

Mobile Games for Learning English in Rural India: Designing Cellphone Games Informed by Traditional Games



Anuj Tewari¹, Anuj Kumar¹, Akhil Mathur¹, Siddhartha Lal¹, Aishvarya Agarwal², Matthew Kam³, and John Canny³



1. Objective

Our goal is to empower low-income communities in Third World regions to meet their literacy needs through appropriate and low-cost educational technologies.



Fluency in a "global language" such as English is critical to socioeconomic empowerment in the developing world. Unfortunately, among low-income communities in India and elsewhere, the school system is not an effective vehicle for English as a Second Language (ESL). One reason is that many children cannot attend school regularly due to their need to work in the agricultural fields or households. Our goal is to make high-quality English instruction more accessible by designing ESL learning games for the cellphone, the fastest growing technology platform in several developing regions. We focus on e-learning games owing to their potential to promote a more enjoyable educational experience.

Unfortunately, conventional educational systems have not always effectively addressed the demand for English as a Second Language (ESL). E.g. the state government in Uttar Pradesh, India made ESL classes mandatory in Hindi-medium public schools owing to pressure from rural parents who wanted their children to receive an education comparable to English-medium private schools. But from our fieldwork, we found that students who had attended over two years of ESL classes at a well-managed rural school could barely read every letter in the alphabet.

2. Contextual interviews to understand traditional village games



Giti Phod

The previous attempts to deploy Western games with the kids didn't work very well even though they incorporated ideas from successful casual games. This leads us to the idea and the need to design games that are *contextually relevant* to the participants in terms of the game world scenarios.

To design contextually relevant games, we need to have an in-depth understanding of the games that the children play. Our methodology for conducting these interviews was to ask the participants to recall the everyday games that they love and to play these games for us to videotape. The brighter kids helped us to understand the games that their peers were playing in front of us.



Siya Satkana

We conducted contextual interviews with 87 children in 3 rural communities over 12 days. During this period, we observed a total of 23 outdoor and 5 indoor games, in addition to 4 variations on 3 outdoor games. 17 outdoor games belong to the family of "tag" games, in which there is generally at least one player designated "it" who has to "tag" players in the opposing team by touching them, either with a hand or an object.

However, the games cannot be immediately digitized. There is a need to analyze these games and compile a design grammar based on the 'fun elements' from each game. Based on this grammar, the mobile games can be developed which would ensure better ESL learning.



Halla Guli Mane

3. Design Grammar and Anti-Grammar

From our analysis of about 28 traditional village games, we can derive two design tools: a *design grammar* and an *anti-grammar*.

Design Grammar offers a selection of game mechanics that can be composed into new game designs, as they are consistent with those found in traditional games.

Some Features in Traditional Games

- Traditional games have elaborate rituals associated with physical movements and the playing space
- While cooperation is required among team members, teams and individual players do not form alliances (whether covert or overt) with the opposing side
- Difficulty levels are increased by introducing appropriate subgoals
- Hardly involve elaborate score-keeping mechanisms, player characters do not have "hit" points

Anti-grammar suggests some poor design choices, i.e. features that are inconsistent with the village games that we have observed and which should not be implemented in videogames for rural children.

Both the design tools are valuable starting points for more researchers and designers to explore what it means to design digital games that match rural children's understanding of games.

Some Features not in Traditional Games

- Resource management isn't a central goal in traditional games
- None of the traditional games involve skills or statistics that enable a character to perform an action better than other characters
- We have not observed complex *inter-team* interactions, e.g. trading, reciprocating obligations in these games
- Games do not have end conditions, i.e. play continues after the goal is achieved, and the game only ends through mutual consent when everyone is tired or bored.

4. Initial Designs and Results



4.1 Tree Tree

Tree-tree is based on a popular game that rural children in south India play. In the actual game, there is an "it" player who calls out the name of a tree from those available in the playground. The aim for other players is to 'touch' this tree before the 'it' player can touch them. Exact digitization of the game would have made the game-play dynamics difficult to understand. Thus, multiplayer aspect of the game was removed. In addition, the square-based motion was introduced to make the game intuitive. The post-test gains while teaching phonemes through this game showed significant gains as compared to the earlier prototypes.



4.2 Marbles - South Indian version

Marbles game is a famous game in India. However, the south and north India have some differences in game-play dynamics. We deployed the respective version in respective societies. The aim of the game is to hit the right marble. We adopted this game to teach animals by associating a marble with each animal. For the North Indian student participants, an additional circle was introduced which was existing in the original game-play dynamics. In figures 4.2 and 4.3, 'Cat' and 'Dog' is taught. Player has to aim to hit on the marble whose corresponding animal word is audio played-backed.

The post test gains with this game were highly significant. The game was intuitive to kids because we did not they did not need any help in understanding the game-play dynamics. More than 90% of the children immediately understood the game which reiterates the need to develop contextual games.



4.3 Marbles - North Indian version

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¹Dhirubhai Ambani Institute of Information and Communication Technology, Gujarat, India

²Indian Institute of Technology, Guwahati, India

³Computer Science Division and Berkeley Institute of Design, University of California, Berkeley

Contact:
mattkam@cs.berkeley.edu