TangiGuru: A Tangible E-Learning Solution forEarly Childhood Development

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Abstract

Exploration and manipulation of physical objects are essential for early childhood learning. Previous investigations found several TUI uses in other fields. Less research has been done on tangible learning for youngsters; thus, its unclear if they are more collaborative, playful, or functional. TangiGuru consists of 12 tangible, manipulative objects known as TangiCubes, which are used as a tangible user interface between children and the e-Learning application. It can carry out cognitive learning activities related to colors, languages, shapes and basic math by dynamically varying assigned values by changing the external appearance of TangiCubes. This dynamic nature of the Tang- iCubes makes it possible to use the same tangibles with endless possibilities compared to traditional tangible learning solutions with static value for each tangible. After the prototyping phase, children were evaluated with the traditional tangible learning solutions compared to TangiGuru. They concluded that the more interactive tangible interfaces could make the children perform activities more engagingly.

Keywords

Tangiguru, Tangicube, Tangible User Interface, Tangible Learning, E-Learning, Embedded Systems, Human-Computer Interaction