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# Junkbots

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The School of Science and Technology at the University of Northampton have been working with local schools to create robots made from junk. This is an initiative by the University to introduce environmental sustainability, engineering and computing to students and has been funded by Northampton Enterprise Limited and east midlands development agency (emda).

This project sets out to engage pupils with a set of activities over four three-hour sessions that provides an insight into STEM subjects. The workshops will be structured in the following way:
(a) Session 1: Introduction to waste management, its impact, recycling and reuse. An introduction to the idea of making robots from rubbish.
(b) To apply some of the ideas on problem solving and use of materials developed previously to build a little junk-clearing robot.
· Lego based robots are provided with two light sensors;
· a play area (containing borders and area for the junk to be placed);
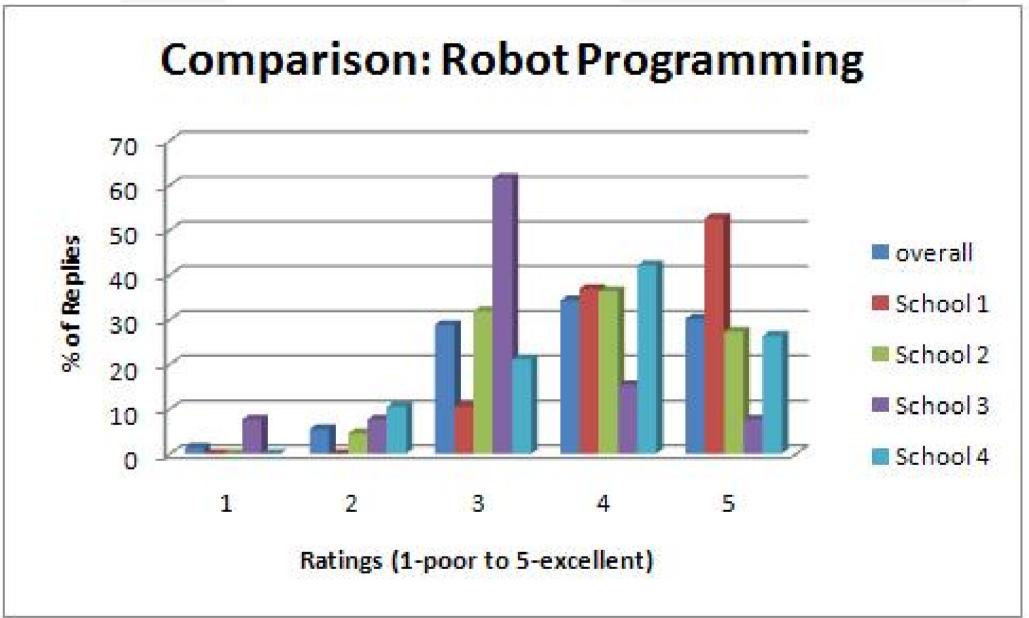(c) Each group will present their work to the other groups in a way

Section (b) is the focus of this poster



## Programming robots

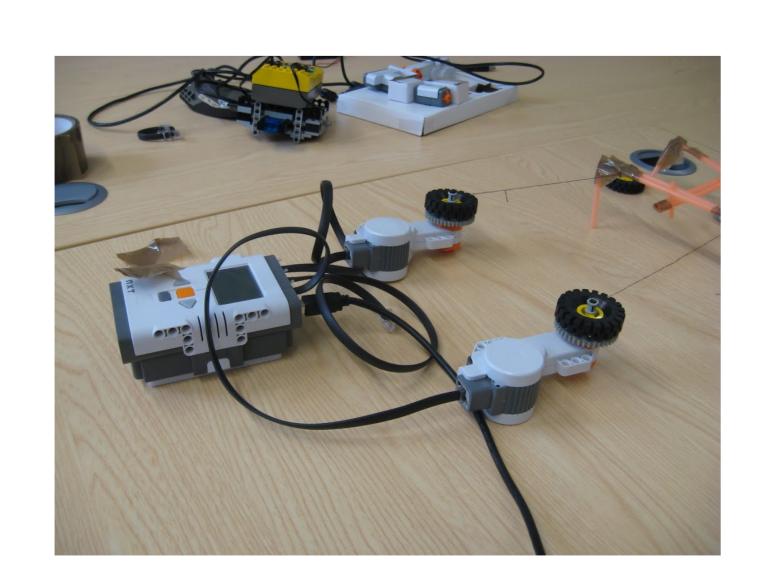The programming of the robots caused a differences in opinion which seemed to come down to two main factors, that there was only one robot per group and having to learn a challenging new skill (programming):
"Didn't get much of a go on this one" (Students D, E)
"this was good however I didn't get to to do a lot" (Student F)
"Really enjoyed it" (Student G)
"It was really good and the amount I have learnt about Java is incredible" (Student J)
"It was cool because we could program them" (Student Q)
"It was good being the programmer" (student R)

"it was exciting and interesting but I didn't get to do much" (student C)

"I enjoyed this the most because it involved problem solving" (student G)



## Teamworking

The language the students used in feedback suggests the students did see the team work element to it. Each reply was an individual reply, but in many cases 'we' and 'us' was used. This could be indicative that these students did see it as a group activity (which it was intended to be). A couple of quotes from one of the students on this point
"We liked this activity because it help us work as a team."
"We really enjoyed ourselves over the last 4 days. We found it very useful."



### Future Work and Teacher Feedback
Twelve school expressed an interest, we delivered the material in three schools.

One the suggestion from one teacher of the future direction to take this and possible other related project, including a future robot project. This project is about developing cross-disciplinary (Computing/ICT/Design) material using the Matrix Multimedia robot that could be used at several years, revolving around robot programming is especially interesting for under a £1000 you can have ten robots that can be added to relatively easily, be programmed in a simple specially written language or in more widely and industrially used languages such as C.

Based on a suggest (see the quote below) from another of the teachers involved students were encouraged to keep journals of their activities and team leaders were selected by the groups. "I do feel embedding some sort of diary/journal adds a focus and allows every one to reflect on what they have done."

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