



**Atollo
Project**

Breaking barriers
through education

D4.5 Education Sessions for Parents/Guardians

A Report on Enhancing Family Engagement and Digital Literacy to Support
Inclusive Learning for Students with Intellectual Disabilities



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About the Atollo project

The Atollo project aims to empower learners with disabilities 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 special education needs (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 disabilities. 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 disabilities. 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 4: Piloting and Evaluation of Digital Educational Content & Quality Assurance

Work Package 4 (WP4), coordinated by INN UNI together with partners Profil Klett (PK) and the University of Zagreb Faculty of Education and Rehabilitation Sciences (UNIZG ERF), is an important work package in this project. WP4 manages the piloting, evaluation, and quality assurance of the digital educational content developed in earlier phases, working closely with schools and stakeholders in Bulgaria, Croatia, and Germany (Gran et al., 2025).

Key deliverables of WP4 include:

- **D4.1:** A report summarising the findings of the pilot testing, which evaluates functionality, curriculum alignment, accessibility, and impact based on mixed-method data collection.
- **D4.2:** The establishment of evaluation procedures and monitoring criteria to assess the digital educational content's effectiveness and inclusivity.
- **D4.3:** Set of optimised digital education content units, along with guidelines on their use
- **D4.4.:** Inclusive Digital Education Toolkit
- **D4.5:** Education sessions for parents and guardians, aimed at raising awareness, digital literacy, and engagement with the Atollo digital learning environment.

Deliverable 4.5 focuses on creating and delivering tailored education sessions specifically for parents and guardians. The sessions aim to enhance family engagement and digital literacy, empowering families to support learners with intellectual disabilities in their use of Atollo digital tools (Gran et al., 2025). These include electronic presentations, demonstrators, and interactive pilot activities, all localised into English and the native

languages of the pilot schools Bulgarian, Croatian, and German to ensure accessibility and cultural relevance (European Commission, 2022). D4.5 aligns with the project's broader aim of fostering inclusive educational ecosystems by actively involving families as key stakeholders. By improving parental competence and confidence with digital learning environments, Atollo addresses barriers to equitable access and helps improve learning outcomes for students with special educational needs (Gran et al., 2025).

The Atollo project Consortium

The Atollo project consortium is an Erasmus Partnership, bringing together 14 partners.

	Partner	Acronym	Country
1	PROFIL KLETT D.O.O.	PK	HR
2	SVEUCILISTE U ZAGREBU	UNIZG ERF	HR
3	UNIVERSITY OF INLAND NORWAY	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	MROSP	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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Education Sessions for Parents/Guardians

1. Introduction

Deliverable D4.5 “Education Sessions for Parents/Guardians” is developed within Work Package 4 (WP4) – *Piloting and Evaluation of Digital Educational Content & Quality Assurance* of the Atollo project number 101132759. WP4, led by the University of Inland Norway (INN UNI) in partnership with Profil Klett (PK) is responsible for piloting, evaluating, and assuring the quality of digital educational content designed for learners with special educational needs (SEN) across multiple European countries (Gran et al., 2025).

The overall aim of D4.5 is to present a structured education program targeted at parents and guardians to support the implementation, understanding, and use of inclusive digital educational materials developed within the project. Given the pivotal role that families play in supporting learners with intellectual disabilities, these education sessions have been designed to strengthen family engagement and enhance digital literacy. This empowers parents and guardians with the knowledge, practical tools, and opportunities for feedback necessary to actively support their children’s learning using Atollo’s digital resources (European Commission, 2022; Gran et al., 2025).

The education sessions include electronic presentations in English and localised in native languages of the pilot countries Bulgarian, Croatian, and German. This localisation ensures cultural relevance and accessibility, crucial aspects for meaningful family involvement (European Commission, 2022).

The deliverable aligns with broader EU policy objectives promoting digital transformation and inclusive education by integrating families as key stakeholders in the educational ecosystem. This enables a holistic approach to learning that bridges school and home environments, thereby helping to overcome access barriers and improve educational outcomes for learners with SEN (OECD, 2023; López, 2025).

The design and implementation of these education sessions were informed by evidence and feedback gathered during extensive pilot testing involving teachers, learners, families, and other stakeholders across several

partner institutions (Gran et al., 2025). Through empowering parents and guardians, D4.5 plays a critical role in fostering sustainable and inclusive digital education practices.

1.1 Purpose and Rationale

The fourth and final parent and guardian workshop within the Atollo project focuses on the practical implementation of inclusive digital educational materials through the use of the Atollo Inclusive Digital Education Toolkit. While previous workshops introduced the project, the digital learning materials, and the findings from the pilot implementation, this session aims to translate the knowledge generated throughout the project into practical guidance for families, educators, and support professionals.

The development of the Toolkit was motivated by one of the most important findings emerging from the pilot implementation across Bulgaria, Croatia, and Germany. Although the digital educational materials were consistently evaluated positively by teachers and learners, the quality of implementation varied considerably depending on contextual factors such as teacher preparedness, classroom organisation, digital infrastructure, and the availability of adult support (Gran et al., 2025). These findings demonstrate that the successful implementation of digital educational materials depends not only on the quality of the materials themselves, but also on the pedagogical, organisational, and social environments in which they are used.

Consequently, the Atollo Toolkit was developed to bridge the gap between the design of inclusive digital educational materials and their practical implementation. The Toolkit provides evidence-based recommendations and practical guidance for implementing digital educational materials with learners with special educational needs (SEN) across diverse educational contexts.

The Toolkit addresses several target groups. Primary users include classroom teachers and teaching assistants, school leaders and ICT coordinators, digital content developers and educational technology providers, and educational policymakers and authorities. Families and support professionals constitute a secondary but highly important target group, as home environments and family engagement play a crucial role in supporting learning outcomes and learner participation.

The recommendations presented in the Toolkit are informed by three complementary sources of evidence. First, the Toolkit draws on empirical findings generated during the Atollo pilot implementation, including teacher questionnaires, focus group interviews, classroom observations, technical monitoring, and learner participation data. Second, the Toolkit incorporates the professional experiences of teachers, teaching assistants, and school leaders involved in the implementation process. Third, the recommendations are informed by established research literature on inclusive education, digital learning, Universal Design for Learning, cognitive load theory, multimedia learning, and family-school partnerships.

Principles of Inclusive Digital Learning

The implementation of inclusive digital educational materials requires a pedagogical framework that recognises learner diversity as a fundamental characteristic of educational practice. Inclusive digital learning is therefore understood as the creation of learning opportunities that are accessible, meaningful, and supportive for all learners regardless of cognitive, linguistic, sensory, or social differences.

A key theoretical framework underpinning the Atollo Toolkit is Universal Design for Learning (UDL). UDL emphasises that educational environments should be designed to accommodate learner variability from the outset rather than through subsequent adaptation (CAST, 2024). Three core principles of UDL inform the design and implementation of the Atollo digital educational materials:

- multiple means of engagement;
- multiple means of representation;
- multiple means of action and expression.

The findings from the Atollo pilot strongly support these principles. Teachers consistently reported that learners with special educational needs benefited from multimodal instruction, visual supports, scaffolded learning activities, flexible pacing, and opportunities to demonstrate understanding through different modalities (Gran et al., 2025).

Another central principle identified through the pilot concerns scaffolding. Drawing on Vygotsky's concept of the Zone of Proximal Development, scaffolding refers to the temporary supports provided to learners as they develop increasing levels of independence. Teachers participating in the pilot repeatedly emphasised the importance of stepwise guidance, predictable learning structures, repeated practice, and differentiated progression pathways for learners with intellectual disabilities and other special educational needs.

The pilot findings also demonstrated the importance of reducing cognitive load. According to cognitive load theory, learners possess limited working memory capacity, and excessive cognitive demands may negatively influence learning outcomes (Sweller, 2011). The revised Atollo materials therefore emphasise simplified interfaces, reduced visual distraction, one-task-per-screen structures, predictable navigation systems, and explicit instructional guidance. These adaptations proved particularly beneficial for learners with intellectual disabilities, attention difficulties, and language-related learning challenges.

The use of multimodal educational materials also emerged as a significant factor supporting learning outcomes. Consistent with multimedia learning theory (Mayer, 2021), learners participating in the pilot responded positively to combinations of visual representations, auditory instructions, interactive tasks, and social interaction opportunities. These findings support the integration of multiple sensory modalities as a core component of inclusive digital education.

Finally, motivation and learner engagement were identified as critical success factors. Teachers observed that learners demonstrated greater persistence and participation when activities were meaningful, achievable, age-appropriate, and personally relevant. These observations correspond closely with existing research highlighting the importance of autonomy, competence, and belonging for learner motivation and participation.

Practical Guidance for Home and School Use

One of the central findings emerging from the Atollo pilot was that successful implementation depends on collaboration among multiple stakeholders. Digital educational resources function most effectively when teachers, families, support staff, and learners work together to create supportive and predictable learning environments.

Before engaging with digital educational materials, families can support learning by establishing structured learning environments characterised by predictability, reduced distraction, and clear expectations. Teachers

participating in the pilot reported that learners with special educational needs particularly benefited from routines, preparation, and clear explanations of learning activities before beginning digital tasks.

During learning activities, parents and support professionals can facilitate learning by encouraging learner autonomy while simultaneously providing emotional and practical support. Effective support strategies include offering encouragement, asking open-ended questions, allowing sufficient processing time, observing learner difficulties, and avoiding unnecessary intervention. Pilot findings indicated that learner independence increased when adults provided support without taking over the learning process.

Following learning activities, reflection and discussion can strengthen learning outcomes and support metacognitive development. Parents may encourage reflection through questions concerning enjoyment, difficulty, learning experiences, and future goals. Teachers participating in the pilot observed that learners who engaged in reflective conversations often demonstrated increased motivation, confidence, and persistence.

The Atollo digital learning materials available through the IZZI platform were specifically designed to support flexible and differentiated learning. The platform provides multiple levels of difficulty, visual supports, audio instructions, interactive tasks, and opportunities for repeated practice. Pilot findings consistently demonstrated that allowing learners to revisit activities, work at different paces, and receive differentiated support increased participation and learner confidence.

The pilot further demonstrated that selecting an appropriate level of challenge is critical for maintaining learner engagement. Educational activities should provide sufficient challenge to support learning while avoiding excessive cognitive overload. Flexibility in progression pathways and adaptation to individual learner needs therefore constitute fundamental principles of inclusive digital learning.

Finally, the Atollo project demonstrated that success should be conceptualised broadly. For many learners with special educational needs, educational progress may be reflected in increased confidence, improved participation, greater independence, enhanced communication, or increased enjoyment of learning rather than solely through traditional measures of academic performance. Consequently, the overarching objective of the Atollo Toolkit is not merely to improve educational outcomes, but to support meaningful participation, inclusion, wellbeing, and equitable learning opportunities for all learners.



2. Structure of the Parent Education Programme

In accordance with the objectives outlined in the project proposal, the parent and guardian education programme was designed as a structured series of four educational sessions delivered throughout the different phases of the Atollo project implementation process. The overall aim of the programme was to facilitate meaningful parental engagement in the implementation of inclusive digital educational materials and to strengthen collaboration between families, schools, and educational support services.

The four sessions were intentionally organised to correspond with key milestones within the project lifecycle, allowing parents and guardians to progressively develop knowledge, practical competence, and confidence in supporting learners with special educational needs (SEN) in digital learning environments. The programme therefore moved beyond the provision of information alone and sought to establish an ongoing dialogue between project partners, educators, and families throughout the pilot implementation process.

The educational programme adopted a developmental approach in which each session built upon knowledge, experiences, and findings generated during the previous stages of the project. The first session introduced participants to the project and its pedagogical foundations. The second session provided opportunities for reflection and dialogue during implementation. The third session focused on the evaluation of pilot experiences and lessons learned. Finally, the fourth session translated the empirical findings and optimisation processes into practical guidance through the implementation of the Inclusive Digital Education Toolkit.

This progressive structure reflects contemporary understandings of family engagement in inclusive education, which emphasise the importance of sustained collaboration, shared decision-making, and continuous knowledge exchange between educational institutions and families (Epstein, 2018; Bronfenbrenner, 1979).

Hence, in line with the project proposal, the parent/guardian education programme consists of four structured sessions aligned with the key phases of project implementation:

Session 1 – Introduction to the Project and Digital Educational Materials (Pre-pilot phase)

Session 2 – Pilot Implementation Progress and Feedback Session (During pilot phase)

Session 3 – Pilot Results and Guidance for Continued Support (Post-pilot phase)

Session 4 – Inclusive Digital Education Toolkit and Practical Application

2.1 Session 1 – Introduction to the Project and Digital Educational Materials (Pre-pilot phase)

The first educational session was conducted during the pre-pilot phase of the project and aimed to establish a common understanding of the objectives, structure, and pedagogical foundations of the Atollo project. The session introduced parents and guardians to the overall rationale for developing inclusive digital educational materials for learners with special educational needs and provided an overview of the educational, technological, and social objectives underpinning the project.

Particular emphasis was placed on presenting the concept of inclusive digital education and explaining how digital educational materials can support participation, engagement, differentiation, and accessibility for learners with diverse educational needs. Parents and guardians were introduced to the planned pilot implementation activities and were informed about the anticipated role of families in supporting learner participation throughout the project period.

The session further aimed to establish trust and collaboration between families, educators, and project partners by providing opportunities for discussion, questions, and clarification regarding the forthcoming pilot implementation. By creating a shared understanding of the project's objectives and expectations, the first session laid the foundation for sustained parental engagement throughout the project lifecycle.

2.2 Session 2 – Pilot Implementation Progress and Feedback Session (During pilot phase)

The second educational session was organised during the pilot implementation phase and focused on facilitating communication, reflection, and collaborative problem-solving among parents, educators, and project partners. As learners had begun actively using the digital educational materials, the purpose of this session was to provide an opportunity for parents and guardians to discuss their experiences, ask questions, and contribute feedback concerning the implementation process.

The session included presentations of ongoing pilot activities, observations regarding learner engagement, and preliminary experiences from participating educational institutions. Particular attention was devoted to identifying challenges associated with accessibility, learner motivation, technological infrastructure, and home-school collaboration.

An important objective of this session was to recognise parents and guardians as active contributors to the implementation process rather than passive recipients of information. Through dialogue and experience sharing, families contributed valuable insights concerning learner preferences, support needs, motivation, and participation outside school settings. This collaborative approach reflects contemporary perspectives on inclusive education, which emphasise the importance of family engagement as a central component of successful educational implementation (Epstein, 2018).

Furthermore, the session enabled project partners to identify areas requiring additional support, clarification, or adaptation prior to the completion of the pilot implementation phase, thereby contributing to the iterative and participatory nature of the overall project design.

2.3 Session 3 – Pilot Results and Guidance for Continued Support (Post-pilot phase)

The third educational session was conducted following the completion of the pilot implementation and focused on presenting the results of the evaluation and optimisation processes. Building upon the experiences gathered during the pilot phase, the session introduced parents and guardians to the principal findings emerging from teacher questionnaires, focus group interviews, classroom observations, learner participation data, and technical monitoring.

The session highlighted both the strengths and challenges associated with the implementation of the digital educational materials. Particular attention was devoted to discussing the pedagogical, technological, and organisational factors that influenced learner participation and educational outcomes across the participating countries.

In addition to presenting empirical findings, the session aimed to provide parents and guardians with practical recommendations for supporting learners after the completion of the pilot phase. Families received guidance regarding the continued use of digital educational resources, the importance of maintaining learner motivation, the establishment of predictable learning routines, and strategies for supporting learner autonomy and participation.

The findings presented during this session ultimately served as the empirical foundation for the optimisation processes undertaken in subsequent project activities and directly informed the development of the Inclusive Digital Education Toolkit.

2.4 Session 4 – Inclusive Digital Education Toolkit and Practical Application

The fourth and final educational session represents the culmination of the educational programme and serves as a bridge between the empirical findings generated during the pilot phase and their practical application in educational and home environments. The session introduces the Inclusive Digital Education Toolkit developed within Deliverable D4.5 and demonstrates how the optimised digital educational materials can be implemented effectively to support learners with special educational needs.

The rationale for developing the Toolkit emerged directly from the findings of the pilot implementation. Although the digital educational materials were generally evaluated positively by teachers, learners, and families, the pilot demonstrated that successful implementation depended upon a range of pedagogical, organisational, technological, and contextual factors extending beyond the digital materials themselves. Differences in teacher preparedness, classroom organisation, infrastructure, accessibility, and family support were found to influence educational outcomes significantly.

Consequently, the primary objective of the fourth session is to translate the knowledge generated during the pilot implementation into practical, evidence-informed guidance that can support inclusive educational practice across diverse contexts. The session introduces parents and guardians to the principles of inclusive digital learning, practical strategies for supporting learning in home and school environments, approaches for supporting learners with special educational needs, and the importance of collaboration between families and educational institutions.

Particular emphasis is placed on the practical use of the Atollo digital educational materials available through the IZZI platform. Parents and guardians are introduced to strategies for supporting learner independence, reducing cognitive load, establishing effective learning routines, promoting motivation, and facilitating meaningful participation in digital learning activities.

The session further emphasises that successful inclusive digital education depends not primarily upon technology itself, but rather upon the interaction between educational practice, family support, accessibility, and collaborative relationships. In this sense, the Inclusive Digital Education Toolkit functions not only as a practical guide for using digital educational materials, but also as a framework for promoting participation, equity, accessibility, and educational inclusion across home and school contexts.



3. Methodological Approach and Materials

The parent and guardian education programme developed within the Atollo project is based on a research-informed and practice-oriented methodological framework designed to support meaningful parental engagement in inclusive digital education. The programme combines empirical evidence generated during the project implementation with established research on inclusive education, family-school partnerships, digital pedagogy, and accessible communication practices.

The methodological approach adopted throughout the four educational sessions reflects the overall pedagogical philosophy of the Atollo project, namely that successful inclusive digital education requires collaboration among multiple stakeholders and that educational innovation must be accompanied by practical guidance, opportunities for reflection, and accessible communication. Consequently, the parent education programme was developed not as a traditional information campaign but as a progressive learning process that enables parents and guardians to develop knowledge, confidence, and practical competence over time.

The educational materials developed for the programme draw upon three principal sources of knowledge and evidence. First, the programme incorporates educational presentations and dissemination materials developed during the earlier phases of the project. These materials introduced parents and guardians to the objectives of the Atollo project, the concept of inclusive digital education, and the pedagogical rationale underlying the development of digital educational materials for learners with special educational needs.

Second, the educational programme builds extensively upon the findings generated during the pilot implementation phase and documented in Deliverable D4.1, *A Report Summarising the Findings of the Pilot Testing* (Gran et al., 2025). The pilot evaluation constituted a comprehensive mixed-method investigation involving teacher questionnaires, focus group interviews, classroom observations, learner participation data, technical monitoring, and implementation experiences gathered across participating educational institutions in Bulgaria, Croatia, and Germany. The pilot findings provided essential empirical evidence concerning learner engagement, accessibility, usability, pedagogical implementation, technological challenges, and organisational conditions affecting the successful use of digital educational materials.

The analysis of pilot data demonstrated that the effectiveness of digital educational materials depended not only on the quality of the educational resources themselves, but also on contextual factors such as teacher preparedness, classroom organisation, infrastructure availability, accessibility adaptations, family involvement,

and institutional support structures. These findings directly informed both the optimisation of the digital educational materials and the development of the educational content presented to parents and guardians.

Third, the educational programme incorporates newly developed materials originating from the Inclusive Digital Education Toolkit developed within Work Package 4. The Toolkit translates the empirical findings and practical experiences generated during the project into evidence-based recommendations for teachers, families, school leaders, educational technology developers, and policymakers. In this sense, the Toolkit serves as a bridge between research evidence, professional practice, and practical implementation.

The methodological design of the parent education programme further draws upon established theoretical frameworks within educational research. The principles of Universal Design for Learning (CAST, 2024) provide the conceptual foundation for discussions concerning accessibility, learner variability, and differentiated educational practices. Cognitive Load Theory (Sweller, 2011) informs recommendations concerning instructional design, simplification of information, and the reduction of unnecessary cognitive demands. Principles of multimedia learning (Mayer, 2021) support the use of multimodal educational resources and interactive learning environments, while theories of family-school partnerships (Epstein, 2018) and ecological systems theory (Bronfenbrenner, 1979) provide the conceptual basis for understanding parental engagement as a critical component of inclusive educational practice.

A central methodological principle guiding the development of the parent education programme has been the communication of complex educational concepts through accessible, practical, and non-technical language. Although the educational content is grounded in research evidence and educational theory, the materials have been specifically designed for non-specialist audiences, including parents and guardians with diverse educational backgrounds and varying levels of digital competence.

To achieve this objective, the educational sessions employ several complementary communication strategies. Complex theoretical concepts are translated into practical examples and concrete recommendations that can be applied in everyday educational contexts. Visual representations, illustrations, and real-world examples are used extensively to support understanding and engagement. Opportunities for discussion, reflection, and dialogue are incorporated throughout the sessions to encourage active participation and knowledge exchange between families and educational professionals.

The educational materials themselves have been developed according to principles of universal design and accessibility. Particular attention has been devoted to ensuring clear visual presentation, high contrast, readable typography, consistent structure, limited cognitive load, and the use of plain language. These design principles not only reflect current recommendations for accessible educational communication but also model the inclusive pedagogical principles promoted throughout the Atollo project.

Finally, the educational programme adopts a developmental and iterative approach in which each educational session builds upon the knowledge, experiences, and findings generated during previous stages of the project. This progressive structure allows parents and guardians to move from initial understanding and familiarisation, through active participation and reflection, towards the practical implementation of evidence-informed strategies for supporting learners with special educational needs in digital learning environments.

In this way, the parent education programme functions simultaneously as an educational intervention, a dissemination activity, and a mechanism for strengthening collaboration between families, schools, and educational systems in support of inclusive digital education.

4. Empirical Basis for the Parent Education Programme: Lessons Learned from the Atollo Pilot Implementation

The design and content of the parent and guardian education programme were informed directly by the findings generated during the Atollo pilot implementation phase. Rather than developing educational materials solely on the basis of theoretical assumptions regarding inclusive digital education, the project adopted an evidence-based and iterative approach in which empirical findings from authentic educational settings continuously informed the development, revision, and optimisation of educational resources and implementation strategies.

The pilot implementation, documented comprehensively in Deliverable D4.1 (*A Report Summarising the Findings of the Pilot Testing*), constituted a large-scale mixed-method evaluation of the Atollo digital educational materials across participating educational institutions in Bulgaria, Croatia, and Germany (Gran et al., 2025). The pilot involved learners with special educational needs, teachers, teaching assistants, school leaders, and support professionals, thereby generating a comprehensive understanding of the pedagogical, technological, organisational, and contextual factors influencing the successful implementation of inclusive digital educational materials.

The evaluation methodology employed during the pilot phase combined multiple sources of evidence, including teacher questionnaires, focus group interviews, classroom observations, learner participation data, and technical monitoring. This methodological triangulation enabled the project consortium to identify not only the strengths of the digital educational materials but also the conditions necessary for successful implementation in authentic educational environments.

One of the most significant findings emerging from the pilot was that the educational effectiveness of digital learning materials cannot be understood independently of their implementation context. Although teachers consistently reported high levels of learner engagement and positive attitudes towards the digital educational materials, educational outcomes varied considerably depending on pedagogical approaches, organisational structures, digital infrastructure, accessibility provisions, and the availability of adult support. Consequently, the pilot findings demonstrated that successful inclusive digital education depends not only on the quality of digital resources themselves but also on the broader educational ecosystems within which they are implemented.

A particularly important finding concerned the role of pedagogical adaptation and differentiated instruction. Teachers across all participating countries emphasised the importance of flexible progression pathways, scaffolded learning activities, predictable routines, and opportunities for repeated practice. Learners with special educational needs often required substantial variations in pacing, support, and instructional design in order to participate meaningfully in digital learning activities. These findings directly informed the optimisation of the Atollo materials and subsequently became central principles within the Inclusive Digital Education Toolkit.

The pilot also highlighted the critical importance of accessibility and usability. Teachers reported that learners with intellectual disabilities, language difficulties, attention deficits, and motor impairments frequently encountered barriers related to complex interfaces, excessive text, insufficient visual support, and inconsistent accessibility features. In response, the optimisation process focused on reducing cognitive load, improving visual clarity, introducing multimodal supports, and increasing opportunities for differentiated access to learning content. These findings strongly influenced the recommendations developed for parents and guardians regarding the support of digital learning activities at home.

Another consistent finding concerned the importance of learner motivation and emotional engagement. Teachers repeatedly observed that learners demonstrated greater persistence, participation, and enjoyment when educational activities were perceived as meaningful, achievable, and relevant to their everyday experiences. Positive relationships with adults, opportunities for success, and flexible approaches to progression emerged as particularly important factors supporting sustained engagement. Consequently, the parent education programme places strong emphasis on creating positive learning experiences, supporting learner autonomy, and recognising diverse forms of educational progress.

The pilot findings further demonstrated that successful implementation depended heavily on collaboration among teachers, teaching assistants, families, and support services. Educational environments characterised by strong communication, shared expectations, and collaborative problem-solving generally reported more successful implementation experiences. Parents and guardians frequently contributed valuable knowledge concerning learners' preferences, support needs, communication strategies, and motivational factors. These observations reinforced the importance of family-school partnerships as a central component of inclusive educational practice and provided a strong empirical foundation for the collaborative approach adopted throughout the parent education programme.

The pilot also identified several organisational and technological factors influencing implementation outcomes. Variations in internet stability, device availability, classroom organisation, staff resources, and technical support significantly affected learner participation and educational continuity. Schools that established predictable routines, provided sufficient adult support, and maintained flexible organisational structures generally experienced fewer implementation barriers and higher levels of learner engagement. These findings informed both the optimisation of the digital educational materials and the practical recommendations presented to parents and guardians regarding the organisation of learning environments at home.

Importantly, the pilot demonstrated that educational success for learners with special educational needs should be conceptualised more broadly than traditional academic achievement measures alone. Teachers frequently reported improvements in learner confidence, participation, independence, communication, persistence, and enjoyment of learning, even when measurable academic gains were difficult to document. These findings support contemporary perspectives on inclusive education, which emphasise participation, wellbeing, belonging, and meaningful engagement as important educational outcomes alongside academic performance.

Taken together, the findings generated during the Atollo pilot implementation provided the empirical foundation for the development of the Inclusive Digital Education Toolkit and the parent and guardian education programme. The educational sessions presented in this deliverable therefore represent not only a dissemination activity but also a direct translation of research findings, professional experience, and stakeholder perspectives into practical educational guidance. In this way, the parent education programme contributes to bridging the gap between educational research, digital innovation, and everyday inclusive educational practice.



Presentations for parents/guardians

Presentations collectively provide a comprehensive overview of the development, implementation, and evaluation of inclusive digital educational materials tailored to diverse learner needs.

The first presentation offers an introduction to the Atollo project and outlines the concept and importance of digital educational materials designed for inclusive learning environments. Building on this foundation, the second presentation documents the progress of the pilot implementation, sharing real-time feedback from teachers, students, and school staff involved in the trials across multiple partner countries. The third presentation highlights key pilot results alongside practical guidance aimed specifically at parents and guardians to foster their engagement and support in their children's digital learning journeys.

Finally, the fourth presentation introduces the Inclusive Digital Education Toolkit, a practical resource developed to empower parents and guardians with strategies and tools to support inclusive digital education at home.

In addition to the English versions, localized presentations have been prepared in Croatian, Bulgarian, and German to ensure relevance and accessibility across participating countries. Together with the comprehensive pilot findings report, these annexes form a valuable resource suite that illustrates Atollo's commitment to advancing equitable access to quality digital education for all learners.

Presentation 1: Introduction to Atollo and Digital Educational Materials

The Atollo project, supported by the Erasmus+ programme (ERASMUS-EDU-2023-PI-FORWARD), represents a concerted effort to advance inclusive education through the development of tailored digital educational content for learners with special educational needs (SEN), particularly those with learning and developmental difficulties at the lower primary level (ages 5-10). This initiative aligns with a growing body of research emphasizing the role of digital technologies in enhancing learning outcomes for students facing diverse cognitive and developmental challenges (Florian, 2011).

Central to the Atollo project is the creation and piloting of digital resources hosted on the Atollo IZZI platform, which combines mathematical and digital competency content into 45 interactive units distributed across four levels of learner needs. By structurally adapting the learning objectives to accommodate varying degrees of difficulty from profound to moderate learning difficulties the project exemplifies principles of Universal Design for Learning (UDL), which advocate for flexible educational approaches to maximize learner engagement and accessibility.

The mathematical content addresses core domains such as numbers, shapes, measurements, problem-solving, and arithmetic operations, domains that research has identified as particularly challenging for students with SEN. The digital literacy units additionally emphasize essential 21st-century skills including information processing, technology use, communication, and digital ethics, framing an integrated approach to competency development in line with contemporary educational frameworks.

The platform's design incorporates accessibility features, such as dyslexia-friendly fonts and adjustable themes, which are critical for addressing the diverse needs within the SEN population (Al-Azawei, Serenelli, & Lundqvist, 2016). Interactive and gamified activities ranging from drag-and-drop tasks to memory games provide multimodal learning experiences that have been shown to enhance motivation and learning retention for children with developmental difficulties.

The Atollo project also innovatively includes home-based learning options and parental involvement, recognizing the established importance of family engagement in supporting meaningful educational outcomes for children with SEN across multiple contexts. Pilot testing conducted across several European countries aims to evaluate not only the efficacy of the digital content but also the usability and accessibility of the platform feedback which will inform iterative refinements. Such a participatory evaluation framework aligns with recommended best practices for intervention research in special education (Odom, Brantlinger, Gersten, et al., 2005).

In sum, the Atollo project embodies an evidence-informed, inclusive approach to digital education, contributing valuable resources and practical insights to the ongoing endeavour of making education equitable and accessible through technology.

Presentation 2: Pilot Implementation Progress and Feedback

The Atollo project, funded via the Erasmus+ programme, continues to advance its mission of empowering learners with special educational needs (SEN) through the development and deployment of inclusive digital educational materials. Presentation 2 offers a comprehensive overview of the project's pilot phase progress, focusing on digital learning at home and the critical role of parents, educators, and learners in the co-construction and evaluation of digital content tailored for students with learning and developmental difficulties.

The pilot testing, initiated across 15 schools in Croatia, Bulgaria, and Germany during spring 2025, engages over 120 teachers and approximately 400 students. This phase marks a pivotal moment in the project's timeline, aiming to monitor, evaluate, and refine the digital content before its final release in 2026. The pilot's integrative approach, combining quantitative data from teacher questionnaires with qualitative insights from focus groups and classroom observations, aligns with recognised best practices in educational research to ensure responsive and empirically grounded content development.

Preliminary findings indicate that the participating teachers the majority of whom possess special education qualifications and extensive teaching experience report a generally high readiness and familiarity with digital instructional tools. This is consistent with evidence suggesting that teacher competence and openness to technology are key enablers of successful digital learning interventions for students with SEN (Edyburn, 2006). Importantly, teachers engage with the digital units predominantly at foundational levels (Level 1 and 2) and digital literacy modules (ICT), reflecting the project's responsiveness to the learning profiles and capabilities of the target population.

The feedback process has surfaced crucial insights into both content and platform functionalities. Technical issues related to device compatibility and language translation have been identified, underscoring the challenges inherent in creating accessible digital tools across multiple countries and languages. Content-specific comments include requests for clearer student instructions, improved visual representations, and more varied activity choices. This constructive feedback loop parallels the iterative design processes advocated in user-centered educational technology research, emphasizing continuous refinement driven by end-user input.

Moreover, the project's inclusion of parents in the evaluation process through voluntary acknowledges the significant role of family involvement in supporting digital learning for children with SEN. This home-based learning component expands the educational context beyond the classroom, promoting engagement and reinforcing learning through collaboration between educators and families.

Recent visibility efforts, including presentations at prominent conferences like NERA2025 and media exposure via Croatian National Television, reflect the project's growing recognition and dissemination within the educational technology community. These efforts support the broader objective of influencing policy and practice to promote scalable, inclusive digital education initiatives (European Commission, 2020).

In conclusion, the pilot phase of the Atollo project exemplifies a rigorous, collaborative approach to developing inclusive digital learning resources for students with SEN. The integration of empirical feedback mechanisms at this stage ensures that the final products will be pedagogically sound, technologically robust, and responsive to the diverse needs of learners and educators.

Presentation 3: Pilot Results and Guidance for Parents

The third parent and guardian workshop presented the main insights and findings from the pilot phase of the Atollo digital learning materials. The session first provided a brief update on the current status of the Atollo project and explained the role of Work Package 4 in the pilot testing and evaluation process. It then summarised evidence gathered through focus group interviews, classroom observations, teacher and assistant questionnaires, technical monitoring and process documentation across participating schools in Bulgaria, Croatia and Germany.

The presentation highlighted how teachers and learners experienced the Atollo digital educational resources in authentic classroom settings. Particular attention was given to curriculum alignment, interface usability, technical functionality, cognitive load, learner motivation, pedagogical adaptability, accessibility and visual feedback. Country-specific findings from Bulgaria, Croatia and Germany showed that learners generally responded positively to visual, interactive and structured digital activities, while successful implementation depended strongly on teacher guidance, appropriate pacing, simplified instructions, suitable devices and reliable technical conditions.

The session also translated the pilot findings into practical recommendations for further development and continued use of the digital materials. These recommendations included a stronger one-task-per-screen structure, clearer and more predictable navigation, age-differentiated visual and narrative profiles, universal text-to-speech, larger interaction areas, offline or data-light modes, improved monitoring tools for teachers, and better opportunities for parental involvement through home access and progress overviews.

For parents and guardians, the presentation served as an important link between the pilot evaluation and continued support for learners at home. It helped families understand both the value and the limitations of digital educational resources and emphasised that effective inclusive digital learning depends not only on technology, but also on pedagogical guidance, accessibility, local adaptation and collaboration between families, teachers and schools.

Presentation 4: Inclusive Digital Education Toolkit for Parents and Guardians

The fourth parent and guardian workshop introduced the Atollo Inclusive Digital Education Toolkit as a practical guide for families supporting children with special educational needs in digital learning environments. Unlike the previous sessions, which focused on the project background, pilot implementation and evaluation results, this final workshop translated the project findings into simple, concrete and family-friendly guidance for everyday use at home.

The presentation explained what the Toolkit means for families and how it can help parents and guardians answer practical questions, such as how to prepare a child for a digital activity, how much support to provide, what to do when a child gets stuck, and how to share useful observations with teachers. A central message of the session was that digital tools can support children's learning, but they work best when combined with calm, purposeful adult support. The workshop emphasised that parents do not need to become teachers or technology experts; their most important role is to create a predictable routine, encourage effort and confidence, notice what supports or blocks learning, celebrate small steps, and communicate useful information to the school.

The session provided parents with a simple home routine structured around three phases: before, during and after learning. Before learning, parents are encouraged to prepare a quiet space, set up the device in advance, explain the task briefly and start with an activity where the child can succeed. During learning, the focus is on supporting without taking over by giving the child time to think, pointing to clues, asking open questions and praising effort. After learning, parents are encouraged to reflect with the child, discuss what went well, identify difficulties and share relevant observations with teachers.

The presentation also addressed collaboration between families and schools. It highlighted the importance of sharing practical information from home, including which activities the child enjoys, where difficulties occur, what type of support works best, how long the child can stay engaged, and whether there are any technical or accessibility barriers. The session concluded by reinforcing key messages: digital tools are most effective when used with human support, predictable routines reduce stress, independence develops step by step, progress is broader than scores or completed tasks, and families and schools are partners in inclusive digital learning.

Localised Presentations in Croatian, Bulgarian and German language

To support effective implementation of the project in the pilot countries, the presentations for parents and guardians have been translated and adapted to the local languages and contexts. These localised versions are intended to improve accessibility and ensure that the information is relevant and easy to understand for local audiences.

In line with the project implementation in pilot countries, the presentations are localised into:

- Croatian
- Bulgarian
- German

Localised versions are provided in separate folders and linked here:

[Presentations for parents/guardians localised in Croatian language](#)

[Presentations for parents/guardians localised in Bulgarian language](#)

[Presentations for parents/guardians localised in German language](#)

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Annexes - presentations

Annex A – Presentation 1: Introduction to Atollo and Digital Educational Materials

Annex B – Presentation 2: Pilot Implementation Progress and Feedback

Annex C – Presentation 3: Pilot Results and Guidance for Parents

Annex D – Presentation 4: Inclusive Digital Education Toolkit for Parents and Guardians

Atollo project ERASMUS-EDU-2023-PI-FORWARD

Introduction to Atollo and Digital Educational Materials

February 2025

Agenda

1. About the Project
2. Digital Education Content
3. Navigating the Atollo IZZI Platform
4. Additional Information

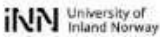


ABOUT THE ATOLLO PROJECT

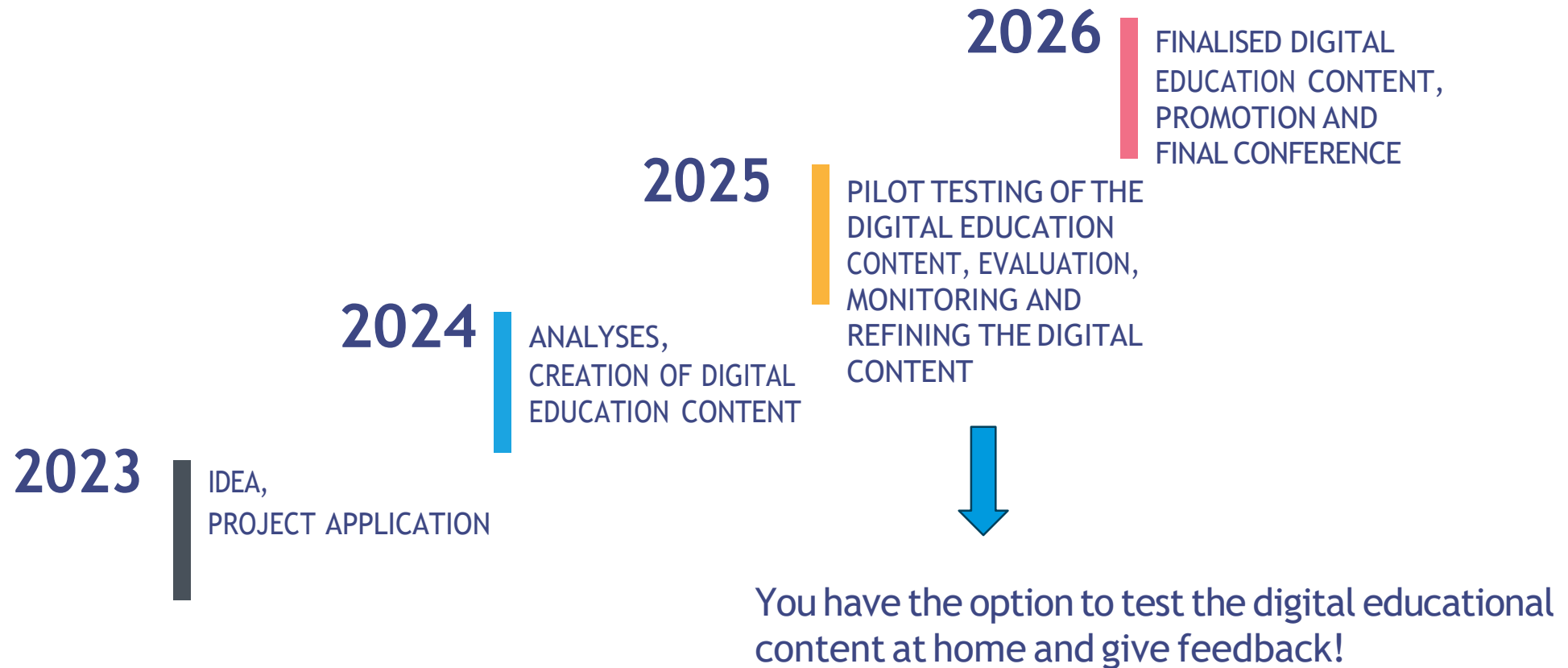
An ERASMUS+ project that aims to empower learners with **special educational needs** by creating inclusive **digital educational materials**.

- 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.
- **Consortium of partners** from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia.



THE ATOLLO PROJECT TIMELINE



ABOUT THE ATOLLO PROJECT

- **Project focus:** mathematical and digital competencies (most similarities across countries)
 - **MATHEMATICAL:** a core subject across countries, challenges in teaching and learning mathematics inclusively, important for further success and daily life
 - **DIGITAL:** future relevance, gap in accessibility, support for inclusive education
- **Target students:** students with learning and developmental difficulties that learn at lower primary level
- **Content:** offered at four different levels (adjusted expectations)



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 expectations at different levels to support diverse needs
- A complement tool for additional support in learning
- Located on the Atollo IZZI platform

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 OBJECTIVES:

- Aligned with curricula, **adjusted outcomes** 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



DIGITAL UNITS AND LEARNING LEVELS

LEARNING LEVELS:

- Units are available at four distinct levels to accommodate diverse learners:
 - **Level 1:** Profound and Multiple Learning Difficulties
 - **Level 2:** Severe Learning Difficulties
 - **Level 3:** Specific Learning Difficulties
 - **Level 4:** Moderate Learning Difficulties
- As levels progress from 1 to 4, learning outcomes become more complex
- From Level 1 - fundamental concepts to Level 4 - most complex



NAVIGATING THE PLATFORM

- 6 bookshelves (languages)
- **5 publications** on each bookshelf (4 mathematics levels + 1 ICT)
- Each mathematics level 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)



DEMONSTRATION

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



LEARNING WITH ATOLLO IZZI DIGITAL

- Activities will be practiced in class
- **Flexible** and **additional** support for learning in the classroom and at home
- **Games** to spark students' interest in maths and practice
- **Interactive** activities
- Real-life situations and visuals
- Students **may need adult support** or could practice individually
- The platform gives them feedback
- No personal information entry - GDPR safe



LEARNING WITH ATOLLO IZZI DIGITAL

- You can choose a level and topic based on teacher recommendation

OR

- You can start from Level 1 (fundamental concepts) and level up



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 to refine content - we appreciate your participation, **if possible**.



THE PILOT TESTING

- Parents/guardians may be included in the evaluation **on a voluntary basis**
- Questionnaires or interviews may be used by the project team to gain feedback
- Technical support: euprojekti@profil-klett.hr



**Thank you for
your attention!**



Atollo project ERASMUS-EDU-2023-PI- FORWARD

Digital learning at home:

Pilot Implementation
Progress and
Feedback

Spring 2025

Agenda

1. Welcome and recap of Workshop 1
2. [Project](#) progress update
3. Demonstrate developed content and platform features
4. Insights from pilot testing
5. Next steps



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 special educational needs.
- **Consortium of partners** from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia.

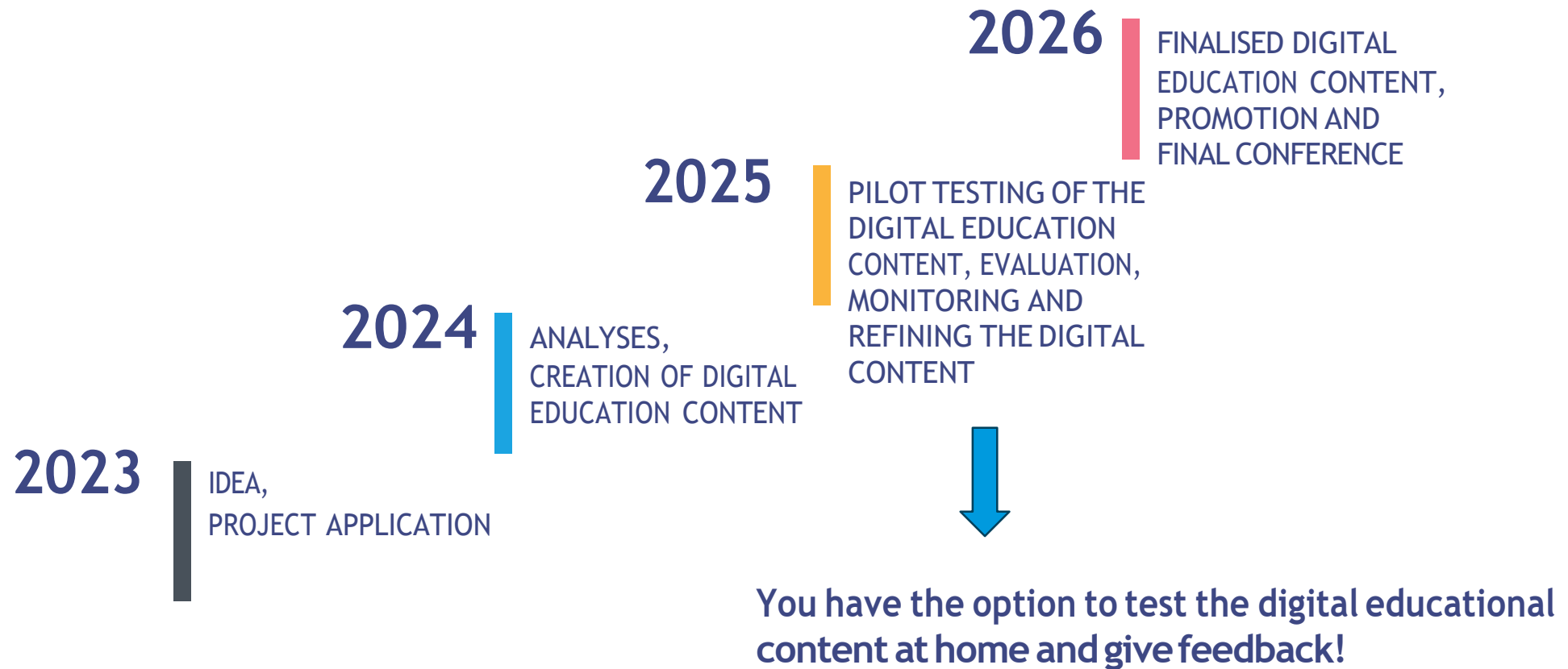


PROJECT PARTNERS

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



THE ATOLLO PROJECT TIMELINE



OBJECTIVES OF THE ATOLLO PROJECT

- Provide educators and learners with tools and insights for a more inclusive digital education.
- To develop a comprehensive set of guidelines and recommendations for policymakers to enhance the scalability of inclusive educational practices.
- To establish a sustainable network of stakeholders to share knowledge and promote good practices in inclusive digital education.
- To create cutting-edge, engaging and accessible digital learning materials tailored to the unique needs of learners with disabilities.



Visibility & Recognition

The project has also gained some exciting recognition recently:

- At the **NERA2025 conference in Helsinki**, our partners from the University of Iceland presented comparative research on digital inclusion policies across Europe, based on insights from our project and related initiatives.
- The project was also **featured on Croatian National Television** in February, with Profil Klett and the University of Zagreb showcasing our mission and the IZZI platform's interactive tools for mathematics education for students with special needs.



Current status

- **Train-the-trainer programme:** successfully completed in February 2025
 - 15 schools in Croatia, Bulgaria, Germany
 - 120 teachers
- **Piloting in progress:** over 400 students using the digital materials
 - additional help and support in mathematics and ICT



RESULTS DURING PILOT TESTING -MAY 2025

Findings and Insights from the Pilot Phase of Digital Learning Materials



Co-funded by
the European Union

Results from piloting in May 2025

We've created questionnaires to the teachers before and after they use the digital content with the students.

- Questionnaire 1 was answered before piloting
- Questionnaire 2 was answered during piloting
- Focus group interviews will be conducted from May 2025 in 5 different schools.
- Classroom observations will be conducted from May 2025 in at least 5 different schools.



Questionnaire 1 before piloting

Bulgaria	Croatia	England	German
13	82	2	9

- Teachers filled out one questionnaire before the start (anonymous) to have more information on participant teachers = **106 teachers answered**



Information on Participant Teachers

- Croatia: 82 teachers, most have been teaching for over 10 years (48), 14 teachers teaching between 1-3 years
- Bulgaria: 13 teachers, 5 have been teaching for over 10 years
- Germany: 9 teachers, 3 have been teaching over 10 years, 4 teaching between 8-10 years

Across pilot countries, the majority of participant teachers use digital materials frequently and felt ready to test new digital materials. They usually work with students who are in lower primary classes but they can be chronologically older (e.g. 15-19 in grade 2). Most teachers in the pilot have a special education degree.



Questionnaire 2 during piloting

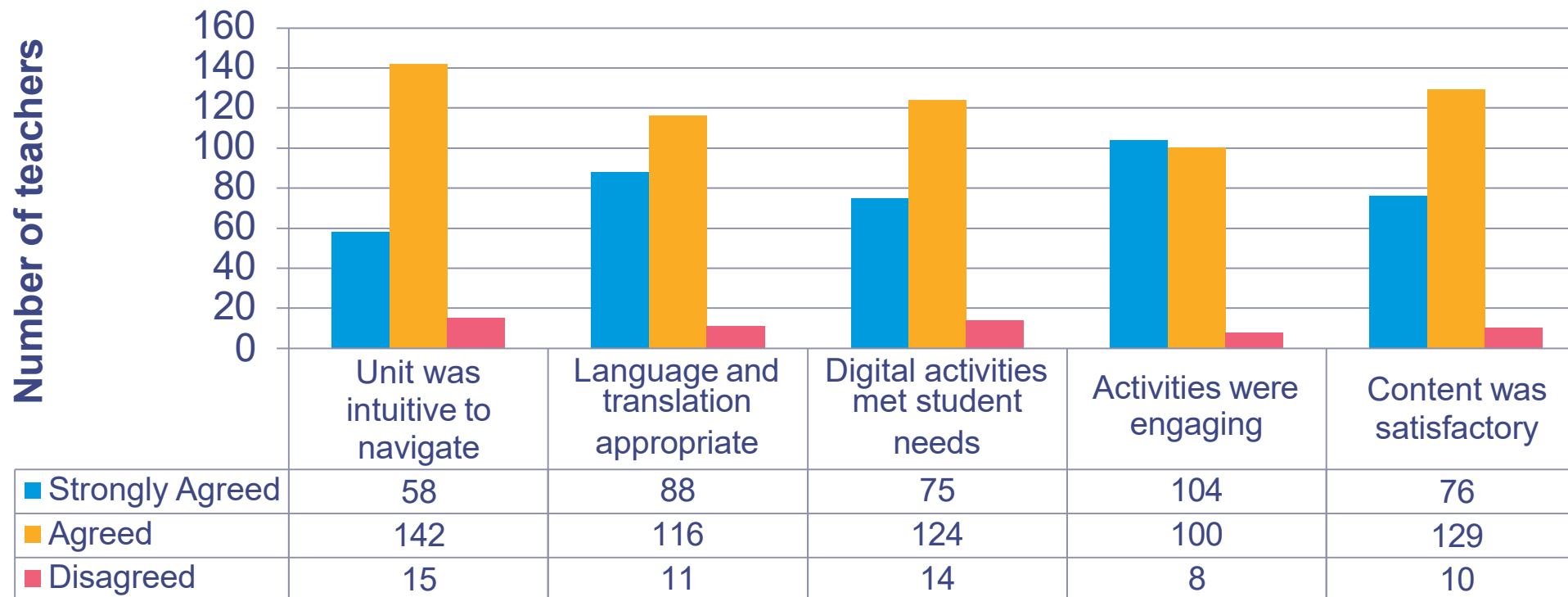
Bulgaria	Croatia	Germany
10	199	6

- Teachers filled out evaluation questionnaires for each unit after testing it
= 215 units evaluated by 8 May

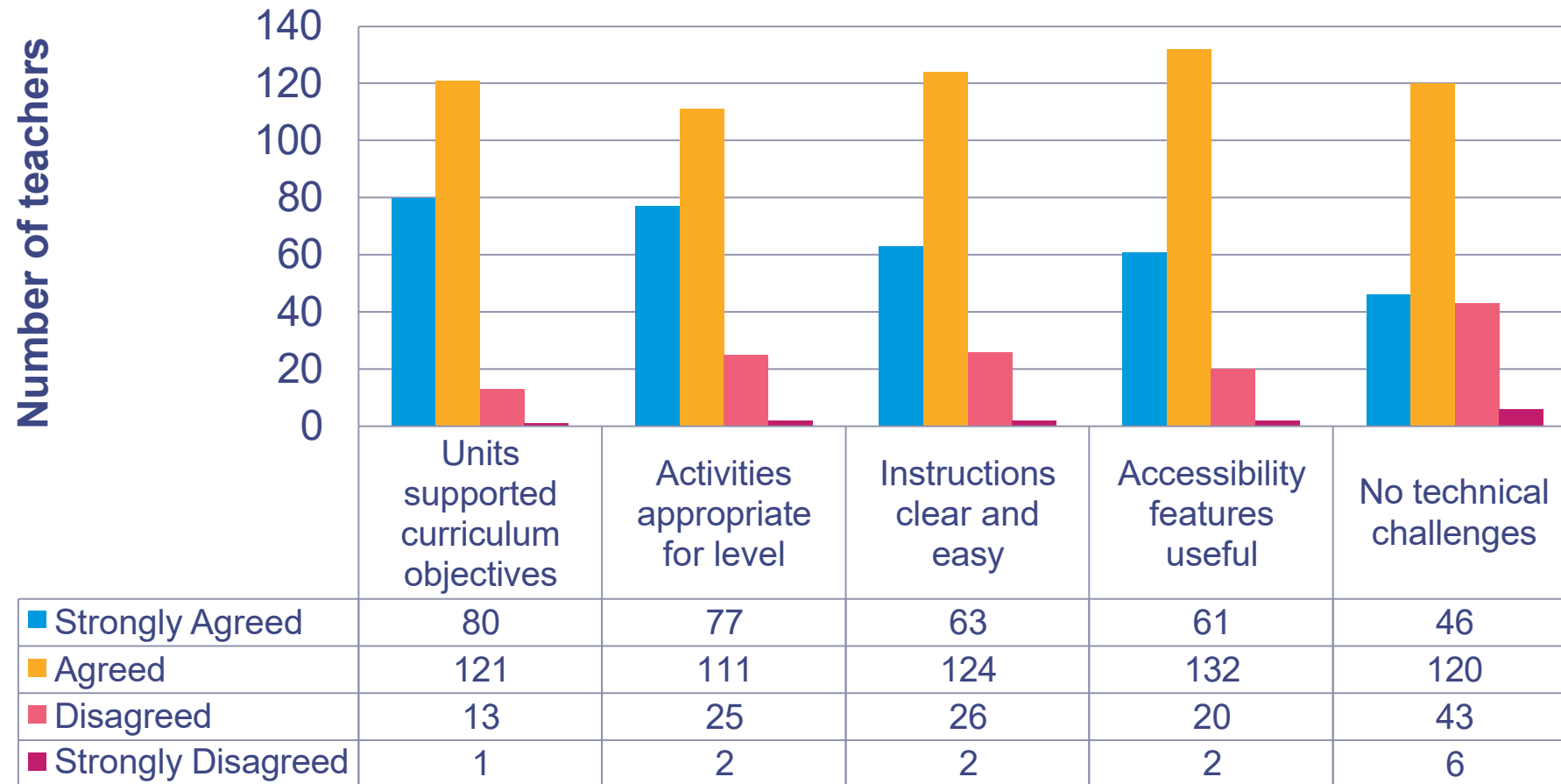


Unit Evaluation Results by 8 May 2025 Croatia, Bulgaria, Germany

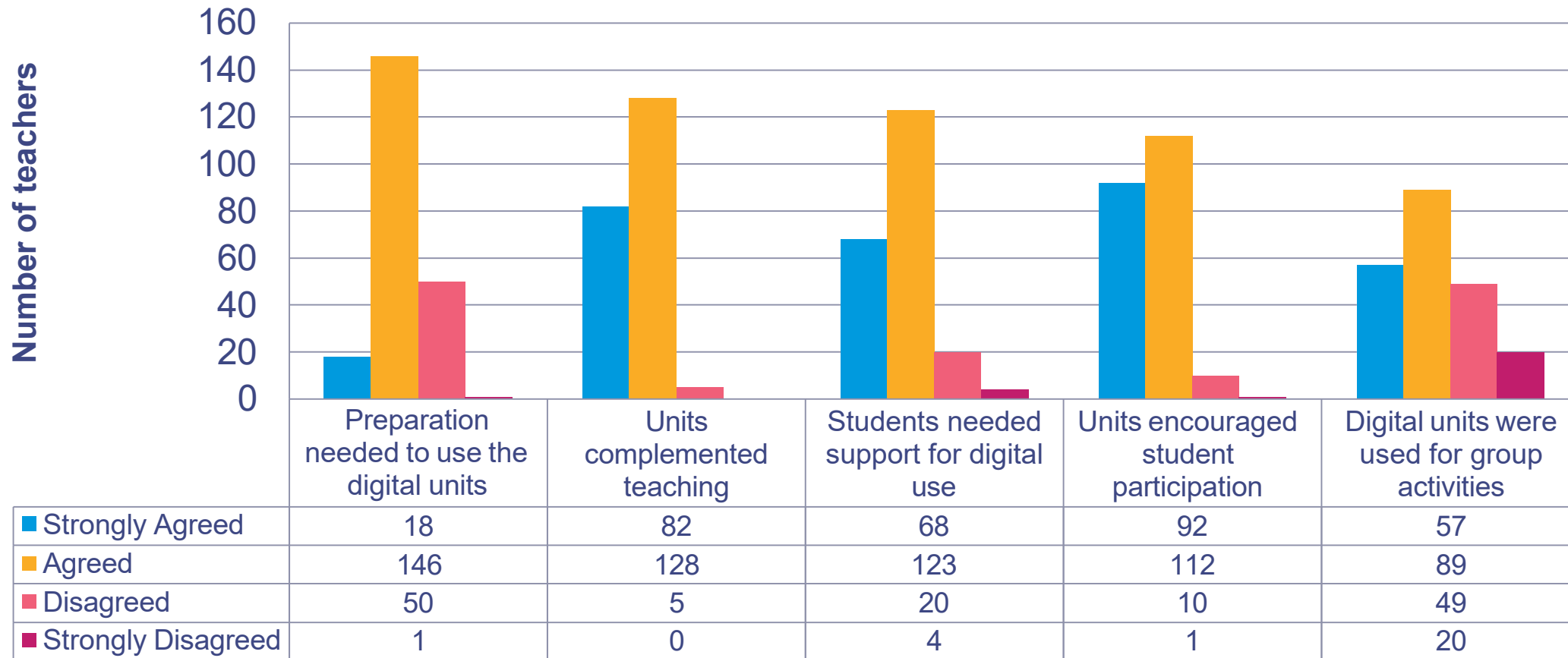
- Most units tested are from Level 1, Level 2 and ICT.



Unit Evaluation Results by 8 May 2025 - Croatia, Bulgaria, Germany



Unit Evaluation Results by 8 May 2025 - Croatia, Bulgaria, Germany



Unit Evaluation Results by 8 May 2025 - Croatia, Bulgaria, Germany

- Feedback related to technical issues (e.g. elements not working on a certain device - mobile, translation issues and language suggestions).
- Constructive feedback on content and activities - suggestions for improvement of the unit activities, choice of images, clearer instructions for students.
- All teacher feedback is valuable and will be taken into account when looking at refining the content and activities.



Open Discussion & Feedback

- How did the students respond to the digital activities?
What worked well, and what could be improved?
- Have you noticed any particular outcomes or positive effects for the students after using the resources?



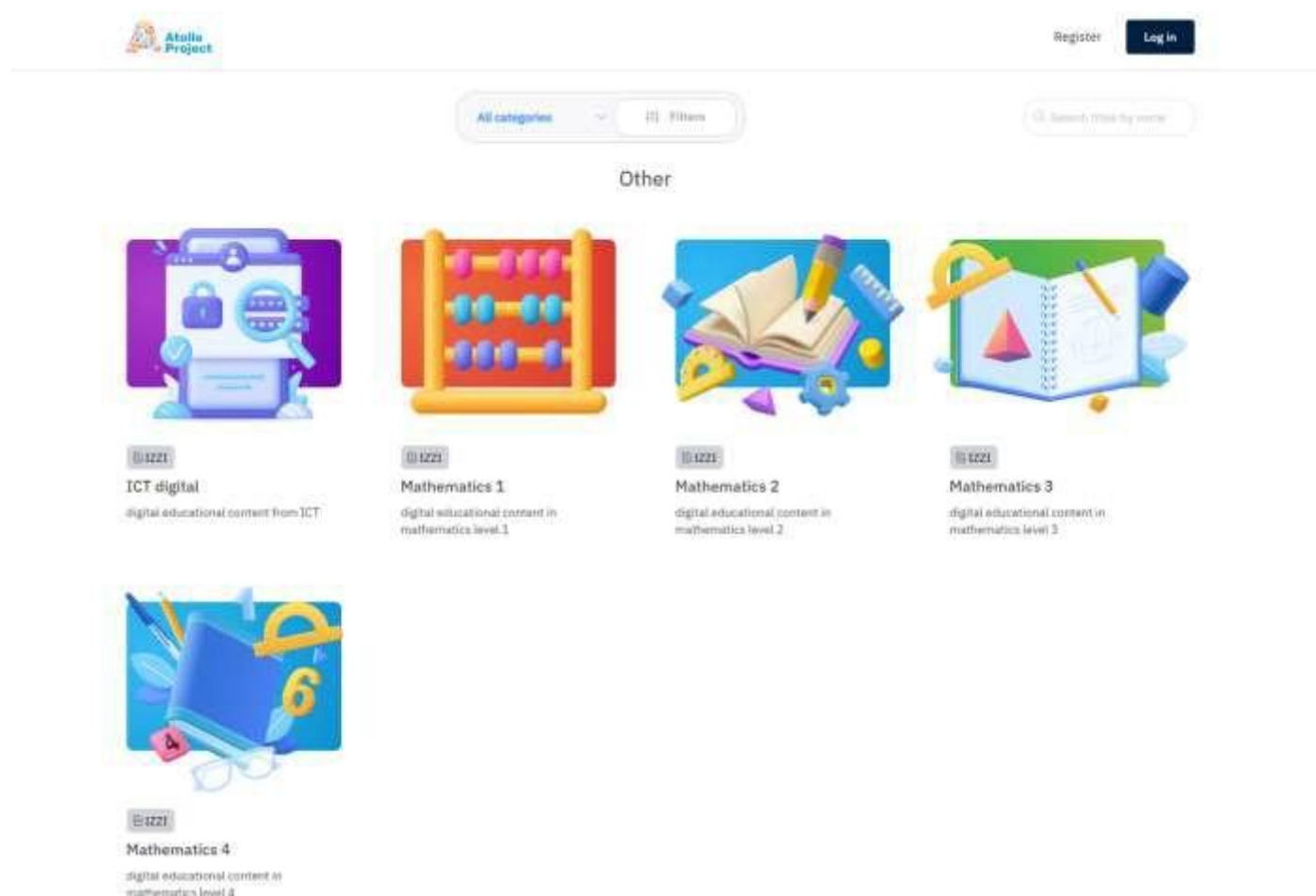
DEMONSTRATION

<https://atollo-en.izzi.digital/>

<https://atollo-hr.izzi.digital/>

<https://atollo-de.izzi.digital/>

<https://atollo-bg.izzi.digital/>



Next Steps and Upcoming Milestones

- Finish piloting.
- Parents can use materials without registration during the summer if they wish.
- Collect and analyze feedback for further improvements.
- Improve content on platform for students.



Navigating the IZZI Platform

- [Atollo](#) IZZI Digital Platform, where all our learning resources are hosted.

Highlights:

- What's new since Workshop 1 - narrations are being added for languages (except for Norwegian)
- Any feedback incorporated since initial trials - feedback on languages was taken into account, technical issues are being resolved on the platform.
- Technical support eu-projekti@profil-klett.hr



**Thank you for
your attention!**

RESULTS

Insights and findings from the Pilot Phase of Digital Learning Materials

AGENDA

1. About the Atollo [project](#) - current status
2. About WP 4 - evaluation
3. Insights and findings from the evaluation of the digital educational resources developed
4. Summary and recommendations for improving the digital learning resources



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
- Consortium of partners from Croatia, Bulgaria, Austria, Germany, Iceland, Norway, Ireland and Australia



ABOUT WP 4 - PILOT TESTING AND EVALUATION REPORT

- WP 4 is coordinated by the University of Inland Norway and the University of Zagreb
- Main aim - analyse digital learning resources in order to enhance the educational experiences of children with special educational needs
- Pilot testing in 15 schools across Croatia, Bulgaria and Germany
 - multiple methods: Teacher and assistant questionnaires, focus group interviews, classroom observations, technical monitoring, process documentation reviews and letter-writing method
- Evaluation report
 - Addresses pedagogical and technical dimensions, examining how the materials support learning, accessibility, and inclusion, and ensuring that they are user-friendly, stable, and adaptable to diverse educational settings
 - Provides recommendations for improvement of the digital material based on the results of the pilot phase and the collective reflections from project partners





Insights and findings from the evaluation of the digital educational resources developed



Bulgarian teachers about Atollo digital content (interviews)

2 schools participated in the pilot

Qualitative analysis:

Focusing on capturing teachers' in-depth perspectives on the implementation of the digital learning units

Focus group interviews in Bulgaria:

Two institutions participated in the piloting: 140 Ivan Bogorov School (inclusive) and the 6th Lozenets Centre for Specialized Educational Support (specialised)

Nb.	Sub-Dimension	Insight from Bulgarian Focus Groups	Implication for Analysis
1	Curricular Alignment	"The content aligns well with our lesson plans, which is beneficial."	Check for alignment with national or local curriculum
2	Interface Usability	"Some buttons are too small for children with fine motor difficulties."	Assess if design elements follow accessibility principles (WCAG, UDL)
3	Technical Functionality	"The application crashes frequently during use."	Evaluate technical stability and consistency across devices
4	Cognitive Load & Language	"Some tasks are too complex, particularly for children with significant disabilities."	Include readability and language complexity evaluation
5	Motivational Factors	"Engagement varies; some kids are very keen, while others lose interest quickly."	Assess multimedia effectiveness and engagement
6	Pedagogical Adaptability	"Tasks are not suited for all levels; children need tailored approaches."	Analyse scaffolding, progression, and learning objectives
7	Sensorimotor & Visual Feedback	"Visual prompts are often misleading, leading to confusion on tasks."	Evaluate sensory and visual feedback mechanisms

Table 13. Key Insights from Bulgarian Focus Groups

Insights from Bulgarian classroom observations

Pedagogical Adaptation: Teachers successfully integrated Atollo resources within existing lesson plans, adjusting language, pacing, and support levels to individual learners

Student Engagement: Students with SEN were highly responsive to visual and interactive tasks

Technical and Accessibility Issues: The main challenges were language inconsistencies and interface sensitivity during touch-based tasks. active participation of students with special educational needs

Croatian teachers about Atollo digital content

11 schools participated in the pilot

Focus group interviews

Classroom observations



Co-funded by
the European Union

Croatian teachers about digital resources (interviews)

Nb.	Sub-Dimension	Insight from Croatian Focus Groups	Implication for Analysis
1	Curricular Alignment	"This content is in line with the school curriculum, which is great."	Check alignment with national or local curriculum
2	Interface Usability	"Some boxes are too small...", "No left/right understanding", "Lines should stay for visual feedback"	Assess if design elements follow accessibility principles (WCAG, UDL)
3	Technical Functionality	"Everything suddenly goes off screen", "No saving options", "Tasks don't resize"	Evaluate technical stability and consistency across devices
4	Cognitive Load & Language	"Too difficult for students with severe disabilities", "Language not easy enough"	Include readability and language complexity evaluation
5	Motivational Factors	"Very motivating for some children", "Videos were boring or complicating"	Assess multimedia effectiveness and engagement
6	Pedagogical Adaptability	"Good for repetition, not for learning new knowledge", "No gradual increase in difficulty"	Analyse scaffolding, progression, and learning objectives
7	Sensorimotor & Visual Feedback	"Hard to write numbers", "Tasks should go full screen", "Visual feedback lacking"	Evaluate sensory and visual feedback mechanisms

Table 17. Review of content and accessibility in Croatian schools

Insights from Croatian classrooms (observations)

Category	Key Points
1. Introduction of digital resource	Teacher introduces tasks, reviews prior knowledge. Proper guidance on using the digital resource. Sometimes no intro → students start independently.
2. Student Engagement	Students interested, focused (in line with their abilities), actively solve tasks. Raise hands, answer, comment, participate. Attention maintained; different level of support needed.
3. Interaction with Digital Resource	Mostly confident in use; frequent users show ease. Some need guidance, especially in task selection, further explanation and clarification.
4. Teacher/Advisor Support	Organizes lesson flow, motivate students. Explains tasks step by step, encourages discussion. Provides feedback, praise, and technical help. Explanation, redirection, positive reinforcement.
5. Adaptation of Digital Material	Simplified instructions & vocabulary. Adjusted pace, volume, and explanations. Individualized approach.
6. Pedagogical Strategies Used	Group work, individual work, pair work. Occasional peer support. Strongly individualized 1:1 approach.
7. Student Learning Out-comes	Visible according to students' abilities. Understanding achieved with varying levels of support. Students mostly connect content and demonstrate success.
8. Technical Issues	Mostly no technical issues. Some slow video loading (possible weak internet). Occasional internet connection problems.
9. Spontaneous Student Feedback	Students - curious, happy, motivated. Positive reactions, satisfaction with tasks. Respond well to praise; solving tasks is fun.

Table 20. Key points from observation of digital units use in Croatian schools

German teachers about Atollo digital content

2 schools participated

Focus group interviews

Classroom observations



Co-funded by
the European Union

German teachers about digital resources (interviews)

Nb.	Sub-Dimension	Insight from German Focus Groups	Implication for Analysis
1	Curricular Alignment	Some math tasks did not follow German conventions (e.g. unfamiliar division formats and terminology issues)	Verify national curriculum alignment, create country specific variants where needed.
2	Interface Usability	Teachers described screens as visually overloaded; some elements were cut off; drag-and-drop actions were unclear.	Check whether UI follows accessibility principles (WCAG, UDL); simplify layouts and reduce cognitive load.
3	Technical Functionality	Wi-Fi instability, login restrictions, and occasional language mismatches disrupted learning sessions.	Evaluate technical stability; introduce offline mode; simplify login structures.
4	Cognitive Load & Language	Many tasks used story-based instructions that were too linguistically complex for SEN learners.	Assess language complexity; include read-aloud, pictograms, and simplified instructions.
5	Motivational Factors	Gamified elements were motivating, but complex tasks caused frustration; some older students found tasks boring.	Assess motivational design; add micro-feedback, shorter videos, and frustration-reducing features.
6	Pedagogical Adaptability	Teachers requested individual learning paths and progression control for each student.	Analyse adaptive sequencing, scaffolding, and teacher dashboards.
7	Sensorimotor & Visual Feedback	Students struggled with fine motor tasks; some drifted to non-learning apps accidentally.	Evaluate sensorimotor usability; enlarge touch targets; strengthen visual feedback.

Table 21. Content and accessibility school 1 Frankfurt

Insights from German classrooms (interviews)

Nb.	Sub-Dimension	Insight from Germany	Implication for Analysis
1	Device Suitability	iPads were preferred; laptops unsuitable for SEN learners.	Optimise Atollo specifically for iPad/tablet use.
2	Equity of Access	Parents rarely engaged at home due to login difficulties; students struggled to differentiate learning devices from entertainment.	Introduce simplified at-home login; provide visual cues for educational mode.
3	Potential for AI Adaptation	Teachers suggested voice-responsive avatars and AI guides.	Explore AI-driven avatars, audio prompts, and personalisable assistants.

Table 26. Availability of devices and infrastructure school 2 Frankfurt

Recommendations for improvement

- Pedagogical design
- Accessibility and usability
- Infrastructure readiness
- Feedback, monitoring and collaboration
- Learning environments

Pedagogical design

- what teachers in all three countries recommend

- Stronger one-task-per-screen structure with predictable sequencing to reduce cognitive load
- Age-differentiated aesthetics and narratives
- Expanding the approach to other subjects besides mathematics
- A closer alignment with national and local methods for solving arithmetic problems would help learners transfer what they do in the app directly to what they encounter in their textbooks and examinations
- The leading role of the teachers remains crucial



Accessibility and usability

- teachers recommend the following

- Implementing a universal text-to-speech control
- For parents, a way to log in and follow their child's work at home to be able to support continuity between school and home
- Touch-based interfaces are better suited than traditional keyboard and mouse input in special education contexts



Infrastructure readiness - what teachers strongly recommend

- Offline capability and data-light modes as preconditions for equitable implementation
- Clear guidance for schools on how to plan device allocation, classroom organisation, and technical support when integrating Atollo into regular lessons



Feedback, monitoring and collaboration - teachers recommend the following

- A better tool to monitor learners' work and coordinate support
- A unified teacher dashboard that allows for differentiated assignment ("this is your folder; please complete A before B"), progress tracking, and simple reporting
- Guidance and micro-courses for teaching assistants on how to scaffold tasks, how to communicate with parents about learners' progress
- Involving families more systematically, for example through optional home access to selected units

Localization and cross-cultural adaptation - what teachers recommend

- National adaptation that adjust terminology, examples, and sequencing to local curricula and teaching traditions
- Ensuring that representations of mathematical procedures reflect how they are taught in each country
- Examples and storylines resonate with learners' cultural contexts



Learning environments - what teachers recommend

- Relevant and effective use of resources depends on learning environments that promote equality, inclusion, and diversity
- Shared understanding among teachers, assistants, and school leaders on how the units fit with broader pedagogical strategies
- More systematic classroom observations and child-centered research designs
- From a “one-size-fits-all” understanding of special educational needs - to universal design

Summary and recommendations for improvements

- Maintaining strong alignment with national curricula while teaching with Atollo digital educational units
- Use digital educational resources if pedagogically appropriate
- Adopt one-task-per-screen scaffolding with clear, predictable navigation to lower cognitive load and support independent work
- Introduce age-differentiated visual and narrative profiles
- Implement universal text-to-speech, larger interaction areas, and an optional “simple visuals” mode to support diverse sensory and motor needs
- Short training modules and guidance materials for teachers and assistants on how to use
- Create optional avenues for parental involvement, fx home access to units and progress overviews



**Thank you for
your attention!**

PARENT GUIDE

4th Parent & Guardian Workshop Atollo Inclusive Digital Education Toolkit

Supporting Your Child's Learning with Digital Tools

Practical guidance for families of learners with special educational needs

June 2026



Co-funded by
the European Union

Today's focus

- What the Atollo Toolkit means for families
- How digital tools can support children with SEN
- A simple home routine: before, during and after learning
- How to encourage independence and motivation
- How parents and schools can work together
- Questions and discussion



What the Toolkit means for families



What is the Atollo Toolkit?

- A practical guide for using digital learning in an inclusive way.
- For parents, it helps answer simple questions:
 - How can I prepare my child for a digital activity?
 - How much help should I give?
 - What should I do if my child gets stuck?
 - How can I share useful feedback with the teacher?



The most important message

- Digital tools can help children learn – but they work best with calm, purposeful adult support.
- Remember:
 - the tool is not the teacher
 - short and predictable sessions work best
 - support should help the child try, not replace their effort
 - progress may look different for every child



What parents do not need to do

- You do not need to become a teacher or technology expert.
- Your most helpful role is to:
 - create a calm routine
 - encourage effort and confidence
 - notice what helps or blocks learning
 - celebrate small steps
 - share useful observations with the school



What helps children with SEN learn digitally?

- Children usually benefit from:
 - one clear task at a time
 - simple instructions
 - visual and audio support
 - enough time to think and respond
 - repetition without pressure
 - encouragement after effort, not only after correct answers



A simple home routine



Before learning: prepare for success

- Keep the start calm and predictable.
- Try this:
 - choose a quiet place
 - prepare the device and login in advance
 - explain the task in one or two simple sentences
 - agree on a short time frame
 - start with a task where the child can succeed



During learning: support without taking over

- Helpful support gives the child space to try.
- Try this:
 - give enough time to think and respond
 - ask: “What could you try next?”
 - point to clues instead of giving the answer
 - praise effort and persistence
 - pause if frustration becomes too high



After learning: reflect and celebrate

- Spend two minutes talking together.
- Ask:
 - What went well?
 - What was difficult?
 - What helped?
 - What should we tell the teacher?
- Celebrate progress: attention, confidence, communication, or asking for help.



Working with the school

- Teachers need practical information from home.
- Useful things to share:
 - which activities your child enjoys
 - where your child gets stuck
 - what type of support works best
 - how long your child can stay engaged
 - any technical or accessibility difficulties



Key messages & discussion

- **Remember:**
 - digital tools are helpful when used with human support
 - predictable routines reduce stress
 - independence grows step by step
 - progress is not only a score or completed task
 - families and schools are partners
- **Discussion question:**
 - What is one small thing you could try at home this week?



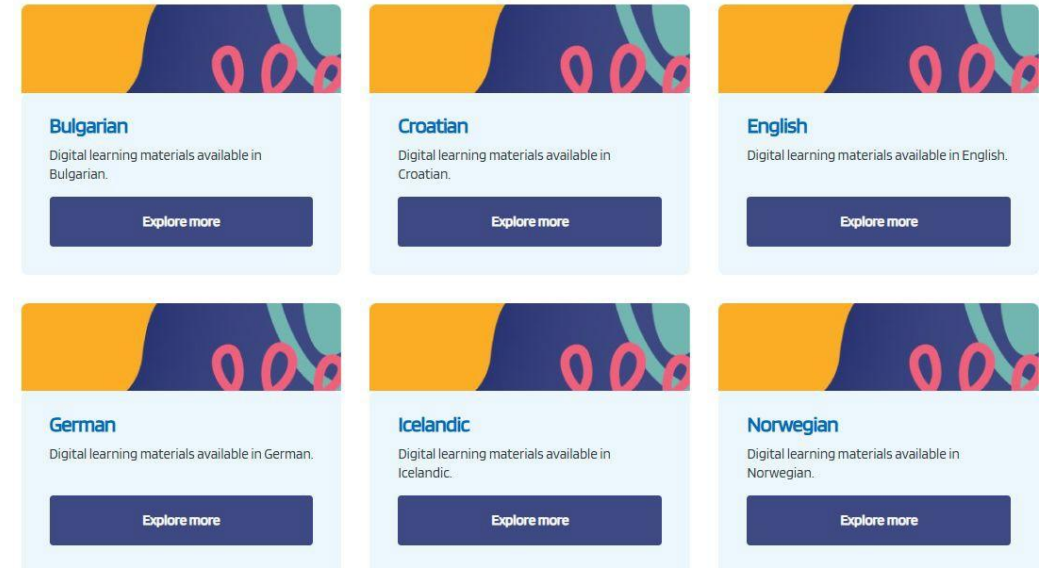
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How to reach digital resource library? Easy!

- Resource library in 6 languages is one click away:
 - <https://atolloproject.eu/resource-library/>
- We hope you enjoy it!





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Breaking barriers,
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Breaking barriers
through education

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