Atollo Project

Breaking barriers through education

D3.2 Train the Trainer Programme

Online training programme and for schools

14/02/2025 | KRISTINA FERARA BLAŠKOVIĆ

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About the Atollo Project

The Atollo project aims to empower learners with special educational needs (SEN) by creating inclusive digital materials. Through a consortium of partners from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia, including an EdTech company, universities, schools for children with SEN, public authorities, and NGO, we will analyse and compare existing programs, develop innovative digital tools and create high-quality digital educational content. We will pilot and test the digital materials and evaluate their implementation and then focus on the improvement of developed digital materials based on the feedback from the learners, teachers and experts. The result of the scientific evaluation of the use of digital materials will be an inclusive digital education toolkit that will contain advice and instructions for everyone who works with it, and uses digital educational materials for children with SEN. We will use a user-centred design approach to ensure that the materials are accessible and inclusive for learners with various types of learning difficulties. This iterative process of improvement will help us create digital materials that are effective and engaging. Furthermore, the project will provide capacity building for teachers to use developed digital materials effectively. The expected results include a cutting-edge set of digital learning materials, capacity building for teachers and an inclusive digital education toolkit for policymakers and education institutions. We will share our findings and outcomes through various channels to reach a wider audience, including policymakers and education institutions, and create awareness about the importance of inclusive digital materials for learners with difficulties. The project will have a direct impact on the involved schools and their learners as well as a broader impact on the underrepresented group of children with disabilities, their educators and wider academic community through research paper derived from this project.

Work Package 3 of the Atollo project aims to develop a cutting-edge set of digital learning materials that are accessible, responsive and tailored to needs of learners with disabilities. Within WP3, 45 ready-to-use digital units were created with at least 5 digital editable templates/components. The creation of digital education materials involved developing a detailed content plan and storyboard for each digital unit (45 digital units with at least 5 digital editable templates/components), suggesting the multimedia editable templates (e.g., videos, images, animations, simulations) that will be used in the digital units, and suggesting interactive components (e.g., quizzes, games, surveys) to enhance learner engagement and participation. Throughout the digital content creation process, the authors worked closely with the digital team, including developers, editors, content managers, and others to ensure the final product is of high quality and meets the needs of learners with disabilities. Each digital learning unit also has evaluation elements, including an evaluation form where teachers and educators can give feedback based on the students' responses.

Besides creating the digital education materials (D3.1), Work Package 3 of the Atollo project also aims to equip teachers with the necessary skills and knowledge to effectively use the digital educational content created in the previous activity. We developed a Train-The-Trainer programme (D3.2) and package that provides teachers with step-by-step instructions and guidelines for using the digital content in their classrooms. We organised online training workshops and through the Train-the-Trainer programme, teachers learned how to integrate the digital content into their teaching practices and evaluate the learners' responses. Schools were equipped with necessary equipment to deliver lectures using digital education materials.

The Atollo Project Consortium

The Atollo project consortium is an Erasmus Partnerships, bringing together 12 partners.

	Partner	Acronym	Country
1	PROFIL KLETT D.O.O.	PK	HR
2	SVEUCILISTE U ZAGREBU	UNIZG ERF	HR
3	HOGSKOLEN I INNLANDET	INN UNI	NO
4	REGIONALEN TSENTAR ZA PODKREPA NA PROTSESA NA PRIOBSHTAVASHTO OBRAZOVANIE SOFIA GRAD	RCSIE	BG
5	SKOLA ZA ODGOJ I OBRAZOVANJE PULA	STE PULA	HR
6	HASKOLI ISLANDS	UI	IS
7	MATRIX INTERNET APPLICATIONS LIMITED	MATRIX	IE
8	PADAGOGISCHE HOCHSCHULE OBEROSTERREICH	PH OOE	AT
9	MINISTARSTVO RADA, MIROVINSKOGA SUSTAVA, OBITELJI I SOCIJALNE POLITIKE	MRSOP	HR
10	STADT FRANKFURT AM MAIN DER MAGISTRAT, CHARLES HALLGARTEN SCHULE IN GERMANY	CHS	DE

No	Associated Partner	Acronym	Country
11	CENTRAL QUEENSLAND UNIVERSITY	CQU	AU
12	NATSIONALNA ASOTSIATSIA NA RESURSNITE UCHITELI	NART	BG
13	DIGITAL TECHNOLOGY SKILLS LIMITED	DTSL	IE
14	TERAWE TECHNOLOGIES LIMITED	TERAWE	IE

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What is the Train-the-Trainer Programme?

The Train-the-Trainer programme is a key component needed to pilot the digital education materials as part of the Atollo project. The programme is designed to facilitate the adoption and effective use of the project's digital learning platform and materials, as well as their testing, evaluation and feedback collection. It aims to support trainers to deliver training to teachers and parents/guardians involved in the pilot project in their own countries. The trainers would be representatives from the school involved in the pilot programme who would receive training and resources in English that they would need to localise. Trainers would need to organise a workshop for teachers in their own schools, and workshops for parents/guardians in their own school.

The Train-the-Trainer programme has the following goals:

- Ensure trainers have an in-depth understanding of the digital educational content, its purpose, structure, and applications in teaching.
- Develop trainers' proficiency in navigating the digital education platform so that they would be able to demonstrate technical steps to teachers and parents/guardians.
- Equip trainers with necessary resources needed to conduct workshops with teachers and parents/guardians involved in piloting the digital education materials.
- Ensure trainers have an in-depth understanding of the pilot testing timeframe, and the digital material evaluation process to inform teachers about their responsibilities in testing and evaluating the materials during the pilot.

By achieving these goals, the Train-the-Trainer programme would ensure the following outcomes:

- Teachers and educators involved in the pilot are prepared to use the Atollo IZZI platform to create meaningful, individualised learning experiences for students with difficulties, and have step-by-step instructions for integrating the content in their classrooms.
- Teachers have the necessary information about the pilot testing and their responsibilities regarding the testing and evaluation of the digital education materials.
- Parents/guardians of students involved are aware of the Atollo project, and the pilot testing. Parents/guardians involved have the information needed to use the platform at home with their children to support their learning, when desired and possible.

Main elements of the Train-the-Trainer programme

The Train-the-Trainer programme will consist both of an online training session in English for trainers, as well as a package of training materials and resources for localisation and use by trainers. There would be at least one trainer per school involved in the pilot programme.

As part of the Train-the-Trainer programme, trainers will receive a training session in English language, and the resources needed to organise localised workshops for teachers and parents. Following the training session, trainers will organise and localise one workshop for teachers involved in piloting the digital education content, localise and distribute teacher manuals, and localise and organise four parent/guardian workshops.

The Train-the-Trainer programme will consist of the following components:

1. **Training for Trainers in English** - Trainers will be trained to understand the project and pilot purpose, using the digital education platform, its content and structure, and the evaluation process. Trainers would be trained in how to organise workshops with teachers and parents/guardians involved in the pilot. The training for trainers will be held in mid-February 2025.
2. **Training Materials and Resources -** Trainers will be provided with necessary materials in English for localisation and distribution to teachers and parents/guardians in the pilot testing.
   - **Teacher Manual for Using Atollo IZZI to Support Students with Difficulties**
   - **Presentation for the workshop with teachers:** Teaching with Atollo IZZI Digital to Support Students with Difficulties
   - **Presentation for the workshop with parents/guardians**: Learning with Atollo IZZI Digital to Support Students with Difficulties
   - **A questionnaire for teachers** that trainers would distribute to teachers after the workshop. The questionnaire would ask teachers and educators which units they would be able to test during the pilot testing.

Trainer-led Workshops for Teachers

Through these workshops, teachers will learn how to integrate the digital content into their teaching practices and evaluate the learners' responses. The workshops will be conducted by trainers in their own school. Trainers will be given the workshop presentation in English, and they would need to translate it to their local language to be able to train all school educators involved in the pilot testing. The workshops for teachers would be held late February 2025, before the start of the pilot testing.

The following is a brief overview of the workshop for teachers:

Workshop for teachers: Teaching with Atollo IZZI Digital	
TARGET AUDIENCE	All teachers and educators from different schools that will be involved in piloting the digital education materials.
WORKSHOP LEADER	Trainers in pilot schools using the resources provided.
TIME	Late February 2025.
FORMAT	Online or in-person. Held by trainers in their local languages.
OBJECTIVE	Introduce the digital education materials to teachers and demonstrate how to navigate the platform, what materials are available. Explain the logistics of the pilot – key dates and teacher responsibilities for testing and evaluating the digital materials.

CONTENT	- Brief overview of the Atollo project - Explanation of the content structure on the Atollo IZZI platform (mathematical and digital units and levels) - Explanation of the Atollo IZZI platform structure and features - Demonstration of how to navigate the platform and use accessibility features - Brief overview of the teacher manual and where to find it on the platform - Lesson planning with Atollo IZZI Digital - Explanation of the pilot's timeframe and the evaluation - Explanation of teachers' responsibilities in the pilot - Informing teachers that we would need to test all units – partners will distribute a questionnaire where teachers would need to mark which units they can test. - Informing teachers that parents/guardians will also have workshops - Information about technical support (contact email) - Q&A session

Trainer-led Workshops for Parents and Guardians

Four education workshops for parents and guardians will be organised. The main outcome of these workshops is to empower parents and guardians to support their child's learning and to promote inclusive education for learners with difficulties. The education sessions will equip parents and guardians with the necessary knowledge and skills to effectively use digital educational materials, which will contribute to the success and well-being of their child.

The first education session for parents and guardians would be held before the pilot testing in late February 2025 to inform them about the Atollo project and the use of digital education materials.

The second education session would be conducted to provide updates on the progress of the pilot, and to address any concerns or questions from parents and guardians.

The third education session would be held to share the results of the pilot and to provide guidance on how parents and guardians can support their child's continued learning with digital educational materials.

The fourth session would be conducted after the guidelines and set of materials have been developed in order to provide them with an overview of the guidelines and teach them to effectively use digital education materials with their child.

The sessions with parents/guardians would be organised by trainers in their own schools.

The following is a brief overview of the workshops for parents:

Workshop 1 for parents/guardians: Learning with Atollo IZZI Digital	
TARGET AUDIENCE	All parents and guardians from different schools that will be involved in piloting the digital education materials.
WORKSHOP LEADER	Trainer (school coordinator) in pilot schools using the resources provided.
TIME	Late February 2025, before the pilot.
FORMAT	Online or in-person. Held by trainers in their local languages.
OBJECTIVE	Introduce the Atollo project, its purpose and the digital education materials to parents/guardians. Demonstrate to parents/guardians how to navigate the platform. Explain the logistics of the pilot – key dates and the evaluation of the digital materials.
CONTENT	- Brief overview of the Atollo project - Explanation of the content on the Atollo IZZI platform (mathematical and digital units and levels) - Explanation of the Atollo IZZI platform structure and features - Demonstration of how to navigate the platform and use accessibility features - Highlighting the importance of the guardians' role in using the platform and supporting their children - Encouraging parents/guardians to use the platform at home - Announcement of three more workshops - Information about technical support (contact email) - Q&A session

Pilot's Timeframe and the Evaluation of Digital Education Units

The digital units will be piloted in at least 3 schools across 3 different countries for a school term. Trained teachers will use the digital educational content in the classroom with learners with difficulties. The aim of the pilot testing is to evaluate the effectiveness of the digital units in improving the learning outcomes and engagement of learners with disabilities, as well as to identify any necessary improvements or adjustments. Comprehensive evaluation procedure and criteria for monitoring and evaluating the piloting of digital educational content in schools will be created and the universities will provide a comprehensive evaluation report that summarises the findings and identifies areas for improvement. In addition, five focus groups with teachers will be organised to collect feedback on each digital unit and component. Based on the feedback received during the pilot testing, the digital units that were well received by the learners and teachers will be selected and further optimised to ensure their effectiveness and accessibility. The optimised digital units, along with the guidelines for their use, will be made available to everyone for use in their classrooms, ensuring that more learners with disabilities can benefit from high-quality, inclusive digital education materials.

Pilot Schools

All necessary information regarding the participating schools **needs to be collected and submitted by February 1, 2025**. This information is essential for the planning, coordination, and successful implementation of the pilot programme.

Key Deadlines:

- **By February 1, 2025:** All necessary information about participating schools must be submitted.
- **Week of February 17–21, 2025:** Train-the-Trainer programme conducted.
- **Week of February 24–28, 2025:** Trainers conduct localised workshops in their schools and distribute teacher questionnaires.
- **Week of February 24–28, 2025:** Feedback from questionnaires submitted.
- **March 10, 2025 – End of June 2025:** Pilot testing phase.

Train-the-Trainer Programme Overview - Week of February 17–21, 2025:

Purpose: Prepare trainers to localise and deliver training for teachers and parents/guardians in schools involved in the pilot programme.

Participants: At least one trainer per school, responsible for localisation and workshop organisation.

Programme Components:

- Training for Trainers:
  - Delivered in English, covering the project's purpose, the digital education platform, content structure, and evaluation process.
  - Guidance on organising workshops for teachers and parents/guardians.
- Training Materials and Resources:
  - Teacher Manual: *Using Atollo IZZI to Support Students with Difficulties*.
  - Workshop Presentations:
    - *Teaching with Atollo IZZI Digital to Support Students with Difficulties* (for teachers).
    - *Learning with Atollo IZZI Digital to Support Students with Difficulties* (for parents/guardians).
  - Teacher Questionnaire: To identify which units teachers can test during the pilot.

Trainer-Led Workshops - Week of February 24–28, 2025

- Trainers localise materials and organise:
  - One workshop for teachers.
  - One workshop for parents/guardians.
- Distribute and collect feedback via teacher questionnaires.

Identifying Testable Units for Pilot Implementation - Week of February 24–28, 2025

After completing the Train-the-Trainer programme, each teacher participating in the pilot will complete the Teacher Questionnaire Before the Pilot. This questionnaire will be distributed by trainers following the initial introduction workshop.

Purpose of the Questionnaire

The questionnaire serves to:

- Collect insights about the teachers participating in the pilot.
- Determine which mathematical and digital units align with teachers' curricula and can be tested during the pilot.
- Ensure a comprehensive evaluation of digital units across all participating schools and countries.

Teacher Questionnaire Before the Pilot

This questionnaire will be distributed to teachers by trainers after the first introduction workshop.

Dear Teacher,

Thank you for participating in the pilot of our digital units for students with special needs. This questionnaire is designed to gain insight into the participants in this pilot testing and have an overview of the mathematical and digital units that will be tested in the pilot testing.

Please rest assured that this form complies with GDPR requirements. No personally identifiable information will be used. The background information on educators will be used to inform the team and draw general conclusions.

Thank you for your time.

The Atollo Project Team

Section 0: Background Information

1. Do you consent to the use of your responses throughout the pilot testing for research and development purposes? Please note that no personally identifiable information will be collected or used.
   ( ) Yes
   ( ) No

Section 1: Background Information

2. What is your teaching experience (in years)?
   ( ) Less than 1 year
   ( ) 1–3 years
   ( ) 4–7 years
   ( ) 8–10 years
   ( ) More than 10 years

3. What grade levels do you primarily teach?
   ( ) Preschool
   ( ) Primary school
   ( ) Secondary school
   ( ) Other: _____

4. Have you used digital tools for teaching before this pilot?
   ( ) Yes, frequently
   ( ) Yes, occasionally
   ( ) Rarely
   ( ) No

5. Have you worked with students with special educational needs prior to this pilot?
   ( ) Yes
   ( ) No

6. On a scale from 1 to 4, how confident are you in integrating digital tools into your teaching practice?
   ( ) 1 - Not confident at all
   ( ) 2 - Slightly confident
   ( ) 3 - Confident
   ( ) 4 - Very confident

7. What formal education or training do you have in the following areas? (Select all that apply)
   ( ) Special education or working with students with special needs
   ( ) Digital tools and technology in education
   ( ) General teacher training (no specific focus on special needs or digital tools)
   ( ) Other: _____
   ( ) None of the above

Section 2: Units in the Pilot Testing

8. Which units will you be able to test in the pilot testing, as they fit into your curriculum and lesson plans until the end of the school year?

Drop down menu list of levels and units

9. Please select two-three additional mathematical units that you could test as part of revision, even if they do not fit into your current lesson plans.

Drop down menu list of levels and units

10. Please select one additional ICT unit you could test with your students.

Drop down menu list of levels and units

Professional Description of Sections

Section 0: Consent

The purpose of this section is to ensure that all participants provide their informed consent before participating

in the survey. This is crucial to comply with ethical guidelines for research and data collection, as well as GDPR and privacy regulations.

Section 1: Background Information

This section collects essential professional information about the participating teachers, such as their level of education, experience with special needs education, and familiarity with digital tools. These background variables provide context for analysing the results and identifying patterns based on teachers' expertise and experience. This information is vital for understanding how teacher qualifications influence the implementation and effectiveness of the digital tools.

Section 2: Units in the Pilot Testing

This section collects information about which units will be used during the pilot testing. This valuable feedback is collected with the aim to ensure that all most digital units will be tested during the pilot testing across countries.

Teacher Feedback Form for Evaluating Digital Units

Dear Teacher,

Thank you for participating in the pilot of our digital units for students with special educational needs. We greatly value your feedback and insights, as they are essential for improving the digital education content and ensuring they meet the needs of both you and your students.

This evaluation form is designed to gather your immediate feedback **after piloting each unit** in the classroom. **We kindly ask you to complete the form after finishing each digital unit.** The questions focus on your experience with the unit in cooperation with your students, including its content, clarity, and overall effectiveness. Your responses will directly contribute to refining the digital units after pilot testing.

Please rest assured that this form complies with research ethics, data privacy regulations, and GDPR requirements. No personally identifiable information will be collected or used. The questionnaire has been created using Nettskjema, a secure platform developed by the University of Oslo for ethical data collection in research.

Thank you for your time and dedication.

The Atollo Project Team

1. Which learning unit have you completed with your student?

A drop-down menu with a list specifying Level – Module - Unit (45 units listed).

Section 1: General User Experience

2. How intuitive was it to navigate the digital unit?
   ( ) Very intuitive
   ( ) Intuitive
   ( ) Somewhat difficult
   ( ) Very difficult

3. Did you encounter any technical issues in this digital unit?
   ( ) Yes
   ( ) No

   If yes, please describe: _____

4. The language and translation of the materials were appropriate.
   ( ) Strongly agree
   ( ) Agree
   ( ) Disagree
   ( ) Strongly disagree

   Please describe any language or translation issues you have encountered in this unit, if any:

5. To what extent were the digital activities in this unit aligned with the educational needs of the students?
   ( ) Completely aligned
   ( ) Somewhat aligned
   ( ) Barely aligned
   ( ) Not aligned at all

6. How engaging were the digital activities in this unit for students?
   ( ) Very engaging
   ( ) Engaging
   ( ) Not very engaging
   ( ) Not engaging at all

Section 2: Satisfaction with the Digital Unit

7. How satisfied are you with the overall content of the digital unit?
   ( ) Very satisfied
   ( ) Satisfied
   ( ) Dissatisfied
   ( ) Very dissatisfied

8. To what extent did the digital unit support the curriculum's learning objectives?
   ( ) Fully supported
   ( ) Mostly supported
   ( ) Partially supported
   ( ) Not supported

9. How appropriate were the activities at this level in this unit for your students?
   ( ) Fully appropriate
   ( ) Mostly appropriate
   ( ) Partially appropriate
   ( ) Not appropriate

10. The instructions for each digital activity were clear and easy to follow.
    ( ) Strongly agree
    ( ) Agree

( ) Disagree
( ) Strongly disagree

Section 3: Accessibility and Inclusivity

11. Have you used the accessibility features in this unit, and if so, how useful did you find them?
    ( ) Used and very useful
    ( ) Used and somewhat useful
    ( ) Used but not useful
    ( ) Not used
12. Were there any features of the digital activities that posed challenges for your students?
    ( ) Yes
    ( ) No
    If yes, please specify: _____

Section 4: Pedagogical Adaptation and Implementation

13. How did you adapt your teaching methods to integrate the digital activities into your lesson plan?
    ( ) Significant adaptation was required
    ( ) Some adaptation was required
    ( ) Minimal adaptation was required
    ( ) No adaptation was required

14. To what extent did the digital activities complement your existing teaching practices?
    ( ) Fully complemented
    ( ) Mostly complemented
    ( ) Partially complemented
    ( ) Did not complement

15. Did you provide any additional support to students while using the digital activities?
    ( ) Yes, extensive support
    ( ) Yes, moderate support
    ( ) Minimal support
    ( ) No additional support

16. Do you feel the digital activities in this unit encouraged active participation from students with special needs?
    ( ) Strongly agree
    ( ) Agree

    (Neutral)
    ( ) Disagree
    ( ) Strongly disagree

17. How often did you use the digital activities to engage students in collaborative or group learning activities?
    ( ) Frequently used for collaboration
    ( ) Occasionally used for collaboration

( ) Rarely used for collaboration
( ) Did not use for collaboration

18. If applicable, what specific pedagogical challenges did you encounter while using the digital activities in this unit? (Open-ended response)

Section 5: Suggestions for Improvement

19. What improvements would you suggest to enhance the effectiveness of the digital unit?

Professional Description of Sections

Section 1: General User Experience
This section focuses on evaluating the usability of the digital activities for teachers and students. User experience is a key indicator of how easily teachers can navigate and utilize the digital activities in the classroom, which directly impacts the implementation and effectiveness of the resources. The section also includes questions on translation or technical challenges encountered, as they may affect the user experience.

Section 2: Satisfaction with the Digital Unit

This section examines teachers' satisfaction with the digital unit and their experience of the students' satisfaction with the unit. It provides insight into whether the digital units meet teachers and students' expectations and support the learning objectives outlined in the curriculum. This information is essential for further development and adaptation of the digital units.

Section 3: Accessibility and Inclusivity
This section assesses how well the digital activities accommodate students with special needs. Accessibility and inclusivity are critical to ensuring that all students have equal opportunities to participate and learn, which is a fundamental principle in special education.

Section 4: Pedagogical Adaptation and Instructional Strategies

This section addresses the pedagogical considerations and strategies for implementing digital content in diverse educational settings. It focuses on the extent to which the digital unit aligns with established teaching methods. Understanding these aspects is critical to ensuring that the tools are not only functional but also pedagogically effective and inclusive for students with special needs.

By examining the integration of digital activities into teaching practices, this section provides valuable insights into how educators can optimize their use and overcome challenges. The feedback gathered here will contribute to refining both the unit and the recommended instructional approaches for their effective deployment.

Section 5: Suggestions for Improvement
This section provides teachers with the opportunity to share specific suggestions for improvement and additional features. Including user perspectives in the further development of digital activities is critical to ensuring their relevance and usability.

Responsibilities for Teachers Participating in the Pilot

1. **Attend Training Workshops:**
    - Participate in the introductory workshop organised by the trainer to understand the purpose, structure, and implementation of the digital units.
2. **Complete the Teacher Questionnaire:**
    - Fill out the **Teacher Questionnaire Before the Pilot**, selecting the units to test during the pilot, including:
      a. Units that fit into the current curriculum and lesson plans.
      b. Two to three additional mathematical units for revision purposes.
      c. One additional digital unit to explore with students.
3. **Pilot the Digital Units:**
    - Implement the selected digital units throughout the school term until June 2025.
    - **Provide Feedback:** Complete evaluation forms about the usability, effectiveness, and challenges of the selected digital units.
4. **Participate in Focus Groups and Interviews:**
    - Engage in focus group discussions and interviews to share experiences and provide detailed feedback during the pilot.
5. **Collaborate with the Project Team:**
    - Maintain regular communication with the project team to report progress, address challenges, and share insights.
6. **Ensure Ethical Use of Materials:**
    - Comply with GDPR and project guidelines, ensuring no personally identifiable information about students is shared outside approved activities.
7. **Follow the Pilot Timeline:**
    - Adhere to the agreed timeline for testing, feedback submission, and participation in evaluation activities.

Report After the Train-the-Trainer Programme

The pilot project for testing the Atollo digital learning materials will involve 15 schools, 120 teachers and 431 students from Croatia, Bulgaria and Germany over a three-month period. Each participating school nominated one school coordinator that took on the role of trainer in their school.

As planned in the explanation of the Train-the-Trainer Programme above, both online and localised sessions were organised to support teachers and parents/guardians in using the digital education materials in practice. Before the start of the pilot, an online Train-the-Trainer session was conducted in English on 18 February 2025 with 20 attendees. The session was organised for school coordinators/trainers from the 15 schools that are participating in the pilot to explain the Atollo project, demonstrate how to navigate the learning platform and choose digital learning units for students with difficulties. The session also included passing on technical information to trainers regarding the pilot testing timeline and trainer and teacher responsibilities.

As most schools participating in the pilot testing are from Croatia (11), another online training session was conducted in the Croatian language on 21 February 2025 with 37 attendees. The session had the exact same format as the one in English but included both school coordinators and teachers who would test the digital learning units in their classrooms in Croatia.

After the training sessions, a link to the following resources was shared with trainers to support them in localising and delivering training workshops in their own schools:

- Recording of the Train-the-Trainer Session on 18 February 2025
- Train-the-Trainer Workshop Presentation (See Appendix 1)
- Teacher Workshop Presentation - Teaching with Atollo IZZI Digital
- Parent Workshop Presentation - Learning with Atollo IZZI Digital
- Learning Outcomes for Each Digital Learning Unit in All Languages
- Teacher Manual for Using Atollo IZZI Digital Materials to Support Learners with Difficulties (See Appendix 1)

After the online training session for trainers in English, trainers then organised localised training sessions in their own languages for their teachers before 1 March 2025. The trainers' responsibility was also to distribute general questionnaires to teachers that had to be filled out by the start of the pilot. The questionnaires were already localised and prepared in the three languages of the pilot: German, Croatian, Bulgarian and distributed to gain general information on participants and see which units they would be able to test during the pilot-project. For this purpose, translated learning outcomes for each digital learning unit were provided.

This means that through the Train-the-Trainer programme (sessions for trainers and then sessions for teachers), all 120 teachers participating in the pilot testing were trained on using the digital education materials.

Additionally, each school organised an informative session at the beginning of March 2025 for parents and guardians with the resources provided.

To conclude, the Trian-the-Trainer programme within the Atollo project included both online sessions and localised sessions at schools, and a package with resources and a Teacher Manual. This comprehensive Train-the-Trainer programme and package ensured that all 120 participating teachers are provided step-by-step instructions and guidelines for using the digital content in their classrooms.

In the online workshops, the trainers and teachers received training on integrating the digital content into their teaching practice, while the Teacher Manual serves as continuous support for using the platform in practice. The Teacher Manual is a document that includes information about the Atollo project, description of mathematical and digital competencies, explanation of learning levels and target students, explanation of how the digital learning materials are organised on the platform, explanation of bookshelves, publications, units and how to navigate the platform. The manual also includes suggestions on how to choose the right learning level for students, how to incorporate the digital learning units to support blended learning in lessons and frequently asked questions.

Since the content is online, all schools involved in the pilot-testing need to have necessary equipment to deliver lessons using digital education materials. Two schools were supported as part of the project in obtaining electronical devices to be able to use the digital education materials. This comprehensive approach ensured that both teachers and students are well-equipped to fully benefit from the innovative digital learning experience offered by the Atollo project.

List of Appendices

Appendix 1 – Teacher Manual for Using Atollo IZZI Digital to Support Learners with Difficulties

Appendix 2 – Train-the-Trainer Presentation – Teaching with Atollo IZZI Digital – 18 February 2025

Atollo Project

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Teacher Manual

Using Atollo IZZI Digital Materials to Support Learners with Difficulties

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About the Atollo Project

The Atollo project aims to empower learners with special educational needs (SEN) by creating inclusive digital materials. Through a consortium of partners from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia, including an EdTech company, universities, schools for children with SEN, public authorities, and NGO, we will analyse and compare existing programs, develop innovative digital tools and create high-quality digital educational content. We will pilot and test the digital materials for students with learning difficulties, evaluate their implementation, and improve the materials based on feedback from learners, teachers and experts. The result of the scientific evaluation of the use of digital materials will be an inclusive digital education toolkit that will contain advice and instructions for everyone who works with and uses digital educational materials for children with difficulties. We will use a user-centred design approach to ensure that the materials are accessible and inclusive for learners with various types of learning difficulties. This iterative process of improvement will help us create digital materials that are effective and engaging. Furthermore, the project will provide capacity building for teachers to use developed digital materials effectively. The expected results include a cutting-edge set of digital learning materials, capacity building for teachers and an inclusive digital education toolkit for policymakers and education institutions. We will share our findings and outcomes through various channels to reach a wider audience, including policymakers and education institutions, and create awareness about the importance of inclusive digital materials for learners with difficulties. The project will have a direct impact on the involved schools and their learners as well as a broader impact on this underrepresented group of children, their educators and wider academic community through research paper derived from this project.

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Introduction

The digital educational content on the IZZI platform was developed as part of the Atollo project no. 101132759, financed under ERASMUS-EDU-2023-PI-FORWARD call, topic: ERASMUS-EDU2023-PI-FORWARD-LOT1, with the goal of helping educators provide **individualised, differentiated** learning environments for students in inclusive settings. Our **target group** of learners are **students with learning difficulties** that learn at lower primary level. In mainstream classrooms, these would typically be learners aged 5-10. However, when appropriate, these digital education materials can be used regardless of the student's chronological age. This means that the content can also be used by chronologically older learners who have intellectual disabilities, as the digital materials can support them in reaching their own individualised learning outcomes. Based on the diverse abilities and learning needs of students, we aimed to provide multi-level content for students with difficulties ranging from Profound and Multiple Complex difficulties to Moderate Learning difficulties. Therefore, the digital education materials are offered at four different levels with the aim of supporting students in different inclusive settings, as well as in special schools.

The platform offers a learning experience with digital educational materials specifically designed to align with the core components of various national curricula for mathematics. These materials have adjusted expectations at different levels to cater to diverse learning needs and foster the development of digital and mathematical competencies among students. By providing digital tools, content, and accessible features, we aim to support meaningful learning experiences. This manual is designed to help educators incorporate the developed digital content into their lessons. The digital educational content should not be used as the sole teaching tool but rather as a complement tool for supporting learning, along with other textbooks or media.

Why We Chose Mathematical and Digital Competencies

As part of the Atollo Project, a comprehensive **Programme Analysis** was conducted between March and May 2024. The analysis focused on key aspects of education systems in the partner countries and provided an in-depth understanding of inclusive and special education practices.

The Programme Analysis was carried out through:

- **An online questionnaire** exploring various aspects of inclusive and special education systems, such as:
    - Curricular regimes
    - SEN categories and assessment practices
    - Inclusive and special education settings
    - Digital education policies
    - Barriers and challenges in implementing inclusive education
- **A literature review** on inclusive and special education in the partner countries
- **Insights from European organisations**, including the European Agency for Special Needs and Inclusive Education and Eurydice.

Key Findings

The findings of the Programme Analysis revealed significant similarities and differences across the education systems in the partner countries, as well as critical gaps in supporting learners with special educational needs (SEN). Based on these findings, the project steering committee identified **mathematical and digital competencies** as the focus areas for the project. The committee identified students with **difficulties** as target audiences for the project. The findings of the analysis, target learners and competencies were described in the Framework for common categorization of program levels, a document created as part of the project in June 2024. The Framework document served as the base for the digital content creation, as well as the base for writing this manual.

Why Mathematical Competencies?

Mathematical competencies were chosen because:

1. **Universality**: Mathematics is a core subject in primary education across all partner countries and forms the foundation for numerical literacy and problem-solving skills.
2. **Challenges in Inclusive Education**: Research highlights the difficulty of teaching mathematics inclusively, especially to diverse groups of learners with varying intellectual abilities.
3. **Foundational Importance**: Early mathematical education introduces essential concepts like numbers, quantities, and basic arithmetic, which are critical for further academic success and daily life.

Across partner countries, mathematical learning emphasises hands-on activities, real-life applications, and problem-solving. These approaches help students build confidence and develop fluency in mathematical concepts, such as counting, measurement, and basic calculations.

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Why Digital Competencies?

Digital competencies were identified as a priority because:

1. **Future Relevance**: Digital skills are essential for students to thrive in modern societies and economies.
2. **Gap in Accessibility**: Despite the importance of digital education, many students with learning and developmental difficulties lack access to tailored digital learning tools.
3. **Support for Inclusive Education**: Digital technologies can provide interactive, accessible, and engaging learning environments that address the specific needs of students with learning and developmental difficulties.

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Content Structure

The content structure follows curricula to reach mathematical and digital learning objectives and competencies for students at the lower primary level. It enables teachers to easily choose **differentiated tasks** for students with varying learning levels.

Digital Units and Learning Levels

The platform consists of **45 units** distributed across four levels, designed to meet diverse student needs. All units are available in **six different languages** (Bulgarian, Croatian, English, German, Icelandic, Norwegian) with each language having its own dedicated "bookshelf" (individual page).

Each **bookshelf**/page contains five publications:

1. **Mathematics Level 1**
2. **Mathematics Level 2**
3. **Mathematics Level 3**
4. **Mathematics Level 4**
5. **ICT** – a standalone publication covering all four levels

Each Mathematics publication includes 10 units, while the ICT publication comprises 5 units:

- Information acquisition and processing
- Technology and equipment
- Digital skills
- Creation and communication
- Ethics and Security

The structure ensures that **every unit** is available at **four distinct levels**, tailored to accommodate students' needs and **address their learning difficulties**, ranging from Profound and Multiple Learning Difficulties to Moderate Learning Difficulties. The content and activities are thoughtfully adapted at each level to align with the identified needs, ensuring accessible learning and engagement for learners.

As levels progress from 1 to 4, expectations rise, and learning outcomes become more advanced. Teachers are encouraged to select the appropriate levels for students **based on the desired learning objectives, individual student's needs, and their learning profiles**.

Learning Competencies and Objectives

At each level, the learning objectives represent **adjusted expectations** compared to the mainstream curriculum. Level 1 outlines fundamental objectives, progressively increasing in complexity as levels rise. Therefore, Level 4 contains the most complex activities and objectives. The mathematical objectives are defined for different areas of knowledge that learners should attain – Numbers and Counting, Shapes and Space, Measurements, Problem-Solving, Development of Natural Numbers, Arithmetic Operations and Geometry.

The digital objectives are – Information Acquisition and Processing, Technology and Equipment, Digital Skills, Creation and Communication, Ethics and Security.

The following is a brief outline of learning objectives on levels**.**

A detailed list of learning outcomes for each digital unit in English is available in Appendix 1, and a list of links to documents containing learning outcomes for each digital unit in other languages is available as Appendix 2.

MATHEMATICS

Level 1 – Mathematics

Learning Objectives on Level 1:

- Develop and apply basic mathematical thinking.
- Gain an understanding of quantities, numbers, operations, and measurements within an established number range.
- Apply mathematical operations in real-life situations, in play, and in practical contexts.
- Acquire basic knowledge and skills for spatial orientation and spatial visualisation.

Level 2 – Mathematics

Learning Objectives on Level 2:

- Develop and apply basic mathematical thinking.
- Gain an understanding of quantities, numbers, operations, and measurements within an established number range.
- Apply mathematical operations in real-life situations, in play, and practical contexts.
- Acquire basic knowledge and skills for spatial orientation and spatial visualization.

Level 3 – Mathematics

Learning Objectives on Level 3:

- Further develop and apply mathematical thinking.
- Work within the number range up to 200; possibly extend to 1000.
- Develop proficiency in addition, subtraction, multiplication, and division, particularly within the number range up to 100.
- Gain an understanding of quantities, numbers, measurements, and sizes within the established number range.
- Understand the decade system and place value.

- Recognise and apply relationships in arithmetic operations and basic arithmetic laws. • Estimate, measure, and compare sizes using appropriate units, and initiate unit conversions.
- Understand mathematical operations in play and practical situations.
- Find solutions for simple real-world problems.
- Learn about fractions.
- Encounter decimal numbers.
- Secure and expand knowledge and skills in spatial orientation and visualization.
- Distinguish, name, and understand forms of surfaces and solids; calculate the perimeter and possibly the area of rectangles and squares.

Level 4 – Mathematics

Learning Objectives on Level 4:

- Further develop and apply mathematical thinking.
- Work within the number range up to 200, possibly extend to 1000.
- Develop proficiency in addition, subtraction, multiplication, and division, particularly within the number range up to 200.
- Gain an understanding of quantities, numbers, measurements, and sizes within the established number range.
- Understand the decade system and place value.
- Recognise and apply relationships in arithmetic operations and basic arithmetic laws. • Estimate, measure, and compare sizes using appropriate units, and initiate unit conversions.
- Understand mathematical operations in play and practical situations.
- Find solutions for simple real-world problems.
- Learn about fractions.
- Encounter decimal numbers.
- Secure and expand knowledge and skills in spatial orientation and visualization.
- Distinguish, name, and understand forms of surfaces and solids; calculate the perimeter and possibly the area of rectangles and squares.

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DIGITAL LEARNING (ICT)

Level 1 – Digital

Learning Objectives on Level 1:

- Use information technologies safely and responsibly.
- Understand, follow, and create simple instructions.
- Use digital devices and the internet for learning.
- Create and design digital drawings and images.
- Experience self-efficacy by using digital technologies creatively and in various ways.

Level 2 – Digital

Learning Objectives on Level 2:

- Use assistive digital technologies in real life situations in a safe and responsible way.
- Understand, follow, and create simple instructions.
- Use digital devices and the internet for learning.
- Create and design digital drawings and images.

Level 3 – Digital

Learning Objectives on Level 3:

- Use information technologies safely and responsibly.
- Understand, follow, and create simple instructions.
- Use digital devices and the internet for learning.
- Create and design digital drawings and images.
- Experience self-efficacy by using digital technologies creatively and in various ways. Information acquisition and processing:
- Perform a basic search for information on a predetermined topic with detailed instructions and guidance.
- With guidance, describe what needs to be done to find information.
- Records the found information with help.

Level 4 – Digital

Learning Objectives on Level 4:

- Use information technologies safely and responsibly.
- Understand, follow, and create simple instructions.
- Use digital devices and the internet for learning.
- Create and design digital drawings and images.
- Experience self-efficacy by using digital technologies creatively and in various ways.

Platform Structure

The digital educational content is located on the Atollo IZZI platform. The platform contains 6 bookshelves for different languages, 4 levels for mathematics and 1 ICT. Each of the four levels of mathematics contain 5 modules that contain digital learning units. Each unit comprises various digital activities and the platform offers accessibility features, which are described in more detail below.

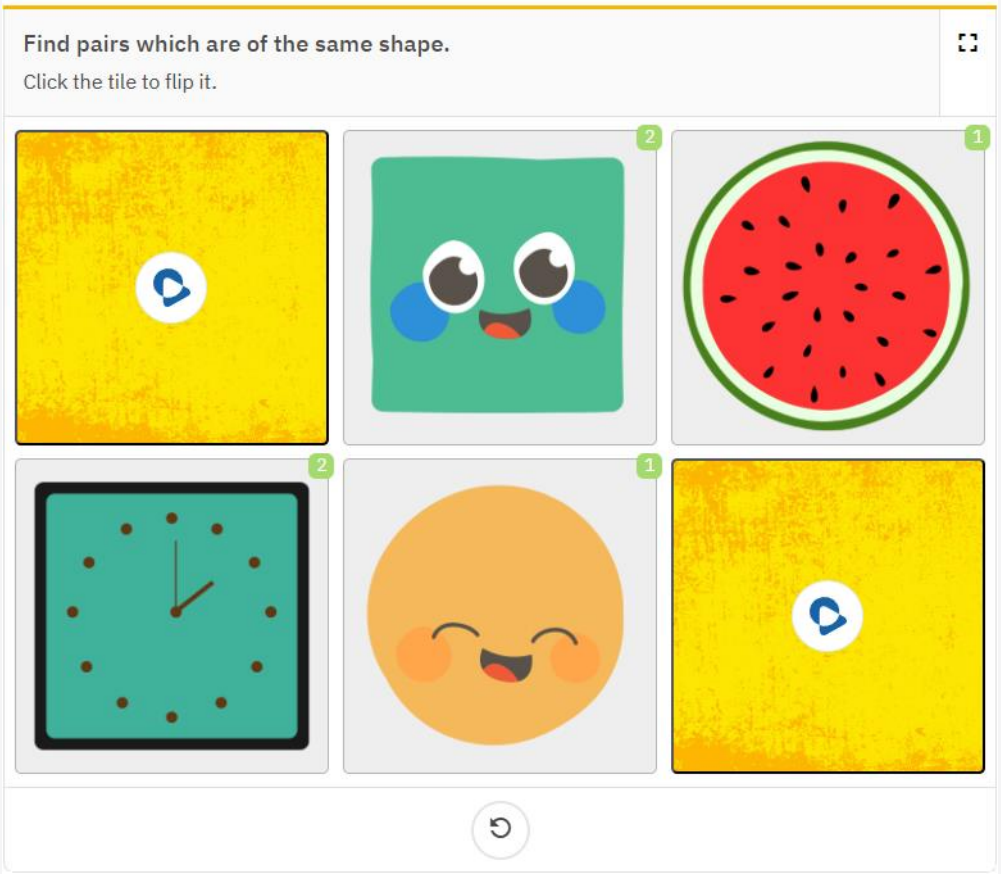
Digital Activities

Each of the 45 units contains at least 5 different digital activities, which were analysed as most suitable for the level of difficulty. The most used digital activities include:

Colouring Book - Colouring is an enjoyable and therapeutic activity for people of all ages. Benefits: encouraging self-expression, developing pre-mathematical skills, developing digital skills.

Draw - Drawing is encouraging activity that fosters creativity, boosts self-esteem and enhances cognitive skills. Benefits: encouraging creativity and self-expression, enhancing the digital and pre-mathematical skills.

Memory – Memory activities include various types such as matching words with words, words with images, words with sounds, sounds with sounds, and images with sounds. Benefits: cognitive development (memory enhancement, attention, and concentration), visual and spatial skills (pattern recognition, spatial awareness), language and communication (vocabulary building, instructions following), emotional regulation (patience and self-control, confidence building), motivation and engagement (fun, interactive, engaging way of learning).



Picture 1. Example of a Memory Activity

Image Puzzle - Student needs to put the pieces in the right places until they form a complete picture. Benefits: enhancing cognitive skills, and problem-solving abilities, while also providing a fun and engaging way to improve focus and patience.

Labyrinth - Labyrinth offers a rich and engaging activity that appeals to children's natural curiosity, desire for challenge, and love for play. Benefits: improves spatial awareness, problem-solving skills, and hand-eye coordination, while also fostering patience and concentration in a fun, engaging way.

Pathfinder - Pathfinder games provide a stimulating and rewarding experience that combines elements of challenge, exploration, problem-solving, and creativity. Benefits: promotes precoding skills, enhances literacy skills and vocabulary expansion.

What`s Missing - The "What's Missing" game presents a visual display where a child observes a set of images, one of which is then removed, challenging them to identify the missing item. Benefits: enhances visual perception, memory retention, and attention to detail.

True False - The True or false digital quiz game presents players with a series of statements or questions, challenging them to discern whether each statement is true or false by selecting the corresponding option. Benefits: helps improve critical thinking skills, and comprehension of visual information in an engaging way.

Multiple Choice - The Multiple Choice presents variety of questions or prompts, offering several answer options from which student must select the correct one. Benefits: offers structured learning, reinforces comprehension and accommodates different learning styles through varied response options.

Matching - The Matching presents players with pairs of related items or concepts, challenging them to match each item with its corresponding counterpart. Options for content creation: matching pairs of words, images, videos, audios, defining the number of objects. Benefits: enhances memory retention, improves cognitive skills, and promotes pattern recognition.

Matching Connection - The Matching Connection presents players with a series of items or concepts that student needs to match based on logical connections. Benefits: promotes cognitive development, logical reasoning, and understanding of relationships between concepts.

Drag and Drop - In Drag and Drop students categorize elements by dragging them to their correct locations or groupings. Benefits: Enhances engagement, facilitates interactive learning experiences, accommodates different learning styles, and provides immediate feedback, promoting better comprehension and retention of information.

Drag and Drop Order - Drag and Drop Order is a component that requires arranging given elements in the specified order by dragging and dropping them. Benefits: promoting cognitive skills such as sequencing, organization, and spatial reasoning in a visually engaging and interactive manner, enhancing their comprehension and learning experience.

Dragonator - Dragonator is a digital activity where students drag and drop image items directly onto the background image, fostering engagement and spatial understanding while solving tasks. Benefits: promoting spatial and pre-mathematical skills, facilitating comprehension and engagement while accommodating diverse learning needs.

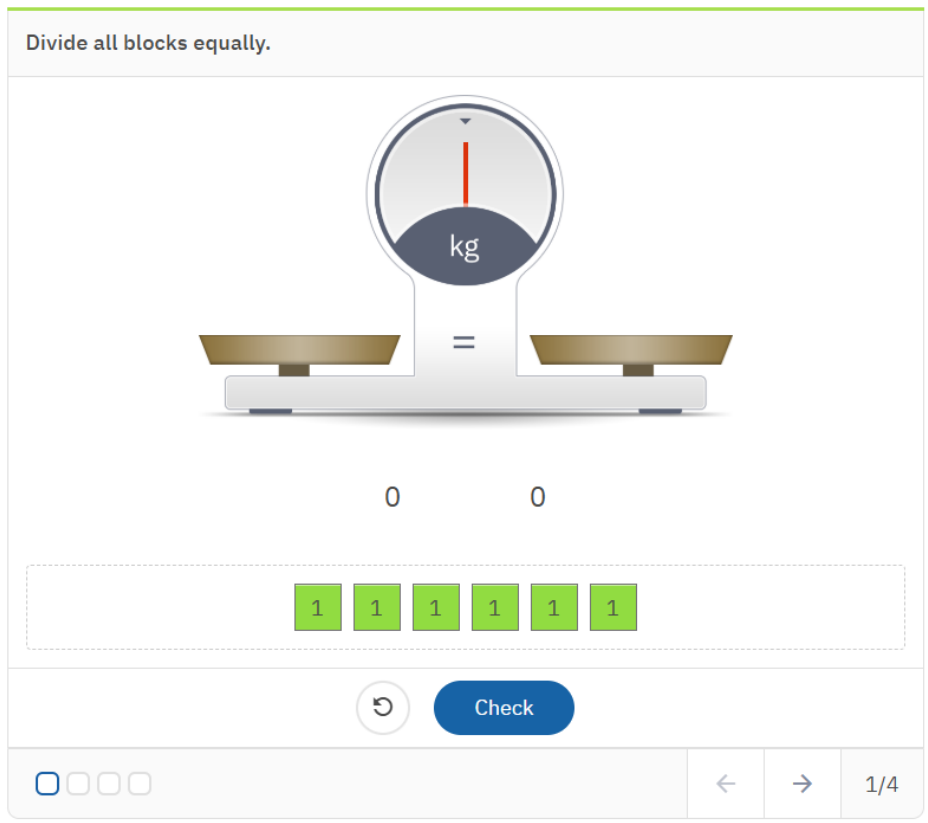
Clickable - Clickable allows students to interact with content by selecting or tapping on specific elements. Options for content creation: click on image, click on text, click on audio. Benefits: enhances concentration and attention to detail by offering interactive features that engage multiple senses and allow for focused exploration of content.

Clickable Word Position - A Clickable Word Position enables students to interact directly with individual letters. They need to identify the position of the letter in the word (at the beginning/in the middle/at the end). Benefits: reinforces letter recognition and word formation skills, provides a supportive environment for practicing spelling and language comprehension, enhancing literacy development.

Symmetry - Symmetry prompts students to explore and create symmetrical designs by manipulating elements such as shapes, lines, or images across an axis. Benefit: helps develop spatial awareness and cognitive abilities, fostering visual processing and understanding of geometric concepts in a structured and engaging manner.

Number Liner - A Number Liner provides a visual representation of numbers along a line, allowing interactive exploration of numerical relationships, practice of counting, and understanding concepts such as addition and subtraction. Benefits: tangible and visual representation of numerical concepts, helps understand and reinforce, mathematical skills (counting and addition).

Scales - Scales is a virtual scale that students use to compare and measure objects, quantities, or concepts, allowing for hands-on exploration of mathematical principles such as equivalence, proportionality, and measurement. Benefits: fosters critical thinking, enhances problem-solving skills, and conceptual understanding.



Picture 2. Example of a Scale Activity

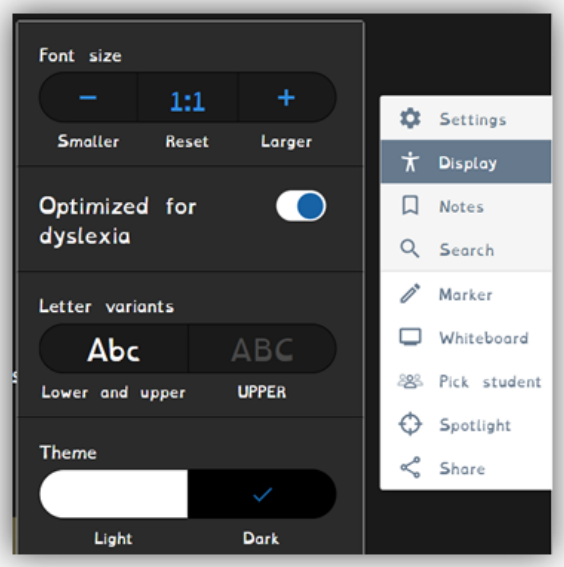
Math Problem Solve - Math Problem Solve is the step-by-step process of solving mathematical exercises. Benefits: understand and apply mathematical concepts, enhancing problem-solving skills, confidence, and comprehension in mathematics.

Video - Educational videos are a vital component of digital educational content due to their ability to engage students, improve comprehension, offer flexibility, and support diverse learning styles. Benefits: engagement and comprehension through the combination of visual and auditory stimulation, making complex information more accessible and easier to understand.

Interactive Video - Dynamic and engaging educational content that incorporates interactive elements allowing viewers to interact with the video. Benefits: more immersive and effective learning compared to traditional video content.

Accessibility Features

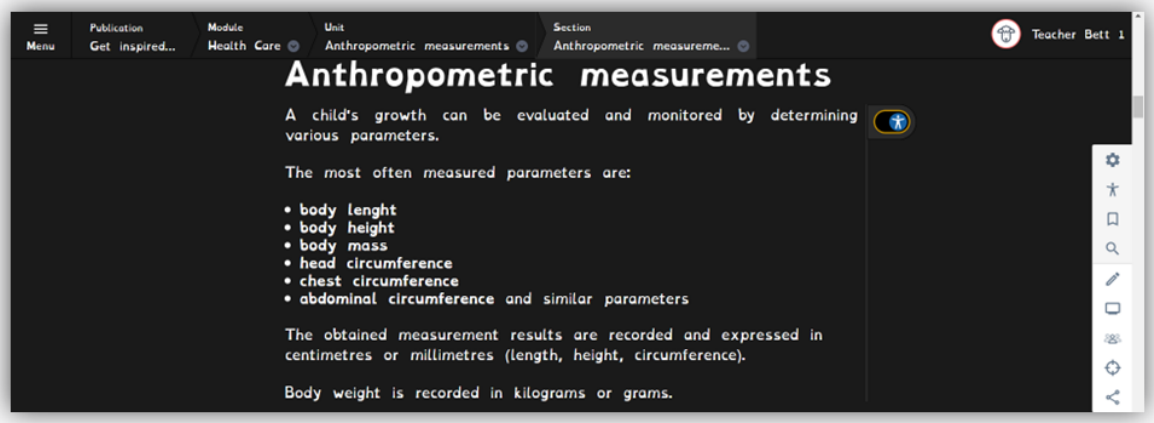
Ensuring digitally accessible educational content is essential for students with special educational needs (SEN). Digital accessibility means that content is designed and developed in a way that enables all users, including those with difficulties and disabilities, to access, interact with, and benefit from it. For students with SEN, digital accessibility is not just a convenience – it is a necessity. Accessible content allows these students to fully participate in learning activities, engage with educational materials, and demonstrate their knowledge and abilities on equal footing with their peers. Whether it is providing alternative formats such as audio descriptions, subtitles, or text-to-speech functionality for students with visual impairments, dyslexia, or other learning difficulties, or ensuring that interactive elements are keyboard accessible for students with mobility impairments, digital accessibility plays a crucial role in creating an inclusive learning environment.



Picture 3.: Accessibility Options

The IZZI platform is committed to meeting all mandatory accessibility requirements and continually strives to exceed them by enhancing accessibility features. Regular updates and improvements ensure that it remains in line with the latest accessibility standards and guidelines.

Therefore, IZZI provides alternative inclusive versions of the same content (e.g. regular and adapted version of the text, audio recordings, alt descriptions of images, videos, and video titles, etc.). Besides there is a toolbar with several options for students to personalise content: bookmarks, notes, highlights, drawings, stresses, change of font size or case, light and dark theme, optimisation for students with dyslexia.



Picture 4.: Dyslexia Font

Languages

The content on the Atollo IZZI platform will be available in six languages: English, Norwegian, Icelandic, Croatian, Bulgarian and German. The platform will also have narrations for each activity,

Lesson Planning

The digital units on the platform support **blended learning**, which means that one unit can be used across multiple lessons, and the digital materials should be combined with other teaching resources, materials and methods. Therefore, the activities on the IZZI platform aim to be a flexible and **additional** support material to the learning process.

The digital units contain various activities that can be used to introduce a concept, spark the students' interest or reinforce a concept. These activities can also be used as a quick starter, a closing activity or a digital break from paper textbooks.

The activities often provide **practical illustrations** and **visuals** using real-life examples. This approach aims to help students learn more effectively by making the material more concrete and relatable. The occasional use of animations or videos further supports understanding, as it allows students to connect sometimes abstract ideas with tangible, real-world applications. Most activities are **interactive** so that the students can practice mathematical calculations or concepts. Students can do these activities as a whole-class or individually, based on the availability of technology in classrooms, individual student's learner profile and abilities. Alternatively, students can solve exercises individually on their own devices and receive feedback. Learners at level 3 and 4 may be able to work individually on certain tasks, while learners at levels 1 and 2 most likely need adult support.

When choosing a level for students, educators should use the descriptions of target learners for each level only as general guidelines to inform their decisions. They can select levels based on the **desired learning objectives**, as well as the individual needs and learning profiles of each student. Alternatively, teachers may decide to start all students at the most basic level, allowing them to advance through the levels as they demonstrate mastery and skill development. The digital education materials aim to offer flexibility and support a personalised learning experience for students. We encourage teachers to use their own professional judgement and knowledge of their own students to use the materials as they see fit.

Frequently Asked Questions

1. What is the purpose of this platform?

The main purpose of the platform is to support students who have difficulties in learning, helping them to reach their learning objectives and make progress. It is designed to provide engaging, interactive resources and activities that facilitate understanding and mastery of key mathematical concepts and develop digital skills.

2. Who can use this platform?

The educational content on the platform targets learners who learn at lower primary levels. In typical settings, these students would be aged 5-10 years old. However, the educational content can also be used by chronologically older students who have intellectual disabilities. The platform can be used by teachers in the classroom, as well as by students at home with adult assistance. The platform is also suitable for both individual use and collaborative learning settings, depending on each student's age and abilities.

3. What kind of tools and resources does the platform provide?

The platform offers a variety of interactive tools and resources to enhance learning. These include educational games, quizzes, animation videos, visual aids, and practical activities that help make abstract concepts more concrete. The activities are designed to engage students, providing real-life examples that facilitate understanding and retention.

4. Can students use the platform independently?

Whether students can use the platform independently depends on their individual learning difficulties. While the platform is designed to be user-friendly and engaging, children who face more significant learning challenges may require support from parents/guardians or teachers. For students who can manage tasks on their own, the platform offers an opportunity for independent learning, allowing them to explore activities and resources at their own pace. However, for those who need more guidance, the platform should be used alongside adult supervision to ensure they get the most out of the experience.

5. Are the materials free-of-charge?

Yes, the materials are free in order to provide teachers and educators with tools to support various types of learners reach their mathematical and digital learning outcomes.

Appendix 1. Learning Outcomes for Each Unit in English

Mathematics Level 1						
Numbers and counting (module 1)	**Shapes and space (module 2)**	**Measurements (module 3)**	**Problem-solving (module 4)**	**Development of natural numbers (module 5)**	**Arithmetic operations (module 6)**	**Geometry (module 7)**
Similar and different (unit 1) I can: - recognise an object based on certain properties (same or different colour, shape, material, purpose) - recognise whether or not an object belongs to a set	Spatial relations (unit 1) I can: - explain the position of objects in my surroundings - draw lines on templates (straight and curved, open and closed)	Measuring (unit 1) I can: - determine which objects are the largest and the smallest - determine which objects are the longest and the shortest - determine which objects are the thickest and the thinnest - differentiate between the units of measurement in my surroundings which I encounter on a daily basis	I solve problems (unit 1) I can: - distinguish between possible and impossible events - orient myself in spaces and relationships - understand basic geometric terms	Numbers and sequences (unit 1) I can: - operate with quantities (numbers) - read and write digits - develop the concept of numbers, including zero; count forwards and backward, possibly in steps of two or larger steps - use the concepts of "double" and "pair" - ensure that numbers are understood by considering their cardinal, ordinal, arithmetic, and measurement aspects - build and reinforce the number range up to 20, possibly extending beyond 20 - introduce the symbol for ten in connection with bundling	Addition and subtraction (unit 1) I can: - count to 10 - notice relationships among sets - add a certain amount to a number - subtract a certain amount	Geometric shapes (unit 1) I can: - orient myself in space as well as recognise and name properties of objects - observe, order, and structure spatial relationships and shapes from my surroundings - manipulate surfaces and solids - recognise a corner, an edge, and a face using geometric shapes - use a ruler
More - less - equal (unit 2) I can: - sort out objects into sets with the same number of members - show sets that have more/fewer members - among the offered sets, select two sets with an equal number of members				Comparing numbers (unit 2) I can: - develop fundamental mathematical skills by observing and manipulating objects - work with quantities: arranging, ordering, and comparing them - associate numbers with quantities and vice versa	Multiplication and division (unit 2) I can: - determine and count the number of groups to help with multiplication and division - determine and count the number of elements in the group to help with multiplication and division - learn multiplication and division with the help of pictures - multiply and divide with the help of pictures - solve practical problems	

Mathematics Level 2						
Numbers and counting (module 1)	**Shapes and space (module 2)**	**Measurements (module 3)**	**Problem-solving (module 4)**	**Development of natural numbers (module 5)**	**Arithmetic operations (module 6)**	**Geometry (module 7)**
Numbers and counting (unit 1) I can: - count objects up to 5, 10, 20 (show the object being counted and say the number words) - recognise numbers according to a template - write numbers according to a template - recognise and write numbers independently	Spatial relations (unit 1) I can: - name relationships between objects (up-down, in front-behind, left-right) - recognise and name relationships among objects (near-far, inside-outside) - pair and create sets of identical objects - recognise and repeat patterns in sequences	Measuring (unit 1) I can: - differentiate objects by their length, height and size - measure with thumb, cubit, step and arm span - compare, evaluate and measure - distinguish between the units of measurement that I encounter on a daily basis - differentiate between day and week as measures for time - recognise the values of coins and banknotes - recognise units of measurement for length and their connection (metre and centimetre)	How to solve a problem? (unit 1) I can: - tell how things are different by looking at their shape, colour, and size - sort things into groups based on their features - recognise different objects and count how many there are - figure out how much money I need to buy the things I want - solve fun mathematical problems - decide which mathematical operation to use to solve simple problems, like adding or subtracting	Quantities (unit 1) I can: - develop fundamental mathematical skills by observing and manipulating objects - work with quantities by arranging, ordering, and comparing them - associate numbers with quantities and vice versa - operate with quantities - use the concepts of “double” and “pair”	Addition and subtraction (unit 1) I can: - add and subtract up to 5, 10, 20 - think mathematically - draw conclusions - notice relationships among sets - recognise the number zero and understand its value - solve practical problems from my immediate surroundings	Spatial relationships and shapes (unit 1) I can: - identify and name basic geometric concepts - distinguish between basic geometric concepts and terms - name and distinguish between geometric shapes - name and distinguish between geometric solids - understand spatial relations - do fun games - draw straight lines using a ruler
	Shapes and curves (unit 2) I can: - distinguish between straight and curved lines - identify, differentiate, and name a cube, a cuboid, a sphere, and a cylinder - name straight and curved surfaces, recognise and draw points in or outside an object, and draw straight lines using a ruler or a triangle - identify, differentiate, and name geometric shapes (square, circle, and triangle)			Numbers (unit 2) I can: - do operations with quantites (numbers) - read and write digits up to 20 and beyond 20 - develop the concept of numbers - learn about the number 0 - count forward and backward - count in steps of two or larger steps - use "double" and "pair" - spot the tens	Multiplication and division (unit 2) I can: - develop operations of doubling and multiplying - differentiate between the operations of division and multiplication - understand the concept of half - work on multiplication tables within the established number range, possibly including their inverses - solve practical problems from the immediate environment	

Mathematics Level 3						
Numbers and counting (module 1)	**Shapes and space (module 2)**	**Measurements (module 3)**	**Problem-solving (module 4)**	**Development of natural numbers (module 5)**	**Arithmetic operations (module 6)**	**Geometry (module 7)**
Numbers (unit 1) I can: - read and write numbers up to 100 - recognise ordinal numbers and differentiate them from cardinal numbers - distinguish single-digit numbers from multi-digit numbers - recognise the values of coins and banknotes - form sequence of numbers - represent fractions visually, read and write fractions - apply decimal number in practical life - understand and use decimal system	Shapes, surfaces, lines and points (unit 1) I can: - connect geometric shapes (circle, triangle, square, and rectangle) with the surface of geometric bodies (cube, cuboid, pyramid, and cylinder) - observe a problem and draw a conclusion - draw lines of given lengths and name the endpoints - determine the membership of points to a line segment	Measurement units (unit 1) I can: - list basic time units (hour, minute, second) - notice the relationships between time measurement units - recognise mass as a property of bodies; compare the masses of bodies - name basic units for mass - understand units and their differentiation (hour, minute, sec, km, m, dm, cm, kg, g)	Solving problems (unit 1) I can: - recognise numerical representations and their meaning in their environment, e.g., bus number, house number - use acquired knowledge in doing various types of tasks (arithmetic tasks, word problems, and everyday life problem situations) - formulate a mathematical problem (determine what is known and unknown, predict/investigate and choose strategies, draw conclusions, and determine possible solutions)	Numbers and relationships (unit 1) I can: - reinforce number concepts and understanding within a familiar number range - build, penetrate, and reinforce the number range up to 100 - explore a new number range through rough and fine structures - visualise numbers - arrange and decompose quantities - navigate within a number range: build up and break down number sequences, establish relationships using known symbols, and round numbers - enhance and solidify understanding of the decimal system	Addition and subtraction (unit 1) I can: - add and subtract tens - calculate using values of banknotes - observe and draw conslusions - analyse and find solutions to simple real-world problems - perform written addition and subtraction with place value carryover or borrowing - reinforce oral and written arithmetic operations within an established number range - perform estimation calculations - name the components of addition and subtraction operations	Relationships and shapes in space (unit 1) I can: - recognise and name a square and a rectangle - distinguish between a square and a rectangle - mark corners, vertices, and sides correctly - describe and calculate the perimeter of squares and rectangles - remember the measurements for length - recognise and draw a circle
		Measuring (unit 2) I can: - deepen understanding of previously introduced measurements - establish measurement relationships and work with measurement sequences - measure lengths and record the obtained number and unit - draw lines of given lengths - estimate, measure, and compare using known units; perform simple unit conversions (e.g., m to cm, kg to dag) - apply units of measurement, possibly including area measures, in real-life problems		Numerical digits and graphic display (unit 2) I can: - differentiate between digits and their place value - understand the place value system - read and interpret data from graphical displays - make observations and draw conclusions	Multiplication and division (unit 2) I can: - recognise multiplication as repeated addition of the same numbers - practice division and multiplication operations - expand and practise the multiplication table - recognise the procedure of written multiplication and division - solve practical problems	

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Mathematics Level 4						
Numbers and counting (module 1)	**Shapes and space (module 2)**	**Measurements (module 3)**	**Problem-solving (module 4)**	**Development of natural numbers (module 5)**	**Arithmetic operations (module 6)**	**Geometry (module 7)**
Numbers (unit 1) I can: - make a record of numbers in a place value table - arrange and decompose quantities - build, deepen, and reinforce the number range up to 200; possibly extend it to 1000 - present fractions visually as well as read and write fractions - apply decimal numbers to everyday life	Edges, vertices and perimeter (unit 1) I can: - recognise cube-, cuboid-, and pyramid-shaped models - name a cube, a cuboid, and a pyramid - notice objects in the shape of cubes, cuboids, and pyramids in my surroundings - recognise and describe the surfaces, edges, and vertices of cubes, cuboids, and pyramids - match the surfaces of geometric bodies with geometric shapes - describe the perimeter as the length of the edge of any geometric shape	Measuring (unit 1) I can: - establish measurement relationships and work with measurement sequences - estimate, measure, and compare using known units; perform simple unit conversions - understand units and their differentiations - apply units of measurement to real-life problems - measure the lengths of the sides of triangles, squares, and rectangles - add the lengths of the sides and explain their sum as the perimeter - compare the volume of liquids by pouring them - name the units for measuring the volume of liquids	Solving the problems (unit 1) I can: - formulate and analyse a simple problem - find a solution to a problem - count and use arithmetic operations - use arithmetic symbols correctly - play fun games - solve everyday maths problems	Concept of numbers (unit 1) I can: - reinforce number concepts and understanding within a familiar number range - explore a new number range through rough and fine structures - visualise numbers, assemble and disassemble number sequences - establish relationships by using familiar symbols and rounding numbers - understand the decimal system - distinguish between digits and their positional values - develop the concept of size and context for large numbers (use of monetary values, length) - read and interpret data from graphic displays (e.g. tables)	Addition and subtraction (unit 1) I can: - add two-digit and single-digit numbers with and without regrouping - subtract a single-digit number from a two-digit number without regrouping - reinforce oral and written arithmetic operations up to 20 - perform written addition and subtraction with place value carryover and borrowing - perform estimation calculations - analyse simple real-world problems and find solutions - check and verbalise results	Relationships and shapes in space (unit 1) I can: - strengthen my spatial orientation: perceive and describe spatial positions, relationships and directions, and changes in direction - discover and classify basic geometric shapes - create something new with shapes and surfaces
	Angles (unit 2) I can: - recognise and name acute, right, and obtuse angles - use a compass as part of geometric tools - draw circles using a compass				Multiplication and division (unit 2) I can: - multiply and divide without a remainder within a set of numbers up to 100 and 200 - practice division and multiplication operations - introduce written multiplication and division, particularly within a number range up to 200 - solve practical problems - perform written addition and subtraction of two-digit numbers without regrouping	Features of geometric shapes (unit 2) I can: - measure and draw lines - use drawing tools - learn about rectangles and squares as specific quadrilaterals; describe and draw them; understand right angles and equal sides as characteristics - draw circles - develop the concepts of perimeter and area - calculate the perimeter of rectangles and squares - potentially introduce simple area calculations

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ICT				
Information acquisition and processing (unit 1)	**Technology and equipment (unit 2)**	**Digital skills (unit 3)**	**Creation and communication (unit 4)**	**Ethics and security (unit 5)**
I can: - select appropriate digital content - browsing educational content with support - search for videos - recognise audio browsers - use digital educational content as learning aids - perform basic actions in digital educational content - recognise text with support - search images with support - perform a basic search for information on a predetermined topic - record the found information with help - describe what needs to be done to obtain the information with support - record the found information - select information from among several found based on search instructions - explain why a certain piece of information was chosen over others	I can: - properly turn on and off digital devices with support/guidance or independently - recognise and name digital technology (devices) and describe its purpose - select appropriate digital technology for a specific task and use it with appropriate support - use a mouse, keyboard, and/or touchscreen in the user interface - with guidance, save and find previously stored content (text, image) - with help and guidance, select the most appropriate program for solving simple school tasks	I can: - perform basic actions in digital educational content - recognise and use simple e-services and learning management systems in education - browse e-sources and open recommended pages with support - launch and close recommended digital educational content - select tools or devices depending on the content - solve simple problems using digital technology - navigate learning management systems and educational social networks - recognise ownership marks indicating someone else's intellectual property	I can: - create simple digital content with support/guidance - perform simple actions in a program to create simple digital content (using a mouse, keyboard, or touch screen) - in a simple program with support, combine two known contents into a new digital product (poster, collage, comic strip...) - with guidance, apply basic skills of messaging and presenting content - participate in brief collaborative communication activities with familiar people - know the basic rules of communication in a virtual environment - use basic pictorial representations for non-verbal expression of emotions; with help and guidance, shape existing works and ideas using simple editing programs - apply basic message exchange skills - with support, present content using digital technology - with help, shape existing works and ideas using simple design programs - use basic visual representations for non-verbal expression of feelings - with guidance and support, conduct simple research - with help and support, solve simple problems using digital technology	I can: - recognise, list, and protect my personal data - recognise and apply healthy habits and behaviours while using technology - manage my screen time - securely obtain and exchange information using technology - recognise, describe, and apply energy-saving options while using technology and the correct way to dispose of electronic waste - be aware of data permanence on the Internet and the need to protect my and others' personal data

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Appendix 2. Learning Outcomes for Each Unit in Other Languages

Please click on the links in this list to access the learning outcomes for each mathematical and ICT unit in other languages:

German

Croatian

Bulgarian

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ERASMUS-EDU-2023-PI-FORWARD

Train-the-Trainer Session

Eva Smrekar, Profil Klett

18 February 2025

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Thank you for taking on the role of trainers!

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Goals for the training:

- Understand the trainer role and responsibilities
- Understand what resources are available to support you
- Go through the presentation for teachers – information to pass on to your colleagues at school
- Answer any questions

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Teaching with Atollo IZZI Digital to Support Learners with Difficulties

February 2025

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Agenda

1. About the Project
2. Research and Analyses Conducted
3. Digital Educational Content
4. Navigating the Atollo IZZI Platform
5. Pilot Testing Timeframe and Responsibilities

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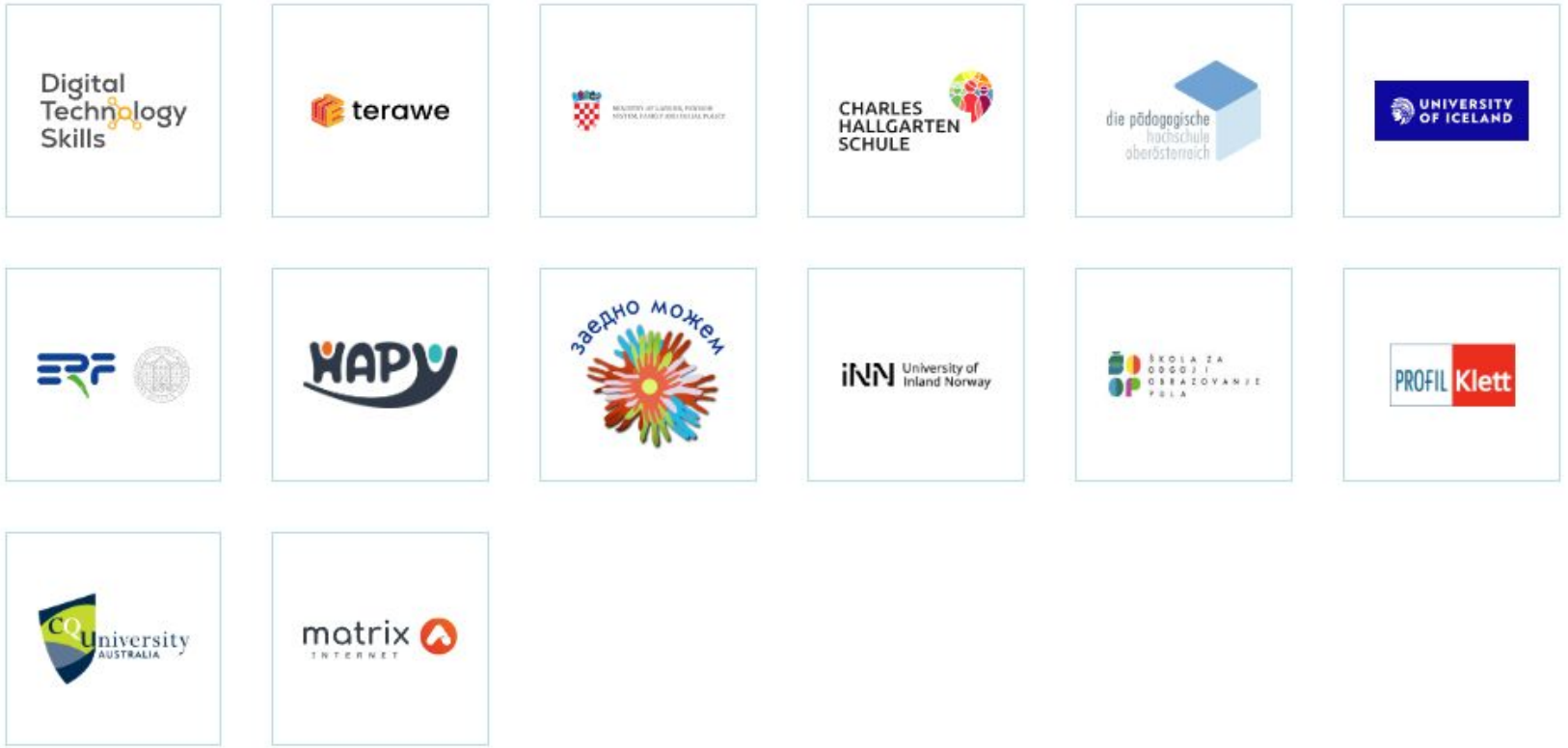
ABOUT THE ATOLLO PROJECT

An ERASMUS+ project that aims to empower learners with **special educational needs** by creating inclusive **digital educational materials**.

- The focus is on students with **learning and developmental difficulties.**
- The use of digital materials will be **scientifically evaluated**.
- An **inclusive digital education toolkit** will be created with advice and instructions for everyone who uses digital educational materials for children with difficulties.
- A **consortium of partners** from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia.

PROJECT PARTNERS

(universities, public authorities, EdTech companies, NGO, schools for children with SEN)



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THE ATOLLO PROJECT TIMELINE

2023
IDEA,
PROJECT APPLICATION

2024
ANALYSES,
CREATION OF DIGITAL EDUCATION CONTENT

2025
PILOT TESTING OF THE DIGITAL EDUCATION CONTENT, EVALUATION, MONITORING AND REFINING THE DIGITAL CONTENT

2026
FINALISED DIGITAL EDUCATION CONTENT, PROMOTION AND FINAL CONFERENCE

We need your help to test the digital educational content at your schools and give feedback!

ABOUT THE ATOLLO PROJECT

A comprehensive **Programme Analysis** was conducted between **March and May 2024** and included:

- **An online questionnaire**:
  - Curricular regimes
  - Categories of SEN and assessment practices
  - Inclusive and special education settings
  - Digital education policies
  - Barriers and challenges in implementing inclusive education
- **A literature review** on inclusive and special education in the partner countries
- **Insights from European organisations**, including the European Agency for Special Needs and Inclusive Education and Eurydice

ABOUT THE ATOLLO PROJECT

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The Programme Analysis revealed:

- Similarities and differences across education systems in partner countries
- Gaps in supporting students with SEN

Key findings:

- **Project focus**: mathematical and digital competencies (most similarities)
- **Target students:** students with learning and developmental difficulties, typically aged 5–10
- **Content:** must be offered at different levels (adjusted expectations)

WHY MATHEMATICAL AND DIGITAL COMPETENCIES?

Mathematical:

- Universality – a core subject across all partner countries
- Challenges in Inclusive Education – difficulty of teaching mathematics inclusively
- Foundational Importance – essential concepts critical for further academic success and daily life

Digital:

- Future Relevance
- Gap in Accessibility – lack of tailored digital learning tools
- Support for Inclusive Education

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DIGITAL EDUCATIONAL CONTENT

Target group of learners:

- Students with **learning and developmental difficulties** that **learn at lower primary level**
- In mainstream classrooms, these learners would be typically aged 5-10
- However, when appropriate, these materials can be used **regardless of the chronological age**

The digital educational content:

- Adjusted mathematical and digital learning objectives at different levels to support diverse needs
- A complement tool for supporting **blended learning**
- Located on the **Atollo IZZI platform**

DIGITAL EDUCATIONAL CONTENT

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LEARNING OBJECTIVES:

- Aligned with curricula, **adjusted learning objectives** compared to the mainstream curricula
- Mathematical objectives are defined for different areas of knowledge:
  - Numbers and Counting
  - Shapes and Space
  - Measurements
  - Problem-Solving
  - Development of Natural Numbers
  - Arithmetic Operations and Geometry
- The digital objectives – Information Acquisition and Processing, Technology and Equipment, Digital Skills, Creation and Communication, Ethics and Security
- A detailed description in the Teacher Manual

DIGITAL UNITS AND LEARNING LEVELS

DIGITAL EDUCATIONAL UNITS:

- **45 units** across four levels (40 mathematical and 5 digital units)
- Available in **six languages** (Bulgarian, Croatian, English, German, Icelandic, Norwegian)
- Each language has a 'bookshelf'
- Each **bookshelf** has **5 publications**:
  - Mathematics Level 1 (10 mathematical units)
  - Mathematics Level 2 (10 mathematical units)
  - Mathematics Level 3 (10 mathematical units)
  - Mathematics Level 4 (10 mathematical units)
  - ICT (5 digital units)

DIGITAL UNITS AND LEARNING LEVELS

LEARNING LEVELS:

- Units are available at four distinct levels to accommodate diverse learners
- Levels are intended to support learners ranging from Profound and Multiple Learning Difficulties to Moderate Learning Difficulties
- Level 1 has fundamental outcomes that become more complex as levels progress
- Select appropriate levels for your students based on the desired learning objectives and student's individual needs

NAVIGATING THE PLATFORM

- 6 bookshelves (languages)
- **5 publications** on each bookshelf (4 mathematics levels + 1 ICT)
- Each mathematics level (publication) contains **10 units**
- Each unit contains at least **5 digital educational activities** (often more)
  - Example: Animation/video, Drag and Drop, Colouring Book, Memory, Draw, What's Missing, Multiple Choice, Labyrinth, etc.
  - Activities aim to be engaging, fun and visual to show practical and real-life scenarios.
- **Accessibility features** (font size, dyslexia-friendly font, uppercase font, dark and light theme)

LESSON PLANNING WITH ATOLLO IZZI DIGITAL

- **Flexible** and **additional** support for teachers, parents and students
- Complement tool to support **blended learning**
- Practical illustrations and **visuals** to introduce a topic or concept
- **Interactive** activities for practice
- The unit is not created as a one-lesson plan
- Activities from one unit can be used across multiple lessons

LESSON PLANNING WITH ATOLLO IZZI DIGITAL

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- The digital activities can be used as a quick **starter**, **reinforcement** or **closing activity** or a **digital break** from textbooks and paper materials.
- Choose activities that suit you and your class.
- Activities can be done together as **a class or individually** (depends on the technology in classrooms, and student's individual abilities).
- Some students may need more adult support than others.

LESSON PLANNING WITH ATOLLO IZZI DIGITAL

- The platform gives feedback to students.
- Select levels based on desired learning objectives and individual needs.
- You may decide to also start all learners at the most basic level and then allow them to advance through the levels, if appropriate.
- Use your **professional judgement and knowledge** of your own students to see how you can incorporate the digital platform in your lessons.
- A **Teacher Manual** is available.

DEMONSTRATION

https://atollo-en.izzi.digital/#/

Please **register on the platform** when using the materials.

Please **login with your email** each time you use the digital learning content on the platform during the pilot.

THE PILOT TESTING

- **Beginning of March until the end of June 2025**, across 3 countries and multiple schools.
- GOALS & IMPORTANCE:
  - testing the digital educational activities in practice
  - receiving feedback from teachers, students and parents/guardians – positives and what to improve
  - making changes to improve the content
- Monitoring and evaluation are crucial in the project – we appreciate your participation
- **Each unit on the Atollo IZZI platform contains an evaluation form created by the University of Inland Norway.**
  - Qs about student engagement, accessibility and functionality, content, technical and language issues
  - **Please fill it out after completing activities from the unit and give your honest feedback.**

THE PILOT TESTING

Teacher responsibilities:

- Participating in the introduction workshop
- **Choosing units** to test during the pilot
- **Testing** the digital educational activities in units (March – end of June 2025)
- **Filling out the evaluation form** after testing a unit (located as a link at the end of the Unit)
- Participating in occasional focus groups or interviews (project evaluation team)
- Ensuring the ethical use of materials
- Following the pilot timeframe

THE PILOT TESTING

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Additional information:

- Trainers need to organise workshops for parents/guardians to inform them about the project (alone or together with teachers).
- Parents/guardians and students may be included in the evaluation.
- Parents/guardians will be encouraged to use the digital platform with their children at home.
- Technical support: **EUprojekti@profil-klett.hr**

TEACHER QUESTIONNAIRE BEFORE THE PILOT

- Teachers need to fill out a general questionnaire **by 28 February 2025** (approx. 10 minutes).
- Important to gain insight into the teacher population in the pilot (general information)
- Questions about units that each teacher can test:
    - Which units will you be able to test in the pilot testing, as they fit into your curriculum and lesson plans until the end of the school year?
    - Please select two-three additional mathematical units that you could test as part of revision, even if they do not fit into your current lesson plans.
    - Please select one additional ICT unit you could test with your students.

TEACHER QUESTIONNAIRE BEFORE THE PILOT
(University of Inland Norway)

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LINK IN ENGLISH

LINK IN CROATIAN

LINK IN GERMAN

LINK IN BULGARIAN

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Trainer responsibilities:

- Train teachers at your school – organise 1 training session until 28 February 2025
- Distribute general questionnaires to teachers – must be filled out until 28 February 2025
- Inform parents/guardians – organise 1 informative session beginning of March 2025 and 3 additional workshops during and after the pilot
- Localise presentations and materials into your own language, if needed

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Resources for trainers:

- Teacher Manual
- Teacher Questionnaire to be distributed to teachers before the start of the pilot
- Teaching with Atollo IZZI Digital – presentation for the teacher workshop
  - Translate into your own language, feel free to adapt
- Learning with Atollo IZZI Digital – presentation for the workshop with parents and guardians
  - Translate into your own language, feel free to adapt

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Q & A time

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Thank you for your attention!

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