

Computational Thinking & AestheticArtistic- Engagement through tinkering: A case study in first grade of primary school

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Abstract

This paper addresses Computational Thinking (CT) and introduces Aesthetic-ArtisticEngagement (AAE) by depicting intersections through an interdisciplinary approach in STEAM-Education in first grade of primary school. CT mostly refers to cognitive abilities, whereas AAE encompasses sensual-experimental action, pictorial thinking and artistic self-expression. Recent studies in STEAM-education have underscored the significance of artistic competencies across the educational spectrum. In this regard, the CT sub-skill of pattern recognition and the AAE sub-skill pattern creation are promising and discussed in this text. The case study's research questions focus on identifying the operators and competencies of CT and AAE by introducing Brunner's unifying EIS principle in terms of different modes of knowledge representation (enactive - pictorial -symbolic). Within a storytelling context, pupils perceived themselves as game developers, applied artistic techniques, and were encouraged to express themselves. The instructor involved posed guiding questions and paraphrased pupils' findings. By arranging different materials and objects according to their characteristics, the pupils proceeded to design a classification system, leading to the design of different patterns and other concepts found in CT and AAE. In terms of imagination and curiosity, the affective level played a crucial role in the process of experimentation as evidenced by the pupils' self-crafted game elements, the suspense they created in the game, and their use of artistic methods and techniques to produce artefacts. Thus, the case study attempts to demonstrate the interplay between artistic and logical thinking in STEAM education by depicting their joint contribution to learning through innovative teaching formats.

Keywords: art education; interdisciplinary learning; STEAM-education; artistic agency; logical thinking