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Coding for Liberal Arts: from technical practice to cross-disciplinary tool

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ABSTRACT

The Coding for Liberal Arts research project is a media-educational study that explores the integration of coding and computational thinking into liberal arts education to enhance technical and disciplinary skills in primary school education. As part of the project, educational courses were implemented in classrooms to test and observe the proposed methodology. Each lesson was structured around the phases of the Scientific Method (Knowing, Predicting, Observing and Recording, Deducing), and four pedagogical pillars: Media and Digital Education, Competency-Based Education, Cooperative Learning, Experiential and Active Learning. The study followed an action-research model, involving approximately 450 students from 23 classes in public and private primary schools in Turin (Italy). Adopting a mixed-methods approach, the study combined qualitative text mining and quantitative analysis to capture both structured and unstructured data. These were collected using various tools (entry and exit tests, preliminary and final questionnaires, group-work outputs, teacher interviews, observation forms, and field notes), and analysed using Python to identify patterns and trends in students' learning experiences. Findings indicate that students successfully applied coding in liberal arts contexts, enhancing interdisciplinary understanding and problem-solving skills. Looking ahead, the results call for further exploration of coding-based methodologies across subjects and educational contexts. Although the PhD concludes in November 2025, the project will continue to address current limitations – particularly course duration and the inclusion of more Montessori-inspired activities. In conclusion, the research suggests that coding can be a valuable educational tool for fostering critical thinking, creativity, and cross-disciplinary collaboration, supporting the development of essential 21st-century skills.

Keywords: Computational Thinking, Digital Skills, Educational Robotics, Programming in the Humanities, Text Mining in Education