

LEGO robotics as teaching tools in vocational teacher education: objects to think with

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Abstract

The presentation will begin with a description of teaching in vocational upper secondary school where LEGO Mindstorms were used to simulate technological work processes from the workplace to which it is being educated. Furthermore, how LEGO Mindstorms were used to raise interest among children and young people to choose a technological education (Technology Bus) through a recruitment project where we visited all children's and youth schools in three municipalities in Norway. (Brevik, 2007). This work was continued through a PhD project with the intention of studying vocational teachers' use of LEGO Mindstorms for implementation of new curricula, where they allow students to simulate technological work processes (Brevik, 2014a, 2014b).

As a concrete example of this work, at "University College of Oslo and Akershus", Campus Kjeller in 2014 established a technology learning workshop where LEGO Mindstorms is the central learning tool. This learning workshop is used by students on teacher education for vocational subjects, and students in elementary school in the immediate vicinity of Campus Kjeller. The learning center was financed by the university college for facilities and the technological infrastructure, while the municipality (owner of children's and youth schools in the vicinity of the campus) funded the LEGO material. In 2016, we established a similar learning workshop with the same LEGO material as at Campus Kjeller at Kyambogo University in Uganda.

The teaching workshop in Uganda is used in the same way as at HiOA, but with masters students in vocational education and business representatives as participants. As a theoretical framework for this development and research work, Seymour Papert's Learning Philosophy, Constructionism (Ackermann, 2001; Papert, 1980, 1993) is used. In addition Goodlad's conceptual framework for the study of the curriculum in practice and curriculum development (Goodlad, 1979), starting point for the practical implementation of the projects. The presentation will also provide a brief introduction to what LEGO Mindstorms as learning tools are, with programming of computer systems combined with mechanical construction and how we used it in different education situations. The presentation ends with thoughts on further work on using this and corresponding learning tools in developing countries for implementing ICT in education.

References

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