Co-funded by the European Union

Teacher workshop with partners in Budapest

The results are based on the work within the project “Computational Thinking and Mathematical Problem Solving, an Analytics Based Learning Environment” (CT&MathABLE). Coordination: Prof. Valentina Dagienė, Vilnius University (Lithuania). Partners: Ankara University (Türkiye), Eötvös Loránd University (Hungary), Gedminų Progymnasium (Lithuania), KTH Royal Institute of Technology (Sweden), Özkent Akbilek Middle School (Türkiye), University of Basque Country (Spain), University of Turku (Finland), The project has received co-funding by the Erasmus+.

These results are developed by Zsuzsa Pluhár, Pál Sarmasági, Anikó Rumbus, Dorottya Vincze under WP2.

Aims and goals of the WS

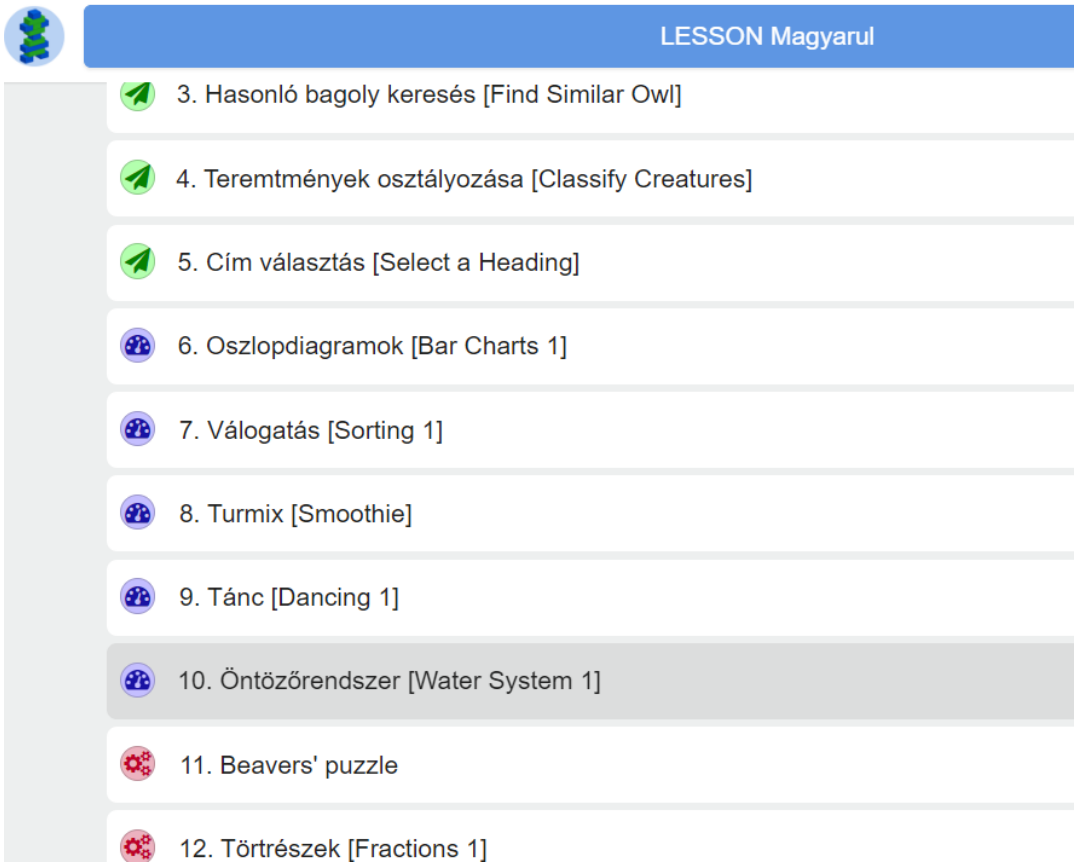
The workshop aimed to showcase the ongoing project's partial results to the Hungarian teachers. The event promoted the existing system and gave an opportunity to the teachers to try it out and give adequate feedback regarding its state at the time of the test. The connected presentations aimed to demonstrate the structure of the project and showcase the possible usage of the developed program within the educational possibilities.

Preparation

The teacher workshop's organization required several different approaches during the preparations. To ensure seamless engagement, the Faculty of Informatics of Eötvös Loránd University initiated a multifaceted approach. Firstly, a comprehensive post detailing the workshop's significance was disseminated across the university website, aiming to grab the attention of educators. Subsequently, an event-specific website (https://e-hod.elte.hu/WSBp/) was created, offering in-depth insights into the workshop's agenda and objectives. Leveraging the expansive reach of social media, strategic Facebook posts were deployed on multiple university-connected pages, sparking anticipation and garnering attention from a diverse audience. In parallel, proactive outreach to schools and collaborative partners was undertaken to expand the event's outreach. Lastly, a user-friendly registration form was devised, streamlining the enrollment process and facilitating seamless participation.

Custom merchandise was meticulously curated to enhance the workshop experience and leave a lasting impression. Each attendee received a branded canvas bag, a practical yet stylish accessory for carrying workshop materials and beyond. Complementing the bag, a sleek pen adorned with the event logo and a compact notebook served as a tangible reminder of the insights gained. Preparations also included the awarding ceremony for the beaver competition, which incorporated programs for the participants, like several separate stations with colorful, practical beaver tasks, and activities with micro:bits.

For the workshop, we prepared a **demo** with a set of tasks in the ViLLE learning environment, in which each task showed the types and possibilities of the tasks to be created, in addition to the possibilities and diversity of the system.



Screenshot of the prepared demo task set in ViLLE system

Feedback Questionnaire

We prepared a questionnaire, a form where we asked teachers about their background experiences, ideas, and feedback.
For the attitudes and evaluations, we used a 5-point Likert scale with sentences where 1 means don't agree and 5 means totally/strongly agree.

The meeting and WS

The event was held at the **Faculty of Informatics of Eötvös Loránd University, Budapest,** from the **30th of May to the 1st of June, 2023**. The meeting took place on the 30th and 31st of May, covering different results and discussing possible ways to move forward. On the **1st of June**, the workshop took place with the Hungarian teachers; here, the partial results were presented in 3 short **presentations**: Pál Sarmasági presented the aim of the project, the goals, and the first version of the learning path based on the curriculum analysis. Then, Heidi Kaarto presented the ViLLE system shortly, and teachers could try the ViLLE system with the prepared demo.

After a coffee break – where the partners and the teachers could discuss free – the teachers could test the small beaver **task-based competition with unplugged activities**, a highlight of the event, aimed to engage participants to help develop their algorithmic thinking in a fun way. Participants navigated through several stations, each adorned with colorful and interactive beaver tasks, challenging their creativity and problem-solving skills. Alongside these activities, engaging sessions with micro:bits added a modern twist, offering hands-on exploration of coding and electronics. The awarding ceremony, culminating in the competition, celebrated the participants' achievements amidst a backdrop of excitement and camaraderie. With participants ranging from young students to students with a couple of years of experience behind them, the event fostered a vibrant atmosphere of learning and discovery.

Results of the workshop

Because of the bad situation of the education and teachers, only 40 participants signed up for the workshop, and only 22 could participate.

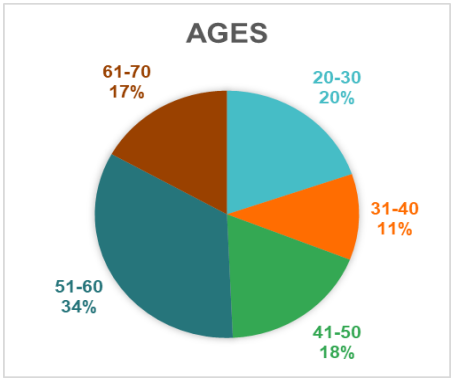
Until June 2024, we organized several smaller activities to increase the number of participants.

The main workshop's atmosphere was positively affected, and we managed to create a useful learning environment for all. The presentations went down as planned, covering the ongoing project and the partial results.

The presentations of the workshop, pictures, and videos are published on the website (https://e-hod.elte.hu/WSBp/).

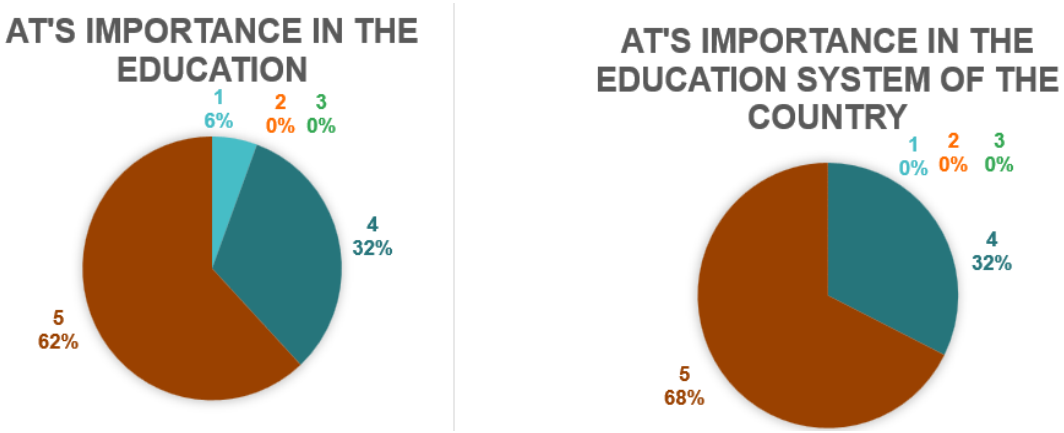
Until the end of May, 71 teachers filled out the questionnaire.

Most of the teachers were between 41 and 60 years old (52%), as represented in the Hungarian education system as well. They teach informatics and math (47%). Most of the teachers (42%, 48%) teach the oldest students (classes 9-10 and 11-12). 90% of the teachers use project-based methods in their education, and approximately 84% work with their students on more complex tasks related to everyday life.



The ViLLE system presented tasks with more and less interactivity. The teachers typically use drag&drop, pairing tasks in their education, however, approximately.50% use all kinds of interactive shows. Most commonly used are Learningapps, Canva, Kahoot, Redmenta, and Mentimeter.

We asked the teachers how important they find such a project to be in their everyday education and the education system. They agreed, totally agreed with the importance of such a project, not only in their education but in the whole educational system.



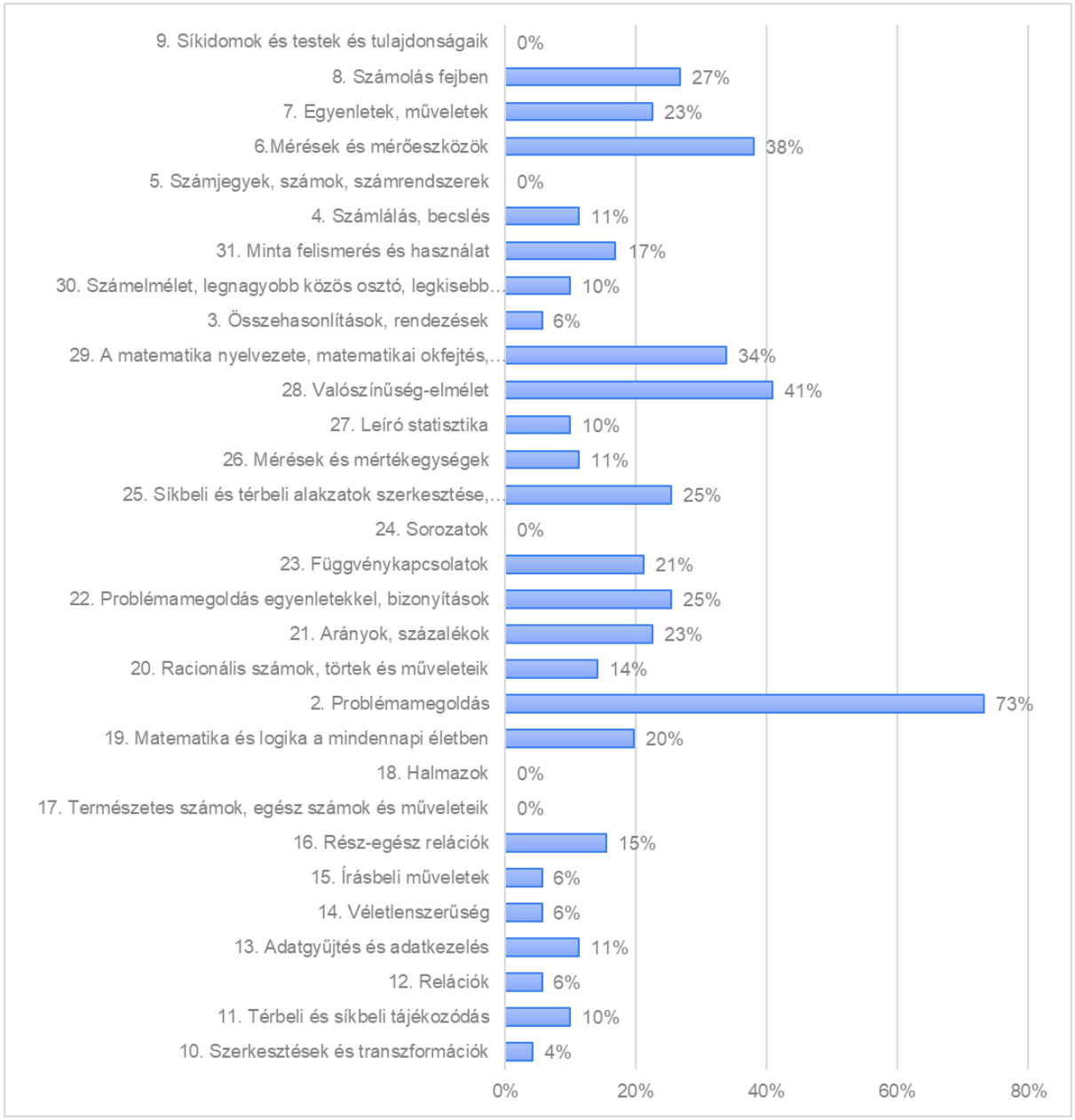
Percentages of the answers to the questions: How important do you find AT…

Most of the teachers received some new information about Algebraic Thinking (44% totally agreed and 44% agreed with the statement).

Only 4 teachers (6%) thought they could not use what they saw here in their teaching process. The others also saw opportunities in the IT unplugged activities and the playful ViLLE tasks

- to combine maths and IT,
- to make students think, and problem-solving, and
- to approach everyday problems.

We showed 31 topics in Math - based on the curriculum analysis - and asked teachers about the most problematic topics.



Most of the teachers find the 2 problematic. Problem solving (73%) and more than 30% the 28. Probability theory (41%); 6. Measurements and measurement tools (38%) and 29. Mathematical language, reasoning, logic, and combinatorics (34%). The less problematic (0%) categories were 5. Digits, numbers, number systems, 9. Shapes and objects and their properties, 10. Constructions and Translations, 17. Natural numbers, Integers, and their operations, 18. Sets and 24. Series.

We examined whether the age group being taught is typical of the category teachers find problematic. The most problematic areas are measurements and measurement tools, but in classes 5-6, the Equations, operations (7), and Mental calculation (8). Later (in older age groups), Probability theory (28) and Mathematical language, reasoning, logic, and combinatorial maths (29) seem to be more problematic.

Links

https://e-hod.elte.hu/WSBp/ct-mathable-media.html

Meeting: https://www.youtube.com/watch?v=igYWZig39cw

Teacher workshop and ceremony: https://www.youtube.com/watch?v=MHqALY_qQqk

https://www.fsf.vu.lt/dokumentai/Projektai/ESF/Erasmus/CTmathABLE/CTMathABLE_Newsletter_2.pdf

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