

PRIMARY CONSTRUCTION WORKSHOP: A LEGO CLASS FOR SIX YEAR-OLDS OF ANY AGE

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Abstract

LEGO is arguably the most successful toy ever devised. It has found its way into primary school for five decades and more. It also appears in secondary school and academe, particularly in the robotics domain. The authors will provide a deceptively simple introduction to LEGO construction. The lead author has developed a curriculum for teaching with LEGO through all primary school years. The secondary author is now teaching this curriculum in a primary school in Bulgaria. The workshop participants will have to opportunity to construct and discuss the cognitive and aesthetic contribution that LEGO and its like can make to children's learning in these educationally critical years. They will also be able to compare and contrast current LEGO offerings with those of the past to evaluate their relative educational potential to well serve the needs of primary education. The length of the workshop will be identical to that of a single double-period school lesson.

Keywords primary education, LEGO, literacy, science, mathematics, curriculum, cognition

1. Introduction

Vessela Ilieva has been teaching “LEGO and Logo” as an integral part of the primary school curriculum for a quarter of a century. Mike Doyle has recently applied her approach in a new school in Sofia. Vessela's approach is intimately connected with teaching children mastery of the computer as a medium [1]. Mike takes a similar view of the so-called new technology and is concerned that it serves the whole of the primary curriculum. This is very different from the former notion of the integration of ICT into the curriculum whilst proscribing its use in selected areas where tradition is embedded in the educational psyche. The cognitive demands for creative LEGO constructions differ significantly from those of the flatland of pencil and paper upon which children express themselves in when drawing and writing. The LEGO three dimensional construction system offers a useful set of combinable and computer controllable elements. Sold as age-coded sets complete with step-by-step illustrated instructions in the toy market, the requirements for creative school use are different. Children learn to think in 3D. So different is LEGO construction and computer control of models from the normal media of academe, that there is no substitute for hands-on experience. This will be provided by a workshop that occupies the time-space of a two-period school lesson.

2. Organisation

Previous workshops that have featured LEGO have focussed on new products by the company or promotions of new uses. We use LEGO daily. In our workshop you will be role-playing a primary school child and yourself as a participant observer. You will be working in groups on a deceptively simple project. You will have the guidance of two experienced LEGO teachers in constructing your project. There will be guidance for those new to LEGO construction to assist in creating situations.

2.1. Designing the situation

Participants will discuss and plan a whole group project that is practicable within the constraints of the available LEGO, as is the case in school. Thereafter, participants will organise themselves into groups to work on aspects of the project.

2.2. Constructing the situation

Groups will construct the elements of the situation. These might include small houses and gardens plus vehicles to make a village community. In every case the objective will be to model the real world rather than the fantasy situations that so many LEGO sets represent.

2.3. Animating the action

Computer control software will be available to animate the situation. Includes will, as a minimum, be lamps, motors, and buzzers (as required by primary school curricula) and connectors. A choice of LEGO software and interface will be offered.

2.4. A LEGO challenge

Building a LEGO house from the bricks supplied and with two photographs of the final outcome is offered as a challenge to participants. The product of this challenge will be suitable to incorporate in the overall situation.

3. Some illustrations from school

To give a flavour of what will be experienced, below are some photographs of projects undertaken by children in one of the workshop leaders' schools.



References

- [1] Ilieva, V. LEGO and LOGO in the primary school. Proceedings of Constructionism 2010. [Online] Available: http://etl.ppp.uoa.gr/constructionism2010/constructionism_2010.zip [Accessed 31 5 2014]

Note: *The workshop will accommodate up to 20 participants.*