

Digital Drawing as a Collaborative Learning Environment for Children

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1. Introduction:

- Drawing - appeals to the masses, especially the children.
- Schools in developing nations lack the basic infrastructural facilities, minimum exposure to digital mediums such as computers
- Encourages collaborative learning, fun and engaging activities. Need for a framework that stimulates a collaborative environment for digital Drawing.
- MultiPoint technology- solution; enables efficient Computer resource usage
- Our software “Rangoli” - utilizes the MultiPoint technology
- Learning curve: individual activities followed by collaborative learning activities
- Activities designed considering: Interactivity, Fun, Engagement and Usability.

2. Methodology:

2.1. Instructor supervision - Tool only acts as a platform for practicing digital drawing as a

collaborative activity, does not provide evaluation. Instructor needed to supervise the activities, intervene whenever needed.

2.2. Instructional Language - English: clear, precise and pedagogical.

2.3. Target Users - children of classes 1- 3.

2.4. Number of Users -2-6 users; provides each user a fair amount of screen space to work on.

3. The Interface:

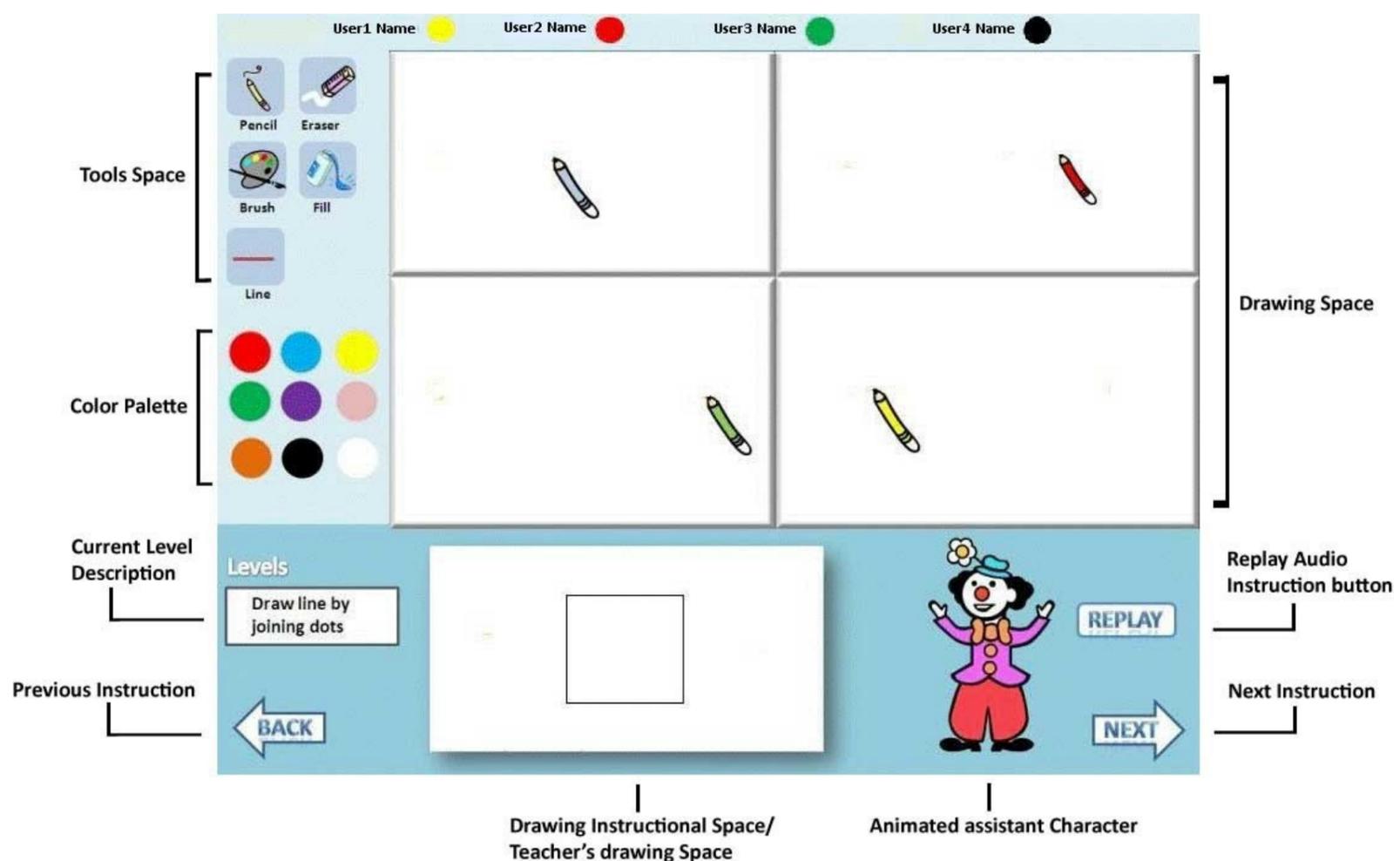


Fig. 1 - The interface and its components

3.1. The User's drawing space - has a variable number of drawing spaces according to the number of users.

3.2. The Instruction space - provides instructions through a drawing instructional space (which shows what the users are expected to draw/color), audio instructions, and an animated assistant character.

3.3. The tools panel - The various tools are - Pencil, Eraser, Line, Brush (predefined thickness), and Paint Bucket (use it with closed or pre-built shapes). Since each user's mouse pointer is of different color, when a user selects the pencil tool the pencil that he gets has a body of his mouse pointer [Fig. 2].

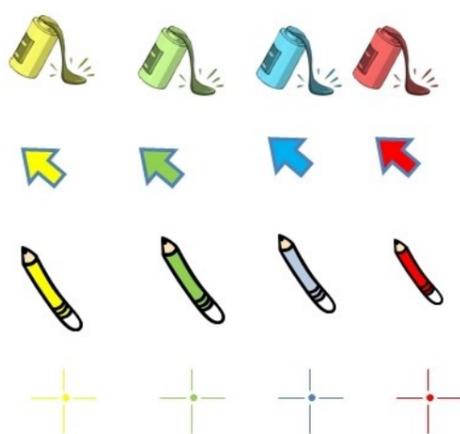


Fig. 2 - different tools

3.4. **Color palette** - nine basic colors - red, blue, yellow, green, purple, pink, orange, black, and white are provided.

3.5. **User Name and working color tab**- shows the User names and their current working colors.

4. The Activities:

4.1. **Individual** - Each user has a different colored cursor/pencil/crosshair/paint bucket, to allow easy association.

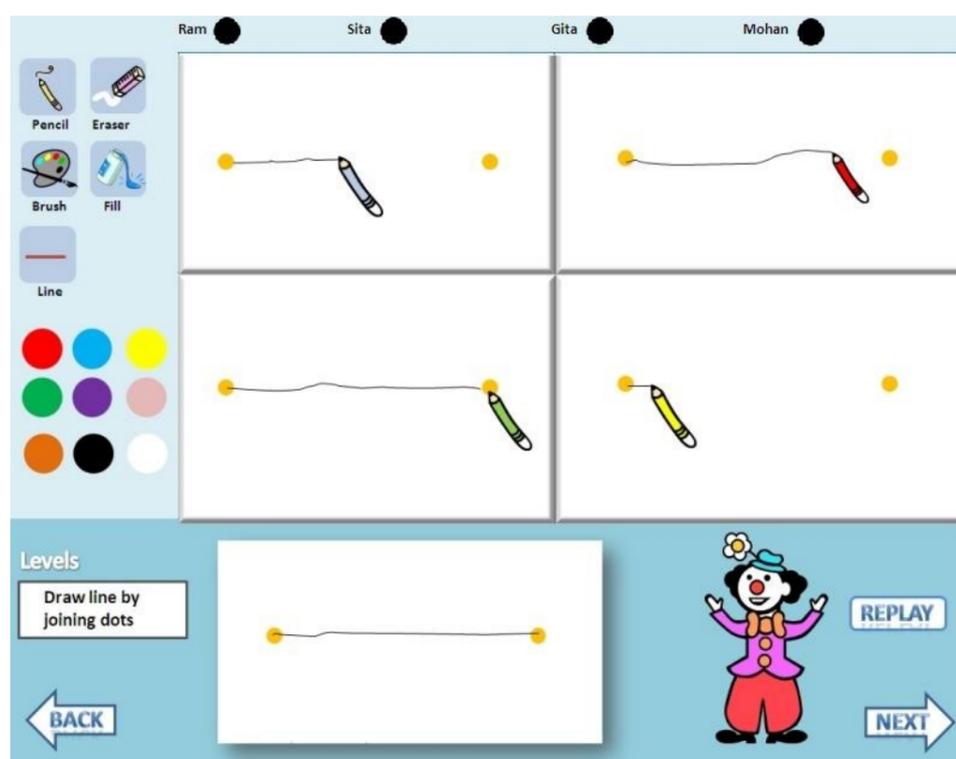


Fig. 3 - join dots to form a line

- choose a color; join dots to form colored line.

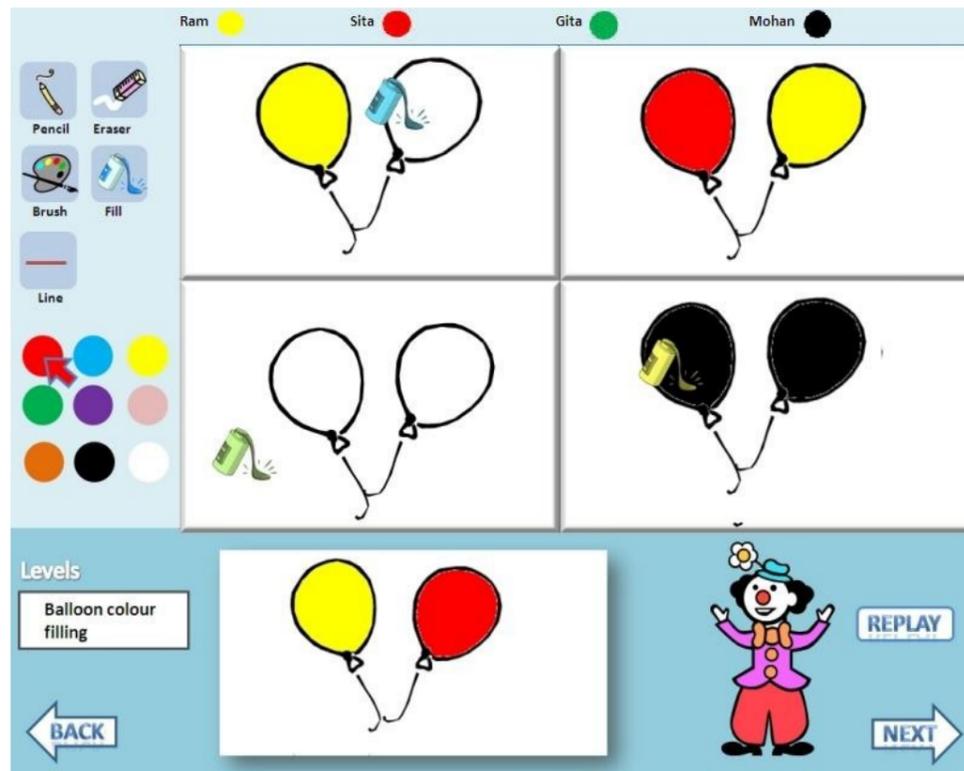


Fig. 4 - coloring activity - presents different images in increasing coloring complexity. Like coloring balloons, different fruits and then a full clothed human figure

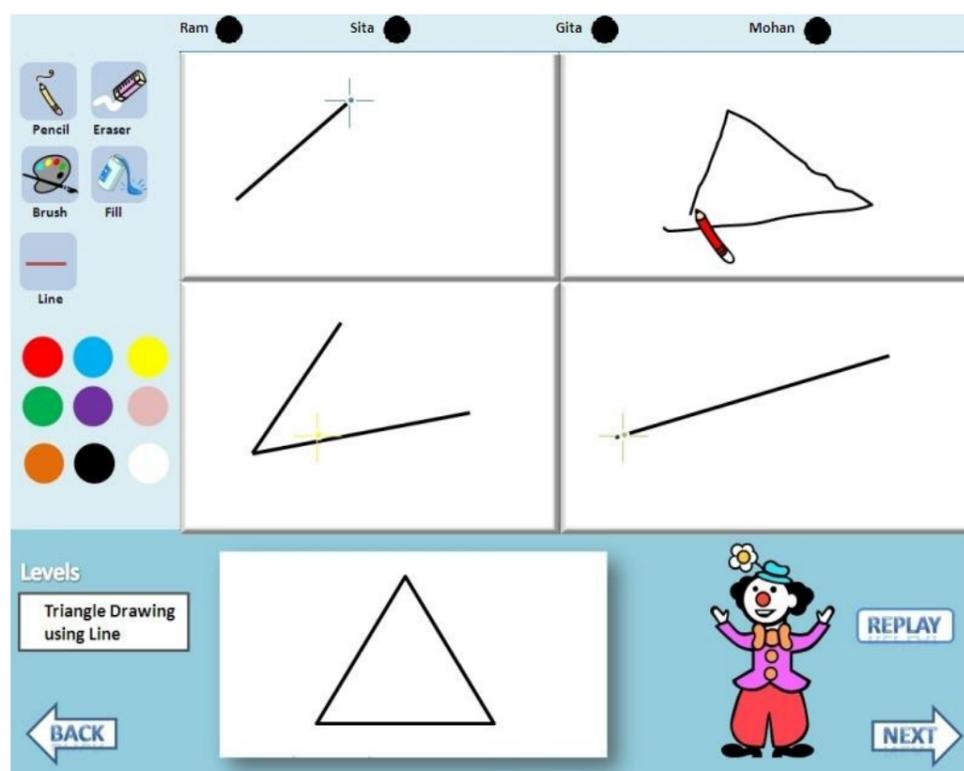


Fig. 5 - shapes drawing - presents simple shapes to the users.

- complete object drawing - instructs to draw more complex drawing than just shapes.

4.2 Collaborative - entire drawing/coloring activity is performed together. The users still have their independent tools allowing them to work simultaneously.



Fig. 6 - different mice coloring different parts

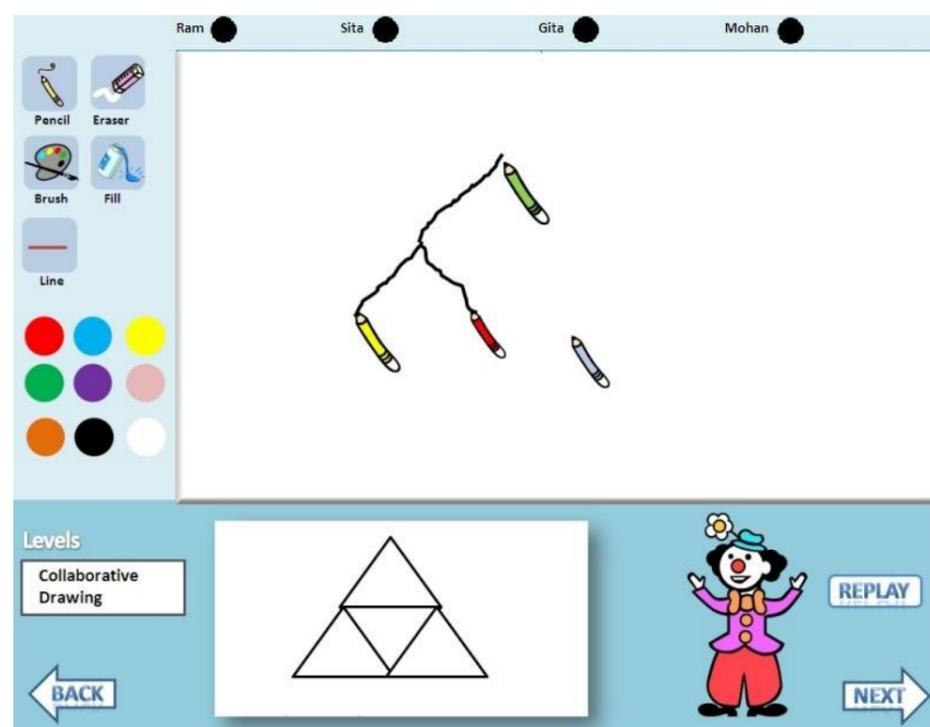


Fig. 7 - different mice drawing different parts

5. References:

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