

ITR Grantee Meeting 2004
Participant Information Form

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Are you a member of the NSF Staff? No

NSF Award Number: ITR-0326054

Title of ITR project you will represent:

Computationally Enhanced Construction Kits and Craft

Website URL of this project:

Theme of this ITR project:

Human-computer interfaces

Your role on this ITR project:

co-PI

Your primary discipline:

Human computer interaction

Description of Project:

Construction kits—geometric design sets, erector sets, architectural blocks, anatomical models, chemical modeling kits—have historically played a powerful educational role in children's lives. We are developing computationally-enhanced construction kits, focusing on scientific, mathematical, and engineering domains. Using embedded computation pieces within a construction kit may communicate with each other, with desktop machines, and with their users. By integrating construction kits with computation, the educational power and expressiveness of these kits can be greatly increased.

We adopt a strategy of comparative design: systematically exploring a variety of design alternatives, characterizing strengths and weaknesses of each, and "mapping out" the overall design space for construction kits. Construction kits often have a central affective role in developing students' interests in science and mathematics. The advent of affordable materials for embedded computation—in combination with both powerful software applications and the World Wide Web—enables these kits to have a vastly more democratized and educationally potent role.

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