

# **MIRACLE: Transforming Climate Education through Augmented Reality and Comic Co-Creation in Primary Schools**

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## **Abstract**

The Erasmus+-funded MIRACLE project (coMics and IllustRations Augmented to tackle CLimate change in primary Education) offers a transformative model for integrating digital technologies into primary education to address one of the most pressing challenges of our time: climate change.

MIRACLE combines innovative use of Augmented Reality (AR), visual storytelling, and co-creation methodologies to empower young learners and educators across Europe. Central to the project is the “MIRACLE Augmented Classroom,” a flexible digital space where pupils collaboratively design comics enhanced with AR, enabling immersive and emotionally resonant engagement with scientific concepts and sustainability challenges.

By placing learner agency at the heart of environmental education, MIRACLE advances a Whole-School Approach that includes pupils, educators, families, and communities. It explicitly addresses eco-anxiety and misinformation, encouraging the development of critical media literacy, scientific reasoning, and digital fluency.

Key outputs include:

- A multilingual teacher training toolkit covering climate science, digital storytelling, and AR design;
- A cross-border MOOC supporting professional development and peer learning;
- A robust co-creation platform allowing pupils to develop AR-enhanced digital comics;
- Pilot programmes involving over 240 students and 60 educators in six countries.

In line with ICICTE’s focus on emerging technologies and the future of education, this presentation explores how MIRACLE bridges creativity and technology to reimagine environmental education. It demonstrates the potential of AR and comics as pedagogical tools that foster deeper understanding, emotional resilience, and sustainable thinking from the earliest years of schooling.