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Innovation in early numeracy education: overcoming challenges

Online workshop | 27 February 2025

Erasmus+

Enriching lives, opening minds.

School education



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PROGRAMME

All times listed in the agenda are in Central European Time (CET)

DAY 1

27 February

14:00-14:15

Opening

14:15-14:45

Keynote

Fostering young minds: exploring higher-order thinking through mathematics and coding toys

Enrico Pollarolo

14:45- 16:00

Workshop sessions

WS1 - Montessori mathematics: the magical world of stones

WS2 - Supporting numeracy in early childhood education through STEM and the arts (STEAM) activities

WS3 - Drama, math, art, and fun

WS4 - Innovative approaches to numeracy education

16:00- 16:10

Break

16:10-16:50

Interactive session – create collective project plan

16:50-17:25

Presentations of project plans

17:25-17:30

Closing

KEYNOTES

KN 1 Fostering young minds: exploring higher-order thinking through mathematics and coding toys

Enrico Pollarolo | Thursday 27 February, 14:15–14:45 CET

This keynote explores how mathematics and coding toys can serve as powerful tools to foster higher-order thinking skills in young learners. Educators can encourage critical thinking, problem-solving, and creativity by combining the use of coding toys and mathematical concepts. The session highlights practical strategies and research insights into using these tools in early childhood education to support cognitive development. Participants will gain deeper understanding of how to create engaging learning environments that nurture young minds.

Enrico Pollarolo is an Assistant Professor in Mathematics at the Department of Early Childhood Education, University of Stavanger, Norway. He completed his PhD at the same institution, focusing on higher-order thinking skills in early childhood education, with a particular emphasis on mathematics, coding toys and the role of educators in fostering these skills.

His research interests include critical thinking, problem-solving and computational thinking in early childhood settings. He has contributed to several publications and projects aimed at enhancing children's development through innovative educational practices.




WORKSHOPS

WS 1 Montessori mathematics: the magical world of stones


Ayşe Özkan Türkay, Büşra Aydın, and Sibel Durmuşoğlu | Thursday 27 February, 14:45–16:00 CET

This workshop offers educators practical and creative ways to incorporate natural materials – particularly stones – into their teaching practices. Participants will explore a variety of activities, including art projects, storytelling, rhythm exercises and educational games, all designed to foster creativity, fine motor skills and problem-solving abilities in students.


By utilising stones as a versatile and tactile resource, we will learn how to design engaging, hands-on learning experiences that encourage curiosity, exploration and a deeper connection with nature. The workshop provides practical strategies and fresh ideas to enhance classroom practices, and highlights the value of simple, natural materials as powerful tools for education.



Ayşe Özkan Türkay, originally from Trabzon, Türkiye, has 15 years of teaching experience. She is dedicated to implementing innovative educational practices and alternative teaching methods in her classroom. Specialising in the Montessori approach, particularly in mathematics education, she engages in continuous training to apply this method effectively. Her commitment to adopting creative and lasting techniques reflects her passion for enhancing student learning experiences.



Büşra Aydın has 17 years of experience as a preschool teacher and five years of active involvement in the eTwinning platform, where she has contributed to numerous projects (earning quality labels), and has built successful international collaborations that enhance professional development and teaching practices. Her work was recognised at Türkiye's 14th National eTwinning Conference, where her project was presented in 2022. She also participated in the Erasmus program in Italy in 2007, which enriched her expertise. Proficient in English and with basic knowledge of Italian, she is committed to fostering innovation in early childhood education.




Sibel Durmuşoğlu is a preschool teacher at Ürgüp 15 July Primary School in Türkiye. She has actively participated in various eTwinning projects, focused on professional growth and enhancing the educational experiences of her students. She has contributed to fostering innovative practices in early childhood education through her dedication to collaborative initiatives. Her work reflects a commitment to both personal development and creating meaningful learning opportunities for her students.

WS 2 Supporting numeracy in early childhood education through STEM and the arts (STEAM) activities

Paula Walshe | Thursday 27 February, 14:45–16:00 CET

This workshop will introduce participants to early childhood STEAM activities, suitable for children aged 0–6, using affordable and accessible resources to support early numeracy and learning through play




Paula Walshe is an experienced lecturer, researcher and published author in the field of early childhood education. She is currently lecturing at South East Technological University in Carlow, Ireland, while also completing her PhD research on STEAM in early childhood education at Dundalk Institute of Technology. Paula has recently published two books based on areas of ECEC practice: 'Full STEAM Ahead - Science, Technology, Engineering, The Arts and Maths in Early Childhood Education' and 'Síolta in Practice' a book on implementing quality standards in ECEC.

WS 3 Drama, math, art, and fun

Christina Zourna | Thursday 27 February, 14:45–16:00 CET

In this workshop, practical applications will be presented on how to teach mathematics through drama in education using experiential methods. Good practices will also be shared that are based on the methodology used in 'Theatre in Mathematics (TiM²)', an ongoing Erasmus Plus project (2023–2026). Links to upcoming teacher training workshops, useful toolkits, published research and relative references will be provided. Participants may adjust the material and activities to the ages of their students and are more than welcome to apply the described methodologies in their own classroom. As Albert Einstein once said, "Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."




Christina Zourna is a mathematician. She earned an MA in Adult Education and Lifelong Learning from Aristotle University of Thessaloniki; and is a PhD student researcher at the Educational and Social Policy Dept at the University of Macedonia in Thessaloniki, Greece. She has been teaching secondary-level mathematics since 1988. Her research interests include the use of drama in education – teaching the curriculum and developing the personal, social and professional skills of teenagers, students and adults. Her original idea of using DiE as a holistic career guidance approach has been officially copyrighted by notarial act (990/11-02-2022).

WS 4 Innovative approaches to numeracy education

Dimitra Karadimou | Thursday 27 January, 14:45–16:00 CET

This workshop will explore innovative approaches to numeracy education by integrating social-emotional learning (SEL) and artificial intelligence (AI). Participants will discover how AI tools such as Photomath can support mathematical understanding while fostering essential SEL skills like self-regulation, collaboration and perseverance. The session will provide an overview of SEL's importance in education and introduce how AI can transform the learning experience of both students and educators. Through a combination of presentations and interactive activities, participants will explore how to effectively incorporate AI tools into numeracy education to enhance academic and social-emotional growth. The session includes group discussions and hands-on opportunities to brainstorm ideas for implementing these strategies in the classroom.



Dimitra Karadimou is a PhD candidate in the Department of Philosophy and Pedagogy at Aristotle University of Thessaloniki, Greece, where her research focuses on innovative educational practices and the integration of psychology into learning. She holds an advanced degree in Physics from the Hellenic Open University in Patra, Greece, and a Master's in School Psychology from University Tor Vergata in Rome, Italy. Her thesis on 'Innovative learning practices based on the psychology of children with learning difficulties' reflects her strong academic foundation in both psychology and pedagogy. With extensive experience in education, Dimitra has been a permanent secondary education teacher in Thessaloniki since 2003. She has also worked in private education at the 'New Generation Ziridis' institution in Athens. Dimitra has contributed to several educational initiatives, including research on preventing school violence and promoting forgiveness education.