

## Individual method

# School-university collaboration for deepening teachers' digital competencies

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### 1. Aims

The aim of this method is to improve teaching of mathematics and computational thinking (CT) in primary and lower secondary education using a virtual learning environment ViLLE (or Eduten) based on learning analytics, developed by University of Turku (<https://www.eduten.com/about.html>). The method is suitable to be used in phase 6. *Collaborative development actions* of the school mentoring process.

### 2. Description

At the beginning, several workshops for schools on integrating ViLLE/Eduten into schools are organised. The first workshop is devoted to introduce computational thinking (CT) and ViLLE in general. Several short tasks on CT are given to teachers, which they need to solve and discuss. Then several CT concepts are described and samples are presented using ViLLE. After the teachers have become familiar within the CT concepts and the tool, they are invited to start using it during their lessons. Teachers can get individual support at any time by asking questions online or watching prepared videos on different issues of ViLLE. After two-three months (depending on the number of lessons each schools will have), the feedback forms are provided and collected, and also a reflection workshop is organized.

Vilnius university researchers have collaboration with University of Turku on the developments of ViLLE. Vilnius university team is developing a special track (lessons and tasks) in ViLLE on CT for grades 3 to 9.

### 3. Context

The introduction to CT and ViLLE is suitable for primary and lower secondary grade levels. This can include students in grades K-8, or roughly ages 6-14.

The method of integrating ViLLE into schools can be useful for a wide range of schools and teachers, including those who want to incorporate technology and computational thinking into their curriculum. This can include public and private schools, as well as educators who teach mathematics and technology.

Primary and lower secondary school teachers can use ViLLE to help students develop CT skills by introducing them to coding and programming concepts in a fun and engaging way. ViLLE offers a variety of educational resources that are specifically designed to help students to understand beyond digital technology.

ViLLE/Eduten is suitable for all types of schools, including public, private, and charter schools. The workshops can be adapted to meet the needs of different grade levels and subject areas, making it a flexible tool for educators who want to incorporate CT into their curriculum.

### 4. Requirements for implementing and resources needed

For the primary workshop only face to face meeting is possible, later also online meetings can be used. All the participants have to have computers to connect to the ViLLE environment.

## 5. Structure

The activities of the method include the following phases:

- A. Method implementation begins with a general workshop on virtual learning environment – ViLLE or Eduten:
  - Discussion on computational thinking: how it is introduced in the updating curriculum (a mentor organizes a whole group discussion, inspiring round-table activity for all participants);
  - Discussion on ViLLE: schools' plans how to use this environment (schools have their own plans, but this discussion helps to develop these plans according to experiences of members from other schools).
- B. Teachers learn how to use the ViLLE environment (during face to face or online meetings)
- C. Teachers starts using the ViLLE environment in their lessons (2-3 months period). Before this stage teachers have had a general workshop for ViLLE (see A).
- D. Workshop for the reflection on the experiences from lessons with the ViLLE environment.

## 6. Actions after implementing the method

After implementing the method described, the following actions can be taken:

1. Monitor and evaluate the use of ViLLE or Eduten in classroom: It is essential to monitor and evaluate the use of ViLLE to identify the effectiveness of the virtual learning environment in improving students' learning outcomes. This can be done through surveys, assessments, and feedback from students and teachers.
2. Provide ongoing training and support: As teachers start using ViLLE in their lessons, it is crucial to provide ongoing training and support to ensure that they use the platform effectively. This can be done through online resources, webinars, and coaching sessions.

3. Share best practices: Schools can share best practices and experiences on how they are using ViLLE to enhance students' learning outcomes. This can be done through forums, conferences, and newsletters. Teachers can be asked to create own exercises and explanatory material in ViLLE.
4. Address any challenges or issues: There may be challenges or issues that arise during the implementation of ViLLE. It is essential to address these issues promptly and effectively to ensure that the platform is used to its full potential.
5. Update the curriculum: As computational thinking is introduced into the curriculum (in most cases in an integrated way), it may be necessary to update the curriculum to reflect the use of ViLLE. This can ensure that students are receiving the best possible education and that the virtual learning environment is being used to its full potential.

## 7. Recommendations

Based on the method implementation described, the following recommendations can be made:

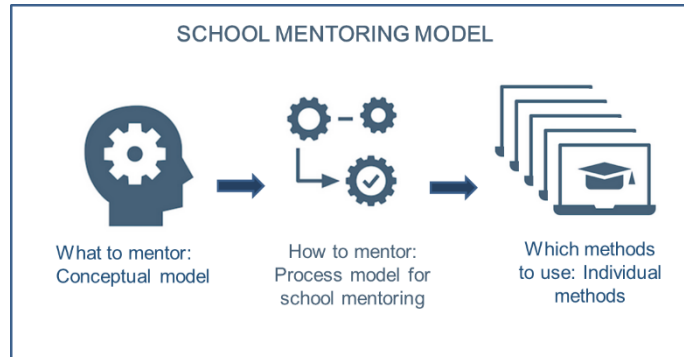
1. Prioritize teacher training and support: The success of using ViLLE in the classroom depends on how well teachers are trained and supported in using the platform. Schools should prioritize ongoing training and support for teachers to ensure that they can effectively integrate ViLLE into their lessons.
2. Foster a culture of collaboration: The discussion on ViLLE and computational thinking can be an opportunity to foster a culture of collaboration among teachers from different schools. Schools should encourage teachers to share their experiences, best practices, and challenges with each other to learn from one another and improve their use of ViLLE.
3. Emphasize evaluation and monitoring: As teachers start using ViLLE, it is essential to monitor and evaluate its effectiveness in improving students' learning outcomes. Schools should prioritize this evaluation to ensure that the virtual learning environment is making a positive impact on students' learning.

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4. **Address technical issues promptly:** Technical issues can arise when using any new technology, including ViLLE. Schools should have a plan in place to address any technical issues promptly and effectively to minimize disruptions to the learning process.
  5. **Update the curriculum as needed:** As computational thinking is introduced into the curriculum and ViLLE is used in the classroom, it may be necessary to update the curriculum to reflect these changes. Schools should prioritize updating the curriculum as needed to ensure that students receive the best possible education.

## This material is part of the School mentoring model

The aim of the model is to foster the adoption of digital innovation at school level.

The focus is on teachers' understanding of digital technology and practices to implement technology in a pedagogically meaningful way.



The model promotes teachers' professional learning with peers and school management to create the culture and practices for evidence-informed implementation of digital innovation.

The model is created in the iHub4Schools project (2021-2023).



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