Emotional-Storyboarding: A Participatory Method for Emotional Designing for Children

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Abstract: Emotional-storyboarding is a participatory design method that engages children to tell stories by drawing emotional expressions. This method provides insights into the children's emotion and overcomes two challenges in participatory design for children—access and verbal communication. We illustrate this method by presenting a case study designing a coloring book about overcoming fear and anger with surprise and happiness. In three hours, we engaged 70 children to express their emotions using emotional-storyboarding. We also present four guidelines for using emotional-storyboarding to design with children: 1. Face-to-Face crowd-source at children's events 2. Make storyboarding creative and active 3. Engage children one-on-one to give them the confidence to express their stories and 4. Publicly praise children's stories. This case study demonstrates that emotional-storyboarding can inform meaningful design for children while simultaneously providing children with an immediate positive emotional experience.

Key words: Children, emotion, co-design, human centered design, participatory design.

1. Introduction

Emotion influences how people feel, behave, and think when experiencing designed objects, services, and events. Currently, methods such as human centered design and participatory design are used to create emotional designs. Human centered design involves gaining insight into users' emotional needs by observing people's lives in everyday context and then testing the ideas directly with users to ensure that their emotional needs are met [1]. Similarly, by involving stakeholders in the exploratory phrase of design, participatory design directly engages stakeholders in the design process to ensure that their emotional (and other) needs are also met [2]. However, both methods were developed to understand the needs of adults, but not of children. Currently, designers are starting to recognize that participatory design can be an effective method for designing for and with children to develop many objects, services, and experiences such as a software support system for children with cancer [3] and educational art programs [4]. However, participatory design remains resource intensive due to the difficulty of gaining access to work with children and their limited verbal ability to communicate their emotional needs to the designers.

To address these challenges, we present a new participatory design activity: emotional-storyboarding. This activity engages children in a simple drawing exercise to express and understand their emotional needs. By allowing children to draw simple facial expressions and then tell stories about the changes in emotion over time, nuanced insights of children's emotional needs and desires can be elicited. As a method, emotional-storyboarding is similar

to comic-boarding, a participatory design method that uses specially created comic books to generate brainstorming sessions with children [5] and familiar plot formats, interaction styles, and characters in comics. Yet, emotional-storyboarding distinctly relies on children's basic drawing abilities to visually and verbally develop their own stories. We illustrate emotional-storyboarding by reporting an event in which designers worked with 70 children in three hours to gather 70 stories. Based on these stories, we discovered the four basic emotions that children most often express and understand: fear, anger, surprise, and happiness. We also learned how they understand the transition between emotions. From this case study, we present four guidelines for practicing emotional-storyboarding with young children: 1. Face-to-face crowd source at children's events 2. Make storyboarding simple, creative, and active 3. Engage children one on one to give confidence to express their stories and 4. Publicly praise children's stories.

2. Background: Why Design a Coloring Book?

As designers for Design for America™—a group of volunteer designers who solve local problems to create social impact—we enrolled in a design competition hosted by Social Designer by Felissimo™—a company which hosts design competitions to help nonprofit organizations and their causes—to create a compelling coloring book for children. The winning coloring book would be produced and distributed by their non-profit partner, DREAM, to underprivileged children, especially in the post-conflict regions, such as Afghanistan.

3. Why Participatory Design?

DREAM wanted a coloring book for children of ages 5-7 with four pages of creative illustrations that children could enjoy and understand. But, how do children understand stories? If we wanted to deliver a powerful story and to design *for* the children, we needed to create a link between them and us. After observing, we realized that a baby will cry if her mother cries. Even though a baby doesn't understand the circumstances, by reading her mother's emotions, she understands how her mother feels. The answer was found: Children read stories by understanding the emotional changes. Using emotional-storyboarding to engage in participatory design with children, we allowed children to become designers and explore the core four main emotions that we could use for the coloring book.

4. Participatory Design Method and the Coloring Book Success

While brainstorming how to engage in participatory design with young children, we came across with an event called Project Pumpkin. It is one of the largest community events at Northwestern University attracting approximately 900 children from Chicago area to trick-or-treat and play games in a safe environment. This event was the crucial part of our participatory design method because it gave us two important resources: children and a place to co-design. During this event, we gave the children a Halloween themed activity called "the Tale of a Pumpkin," in which children choose 4 different colors of pumpkin shapes and draw 4 different emotions on them. Then, we put those shapes on a story board and let the children tell us the story of their pumpkin in the order of the emotion sequences. Finally, we took a picture of them with their story board before they left.

Figure.1 "The Tale of a Pumpkin" Activity: Children drawing on the colored pumpkins and telling stories. We (4 designers in total) were able to interact with 70 children in a span of three hours. After co-designing many stories with them, we found that the majority of the children conveyed these four emotions: fear, anger, surprise, and happiness. This discovery became the base of our coloring book, which won the social designer competition.

Figure.2 The final coloring book: Titled "Fear. Anger. Surprise. Happiness"

The coloring book story is as follows: A young girl, Mei, who was afraid of the shadow monster, decides to face her fears by opening a door to the unknown. When she opens the door to face the monster, what she finds is a beautiful world filled with friends who are also courageous to conquer their fears.

5. Emotional-Storyboarding: A Participatory Design Method for Designing with Children

Why was our design successful? We credit the emotional-storyboarding methodology, rather than the drawings. Through the emotional-storyboarding activity, we generated meaningful content. The book was created by 70 children, who gave us the base story structure that we could then illustrate. By giving them the freedom to express their creativity, the children became designers. Here, by breaking down our participatory methodology, we discovered the key components of how to effectively engage children in emotional-storyboarding to generate empathetic content and meet their needs.

5.1 Face-to-Face Crowd-Source at Children's Events

Face-to-Face crowd-sourcing, bringing large pools of people to contribute to a project at local events, allows designers direct interaction with children. They can get immediate consent from parents and gather many insights in a short period of time. Children, especially in the age range of 5-7, are hard to access without extensive, special permissions. Designers may be able to go to a public playground or children's museum, but these settings don't often allow for focused attention on a participatory design activity due to the distracting setting. Many designers rely on generous teachers or parents who allow them to visit their classrooms/homes. However, these experiences limit the number of children that can be accessed at one time. Using a Halloween event also gives the theme for the activity work, here a Halloween theme. Children are meant to participate in this event, and having a fun activity wins their attention. This face-to-face crowd-sourcing approach is a variation of designers' recent efforts to crowd-source on line, testing products and services [6] and generating solutions [7,8] in a distributed network of individuals to reduce monetary and time costs. The primary distinction is that face-to-face crowd-sourcing occurs face-to-face with people, in this case, children. Online crowd-sourcing remains limited to the adult population because of laws related to communicating with children online.

5.2 Make Storyboarding Creative and Active

To be consistent with participatory design methods that engage children through games [10], emotional-storyboarding must engage children creatively and actively to attract them. For example, our emotional-storytelling

activity, "The Tale of a Pumpkin," fits in to the Halloween setting where we decided to face-to-face crowd-source. Also, we did not emphasize the activity rules. We let the children tell us the story. We were listeners and recorders of their ideas. We gave children the freedom to express their creative ideas. During the activity, because they were creating something that was their own, children were more interested and wanted to spend more time. Also, we were able to see an effect of word of mouth. Many participants came with their friends. This shows that our emotional-storyboarding activity caught their interest to participate. Our activity not only inspired the children but also inspired the adults who were watching because we let the children be designers and story tellers. This approach to engaging children in creative and active storytelling parallels the whole language approach to literacy. Following the whole language approach, children learn to write by dictating stories to teachers who transcribe their stories on paper. Children are motivated to read when seeing their own stories written down [11]. Similarly, we validated the children's ideas and motivated participation by formally capturing their stories.

5.3 Engage Children One-On-One to Support Stories and Encourage Feelings of Individual Worth
One-on-one interaction allowed children with different personalities to participate in the design process. Emotional-storyboarding required the children to think aloud. Unlike traditional think-aloud protocols, children remained focused and stayed on track. Emotional-storytelling efficiently allowed the facilitators and children to engage in an open conversation, feeling free to exchange ideas safely. It allowed us to hear stories from both introverted and extroverted children. Emotional-storytelling does not make quiet children feel alone; rather it gives them a chance to speak up to tell a creative story. Our approach to engaging children one-on-one to elicit emotionally inspired stories is related to play therapy, a therapeutic practice designed to help children express their experiences and feelings through self-guided play [12]. During a play therapy session, children are given toys to express their feelings and therapists observe the children at play in an emotionally safe environment. Like with the pumpkins, children may name the toys and give them personal and social histories that resemble their own lives. Play therapy and emotional storyboarding are based on the belief that play is a natural medium for children's self-expression; however emotional-storyboarding is less concerned with therapeutic outcomes and more concerned with artistic expression.

5.4 Publicly Praise Children's Stories.
Children like to show off because they want to get attention and to feel special. They also like getting prizes. Why not combine these two together? In our activity, we let the children tell us their story, have their picture taken with their story board, and keep the storyboard they created (and of course, we gave them Halloween candy, too). This activity captured the children's attention. Taking pictures meant that they were able to show off their storyboard and their costumes. Because they considered their unique story board was something cooler than candy, they put meaning and effort into them. Giving incentives that children created lets them remember how much fun they had in participating, and it creates a stronger input in their designs—children are eager to create something to share.

6. Challenges
While emotional-storyboarding overcomes challenges such as limited access to children and miscommunication between adult designers and children, it does also pose challenges. For example, as noted, this particular method does require additional facilitators to manage the large number of participants. It took five minutes to gather one-on-

one story interaction with a child. Emotional-storyboarding also requires additional research on which children's activity to attend. The event like Project Pumpkin might be hard to find outside of the school setting. Finally, when encouraging children to express emotions, activity leaders must provide a safety zone in which all feelings are warranted. Despite the challenges, we believe that the benefits of this method outweigh the costs when designing emotional children products that reflect their thinking processes and empathetic needs.

7. Conclusion

We present emotional-storyboarding, a participatory design method that engages children in a simple drawing exercise to express and understand their emotional needs. Through a design case study, we present the four guidelines for emotional-storyboarding with young children: 1. Crowd source at chilren's events 2. Make storyboarding creative and active 3. Engage children one-on-one to support stories and feelings of individual worth and 4. Publicly praise children's stories. The results suggest that emotional-storyboarding informs meaningful emotional design for young children while providing children with an immediate positive emotional experience.

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