Moving Automata Toys in the Classroom: a Multifaceted Didactical Path

Letizia Bargelli, Corinna Bartoletti
Borgorete Società Cooperativa Sociale (Italy)
corinnabartoletti@gmail.com, letizia.bargelli@teletu.it

This paper is focused on presenting a project funded by the European Commission through the Lifelong Learning Programme (Comenius- Multilateral Projects): **CLOHE Clockwork objects, enhanced learning: Automata Toys Construction in primary education for Learning to Learn promotion, creativity fostering & Key Competences acquisition.**

This project is an innovative proposal that is using mechanical moving toys (Automata) as a learning tool for primary students to build transversal key competences. Mechanical moving toys (Automata) are a great way to introduce engineering, arts, sculpture, mechanics and science, by combining play and technology. Mechanical moving toys (Automata) also offer education, ways to explore arts and game based activities around the construction and understanding of automata.

Rationale

CLOHE highly responds to the EU policy perspective & to the strategies and the challenges on Education & Training domain. Within the EU 2020 Strategy, learning and education processes are becoming more and more important since they literally shape up the building of the future. Some challenges are implied in the EU 2020 policy and these relate inter alia to the domains of creativity and innovation. Innovation and creativity in Education & Training is to be achieved inter alia through the promotion of Key Transversal Competences and partnership with the world of work. The role of ART education in forming the competences for young people for life in the 21st century has been widely recognized at the European level. The European Commission proposed a European Agenda for Culture acknowledges the value of arts education in developing creativity and the EU strategic framework clearly emphasizes the importance of transversal key competences, including cultural awareness and creativity [1] Finally, theoretical studies underlie the importance of bringing children exposed to early engineering concepts [2]. Engineering fosters problem-solving skills and sharpens children's abilities to function in three dimension; Learning early about engineering will promote students' awareness of and access to scientific and technical careers.

Automata as a learning tool

Automata are Mechanical Toys, small Kinetic Art sculptures with high significance. An Automata might be seen as a syncretism between engineering, cultural awareness and artistic expression. As other manual artifacts, Automata are child tailored communication device and can be defined as “story telling mechanical sculptures”. Automata‘s motion can be created in various ways: by batteries, solar energy but more simply and commonly through mechanical & manual tools. The lower part,

their base, being constituted by a set of mechanical elements (cams, cranks, gears, ratchets, levers etc.) and the upper part being a totally “off the top of the soul” product, a little fantasy work. Automata are thus a good introduction to engineering, mechanics and science, through syncretism between game and technical principles.