Dancing Puppets- An Innovative Approach to Learning Programming

Eakta Jain, Nidhi, Riya Bhattacharya, Utsav Maitra, Gaurav Sharma,
S. Bipin Agravat, Amitabha Mukerjee

ABSTRACT

The objective of this work is to use traditional Folk Puppets (called Kathputli in Hindi) to make the process of learning more socially acceptable.

Children are the key learners in rural society and provide a channel for their parents to learn modern technology. This channel is especially significant when the parents are illiterate or semi-literate.

In our current work with children in rural areas using simple robotic programming tools[1], even lower-end programming systems such as LEGO Mindstorms are a) enormously expensive for a family whose monthly income is about $20, and b) alien in usage and construction, and are difficult for the parents to accept.

The Kathputli is envisaged as a low-cost, culturally familiar platform whereby digital technology can become more acceptable to village elders. Using it, the child is able to show the principles of programming through the story enactment behavior of puppets, and in the process, demonstrate the validity of the programming that she learns. Also, the child is herself more motivated, for her programs move real objects instead of manipulating abstract notions that are inside the computer (Fig. 1a).

```
void main()
{int a =2;
 int b = 3;
 int x = a+b;
printf("%d",x);}
```

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Programming   Output   Timeline Model for   Output
                                     programming
              (a)   (b)
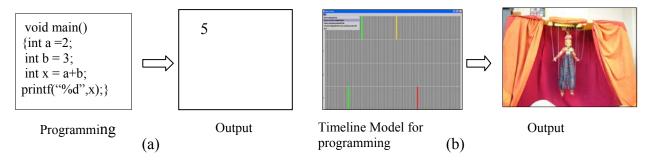
Figure 1. (a) A traditional program that deals with abstract entities,
          (b) The puppet setup with a programming interface for controlling the puppets.

Here, it is proposed that children program a setup resembling traditional village puppet theater that has been designed (Fig 1b) using low-cost toy motors and simple props.

The puppet is controlled by four motors which can be separately programmed through a simple programming interface. The system also provides interfaces for dancing to music.

The pedagogy adopted is to encourage the child to narrate stories rooted in her own life, which is important for her self-esteem.

1. Amitabha Mukerjee and Nikhil Sinha,
   BRiCS: An Indian Experiment in Educational Robotics
   International Conference on Engineering in Education,
   ICEE, Valencia Spain July 2003