Facilitating effective exploratory interaction
Design and formative evaluation of intelligent support in MiGen

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Background

The eXpresser microworld is an exploratory learning environment (ELE) where students can construct figural patterns by expressing the structure, the relationships and rules that underpin them.

Student undertake activities that support the development of algebraic ways of thinking.

We envisage that some of the responsibilities of the teacher could be delegated to an intelligent system that would be entrusted to facilitate students interactions while maintaining the exploratory essence of ELEs.

Supporting and challenging students

Support (Hint)

Challenge (messing-up)

Reflection

Formative Evaluation

relevance = relevant support instances by system
all support instances by system

coverage = support instances by system
support instances by system or humans

Summary

Availability of help-on-demand allows students to complete the tasks successfully. Simultaneously they face challenges, cognitive conflicts and ‘nudges’ that promote learning.

Striking a balance between student-controlled suggestions and intrusive feedback is an open question.

Reactive prompts targeted at particular student actions seem effective in encouraging reflection.