Designing for Children
- With focus on 'Play + Learn'

Leveraging the Power of Participatory Culture for Awareness among Street Children

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Abstract: In this paper, we describe a novel education movement to bring awareness among street children by engaging the educated online population in India. We delve into the possibility of using this strong population of sympathizing yet busy individuals as our drivers to educate the country's street children. We do this by designing useful education material such as handouts/booklets/toolkits of specially designed infographics that can be handed out to the children along with a minimum set of instructions. Since these designs can be printed out by absolutely anyone with the access to a printer, we believe that this passive population of sympathizers will be empowered to take a more active interest in the street children they see every day. These infographics contain information on survival skills for the street child such as safety on main roads and will employ graphics that are illiterate-friendly.

1. Introduction

1.1 Definitions
UNICEF defines street children as following Children on the street are those engaged in some kind of economic activity ranging from begging to vending. [1]

According to Jenkins, a participatory culture is one:

- With relatively low barriers to civic engagement
- With some type of informal mentorship whereby what is known by the most experienced is passed along to novices
- Where members believe that their contributions matter
- Where members feel some degree of social connection [Jenkins et al., 2006]

1.2 The Context

With 18 million children on the streets, India stands first on the list of largest population of street children in the world [2]. Metros such as Mumbai, Delhi and Calcutta each have about 100,000 children living on the city streets. The reality is that street children are one the fastest growing populations in urban India.

There is another reality to India. A reality filled with such hope that it seems like a conundrum to the above. India also is one of the fastest growing economies in the world. A big part of the Indian population that is both causing and benefiting from this growth is online. There are about 36 million active internet users in urban India [3].

Even more interesting is that both of these groups run into each other on an everyday basis. Their 'interactions' usually happen at traffic signals or busy streets and involves emotions such as sympathy, anger, frustration along with an urge to help. However, this urge to help is either falsely satiated by sparing a couple of rupees and is most times simply forgotten.

1.3 Making the Connection

Enter Participatory culture - "… (a culture) in which members believe their contributions matter, and feel some degree of social connection with one another…"[Jenkins et al., 2006] In other words, Participatory Culture is about (and not limited to) collaboratively generating ideas and disseminating them to a group of creatively driven individuals who are not necessarily experts in the concerned field.

One of the many possibilities of Participatory Culture is civic engagement and social change. The rate at which connections happen, projects collaboratively innovated, strangers self-organize, execute and report back is phenomenal while making the entire process more organized. If the power of participatory culture can bring political change and generate knowledge repositories that were earlier unknown to humankind (Wikipedia) it can also be effectively used to help be part of the answer, if not the full solution, for some of the pressing social problems we have today and moves people to think about being part of a more responsible society.

Given that India has begun to experience the power of Online Media along with the rest of the world, this is a good time to introduce the active online Indian population to the possibilities of social change that they can create and influence through Participatory Culture.

The contribution of this paper is two-fold: One is to explore the possibility of illiterate-friendly infographics that can be distributed to street children along with minimum or no instructions through iterative user-centered design process. Secondly, design of a system which leverages participatory culture to disseminate these designs to the children on the street in a sustainable and scalable fashion is discussed.

2. The design Process

Below is the Design Process we planned.

| Review existing research | Immersion with target audience | Prototype designs | Test designs with street children | Iterate designs | Online distribution |

Not yet implemented
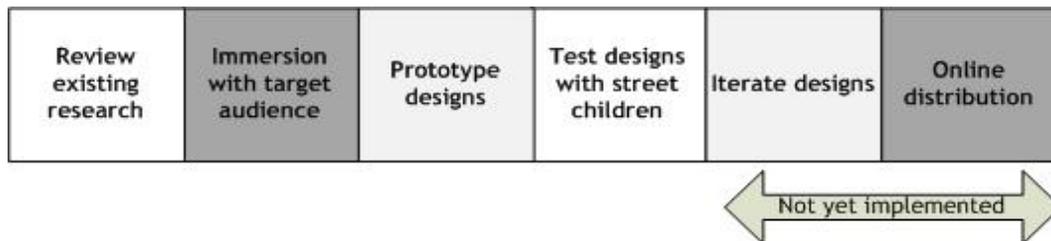
Figure 1. Design Process and current status.

An iterative user-centered design process was followed in designing the infographics. The first step to which was reviewing existing research.

2.1 Related Work

While there has been some research around designing user interfaces for illiterates in the field of Human Computer Interaction [Medhi et al., 2009] there has not been much research around information design for illiterates outside of the domain of technology or computer interaction. It is safe to say that there has been little to no research around designing information for children on the street. That said, there are projects that combine text-free designs and instructions which focus on play and learn [4] and design explorations in using technology to help adolescents make safe-sex choices [Duveskog et al., 2009]. There are also a number of books and computer software around nonverbal communication strategies for children with special needs [5]. However, these are not directly adaptable for the child on the street since the visuals do not represent a street child's environment.

2.2 Interactions with children at 'Thara'

Given this, we had very little prior research to go on. So, we decided to go to our end users - the children. We visited an orphanage named Thara [6] in Secunderabad, Andhra Pradesh that fostered kids that have been orphaned, abandoned or are runaways. These

children were taken off the streets and railway stations and given shelter at the home. This was an all boys home where they are provided shelter and some basic survival-necessary reading and writing skills.

Once our target sample of audience was identified, we spent time interacting with the kids to better understand their background, abilities in terms of education, cognition and knowledge. We also spoke to their caregivers and other players in their ecosystem who have knowledge based on their day-to-day interactions with the children. Following this, we ran a participatory design session with the children and asked them to draw images on street safety. We used the design language that the kids provided us in our final prototypes. This is explained in detail below.

The children at the orphanage were told about a fictional 4 year old kid named Raju. They were told that since 'Raju' had no one who takes care of him, he lived on the streets. The children were asked to give Raju advice on how he can survive on the streets through drawings, especially on how he can cross main roads. The kids came up with drawings and or wrote down instructions for 'Raju' on crossing the road. We then took these drawings and designed infographics that incorporated their messages to 'Raju.'

Also from conversations with foster home caregivers, volunteers working with children and the children themselves, we realized that the children understood numbers; count and money differently. While money's value is something that they understand - count and number wasn't something these children understood easily. So for the younger children (ages 3-5) we came up with an infographic that is entirely text-free and forms relation between money, count and number.

We also decided to design an infographic that helps children learn through drawing, thus introducing an element of play. Instead of providing them with conventional methods of drawing, we created an infographic that has part of the image and allowed the child to fill out the rest.

Once the designs were ready, we went back to the orphanage and tested the prototype infographics with the children to check they are intelligible. We present our findings under 'Insight' section.

## 2.3 The deployment process

Now that the final prototypes are ready, they are ready for distribution through social media platforms. The PDFs will come with instructions on how to print and distribute to children. The infographics will be under the 'Attribution-Noncommercial-Share Alike' Creative Commons license [7] so that others (designers or non-designers alike) can adapt them to suit the needs of their locality.

The audience will also have the choice to learn more about the problem of street children in India and to be cognizant of other ways of helping street children. We also plan to encourage Participatory Design by allowing designers and non-designers alike to submit contributions and feedback. This will give the community a sense of social connection with one another.

3. Insights
3.1 Insights from Children on the infographics

- Misinterpreted: We found that the children especially the younger ones started to get confused because of the image perspective. A 4-year old kid assumed that the boy in the image was standing on top of a car while in the image he was next to the car. This was because the cognitive ability to understand image perspectives doesn't completely set in at this age. Based on this we made changes to the image as follows
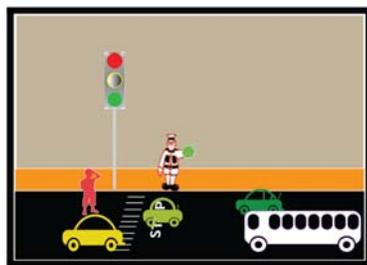
Before
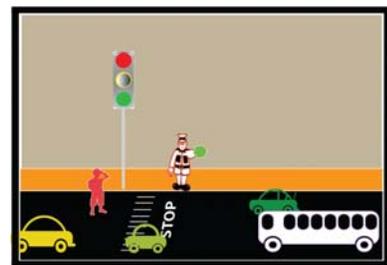
After

- Imagination can takeover: Children are extremely imaginative. It is important to be cautious of this and to use it to one's advantage. We presented to the children the following images in a comic strip format as follows. The children started to weave some very colorful stories. In this process, they missed a few things that the images were trying to communicate.

Before   After

- Text doesn't deter a child from picking up an infographic: In fact it makes them curious. The younger children (3-5 yr olds) were very much fascinated with the pictures and the elder ones to read the text for them while some of them completely ignored the text that was there. The older children who could read to an extent read the images to better understand the images. When asked to describe the images, the semi-literate children could articulate what they saw well than the children who couldn't read. We realized that it is the amount of text that is present that matters.

- Looking for confirmation: With the 'Complete the drawing' infographic, when the kids were not given any direction, they tended to look confirm if they were supposed to fill out the rest of the drawing. This is probably due to the fact that these kids have always been given instructions on what to do and punished when they did something wrong. Child laborers and runaways from bad families tend to show this behavior. When the kid was told that he was free to do what he likes, we saw that some kids started to shade the drawing once after they completed it.

- Color Vs. Black and white: When presented with a colorful version of the count + money infographic and an black and white version, the kids preferred the colorful one. When asked why, they simply answered because its more beautiful. Attractive colors grab children's attention and this is true for all kids (illiterate and literate alike).

3.2 Insights from drivers of change/Participators

Following is some of the qualitative data we acquired by speaking to a random sample of Indian online population on the issue of street children in general and our specific concept.

- People care: "… they (street children) need to be brought out of their current environment entirely, and sent to schools and homes that have teachers" When asked how they felt about the issue of Street children, the educated population felt very strongly against the issue.

- Learned Helplessness: "…there is very little we can do. Government should take initiative to do something" While they care enough to oppose a certain issue and to a certain extent feel responsible for it, they often don't feel capable of changing the situation. While a part of this helplessness arises from the continuous failure of the system, a lot of it is learned.

- Idea of Participatory culture: "…that would be interesting. I would totally take it up if you can convince me that children are receptive of these infographics" When we provided them with the infographics and asked if they would be willing distribute them, one of the first question we usually faced was if the infographics were tested with street children. Once we clarified to them that they were tested with good results, we got a lot of enthusiastic response. They also ended up suggesting some very creative ideas around branding these infographics, distribution, resources that we could look up and medium (other than print) we could use to spread these infographics further.

4. Discussion

Based on the feedback above, the final prototypes have been reiterated. We have presented these under Appendix I, II, III, and IV. Below are the design principles that we believe are applicable in designing for illiterate children.

4.1 Design Guidelines

- Balance the use of text: Unlike adults [Medhi et al., 2009], children tend to be more curious with text. The key is to balance the text and image and have text purely as a supporting element. Children are curious to understand what the text is. If they don't know how to read it, they approach an adult to learn how to. This is, in a way, designing to modify behavior.

- Be minimalistic in your design: The simplest things can be confusing to the child. For example, a line around an image can constrict a child to draw within the borders and give him a feeling that he is not supposed to use the white space. Also, their attention needs to be draws out to the specific point in your infographic therefore things that don't necessarily drive your point should be eliminated.
- Design by cognitive ability: Mental schemas, image perspective are all important things to be considered before designing. While one may be designing for the Pre-operational period of a child, it is important to keep in mind that some of the mental skills from the earlier stages may not have developed[8]
- Use the story-telling method effectively: Images are powerful communication mediums with children. Images don't just communicate to them a set of instructions but communicate a story. For this reason, one could employ images as part of an effective story telling methodology.

4.3 Guidelines for Participatory Culture

- Setting Expectations: It is important to set expectations upfront. The idea doesn't claim to solve the 400 year old social problem of street children. Rather, it is a way of bringing awareness to our children on the street on teaching them survival basics thus helping them take care of themselves.
- Giving them control: The amount of control and decision making that Participatory Culture offers to every member in the group is the most appealing element and is the biggest driver of participation and engagement.
- 'We love data': The online population is accustomed to believing in data. For this reason, making the process of prototype testing and their results transparent is critical.
- More than charity: Charity is only part of the solution. Explaining the limitations of charity and possibilities of other forms of support is pivotal. Teaching survival skills goes a long way when compared to money that can buy them lunch for a day.

4.4 Future work

In our interactions with the caregivers, volunteers in the field of social work focused on children and our brainstorming sessions we realized the number of possibilities this concepts holds. Some of the infographics we would like to explore going forward are:

- Guidelines on health for young mothers;
- Healthy sex choices/Safe-sex options for adolescents;
- Awareness on other topics such as Cleanliness, Child sexual Abuse, Drugs/Alcohol abuse and Child rights are other topics we'd like to explore.

We are considering expanding the concept to other traditional media (such as billboards) that street children can interact with ease and as a group. We'd like to work towards testing this in reality in India and based on the results actively pursue the possibility of making it global.

5. Conclusion

In this paper, we've presented infographics that are directed towards street children in India which have been tested with encouraging results. We believe the design principles presented herewith make a considerable contribution to the domain of illiterate-friendly design directed towards children.

We've also discussed the possibilities that participatory culture holds to influence this social change by employing a medium that is not only cheap but can be easily distributed. We believe this paper is one among the first in the domain of design and social media to draw the connection between participatory culture and the practical solutions it offers for social change.

Appendix I
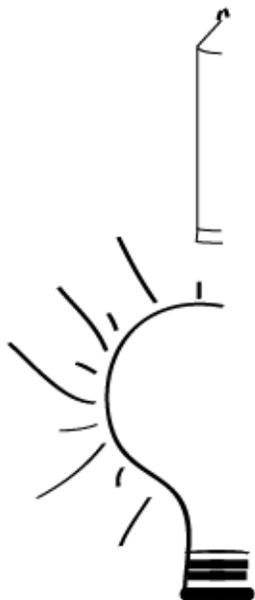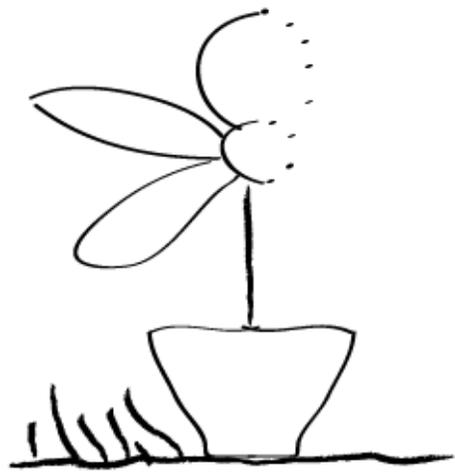
 'Complete the Drawing': A text-free infographic that is intuitive enough for the child to understand that he/she has to complete the drawing. The child needs to be given a pencil along with a print-out of this infographic.

Appendix II
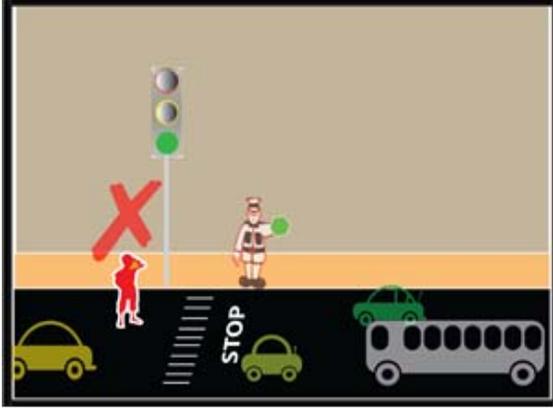
సిగ్నల్ పచ్చ రంగులో ఉన్నప్పుడు రోడ్డు క్రాస్ చేయవద్దు

जब सिग्नल हरे रंग में हो तब रोड को क्रॉस मत करना

Do not cross the road when the signal is green
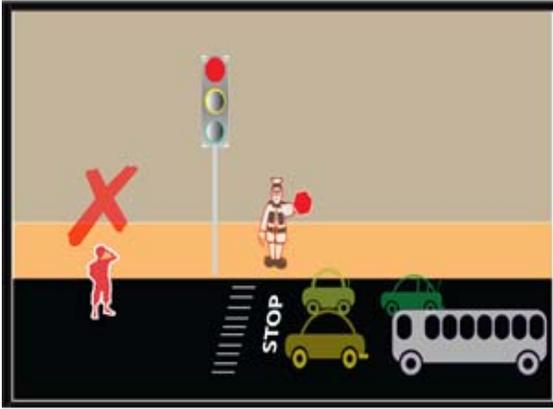
తెల్ల గీతలు లేని చోట రోడ్డు క్రాస్ చేయ వద్దు

सफ़ेद पंक्तिया जहा न हो वह सड़क क्रॉस मत करना

Do not cross where zebra crossing is not there
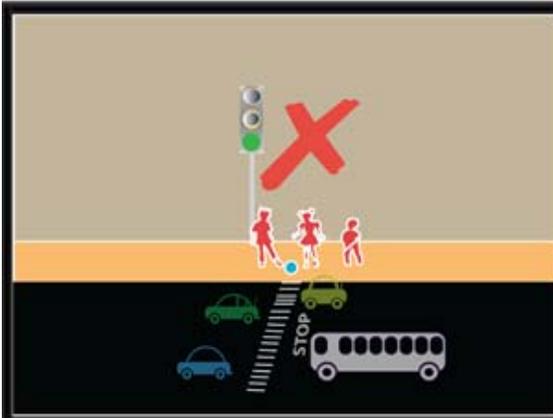
పుట్ పాత్ పై ఆడుకో వద్దు. ప్రమాదకరం

फुटपाथ पर नहीं खेलना. ट्रैफिक खतरनाक है |

Do not play on the main roads. It is dangerous

'Traffic-safety don'ts': An infographic around the 'Do Nots' on a road. The text only supports the images and bright colors are there to grab attention. Please note that the English text has been included for the purpose of this paper and will not be present in the actual infographic.

Appendix III
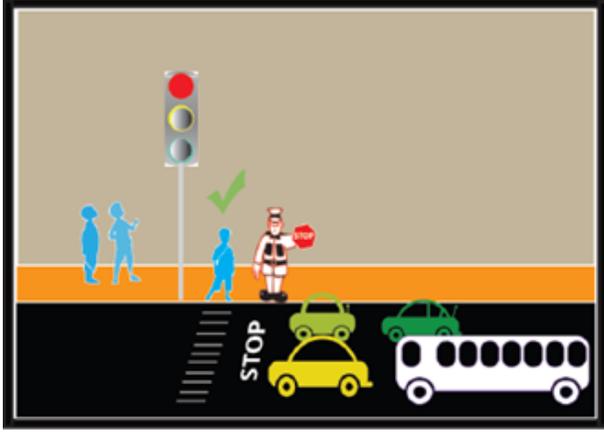
సిగ్నల్ ఎర్ర రంగులో ఉన్నప్పుడు మాత్రమే రోడ్డు దాటాలి

सिग्नल जब लाल रंग में हो तब ही सड़क पार करना

Cross the road when the signal is red.
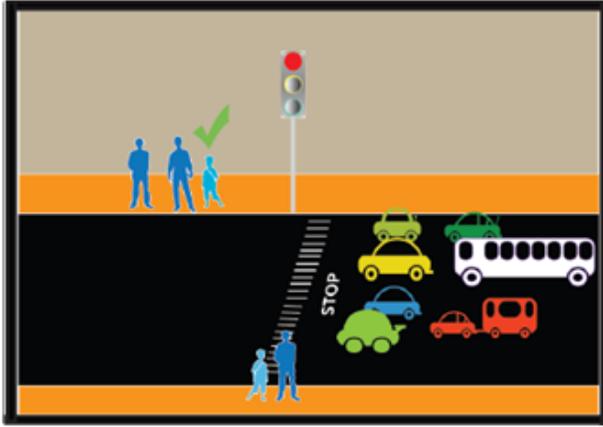
రోడ్డు పై రద్దీ ఉన్నప్పుడు పెద్దవారితోనే రోడ్డు దాటాలి

सड़क पे अगर बहुत ट्रैफिक हो बड़ों की मदत मांगो

Take help of an adult if there is lot of traffic
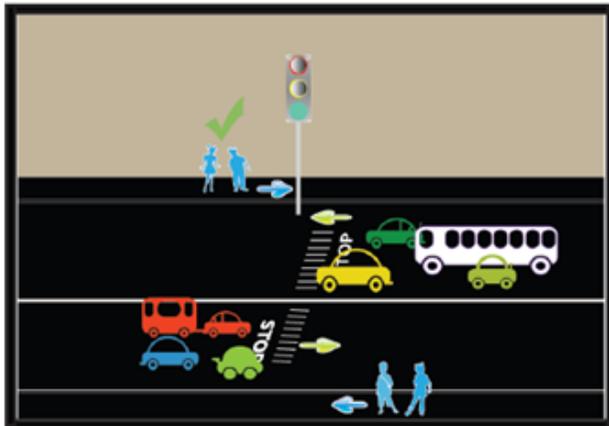
రోడ్డు పై నడిచేటప్పుడు ట్రాఫిక్ కు ఎదురుగ నడవాలి

सड़क पे चलते वक्त ट्रैफिक के उल्टा तरफ में जाओ

Walk in the opposite direction of traffic.

'Traffic safety - Dos': An infographic around road-safety. The text only supports the images and bright colors grab attention the child's attention. Please note that the English text has been included for the purpose of this paper and will not be present in the actual infographic.

Appendix IV
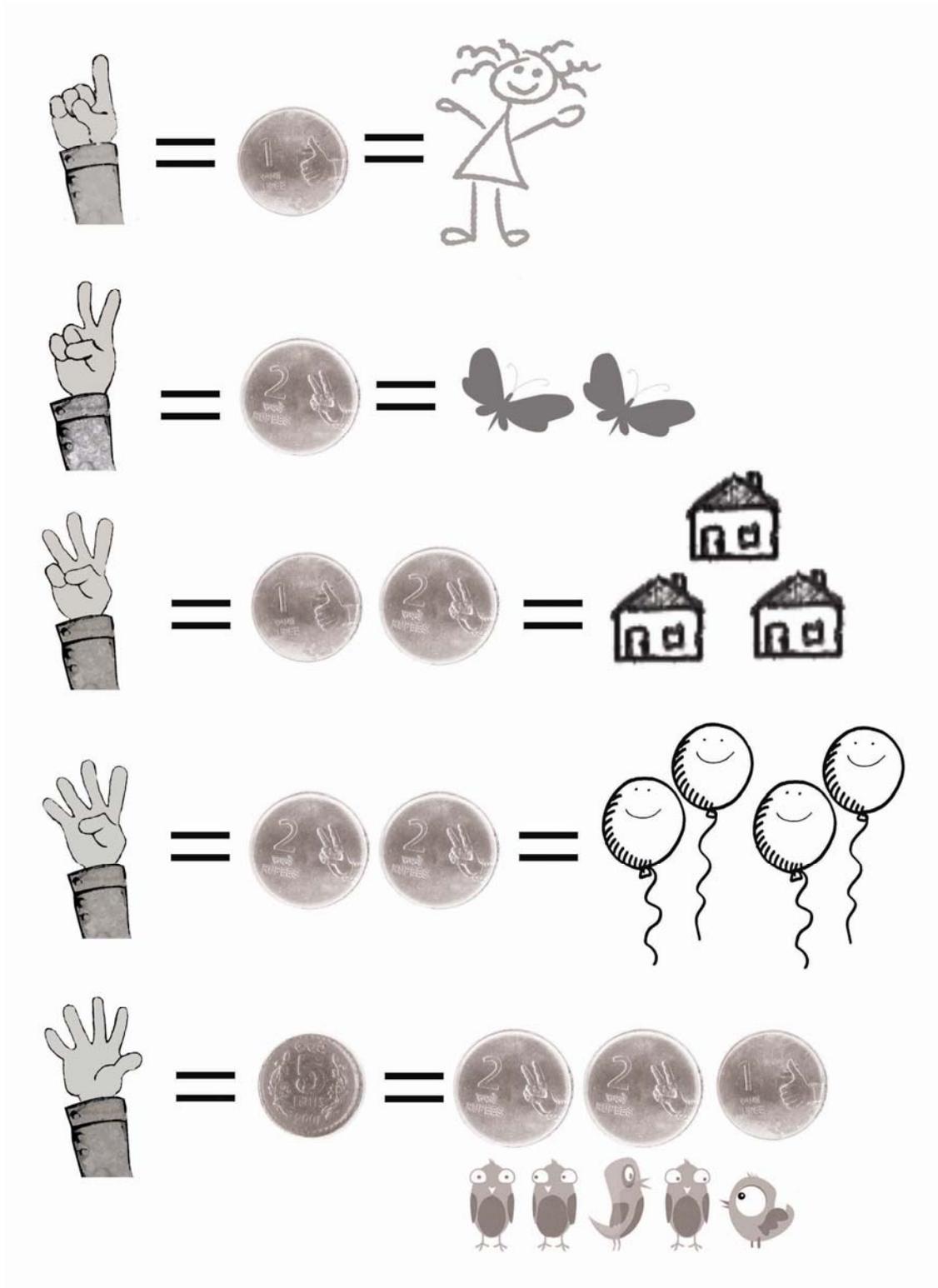
'Count + Money': Targeted towards the younger children, this infographic relates value of money with count in a very child-friendly manner.

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