Innovation* method.



5. Integration of the School Mentoring Model with other WPs of the iHub4Schools project

The *School Mentoring Model* proposed by WP3 is closely linked to the other WPs. Because WP1 and WP3 work started from Month 1, it was somewhat difficult to integrate the research work in WP1 to WP3 work. However, WP3's developments have been influenced by the literature review conducted in WP1, especially to inform the development of the *Conceptual model* that explains what are the theoretical underpinnings that iHub4Schools approach considers important in the acceleration of digital innovation in schools. This work in WP1, in turn, is closely linked to WP4 in order to understand what is important to assess in order to understand how the iHub4Schools approach supports school-to-school and teacher-to-teacher level innovation. WP3 and WP4 work integrate tightly together to define success criteria for the piloting of the *School Mentoring Model*. WP2 and WP3 activities also need to be considered together, as the concept of a regional innovation hub that will be developed in WP2 will form the context in which the *School Mentoring Model* and the *Individual methods* will be implemented; this is also more important during the following months. WP5 makes WP3 outputs available for the external partners, and this dissemination started during autumn 2021, as soon as there were some outcomes to disseminate.

6. Conclusions

It has turned out to be somewhat challenging to create one model for school mentoring that could truly support mentors and schools themselves and that can be applied directly in various situations. The contexts are so different, affected by the cultural differences, national curricula and policies, resources available, and needs of each schools and teachers, that one model is not enough. Our solution has been to create a generic model for overall planning and structuring of mentoring, with a variety of examples of *Individual methods* that can be used as inspiration for practical actions in different school situations. The piloting of the *School Mentoring Model* in more schools will show how useful the model turns out to be.

Already till M15 we have received important feedback about the mentoring processes in pilots, and these will be used to revise the *Process models*. In addition, in pilots the mentors will create new individual small-scale methods, which will be added in the *School Mentoring Model*.



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