Introduction

In their paper “Embodying Values in Technology: Theory and Practice” Flanagan, Howe, and Nissenbaum introduce the concept of “values in design”—a process of uncovering and incorporating value systems into the design of technology. The premise of the paper is that values should not only be acknowledged in technology projects, but actively integrated into the artifacts that users adopt.[1] As consumer technologies diversify and proliferate, there is an ongoing need for more effective, and nuanced, solutions to values-based mediation. For this reason, we decided to use “values in design” as the lens for our Masters Final Project.

We selected a value-intensive topic to use in our exploration of “values in design”: families with young children. It is the role of adults to shape and guide children’s view of the world and access to the environment around them. The decisions that parents make reflect their personal belief systems, as well as broader societal values. As technology plays an increasingly large role in children’s lives, parents and other authority figures must develop systems for mediating young people’s interactions with these systems. A range of existing technology solutions aim to serve this need, but they do not always meet the goals they intend to serve or reflect the values they attempt to embody. This is a great opportunity space for new innovation.

Flanagan, Howe and Nissenbaum introduce three activities of values in design: discovery, translation, and verification.[2] Our project uses this framework to guide the design process. Discovery is the process of identifying values underlying and guiding the design project. In the discovery phase, we conducted research to uncover values that lawmakers, advocates, and academics express with respect to children and technology. We then interviewed 10 Bay Area families about how parents and children ages 6-10 approach technology in their lives, with a focus on values in technology “on the ground.” Translation is the method of imprinting these values into a design product. In the translation phase, we developed a series of design artifacts that engage some of the values we found in discovery. In verification, designers evaluate how well they have embodied the intended values into the system they created.[3] Finally, in the verification phase, we examine both successes and outstanding challenges encountered in the design process.

Literature Review

Our literature review focuses on unpacking the values that academics, government bodies, and advocates have identified with respect to children and technology. It is important to reveal how stakeholders prioritize and define values, because different understandings of values can lead to
very different design artifacts. Values may be in conflict with one another, and they may need to be ranked and weighed in the design process. Values are deeply embedded in social structures. They may be common to all people or may be specific to a nation, society, culture, religion, community, or family.

Standard Concerns About Kids and Media & Existing Mechanisms for Addressing Those Concerns

Existing research has primarily focused on how the Internet can negatively impact children. Typically, these concerns address online safety issues, particularly unwanted solicitation, cyberbullying, and pornography. In an attempt to keep kids safe online, the government, social networking sites, and parents have implemented their own forms of legal and technical regulations. For example, the government passed the Children's Online Privacy Protection Act (COPPA). According to COPPA, websites directed to children are required to notify parents of their data collection practices via a “clear and prominent” notice. In addition, websites must receive parental consent in order to allow the minor to sign up for the service and for the website to collect their information.

Rather than embrace or even adhere to COPPA, various social networking sites, such as Facebook and MySpace, have completely banned the membership of minors under 13. This may be because these sites are reluctant to change their privacy practices. According to a 2008 report, Facebook, during this period, was actively blocking children under 13 from creating an account. Furthermore, Facebook and MySpace, were using “persistent cookies” to prevent underage children from re-registering for a new account with a different age. Besides using technical mechanisms to block underage children, various websites and social networking sites had additional “safety” features. Such features included a “Report” button, children-specific areas for websites that catered to adults and children, restricted search, amber alerts, the removal of sex offenders, educational resources, and parental controls.

Parents, in order to keep their kids safe online, have implemented technical mechanisms on the family computer. The majority of research focuses on filtering and monitoring software as solutions. Such tools allow parents to restrict the content their kids see. According to a Pew study from 2007, slightly more than half of the parents said they had filtering software on their child’s computer. Interestingly, 45% of parents stated they had monitoring software, which allowed them to track all computer activity. 65% of parents reported that they checked their teens online activities. However, it is unclear how regularly parents monitored their kids, what they looked for specifically, and how knowledgeable they were with these tools. Wolak et al. found that only 5% of parents specifically installed filtering and monitoring software in response to a child’s inappropriate behavior or a “disturbing” occurrence online. However, more than half of the parents interviewed installed this software because they just wanted to protect their children when they were online. Again, it is unclear how often the technology itself is being monitored and used by parents. While current legal and technological mechanisms exists, such regulations are not necessarily effective. Furthermore, these forms of regulations do not
necessarily represent real-life situations.

Old Solutions & New Directions

Palfrey et al. described these existing forms of regulations as being “adult-centered” since they are “dependent on the fears of adults rather than the realities of kids.”[25] For example, while adults fear that children are being constantly exposed to pornography and solicited by strangers online, research shows that children receive the most exposure to nudity and sexual content from television.[26] Furthermore, of the parents surveyed in Boyd et al. research, “only one percent reported that any of their children have ever met a stranger online with ill intentions.”[27] Thus, while exposure to sexual content and stranger solicitation does occur, the occurrences are not as common as adults think.

Furthermore, COPPA and the technical mechanisms discussed (e.g. filtering software), do not account for how kids use the Internet and the context in which it is being used.[28] These form of regulations treat all kids--whether they are a young child or a teen--as being the same. Put simply, these regulators assume that kids, regardless of their age, have the same Internet habits and can be protected in the same way. Contrary to this assumption, research has shown that filtering may only be useful for parents with young children, but are not beneficial for parents with teens.[29] This is unsurprising since teens are often savvy enough to circumvent this technology and have more freedom to go somewhere else (e.g. a friend’s house) to access unfiltered Internet.[30] In addition, Yardi et al. found that parents who used filtering and blocking software thought they were too “burdensome and ineffective,” since the software made search impossible for everyone in the house.[31] Interestingly, Yardi et al. also highlighted the different methods parents were using to monitor their children. This included enforcing house rules, forwarding their child’s emails to their own account, or forcing Facebook credentials to be shared.[32] Compared to filtering and other traditional forms of regulation, these new forms may be more effective.

Arguably, these “adult-centered” regulations do not map to the “realities” of parenting. While COPPA was in response to parental concern about online safety, research by Boyd et al. suggests that parents may not necessarily know about COPPA.[33] In their research, Boyd et al. found that the majority of parents surveyed helped their underage children sign up for a Facebook account, and in doing so, encouraged their children to “lie about their age.”[34] Slightly more than half of parents were aware of the minimum age requirement, and of those that were aware, 35% of parents assumed the minimum age requirement was actually a recommendation.[35] This suggest that parents are unaware of COPPA. However, confusion about COPPA is not limited to just parents. Even Mark Zuckerberg, founder of Facebook, misinterprets the law: he believes that COPPA doesn’t allow minors under 13 to sign up for any online service or website.[36] [37] How, then, can a law protect children if adults, particularly parents and website operators, have no general understanding of it?

Furthermore, technical mechanisms assume parents have a strong understanding of
technology. However, research has shown that parents are not technically-savvy, especially when compared to their children.[38] [39] An example of the “technical gap” [40] is seen in Buzzi’s research. In her study of YouTube’s child protection features, she found that parents did not always take advantage of appropriate features because they did not understand them.[41] For example, she found that some parents complained in the user comments that a video was offensive or objectionable and should be removed. Apparently, these individuals were unaware that they could flag the content for removal. Other parents entered comments that indicated they were not cognizant of the child protection features that YouTube offers.[42] In her research, Buzzi recommended user interface modifications that would make these UI features more accessible and intuitive. Her research reinforces the idea that technical mediation mechanisms are only effective if users can understand and use them. This shows that while traditional solutions may be underutilized or even circumvented by families, some designers are attempting to find solutions that are more in-tune with user needs.

Similar to Buzzi’s work, Egelman, Brush, and Inkpen recognized the importance of usability in mediating children’s use of technology. Their project specifically focused on the shared home computer used by all members of a household.[43] In a traditional user control model, each family member has a user profile with corresponding rights to use certain content and functionality. The user must select a role at the time he or she logs into the computer.[44] The authors recognized that such systems are inconsistent with the way families actually use the computer. Members of a household rapidly rotate between users. For some tasks, individuals need to access material specifically permitted by their profile.[45] At other times, this is unnecessary. The need for profile-specific content or functionality often arises mid-task, not at the point of log-in. Because the existing functionality is slow and cumbersome to use, many families in the study failed to systematically use profiles in their household.[46]

Egelman, Brush, and Inkpen proposed an alternate design that allows for more contextual use of profiles. In their model, users could change between profiles at any point while using the computer. Their approach was more in line with the way users actually employ the technology. Because it was faster and more intuitive than the traditional model, families were more excited to use the controls consistently and effectively.[47] This finding indicates context-sensitivity can play a critical role in building nuanced models of user control. Yee and Thein also offered a context-based design solution, but they focused on the mobile channel. They proposed a smartphone model that permits access for a user based on both the user’s role and also context of use.[48] Based on their solution, the system administrator can assign a profile to each person who uses the phone, and then create a set of policies for that user. Access to content and functionality is based on these policies, which can take into account contextual cues like time of day and location. The authors envisioned a system where “explicit context is directly captured via sensors and implicit context is acquired by monitoring user and system.” [49] While Yee and Thein proposed a range of applications for such design technology, parental mediation of shared devices is one of the most obvious uses.
Underlying Values

As discussed in the preceding section, there are a range of regulatory and functional mechanisms that mediate children’s access to technology and the content it delivers. Each of these systems embodies a set of values that creators or users are attempting to represent. Some of these values are concrete. Others are more conceptual. While the mechanisms themselves may be ineffective or underutilized, the principles guiding them are likely to remain important in new solutions that mediate children’s use of technology.

Safety is one clear value underlying both design and regulatory tools. Parents and government officials alike recognize that technology enables children to engage in activities that may put them in danger. They realize that children are unable to use the level of discretion that adult users are expected to exercise. Safety comes in different forms, but when discussing children and the Internet, interpersonal safety is the most common theme.[50] [51] [52] On the Internet, children may come in contact with predators or others who may harm them. Parental monitoring and technical mechanisms attempt to prevent such threats and ensure child safety.

Well-being is a second concrete value that people seek to promote in children. There are many aspects to a child’s well-being and a range of harms that could reduce this state. When one worries that a child will become obese sitting in front of the computer all day, she is expressing the value of physical well-being. Emotional well-being is also a common value. Experts and parents are concerned that early and excessive exposure to violent or sexual content may reduce emotional well-being.[53] Cyberbullying through social media channels may also cause emotional harm.[54] Exposure to manipulative advertising may hinder psychological well-being,[55] not to mention the financial well-being of a child’s parents.

Privacy is closely tied to both safety and well-being. There is no consensus among researchers and technology practitioners on one single definition of privacy. In the context of children and technology, information exposure is a consistent thread. Parents and regulators do not want information about children exposed to those who might harm, manipulate, or judge them harshly. One concern about child privacy is that children or their friends will publicly share information that will later adversely impact their reputations. Kids may lack the skills and tools to protect the information they want to keep private. They may also disagree with their parents about which information is appropriate to share.[56] A second privacy concern is that children’s data will be collected and tracked for purposes such as advertising. Data collection and sharing practices on mobile phones and tablets are poorly understood by many adult consumers.[57] Children are even less equipped to navigate these issues.

Not all values have a straightforward implication for design. Enlightenment is a broadly-held value that has a complex relationship with technology. A vast universe of information and broad market for educational technology serve children’s intellectual development.[58] Not all technology exposure, however, supports the goal of enlightenment. A child who spends many hours a day playing video games may spend fewer hours exploring other intellectual pursuits.
Those mediating children’s use of technology must take into account both context and content when considering how to support a child’s intellectual development.

Sociality is another complicated case. While it is certainly in the interest of the broader society for a child to develop well-rounded and appropriate social skills, it is ambiguous where and when technology can support or hinder social development. Increasingly, children’s social lives happen through technology: over the phone and Skype, through text and instant messaging, and using email and online social networks.[59] There are certainly benefits to these tools, for example keeping in close touch with distant relatives. There are also anti-social behaviors that can develop over technology networks. Cyberbullying is one often-cited example.[60] [61] In mediating technology use, parents, designers, and regulators must consider the range of social activities that may occur and the consequences of these interactions.

Autonomy is a more controversial value with respect to youth. Many factors come into play when discussing child autonomy, including and range of risks and rewards that independence can bring. Some parents give their children far more latitude to act independently than others.[62] Autonomy may be at direct odds with parental control, which some guardians strongly value.[63] Most parents adjust rules and expectations over time, giving children greater autonomy as they mature. While empowerment is not appropriate for all children in all circumstances, regulators are increasing arguing that in a constantly shifting landscape of content and technology, children must learn to independently make smart decisions about the media they consume.[64]

How Values Might Guide Better Design

The standard design and development process has primarily focused on functionality and efficiency. The implicit values of designers and engineers are always a part of the artifacts they create, but this is rarely a focus of their explicit practices. As technologies become an integral part of virtually every aspect of our lives, it becomes increasingly important to bring abstract social, moral, and political values to the forefront of design. As designers demonstrate “a reflective understanding of the relevant values and how these values function in the lives of people and possibly groups affected by the systems in question,”[65] this will only serve to further address and meet the user’s needs.

By including value considerations from the beginning of a project, design choices will consistently be made by the appropriate stakeholders. They will ensure that overarching values like freedom, autonomy, equality, democracy, and privacy remain integrated in how system features are designed. Stakeholders who understand the consequences of conflicting values will be able to navigate through the disparities to make design choices that adhere to the most appropriate values for each context. Ideally, they will consider the implications these values have on the user.

Because embodying values in design enters relatively new territory, the more designers
embrace this ambiguous space, the more links will be created between values and specific design features. Over time these links will create a general understanding and a solid point for other designers to draw from, which will only continue to promote designing with values in mind. As values continue to be communicated correctly through design choices and features, users will learn how to decipher the abstract values that are being conveyed through specific design features. Ultimately, this will empower users to make educated choices, and they will be enable to choose technologies that align with their personal values.

Qualitative Research

After examining values expressed by lawmakers, advocates, and academics with respect to families and technology, we shifted perspectives to understand the values of families themselves. To do so, we interviewed 10 families with children between the ages of 6 and 10 for 60-90 minutes. We conducted interviews over a three-week period, primarily in participants’ homes. We talked to a diverse range of families from locations across the Bay Area, including Los Altos, Richmond, Oakland, Pacifica, and El Cerrito. Family demographics included households with one single-parent, two full-time working parents, one full-time parent and one stay-at-home parent, and parents with flexible schedules. There were typically 1-3 children in the family, and each family owned multiple devices, such as smartphones, tablets, iPod Touches, computers and video game consoles.

Our interview was broken up into five sections: getting to know them, technology use, parenting in general, in-depth questions, and wrap-up. We used probing techniques to gain a deeper understanding of specific statements that piqued our interest. We included specific drawing prompts in our interview guide, but realized it was difficult to simultaneously interview the parents and engage with the children.

*Drawn by son from Family Mars. We asked him to draw a picture of his parents using technology. Second picture: Son shows us his card collection.*
Consequently, we often resorted to letting the children draw on their own, though we soon realized that this was not effective in maintaining their attention. Some of our interviews, then, were with the entire family, while others were with just parents. All interviews were recorded and transcribed.

After transcribing our interviews, we then ‘affinity diagrammed’ our data. To begin this process, we worked on our own to analyze interview transcripts and write down quotes and themes onto Post-It notes. We then met to cluster compare the themes we found individually. While there was overlap with our themes, we felt that our clusters were too broad. We tried to reframe similar themes into “How might we” questions, phrasing potential problem spaces into questions. For example, How might we foster creativity and imagination? How might we encourage face-to-face interaction? How might we make parents more aware of their child’s technology use? How might we maximize benefit while minimizing harm of technology? After this exercise, we worked individually to come up with potential design concepts that speak to these different questions. We met again to share our designs. Overall, we came up with 30 different ideas, each solving a different problem and embodying different sets of values.

After reviewing our design ideas from the brainstorm, we decided to do a second round of data review. We again worked individually to analyze the data and come up with new concepts. There were many interesting problem spaces and a range of promising design solutions that came out of our analysis and brainstorming sessions.
Design Approach

Since our interviews uncovered so many problem spaces that could be explored further, we decided, as a team, to explore different topics based on key user needs. Emily and Lizzy were interested in designing a content discovery tool (called ‘eeny meeny’) that would help empower parents to choose content for their kids. Kristine was interested in delving deeper into the research and further exploring how to promote a combination of digital and analog play, interaction, and creativity. This section includes two parts: Emily and Lizzy’s design approach, and Kristine’s approach.

EENY MEENY: PARENT RECOMMENDATION APP

Interview Takeaways and Problem Statement

As we completed our interviews in the “discovery” phase, we realized many of the underlying values discussed in our literature review resurfaced during our conversations with families. Parents talked about the well-being, social development, and intellectual growth of their children. Some also raised concerns about privacy and safety. The value of autonomy was particularly interesting. In our literature review, we discussed autonomy in terms of children's ability to act independently. Ultimately, however, it was parental autonomy and empowerment that emerged as a central theme in the interviews.

One of the most interesting insights in our analysis is that parents have very different values and approaches to media consumption. Some parents actively seek apps, games, and other content that they think meet their own priorities while also being appealing to the kids. Other parents let kids “shop” and then review and approve content. Some parents stay out of the equation altogether, trusting their kids to make good decisions when they browse or download.

*I see what he’s kinda doing and I usually just use logic with him: “okay, you’re killing people, why are you doing that, what do you understand?” But no, I haven’t really... totally true, reality is, nope, I don’t check that thing.* [Mom, Family Pacific]

*I usually do most of the research. And I find games that I think have—will pique his interest, and you know. They don’t play any shooting games or killing games—nothing like that. It’s always strategy games.* [Dad, Family Mercury]

*Dad: We look at reviews. If it’s more than 99 cents I’ll Google it and try to find more information about it. Uh, what else. Sometimes we use Common Sense Media. Other friends. Mom: I remember on time on Facebook we were getting ready to go on a trip and I just said, what are the top five apps for your kids. And I just looked at what they said, who said it, and the...*
For parents who do play an active role in mediating consumption, our interviewees used very different approaches. Many people browsed reviews in the app store. Some looked at the ratings. Some “Googled” the app in search of blogs and discussions about the app. Others used third-party resources like Common Sense Media that provide content ratings and reviews specifically targeted to families. Finally, some parents used the download-first approach. They download the app and try it out. If they don’t like it, they simply delete it. Some, but not all parents, sought feedback from friends and family about which content was appropriate.

*Dad*: In the App Store, I check a few times with the genius, you know, to get recommendations based on your other purchases.

*Mom*: Who’s that guy from the NYT?

*Dad*: David Pogue. He’s a tech columnist that does reviews of educational games for kids on the iPad. Found games that way. [Family Mecury]

But if I’m going to purchase one like you know, the World of Goo, or Conquest, I’ll research it before I download it. Because they get sick of the games after a while. I kind of need to update them... I’ll Google it, occasionally, if it’s top apps, you know, educational apps for kids, and I’ll see what’s popular. But most of what’s, you know the top 10 popular are like... [Dad, Family Rock]

Parents had different criteria, thresholds, and concerns for their children. Violence, for example, was a concern for many parents, but each individual had a different perspective on what specifically constitutes “inappropriate” content. Some parents worried about language, others did not. Some parents were very aware of advertising in their children’s lives and wanted to minimize exposure from media. Some parents talked about privacy and safety. Others discussed preferences in terms of the educational value that content could provide.

*Mom*: Well, we’re not very strict in terms of music because Dad has always listen to rap. Explicit lyrics is something he’s heard a lot of in his little life. So we never really restricted him to—well, if there’s a clean version and an explicit version of a song he gets, I do ask him to get the clean.

*Dad*: He can listen to the music, as long as he doesn’t say the words. We’ve held by that agreement for long as I remember, so that’s the deal. I personally don’t have that much worry about the what music he listens to… but he is good about the language.

*Mom*: There are times where I just said, ‘no,’ because they were just nasty...They were sexually explicit, repugnant, or just sad. You just listen to it and think, “that is absolutely so wrong to talk that way. “ I can’t accept it. Just colloquially cursing... it’s the use of the language and how it’s used. If it’s used in a vitriol, hateful, or misogynistic way, or sexually explicit way, then not. It’s just bad music. [laughter] It’s really subjective, right? The roots are really intelligent. They are intelligent guys with intelligent lyrics. A lot explicit lyrics... but what they are saying, if you listen to them in context, is a message—a message we don’t disapprove of. [Family Earth]
The whole science project thing turning into bomb or gun making activities. Until we give them carte blanche to follow some of these things that they find, it would be destructive around the house or dangerous to us. Those things bother me. They’re boys. They’re totally fascinated by that stuff. If we had two girls here, we wouldn’t have the same issues. Girls don’t think about cutting all the heads off matches and putting them in something or tying them tight and lighting them. [Dad, Family Mars]

...Well he watches a fair amount of TV, but I think it’s most of the TV he watches is ok, because it’s like a springboard. He watches something on TV and it fills his imagination and then he goes off and he does something else with it. Like today he said they had recess indoors, regular recess and lunch, so he spent his whole time drawing this dragon that was inspired by this dragon game that he plays...This DragonVale thing is sort of like Farmville, you put things and there’s counters and you feed your dragons and you try to get visitors. There’s this funky monetary system and you buy things and you can put real money in to get more of their funky monetary system, but there’s no real money from me so he’s got to grow everything himself...
Sometimes his friends play these Shoot ‘em Up games and he’ll say I really want to play this game that Michael’s playing, and I’ll say nah forget it. We’re not going to play the game Michael has, you can play it when you go to Michael’s house. We’re not going to play Shoot ‘em Up games, and fortunately he doesn’t want to. He wants to raise baby dragons and I’m so okay with that. Ahhh, life is good. [Mom, Family Los Altos 2]

Ultimately, most parents rely on some combination of readily available information and gut instinct to guide their decisions. They often feel like they’re “winging it.”

Dad: Personally, I feel like if he does 30 minutes [of technology], he should do at least 30 minutes to an hour of reading. He spends a good amount of time reading. I think I have a lower tolerance for this.
Mom: You think? [laughter]
Lizzy: Where did you come up with this ratio?
Dad: I never figured out what the ratio ought to be. The challenges is having devices that becomes sort of difficult to put limits on. So it becomes almost a feeling of like, ‘okay, that’s just too much time on that.’ My own feeling is that having those devices around and having easy to access makes them an easy first option for things to do. I have real issue with that. 30 minutes is an arbitrary line I draw based on feelings. Other times, should be other stuff outside of that. [Family Earth]

Mom: I guess we really got [iPod Touches] because we thought it would be good to have access to information, right? And we knew it would be fun. We weren’t naïve about the games and all that. I guess that’s what won me over. And she’s 9, almost 10 and I thought, this is kind of the age where she wants to know what the meaning of a word is or how big Mount Fuji is or whatever, she can look that up on her own. This is the modern world, and you can’t get away from, or you would necessarily want to get away from the technology. And then it really became
a question of ok, do we just get it for [the oldest child] and create this imbalance where they're gonna be quite upset, so that was sort of tricky, because we did buy three and it was quite a splurge.

Parents are overloaded with information, but have limited time and attention to parse through it. They are also skeptical of overly rigid filters and blockers that do not effectively account for their nuanced opinions. In this landscape, we wondered if there was a way to help parents evaluate options and make decisions, while still respecting the autonomy of their unique parenting style. Could we provide the right amount and type of information at the right time and place to help parents feel empowered and confident when making choices? Could we help parents choose the best content without making, in the words of one of our interviewees, “more work for mother?”

Primary Persona and User Needs

Early on, we realized not all parents would be interested in using a recommendation tool, especially those that never review or download content for their children. As a result, we wanted to design a tool for those parents who spent time researching kid-friendly content. Since some of our interviewees told us they read about an app at several websites, we wanted to centralize app information into a single location.

To figure out user needs, we first developed our primary persona: Kevin Russell
Kevin Russell represents a subpopulation of our interviewees, and thus a particular set of values. These parents are technically-savvy and spend time reading reviews and carefully vetting their kids content (parental autonomy). Additionally, these parents want their kids to be exposed to the benefits of the Internet (enlightenment), while protecting them from inappropriate or harmful content (safety and well-being). Rather than let their kids interact with the same content over and over again, these parents want their kids to play with new content (enlightenment). They are also concerned about TV commercials and see advertising as harmful to their children (privacy and well-being). Surprisingly, many parents, after our interviews, were curious to know if they were like other families (normalcy).

Kevin actively seeks out content for his kids. He also researches apps that his kids want. Kevin wonders what other parents are choosing for their kids, but he doesn’t always feel comfortable asking them for advice.

Based on our analysis, the recommendation tool should be:

- Easy-to-Use
  - Kevin should be able to easily find interesting, but appropriate content for his children.
  - Kevin should be able to read reviews about content without hunting all over the web.
  - Kevin should be able to easily personalize his recommendations.
- Kevin should be able to make his decision in real-time, without having to download or install the content.

> Establish Confidence
- Kevin should be able to see how many other parents liked an app, ensuring that he is "like other families."

**Scenarios**

After developing our primary persona, we then developed two scenarios of how this recommendation tool would be used. In the first scenario, Kevin is actively setting up the recommendation tool and searching for content for his kids. In the second scenario, Kevin is looking up an app his kid specifically requested.

**Scenario I: Set-up and actively searches for content**

*Once upon a time...*

there was a tech-savvy Dad, named Kevin, who wanted his kids to get the most out of technology.

*Everyday...*

his kids played the same games on the iPad, but he knew there was more out there for them.

*Until one day...*

he found a new tool that will help him navigate the landscape of apps for kids.

*And because of that...*

Kevin discovered apps that appeal to his kids’ interests and his own preferences.

*Until finally...*

his kids began to welcome his recommendations.

*And ever since...*

his kids have used a range of apps that are fun, educational, and innovative.

*Moral...*

Content discovery can be a challenge, but with the right tools parents can make the most of technology in their kids’ lives.

**Scenario II: Kid asks for content**

*Once upon a time...*

there was a little boy who wanted to play Cut the Rope, a game his friends loved.

*Everyday...*

the little boy asked his dad, Kevin, to download the app for him, but Kevin was sometimes too busy to read all the reviews on the Internet and ask other parents about the game.

*Until one day...*

Kevin decided to use a content discovery tool to search for and read about Cut the Rope.

*And because of that...*
He was able to see Common Sense Reviews, as well as the number of parents who also loved the app in one centralized location.  

Until finally...  
Kevin regularly used this content discovery tool to look up apps for their kids.  

And ever since...  
The little boy was always entertained because Kevin could easily discover new apps for him.  

Moral...  
With eeny meeny, parents can get the information they want in one centralized location and pick apps that are consistent with their values.

Competitor Analysis

Before we began designing, we conducted a competitive analysis to see what tools already exist in the market and what needs are still unmet by existing products. This allows us to find a market niche and differentiate our product.

Websites on Apps for Kids
We identified five existing app discovery tools designed to be used on mobile devices. All of these tools target an adult user audience. None provide information specifically tailored to the needs and concerns of parents.

Chomp (iPhone) is, according to the company’s website, “the search engine that finds the apps you want.” Chomp allows users to search based on app name or function. Chomp’s main distinguishing feature is that the site collects and processes information about what apps do, making discovery easier. It offers app ratings and reviews from Chomp users. Pages for kids’ apps follow the same general structure as those for other apps.

AppGrooves (iPhone) presents pairs of similar apps and asks the user to select the preferred app. It then provides additional app recommendations based on the responses. In addition, it offers lists of highly rated apps. It also allows users to share favorites through social media channels. It has no special features for parents or kids.

MyMarket (Android) describes itself as a “customizable overlay for the Android market which allows you to bookmark, recommend, remove, filter and preview items in the listings.” This description is somewhat misleading. Rather than being an “overlay” it appears to be a standalone app that scrapes data from the market. The existence of MyMarket was the first indication we found that Android Market data can be harvested for use by other apps. MyMarket offers organization and recommendation features like eeny meeny, but it does not offer much information about the apps beyond what the Marketplace provides.

Kinetik (iPhone) distinguishes itself by the social features it provides. It allows users to see app recommendations from their friends, provide recommendations over social media channels, and
view trending apps. It offers more social media functionality and options than AppGrooves. However, it provides only brief descriptions of the apps that users are sharing with one another.

TasteKid offers recommendations on music, movies, shows, books, authors, and games based on the user’s preferences. The user types in the name of a book, for example, and receives additional content suggestions. While TasteKid offers an app for Android and iPhone in addition to a website, it ironically focuses on recommending movies, music, and books, and not apps. While the word “kid” is included in the name, this app actually has nothing to do with children.

The following is a summary of functionality in these apps:

<table>
<thead>
<tr>
<th></th>
<th>Chomp</th>
<th>AppGrooves</th>
<th>MyMarket</th>
<th>Kinetik</th>
<th>TasteKid</th>
<th>eenymeeny</th>
</tr>
</thead>
<tbody>
<tr>
<td>search function</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>social element</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>custom information about apps</td>
<td>no</td>
<td>no</td>
<td>no</td>
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<td>no</td>
<td>yes</td>
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<tr>
<td>custom suggestions</td>
<td>no</td>
<td>yes</td>
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<td>yes</td>
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<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>targets parents</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Websites on Apps for Kids**
Next, we looked at existing resources for parents evaluating kids’ apps. We found a number of websites focused on this purpose. They vary significantly in content and design quality. Some seem to be operated by parents for parents, while others appear more commercial. We examined the following sites prominently displayed in Google search results: giggleapps.com, apps4kids.net, smartappsforkids.com, bestkidsapps.com, bestappsforkids.org, bestappsforkids.com, ikidapps.com, commonsensemedia.org. These existing resources offer information targeted to parents. Some offer filtering options for age and interest area, but none provide custom recommendations to individual parents or allow parents to select the types of information they see in reviews. All the tools are browser-based with no mobile app version.

**Analogous Designs**
Finally, we looked at other types of content recommendation systems for a more general sense of how designers approach this type of tool. One of the first sites we examined was Good
Reads, a website that offers book recommendations based on user preferences. Good Reads has a simple, intuitive set-up process through which the site “gets to know” the users. Netflix and Pandora are popular, well-designed sites that provide content based on user behavior. We examined the design elements of these sites for further inspiration.

We also looked at Good Guide, which is a system that provides customized information to users about products, including considerations like environmental impact, health concerns, and social responsibility. Good Guide offers large volumes of information in a digestible format. It is available as both an app and a browser extension. We looked to Good Guide for inspiration because it both allows individual users to learn about the issues they value most and also offers an information intensive interface in an elegant design. While the purpose of the project is different, there was a lot we could learn from this tool.

Prototyping and Testing

In this section, we will outline the three major design iterations that led us to the final “eeny meeny” design. Following Flanagan et. al’s framework, we attempted to translate values into our design. As outlined in our primary persona section, we designed the app to emphasize the values of well-being, privacy, safety, and enlightenment. Since parents have different criteria for each of these values, we wanted to created a tool that would provide recommendations based on these different perspectives. We wanted to allow parents to be able to customize the information they read in reviews, a feature that speaks to the values of parental autonomy and empowerment.

After every iteration, we tested our prototype with parents. We were not only testing the app’s usability, but also “verifying values.” We wanted to make sure our app embodied some or all of the values parents like Kevin thought were important.

Phase I: Web page and extension

In our initial approach, we were interested in developing a browser extension that would help parents make real-time decisions when searching for a wide range of media (e.g. app, websites, etc.) on the web. Although our interviews had focused on smartphones and tablets, families also discussed using the Internet, including sites like YouTube and Club Penguin.

This initial design had two elements. First, there was a webpage where the user created his account, entered his preferences, and picked friends from whom he would like to see recommendations. Second, there was an extension, which provided content reviews and recommendations based on his preferences. Many of the sketches for this tool focused on the interaction of setting up preferences (e.g. liking and disliking content). We sketched several iterations of this design on paper, experimenting with different design elements and methods of capturing user preferences.
Prototype I (Balsalmiq):

After sketching out our design on paper, we began working in Balsalmiq. We continued to play with different designs for collecting user preferences. We also began thinking about the login process. In this initial design, we decided to encourage users to sign up with Facebook or Google+. This way, the user could see what his friends liked and recommended. Due to privacy implications, we also provided the option of signing in with an email address.

In our first prototype, we asked the user to select content genres he liked and disliked, and then rate popular content within liked genres with either a “thumbs up” or “thumbs down.” However, after completing this design, we realized that people don’t necessarily think of content in terms of pre-set genres.

![What genre does your child like?](image)

Prototype II (Balsalmiq)

In our second version, we removed the rating of genres. We also added a bookmarking feature that allows the user to flag content of interest for later review. We went through several iterations of naming this bookmarking feature. We also added personal ratings, which allowed the parent to indicate whether he liked or disliked the content.

We considered how to make the extension responsive to content being used in the browser. We decided that the extension would pop-up when the user was browsing or searching for kid-friendly content. For example, when a parent visited Club Penguin, he would see information from various sources (e.g. Common Sense Media Ratings) about Club Penguin, as well as recommendations for other content like Club Penguin. He would also be able to rate content in the extension.
Prototype III (Balsamiq)

In the final iteration of this phase, we decided to eliminate the webpage and move all functionality, including setup, into the extension. We felt that the simplified design would make for a more streamlined user experience. We experimented with different ways to manage bookmarked content, including leveraging the bookmarking feature of the browser itself.

Phase II: Recommendation App

After drafting our initial design, we made several realizations. First, parents would likely have different criteria for evaluating different types of media. For example, they probably would want to know different things about websites versus apps. This makes it difficult to build a single system for recommending all types of media. Second, the context in which parents browse for recommendations would be different for all media. If a parent is checking out websites, he would likely want information about the sites in the context of a browser. If a parent is considering an app download, it is more useful to see information on the device where the download will take place. Finally, the sources of information that we would use for 'eeny meeny' would be different for different media types. If we wanted a data privacy resource for evaluating kids’ websites, we would likely draw on the application Ghostery. For apps, on the other hand, it would be more meaningful to look at permissions from the app store. To further complicate the issue, Apple and Google present different information about data that applications may access, so we would need a different strategy for each platform.

It became clear that we needed to narrow the scope of the project. Since our initial user
interviews focused on phones and tablets, we had the most information about parental needs in the mobile space. As a result, we decided to focus exclusively on providing app information and recommendations. We also learned that it was possible to scrape basic app data from Google Play and not iTunes. Thus, we decided to design for the Android platform. Furthermore, by designing for the Android platform, we could leverage permission warnings Google Play provides. In the Google Play market, before the user can install an app, he must accept a list of permission that are presented to him during installation time. By accepting the list of permissions, he allows the app to access resources (e.g. contacts, SMS messages, photos) on his phone. Since many parents shop for and use apps on mobile devices, we decided to completely eliminate the extension and build an app instead.

Prototype IV (Balsamiq):
In converting our initial design to a mobile interface, we found that we needed to reduce the complexity and volume of content. We simplified the setup process, so that the user had just three tasks: creating an account, choosing trusted friends, and selecting favorite apps.

Similar to our extension prototype, we retained the social element (e.g. Facebook Connect) in our design. Once the parent created an account and selected friends, we asked the parent to select the apps they approved of and what their kids loved. We removed the “thumbs up/thumbs down” feature because it would have taken up too much space. We wanted parents to be able to input what they knew their kids liked on a single screen.

Similar to the extension, a list of recommendations appeared. When the parent viewed more about the app, he would be able to rate the app and view the description, Common Sense Media (CSM) ratings, permissions information, and how many friends loved the app. From this details page, we added a bookmarking feature, which we called the “Maybe Box.”
User testing I (Lake Merritt Park, 10 families)
Our first round of user tests took place on a busy Sunday in Lake Merritt park in Oakland. We spoke with parents from 10 families, focusing on smartphone and tablet users with kids who actively use apps. All participants were passers-by who stopped by our testing table. We offered donuts to families that gave us their time.

When conducting the test, we showed participants our paper prototypes. For each page, we gave them a task to complete and asked if they understood the page they were seeing. This first round of testing gave us important insights into some issues with the Balsamiq prototype.

Overall, users understood the concept of the app. They liked the idea of social recommendations, but they were not very interested in seeing recommendations from friends. Users were more curious about strangers “like them.” Users liked that the recommendation details page offered different types of information about an app, but they were confused by the different categories and sources of the data. For example, few were familiar with Common Sense Media (CSM), but when they looked at the details of CSM ratings they were interested in the information. Many participants said they wanted to see more information about CSM ratings. For example, one user selected “Consumerism” because he wanted to learn more about “Consumerism” in the app.

Participants were also confused by the “Maybe Box.” Participants did not understand the phrase, nor did they know where to clicked when we gave them the following task:

“Pretend you are in a rush and would like to Temple Run later. What would you select to move this app for review later?”

Many participants selected the “Maybe Box” tab rather than button. One participant also suggested we use the term bookmark, since that was more commonplace and recognizable.

One surprising finding was that our users knew and cared about data privacy on their phones. We were initially unsure if this type of information would be of interest, but found that it was useful to parents.

Prototype V (Balsamiq)
Based on the feedback we received in our first round of testing, we made changes to our prototype. We changed the “Maybe Box” to “Bookmarks.” We also added a pop-up window to provide more information about a specific CSM Rating. We added a sentence below each section of the details page explaining the source and purpose of the information.

User Testing II (Lawrence Hall of Science, 8 families)
We conducted our second round of testing at the Lawrence Hall of Science. Testing was conducted on a Friday. We spoke with parents from 8 families, again focusing on smartphone
and tablet users with kids who actively use apps. All participants were passers-by who stopped by our testing table. We offered stickers to families that gave us their time.

Again, we showed participants our paper prototypes. For each page, we gave them a task to complete and asked if they understood the page they were seeing.

Overall, parents understood the concept of the app. However, it was clear that not all of them would be our target user. Some parents did not finish our test because they were not interested in the information it provided. Parents that were excited about the app were a lot like Kevin, our persona: they were tech-savvy and already spent time researching apps for their children. Additionally, these parents already knew about and were using Common Sense Media.

In terms of design, many parents were overwhelmed by the amount of information on the app’s detailed page was expanded. This could have also been because we showed all the information in the app details page at once on a long screen. In real-life, the users would expand each section one at a time to view the information they cared about.

Most surprisingly, many people did not care about their friends reviews. Again, parents wanted to see recommendations from strangers who were like them. As one mom said, “If I wanted to know [what my friends thought], I would just ask them or post on Facebook.”

Parents also asked if recommended apps were free or paid. A few wanted to be able to specify that they were only interested in free apps.

Lastly, people were confused about the login and did not see the difference between social media and email-based login.

In terms of positive reactions, all parents understood “Bookmarks.” They also selected the “Bookmark this” button instead of tab. This confirmed that we made the correct decision to rename the button and tab. While some parents didn’t understand the phrase “What this app can do your phone,” most of them understood this section when they saw more details. One mom said she made an effort to look at “that stuff” when looking at app on her Android.

Prototype VI (Fireworks)
After our second usability test, we created high fidelity prototypes in Fireworks. First, we simplified login. This decision solved two problems: first, it made creating an account less confusing, and second, it removed the “select trusted friends” option, a feature parents did not want. In its place, we added the “parents like you” feature. This was to address parents’ desire to see what strangers with similar preferences had rated positively.
On the “Apps my kids love” page, we added a feature that allows the user to select whether he prefers free or paid apps.

In terms of general edits, we made our high fidelity prototype more stylized. We adjusted color, fonts, icons, and layout to create the right balance of information and visual elements.

**User Testing III (Lawrence Hall of Science, 6 families)**

For our final usability test, we went back to Lawrence Hall of Science on Cal Day. We conducted our tests in a different spot, and we talked to 6 parents. Again, all participants were passers-by who stopped by our testing table. We offered stickers to families that gave us their time.

During this round of testing, we found ourselves asking people about the type of the phone they owned. This was because some users were unfamiliar with the term “Google Play,” the new name of the Android Marketplace. Most of our testers that day were iPhone owners. One parent had an Android, but she was unaware of Google Play. This could be because of Google’s recent rebranding.

In our last round of testing, we met more parents who said they were not interested in using an app like this. One parent immediately selected “Download” on the “Recommendations” page. When asked, she said she didn’t care about CSM ratings or what the app could do on her phone. Another parent said that there was too much information, and “my time is too valuable” to read all the information. He told us that he used to read Yelp, but stopped because it provides too much information. He said, “Information is less valuable en masse.” Other parents were
unfamiliar with CSM, but thought the information could be valuable.

Parents were often stuck on the “Apps my kids love” page. One parent thought the page would give him more information about apps he might like. When he clicked on an icon, he expected to see a pop-up with more about that app. Another parent admitted that she didn’t read the instructions on the page, so she didn’t know what to do on that page. One suggested we emphasize that the page’s purpose is to learn what the user currently owns and likes.

Overall, people understood the bookmark function. One parent, supporting this feature, said that a bookmark function was a “key thing missing from iTunes right now.”

Final Prototype

For our final set of revisions, we focused on the “Apps your kids love” page and the “Recommendations List.” Since the “Apps your kids love” heading confused many parents, we decided to change the overall language of the page. For the “Recommendations List,” we added the number of parents who loved the app, and ranked the entries in order of the number of people who loved it. This would help parents quickly differentiate between the apps.

Technical Approach

Although the majority of parents in our interviews used iPhones and iPads, we chose to design an Android app because of the platform’s technical capabilities. Google Play has an API that would allow us to scrape data, including app description and permissions, from the site. Apple blocks developer access to data in its app store. The iTunes market does not offer permissions information about apps.

We chose to leverage Common Sense Media’s content ratings for a number of reasons. First, some parents we talked to—both during our interviews and testing—said they used this website.
Further, parents who were unaware of this website also showed interest in their categories. In terms of technical capabilities, the CSM has an easy-to-use API that would allow us to pull ratings into our app.

While we did not design an algorithm for our recommendation engine, we did consider the inputs we would use for the system. The tool would look at personal ratings and downloads. It would parse information about those apps, including text in the app description, metadata, CSM ratings, and permissions, and then seek themes. It would also look at parents who made similar patterns of content selections. The algorithm would be able to learn over time, refining recommendations as it received more user feedback. We would iteratively revise and refine the algorithm based on user testing and feedback.

Results and Future Work

The final step of our design process was to evaluate how well we incorporated the intended values into our design. Nissenbaum calls this step “verification.” The primary goal of this project was help parents learn about apps for their kids. While parents approach content selection with a range of perspectives, there were significant commonalities that helped us narrow down the type of information our tool offered. Ultimately, the primary values we wanted to support were parental autonomy and empowerment. We accomplished this by providing detailed information to parents, but allowing each user to customize the amount and type of information he sees. The app attempts to “learn” each individual’s preferences and values, and provides recommendations to match them. Based on the user testing we did, the app broadly supports the values of we set out to foster.

Verification, however, is not a single point on the project timeline. As designers, we need to continue to consider values incorporation during build and after deployment. Specific engineering decisions, such as the inputs and thresholds of the recommendation algorithm, can impact the expression of values. Only continued review, tweaking, and testing can ensure that the tool supports the intended values once it is released “into the wild.” Since our project is still in prototype phase, we do not yet know how and when parents would actually use the app in the context of their daily lives.

For us, next steps would include testing in a “parent-only” area. While we purposefully conducted testing in areas where there were children, we realized it was difficult for some parents to complete our test because they had to watch their children.

Furthermore, we would need to find parents most similar to “Kevin Russell” for future tests. In our initial phases of testing, we were validating the concept and usability of eenny meeny. Near the end of testing, it was clear who would use our app. Thus, in the next phase of testing, we would continue to test out the usability of this app, but with our target users. In addition, we would want to focus our testing exclusively on Android users, because our design is specifically tailored to this platform.
One potential area of exploration would be to look at “Things this app can do on my phone.” As stated, we were surprised that many parents were aware of and concerned about an app’s ability to collect data on their phone. One reason we were excited to design for the Android platform was because the Google Play market has permission warnings. As outlined earlier, before the user can install an app on his phone, he must accept a list of permissions. By accepting the list of permissions, he grants the app to access things like contacts, SMS messages, and phone camera. Since Android has 134 permissions [66], we should work to discover and display permissions that parents care about the most [67]. For example, during our second usability testing session at the Lawrence Hall of Science, one parent said, “Yeah, I would like to know if it knew my location.” New tools may also help provide useful information about permissions. Stowaway, for example, is a tool that informs users when an app accesses unnecessary permissions[68]. While not in a format that we can currently leverage, we may be able batch detect unnecessary permissions in kids’ games in the future using Stowaway.

One of our major takeaways is that values-based design is far from straightforward. Not only do users and designers have a range of values, but those priorities can shift over time and across contexts. The application, by contrast, is an fixed artifact imprinted with pre-set features. It is therefore our job as designers to be humble, flexible, and active, building for a complex world and acknowledging where the medium falls short. For Nissenbaum, the goal is for designers to become more skilled at the process of values inquiry. From this perspective, we consider the the project a success.

iGeneration

Design Approach
Further Analysis

My goal for this project was to create a design deeply rooted in findings from our qualitative research. Based on the spectrum of interviews we conducted, I decided to dig deeper into analyzing the research in order to determine key insights. There were several stories from the interviews that stood out. This instilled in me a deep desire to capture the essence of these stories and truly uncover unspoken user needs and values. Every family discussed a struggle over figuring out how these devices fit into their lives in ways that added value, specifically in terms of enlightenment and well-being. In the midst of the typical battles, mainly over screen time and content management, emerged a fondness for the power of technology and the satisfaction that it provides. The following two quotes capture this sentiment:

“We named it (iPad) Friend because we didn’t know if we would find any. It acts like a friend, it keeps you company and entertains you.” – Mom

“When we got the [diabetes] pump, it had that technology, and I’m into technology, so technology changed my life. That’s all I do. So immediately, I’m a reporting person and an analysis person, I immediately jumped on board and started collecting data points, because you have to look at it in the aggregate, you can’t really look at it on a day basis. You have to look at it for at least two weeks, because there’s a lot of error. And then after I used those reports, I really started ratcheting down the patterns and adjusting and it got really, and we’ve had really good results of keeping his blood sugar super low, like almost into the normal non-diabetic range. And I talk to all these parents who don’t use technology, and they have never used any of those. And I’m like, you just want to cry, because their blood sugar averages are like... Horrible. And you’re like. The answers are all right there. Just look at it. The pump can do everything. And they don’t do it.” – Dad

The anecdote about the diabetes pump was shared during our first interview, but it kept reoccurring as the ultimate hero story for these devices. This one piece of technology enabled autonomy, enlightenment and well-being for this particular family. Along this vein, how can these devices help facilitate experiences that align with a family’s values in ways that are relevant to their day-to-day life? Thus, I began by carefully reviewing each interview transcript and coding for specific themes, such as values, aspirations, and uncertainties. From this, I transferred key quotes to post-its and began another affinity diagram, a method that helped me to visualize common themes and patterns. After clustering post-its into similar categories over the span of a few days, I began to brainstorm creative titles for each cluster. This method is used to create an easily memorable phrase that captures the core theme of each cluster. With hundreds of post-its, I struggled with the granularity and abstraction of each cluster. So after spending some time rearranging post-its and clusters, I began to look at the relationships between clusters. I quickly realized that there were strong connections between some but it was difficult to map all of the relationships in a concrete way.
In the midst of sifting through the large amounts of data during affinity diagramming, I decided to try using the AEIOU tool to quickly grasp the main points of the research.
I created a journey map to understand the process and events that occur when a family embraces the use of smartphones and tablets. (left) I attempted to create various 2x2 diagrams to better understand opportunity spaces. (right)

Prioritizing User Needs

After sifting and thinking, I narrowed down the user needs by focusing on specific clusters. I looked at the concerns parents expressed and what they deemed useful about devices. From this list, I decided that many of the concerns are best addressed by parents taking preventative measures, so I focused on those uses instead. I wanted to understand the perceived usefulness in context so I went back to the clusters relating to values, desires, activities, and raising kids. I prioritized user needs from these clusters into three buckets: growing up, what kids do, and the things of life, with the main user needs below:
Generating Insights

From the analysis findings and previous ‘how might we’ questions created with my team, I then focused on generating insights in the form of [who][verb][what][why] statements. I primarily leveraged the high-level concepts from the cluster names, but also referred to the journey map and AEIOU diagram.

Insights

- Families find all-in-one devices convenient, but they also pose challenges.
- Parents desire to teach kids the skills that they need so that they’re prepared to thrive in the world, but they aren’t sure how device usage fits into that.
- Families desire to use devices to add more meaning and value to their lives.
- Parents ultimately want to trust their kids to use devices responsibly, but they worry about the type of content they are being exposed to.
- Parents prefer to teach their kids responsibility instead of explicitly controlling their device usage.
- Parents tend to implement stricter controls and rules around monitoring their kids’ device usage when the boundaries have been pushed.
• Parents aren’t sure how to best incorporate device usage into their kids’ lives in a healthy and balanced way, especially when each parent has differing values.
• Every kid and parent has different needs, values, and desires around incorporating tech into their lives.
• Families enjoy having technology in their lives but desire to fill their lives with other analog activities.
• Parents believe that tech is the future and feel that it is their responsibility to expose their kids to it.
• Parents value dialogue and interaction with their kids instead of simply laying down the law because they want to raise kids who are capable of making their own decisions.

Research Synthesis
After prioritizing user needs and generating a list of insights, I distilled all of it down to the following:

Overarching Insight
Families want to use devices to add meaning and value to their lives.

Values
• Dialogue
• Interaction / sociality (with parents and other kids)
• Raise kids who are tech savvy, so they will be successful
• Raise kids who are capable of making their own decisions / autonomous
• Health and happiness / well-being
• Maintain offline activities despite the prevalence of these devices

Meaningful Uses of Devices
• To explore and learn / enlightenment
• To play
• Babysitting device and pacifier
• Gain skills and knowledge
• Creativity and imagination
• Manage life (bills, chores, email, directions, communication)

Minimize Negative Effects
• Attention spans affected / expectation of immediacy
• Waste time
• Distraction from what’s in front of you
• Exposure to inappropriate content
• Solo play / lack of interactions
• Understanding of fantasy vs reality is blurred
Design Principles

- Flexibility (every kid and family is different, interests change often)
- Easy to use and figure out (time constrained families don’t want another thing to manage)
- Instills confidence in parents and the decisions they are making (they need to feel like a good parent and want to be normal)

Based on these findings, I knew that the project could head in multiple directions. Because creativity and imagination in relation to enlightenment opportunities were mentioned by every parent we interviewed, without us asking about it, I decided it was worth exploring. Also, the idea of creating a tool that allows parents to engage and protect their kids in less restrictive ways reframed the user needs and values from a contrasting viewpoint. Exploring this area from this atypical perspective was bound to yield new and different solutions. The following two questions guided me as I began to enter the design process:

- How might we help families incorporate technology into their lives in meaningful ways?
- How might we promote a combination of analog and digital play and creativity?

Secondary Research

Another Literature Review

After choosing these two ‘how might we’ questions, I began another literature review specifically focused on understanding why creativity and imagination are important to parents. I read numerous articles and books discussing the importance of play, technology and imagination on learning. Key themes from this research are detailed below.

Kids’ Relationship with Technology

In The Young and The Digital, one of the main themes that the author addresses is the shift from technology as purely consumption devices to creation devices as well. This shift has occurred with a change in the age at which digital use begins. In turn, this has allowed children to pick up technical and social skills. While many positives have resulted from this, the author states: “asking young people to disconnect even momentarily from the vast swirl of content and comrades they engage throughout the day generates anxiety, discomfort, and cultural alienation” [69]. A couple of parents mentioned that they notice physical and behavioral changes when their kids are having a hard time disengaging from these devices. This quote reflects that sentiment: “have we created a culture in which the ability to pay attention to a single thing for a sustained period of time is simply no longer possible in an age of constant simulation, communication and gratification?”[70]

Interaction

There have been two research studies that seek to promote reading between kids and adults over the Internet. Family Story Play provides a way for kids to read with their grandparents
through a device that combines a paper book, videoconferencing, and Elmo videos. The device succeeded at engaging kids in collaborative storytelling [71]. StoryVisit combined videoconferencing, access to an e-book and an animated character to promote long-distance reading. They discovered that providing joint activities helped to promote a sense of togetherness [72].

**Playful Learning**
A common critique of computers is their promotion of passive interaction. Resnick attempts to change the metaphor of a computer as a television to a paintbrush. By providing activities that allow children to push boundaries, experiment and design, they are gaining skills in creative thinking and expression. The need to nurture creativity and imagination in childhood is required for innovative thinking in the workplace. Even though Resnick believes that “a heavy diet of ready-made computer images and programmed toys appears to stunt imaginative thinking,” he cites numerous examples of computer games that promote active engagement [73]. The ultimate focus of technology is blending together the real world with the virtual world.

**Physical Objects**
Turkle’s discussion of the relationship and emotional connection we develop with the objects in our lives led me to really think about the impact that these devices have had on childhood and the experience of growing up. Yee discusses the transition from physical to digital using architectural drawings as an example of the rituals lost and the anonymity created through the ease of technology [74]. She comments on being a part of a generation that straddles the physical and digital worlds, which is quickly changing as more and more activities are moving from the physical world to the digital world. As this shift continues, what is being lost must be considered.

**Competitive Analysis**
Along with an academic literature review, I began exploring different apps and top ten lists to become better acquainted with the existing landscape of children’s creativity apps. I discovered many apps that bring typical offline activities—drawing, pottery, building—to the online world. This reminded me of Turkle’s distinction between “what technology does for us and what it does to us” [75]. I began to seriously evaluate the purpose and need for these apps through the frame of what is lost when we lose our relationship with physical objects.

I then began to expand my analysis and investigated offline creative activities as well. I discovered the Children’s Creativity Museum in San Francisco; pored through their blog and went for a visit. I learned about their approach to creativity of providing 20% of an idea to a child and letting him/her come up with the remaining 80%. This resonated with me as a more effective method to inspire creativity than simply giving a child a blank slate to work from. By visiting the museum and viewing how the exhibits are setup, I witnessed an effective combination of physical objects and technology. For example, the animation studio was set up with supplies to
make characters out of paper before animating them as digital artifacts on the computer. I also saw how constraints in activities work to challenge kids’ creativity. The Innovation Lab had a ‘Mystery Box’ activity that gave a child an open-ended prompt and about 10 items in a box to build with.

After observing a number of diverse creative activities at the museum, I continued my exploration online for other activities. I discovered many different blogs and websites that focused on inspiring creativity and imagination. The wealth of ideas and activities are available for parents and kids who put in the time and effort to search for them. Because convenience is a key user need for many parents, providing these activities easily became key to my project. A brief summary of sites that inspired my design choices follows:

*MaMaMedia*
This website created by Dr. Idit Harel was the most relevant concept to my vision for an app. Created based on constructivist theory, it promotes digital literacy, play, exploration and imagination through playing games, creating digital creatures, making art and sharing ideas. The concept of the site is similar but the activities and design appear to be somewhat outdated.

*Rock Thoughts*
Rock Thoughts is a global art and storytelling project where participants paint monsters onto rocks, create a story about them, and hide them. Individuals who find the hidden rocks create another story about the monster. All of this is documented on a website. The focus on creativity and interaction reflected the key user needs that my project focused on exploring.

*Wander Monster*
Wander Monster is a blog that documents the post-it comics created by a father and son duo. The father began leaving a post-it with half a drawing and half a story in his son’s lunchbox everyday. The son would finish the story and drawing during lunch, which the father would find when cleaning out the lunchbox at the end of the day. This simple interactive creative activity became the basis for exploring creativity and interaction simultaneously.

**Problem Statement**
Based on the research, findings and design principles, I landed on an overarching concept of using technological devices to add meaning and encourage creativity through exploration, discovery, immersion, imagination, and connection.

I framed my problem statement as follows:

Families love the convenience and ease that their technological devices provide, evident in one parent’s comment that a “no screen time day is a tough day.” But they also desire to mediate their usage with offline activities, as another parent commented, “there are always things to do
but the device is the easiest.” A key experience of childhood is freeform play and imagination, which can become tainted by extreme device usage. How might we design a tool that helps facilitate offline play and creativity?

**UX Design and Prototyping**

My initial plan was to diverge wildly and generate hundreds of concepts around the problem statement. I began the process of ideating, yet I kept being drawn to a couple of concepts that I had created earlier on. I decided to create an app because kids are already spending a significant amount of time on these devices, but I wanted it to be significantly different from the apps that are already on the market. The logical next step was to begin creating paper prototypes to explore the feasibility of these concepts. I also created several storyboards to flesh out different use cases for an app designed to promote imagination and creativity.

**Storyboards of Use Cases**

**Day in the Life at Home**

1. Mom is fixing dinner, when her son tugs on her shirt and says ‘I’m Bored.’
2. Mom gets the recycling bin and craft box out, along with the iPad and launches the ‘I’m Bored’ app.
3. Son decides he wants to build a robot and make a video of it in action.
4. He looks through all the materials in both boxes and comes up with a robot.
5. Two hours later, his robot is done. The app guides him on what shots to take to create a video.
6. After dinner, he sits with his mom to show her the video and robot he created.
**Mom is Going Crazy**

1. The kids are screaming and running around the house. The house is also an absolute mess.
2. Mom breaks out the ‘I’m Bored’ kit and sets it up in the dining room.
3. Mom corrals the kids into the dining room and they start working quietly.
4. A few hours later... the house is clean.
5. The kids are still working quietly.
6. The ‘I’m Bored’ kit saved the day!

**The Inspirational Museum Visit**

1. First visit to the Children’s Creativity Museum.
2. Dad and son create an animation by hand.
3. They transfer the story onto the computer.
4. The next day, while mom is preparing dinner, the son tells her he wants to make a film.
5. Mom sets up the iPad and film kit.
6. Son shows Dad the film on their TV after dinner.

**Personas**

As I began designing, I realized that having specific personas in mind helped me to stay focused on my target users. They are based on a compilation of characteristics from the families that we interviewed.

*Parents: Todd and Beth Randall  Kids: Austin, 8 years old and Seth, 3 years old*

The Randalls have resided in Redwood City for the past 8 years. They found the perfect house and moved there right before Austin was born. Seth just turned 3 and follows his brother around everywhere. He wants to do everything that his older brother does.

Todd works as a software engineer for a Fortune 500 tech company in Silicon Valley, and wholeheartedly believes that tech is where the future is. He's always online in one form or another, whether it's through his iPhone waiting in line, streaming Netflix through the PS3, looking up a recipe on the iPad in the kitchen or checking Facebook on his MacBook Air. He is also an avid Words with Friends player whenever he has a couple minutes of downtime.

Beth works part-time as a physical therapist and prefers living a slower paced life. She enjoys the ease of paying bills on her iPhone and checking in on her parents on Skype, but she also misses the evenings at home spent together without Todd checking his iPhone every 10 minutes. She knows that technology is where the future is headed and secretly hopes that her boys will be the next Steve Jobs, so she appreciates that they are gaining technical skills by having access to iDevices. Yet, there are days when she wishes she could simply take them to the park for an afternoon without them asking to play with her iPhone during the car ride there. Sometimes she worries when Austin only draws scenes from Temple Run and characters from Dragon Vales on certain days. She worries that he's beginning to lose the rich imagination that has always characterized him.
Joelle and Maggie recently moved to Oakland from Philadelphia. Joelle works full-time as an accountant in San Francisco and takes BART to get to work. Maggie’s father purchased an iPod Touch for her before she moved across the country in order to make keeping in touch easier. Joelle was wary of allowing her daughter to have the iTouch at first, but found it difficult to limit the time that she spent on it because it was her lifeline to family and friends back east. Joelle began to appreciate the device after realizing the ease at which she could check-up on Maggie, i.e. receive a text from her when she got home from school.

Maggie often enjoys spending ‘imagination time’ drawing and taking photos, but Joelle noticed that her offline activities have decreased since the iTouch entered their home. This concerned her, so she used the Eeny Meeny app to find apps that would encourage Maggie to engage in ‘imagination time’ activities again. Joelle didn’t want to get into the habit of constantly purchasing apps, so she looked for free creative apps for kids. Two that came up in her search are called I’m Bored and Interact. She downloaded both of them and watched as Maggie used them instead of playing Angry Birds.

Joelle was surprised at how engaged she actually became with these apps as Maggie used them. She often loved looking through Maggie’s art gallery on I’m Bored and was constantly rediscovering how creative her daughter is. The gallery also served to document every single one of Maggie’s creations, which she happily shared with family in Philadelphia. This also allowed Joelle to not feel guilty about only keeping a handful of her daughter’s creations so they could live in a clutter-free house. Joelle was always involved in creating a handful of stories with Maggie on Interact. When she first downloaded the app, she begged Maggie to use it with her dad, who is the creative one, but she soon discovered how much she enjoyed it. Maggie’s sense of humor always amused her and proved to be an effective way for her to decompress on the BART ride home.
**Prototypes**

The initial paper prototype consisted of several hand drawn screens for an iPad app called *I'm Bored*. While designing this prototype I continued to research existing apps and literature, and found that incorporating the key user need for interaction became a challenge. The idea of pushing the boundaries of how devices can be used along with the possibilities of sensors inspired additional exploration beyond the traditional limits of current apps on the market. I decided to create prototypes of three separate concepts that would be tested at the Children’s Creativity Museum Innovation Lab. All of the apps fell under the umbrella name iGeneration but focused on different user needs. *I’m Bored* promotes offline imagination and creative time by prompting the child with a creative activity. *Interact* promotes interaction with another parent or child by providing a platform for asynchronous storytelling. *I Dream* builds technical skills by allowing kids to explore and play with cutting edge sensors.

**Usability Testing**

Because the usability test was focused on gauging interest and receiving feedback based on the three concepts instead of specific tasks, they were designed to be more open-ended. The *I’m Bored* app concept was a revised iPad paper prototype iteration. Along with the device prototype, recyclables and craft materials were provided because the creative prompt involved building a dream playground using materials from a recycling bin. The *Interact* app paper prototype was designed as an iPad app and iPhone app. The *I Dream* app concept sought to explore future technological possibilities of these devices in engaging kids in creative and imaginative activities. In an attempt to negate the power of suggestion, a checklist of ideas was provided along with an option for writing in your own.

*The Children’s Creativity Museum*
A two-hour testing session was scheduled on a Saturday afternoon in the museum’s Innovation Lab. The day happened to be the first sunny and warm day after a series of rainy days, so attendance at the museum was lower than expected, but I was able to test at least one concept with 15 different kids. I also had a couple of informative conversations with parents and grandparents. My original intention was to test all three concepts with every child, but after quickly realizing that most children weren’t interested in the Interact concept, I decided to focus on I’m Bored. The survey was more effective with adults as kids were extremely engaged in building and drawing. The amount of time children spent building their dream playground ranged from 10 minutes to an hour. Every child was compelled to share the story behind his/her creation after it was complete.

Through observing the kids active engagement in building with empty Kleenex boxes, toilet paper tubes, cream cheese containers, and craft supplies, I recognized the excitement that comes when kids play with cardboard boxes. Younger children always co-created with their parents, which I was unaware of before, whereas kids 8 years old and older are more independent. The prompt sometimes acted as a springboard for kids to revise to their liking, so it didn’t need to be 100% compelling for every kid. It served its purpose by spurring creativity. I sat with an 11 year old boy as he drew, and I was surprised at his self-deprecating comments about his drawing skills. This caused me to think about how kids lose their creative uninhibitedness as they grow up.

One boy’s dream playground
A collection of what the kids created at the Children's Creativity Museum

Lawrence Hall of Science
A second two-hour usability testing session was conducted at the Lawrence Hall of Science to solicit feedback on a hi-fidelity prototype of I'm Bored. I decided to focus on this one app because it was the most successful at the previous session. I tested screen shots of the app on an iPad with five children and three parents who were visiting the museum that day and passing by. The parents loved the app and had a couple of feature suggestions for improvement. Some kids were interested in the prompts and activities provided, but others found it boring compared to popular game apps. I discovered that the main difficulty of testing a specific task for a hi-fidelity prototype with children is gaining insightful feedback. The typically effective usage of open-ended questions often received short responses from the children.

Final Design
A final hi-fidelity prototype of two apps, I'm Bored and Interact, are available. Despite the
feedback received during the usability tests, I decided that the concept of Interact was compelling enough to explore based on several informal conversations I had with parents. Also, with the recent success of Draw Something, promoting creative interaction in children appears to be a valid opportunity area.

In an attempt to find multiple ways to encourage kids to spend time doing activities offline, a series of wallpapers with creative prompts are also available with the apps.

Next Steps
More testing with children and parents would be beneficial in refining the user interface and interaction design of the two apps. Further investigating the technical limitations and availability of sensors would be required to continue developing the I Dream app into an engaging experience for children.

Determining the best methods for answering the following questions would be valuable:
- How detailed of a prompt is needed to qualify as 20%?
- What types of device controls and constraints are needed for this app to most effective?
- What’s the ideal mix of device usage and offline activity in terms of time, activity, and number of people involved? Is it possible to break the mental model of an app solely requiring screen attention?

In the future, continuing to explore engaging and effective ways to straddle between the digital and physical worlds of learning, play and creativity would be the best way to continue developing a system of solutions under iGeneration. Exploring concrete ways to translate the values of enlightenment, sociality and well-being into meaningful solutions for families will also be beneficial.

Conclusion
Legislators, advocates, and academics express a diverse set of values in the laws, reports, and technical artifacts they produce. When it comes to children and technology, they often raise issues of safety, well-being, enlightenment, and sociality. While these parties may not agree on specific solutions to promote these values, their approach often involves control and regulation through rules, norms, or software tools. In conversations with families, we found that the reality “on the ground” is much more complex than that portrayed in professional literature. All parents, for example, want to support a child’s well-being, but they disagree on how technology can promote this value. The prioritization and definition of values can change across contexts and time. In such a complex landscape, parents are less interested in a top-down command and control approach. They want to be empowered to make good decisions for their families that reflect the nuanced realities of their lives.
Implicit values of engineers and designers are expressed in technological artifacts. Implicit values of parents are expressed not only in their words and behaviors, but in the way they organize their homes and routines. In order to fully uncover values that parents have, it was beneficial to observe their lives in context and take into account behavior cues. It was also valuable to see interactions between family members. By seeing parents and children interact with one another, we were able to see where parents’ and children’s values line up and where they conflict. Even two parents in a household may see the world in different ways. We noticed early on that many households were comprised of a “techie” parent and a “luddite” parent. Their tolerance towards technology use did not always align.

Our apps attempt to mediate and reflect widespread values held by those involved with raising healthy and functioning children. As technology use in homes and schools continues to rise, it will be critical for designers and researchers to further understand how these values are reflected in the design of technology.

Acknowledgments

We would like to thank our project advisor, Deirdre Mulligan, for her guidance and support, and the families who opened their homes to us and shared their stories with us. A special thank you to the Lawrence Hall of Science and the Children’s Creativity Museum for letting us use their facilities for our usability tests. Finally, a thank you to Nicole M., Zac S., Ian C., and Anya H. for forwarding our emails and connecting us with all the right people.
References

2. Ibid
3. Ibid
4. Ibid
5. Ibid
6. Ibid
7. Ibid
8. Ibid
11. Risks and Safety on the Internet: The Perspective on European Children, Sonia Livingstone et al. with members of the EU Kids Online network
12. Empowering Parents and Protecting Children in an Evolving Media Landscape, Palfrey et al., 2010
17. Ibid
18. Ibid
20. Ibid
22. Ibid
27. Enhancing Childhood Safety and online technology, Internet Safety Technical Task Force, 2008
28. Ibid
29. Social and Technical Challenges in Parenting Teens’ Social Media Use, Sarita Yardi et al. (2011)
30. Ibid
32. Ibid
33. Ibid
34. Ibid
35. Ibid
38. Teaching the iGeneration, Larry D. Rosen (2011)
40. Ibid
41. Children and YouTube: Access To Safe Content, Marina Buzzi (2011)
42. Ibid
44. Ibid
45. Ibid
46. Ibid
47. Ibid
48. Leveraging Access Control Mechanism of Android Smartphone Using Context-Related Role-Based Access
Control Model, Thiri The Wut Yee, Nilar Thein (2011)
49 Ibid
51 Enhancing Childhood Safety and online technology, Internet Safety Technical Task Force (2008)
52 Online Victimization of Youth: Five Years Later, Janis Wolak et al. of the Crimes against Children Research Center (2006)
53 Enhancing Childhood Safety and online technology, Internet Safety Technical Task Force (2008)
54 Ibid
56 Ibid
57 Privacy Revelations for Web and Mobile Apps, D. Wetherall, D. Choffnes, B. Greenstein, S. Han, P. Homyack, J. Jung, S. Schechter, and X. Wang (2011)
58 Teaching the iGeneration, Larry D. Rosen (2011)
60 Enhancing Childhood Safety and online technology, Internet Safety Technical Task Force (2008)
62 Child care practices anteceding three patterns of preschool behavior, D. Baumrind (1967)
63 Ibid
64 Risks and Safety on the Internet: The Perspective on European Children, Sonia Livingstone, Leslie Haddon, Anke Görzig and Kjartan Ólafsson (2011)
65 Embodying Values in Technology, Mary Flanagan, Daniel C. Howe and Helen Nissenbaum (2008)
67 Ibid
69. The Young and the Digital, S. Craig Watkins (2009)
70 Ibid
71. Family Story Play: Reading with Young Children (and Elmo) Over a Distance, Hayes Raffle, Rafael Ballagas, Glenda Revelle, hiroshi Horii, Sean Follmer, Janet Go, Emily Reardon, Koichi Mori, Joseph Kaye, Mirjana Spasojevic (2010)
72. Hello, is Grandma there? Let’s Read. Hayes Raffle, Rafael Ballagas, Glenda Revelle, hiroshi Horii, Sean Follmer, Janet Go, Emily Reardon, Koichi Mori, Joseph Kaye, Mirjana Spasojevic (2011)
74. Evocative Objects: Things We Think With, Sherry Turkle (2007)
75. Ibid
Appendix

Interview Guide

Interview Objectives
By the end of the interview you should be able to answer the following questions

1. What is the story of this family? Who are they and what are they about?
2. What role does technology play in individual and family life? How does it/doesn’t it/could it support them in what they are about?
3. How do parents mediate kids’ technology use? What values are behind that? What are their goals and concerns for the use of these devices? Is there a need to help transition from controlling devices to self-policing?

Interview Guide

Getting to know them (10 minutes)
Objective: build rapport

Hi. Thank you again for your time. As you know, this interview is for our final project, which is focusing on families with technologies. Today we will be asking you some questions about you and your family. This interview should not take more than 90 minutes. If you are uncomfortable at anytime, please let us know, and we will stop the interview. We will be recording this interview. If you, at any point, would like us to stop recording, please let us know.

First, can you:
- *Set up, check lighting, curtains, etc. Turn on recording.*
- Briefly tell us about yourself and your family. (*Kids:* draw a picture describing your family)
- Describe a typical day for your family.
- What do you and your family like to do together?
- Do you have a story about your family that you find yourselves telling over and over again? Do you have a story about your family that really illustrates what you guys are all about?

Technology being used (20 minutes)
Objective: Gaining a general understanding of the family’s existing technology footprint

In our initial recruiting letter, you indicated that you regularly used XYZ devices.
- Can you tell us what you use these devices for? Why? (*Kids:* draw a picture showing how you use your favorite device)
- What do you like and dislike about each?
- What other technology is central to your household?
Parenting in General (30 minutes)

Objective: Understand their parenting philosophy and household rules.

Now, we would like to know a little more about your parenting style in general.

- **(Kids: draw a picture about family rules)**
- What values are important to your family? What do you want or hope for your kids?
- What are your house rules? How are they established?
  - Do you have rules about money, chores, picking up after yourself, homework, etc?
  - Does your family have specific rules for technology?
    - Does your family ever take a break from technology?
    - Have you ever tried parental controls? On what? How did it go?
  - How does this compare to other families you know?
- What happens when someone breaks the rules?
- Can you give us an example of what happened when these rules were broken?

Going Deeper (30 minutes)

- **(Kids: draw a picture of your mom or dad using technology)**
- How do you determine when a child can own/have access to a specific device?
  - Is it by age? By feel?
- When do you think your kids will be ready to self-police?
  - How will they get there?
- What are your hopes and fears with your kids using these devices?
  - Concerns? Benefits?
- How has technology changed the way you raise your kids? Has it?
- What do your kids know about technology that you don’t?
- Pick three devices that are most important to you. If you had to describe each as a cartoon character, which would it be and why?

Wrap-up (10 minutes)

We are now reaching the end of our interview. Before we wrap-up, we have just a few more general questions for you.

- What are some of the key ways that your life has changed through technology? What impact has it had?
- Draw your dream device.
eeny meeny prototypes

Phase I:
Web Extension (Version 1)

Create an account and select reviews from friends you trust.
Rate genres and games your kids like and you approve.
Your Preferences
This will personalize recommendations

Genres I don't want my child to be exposed to:

☐ Arcade & Action  ☐ Educational  ☐ Violence  ☐ Lorem Ipsum
☐ Brain & Puzzle  ☐ Entertainment  ☐ Lorem Ipsum  ☐ Lorem Ipsum
☐ Creativity  ☐ Sexually Explicit  ☐ Lorem Ipsum  ☐ Lorem Ipsum

Other genres or games ____________________________________________ Separate by commas

My Recommendations

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla sodales urna at turpis malesuada velit. Potenti id ac quam. Etiam mollis ligula eget elit. Elementum

Show Ratings For:

Directions

CSM ratings you care about:

☐ Educational Value  ☐ Positive Mag  ☐ Violence  ☐ Sex
☐ Language  ☐ Consumerism  ☐ Drinking, Drugs, & Smoking  ☐ Privacy & Safety

Select minimum rating

List Third Party Advertisers? ☐ Yes  ☐ No

Set up preferences.
Curiosity Box
Web extension (Version 2)

Updated web extension, reviews and recommendations
When the parents rate a website with a “thumbs up,” the website is saved in a special folder for their child. This is a special folder with kid-friendly and parent-approved content.
Phase II: Balsamiq prototypes of eeny meeny app (Version 1)

Log-in and “Apps your kids love” screen.

In this screen, the user can select friends whose reviews she wants to see. Next screen is list of recommendations. The last screen shows information about the game Temple Run. CSM ratings is expanded.
Phase II: Balsamiq prototypes of eeny meeny app (Version 2)

We updated the “Maybe Box” to be “Bookmarks.” The second image shows more information about the app. We expanded all the information and changed “friends who love this app” to “parents like you love this app.”
When the user is looking at the CSM ratings for an app, he will be able to read more about a specific rating when he taps on the category.
Final Prototype of eeny meeny app

Log-in & selecting apps. Selecting apps during set up will help with personalized recommendations.
Recommendation screen and unexpanded Temple Run information screen. For the recommendation screen, we added “Parents like you love this app.” For the information screen, we added icons to make each section visually recognizable.
App’s description and Common Sense Media Ratings, expanded.
Expanded view of “Things this app can do on your phone,” and close up of “parents like you.”
View of Bookmarks List.
Settings page, with Common Sense Media Ratings expanded.
Settings view. More information about a specific Common Sense Media rating.
eeny meeny Usability Testing Guide

- You want to create an account, what do you do?
- Please read this next page (friends whose recommendations you trust). Show me what you would do.
- Look at Info (Recommendation list and select game)
  - Do you understand what you are seeing?
  - Do you know what CSM is?
  - Do you know what 'things this app can do on your phone' means?
    - If you wanted to rate an app, what would you do?
    - If you wanted to download an app, what would you do?
    - Pretend you are in a rush and you want to check this app at a later time, what would you? (Put in Maybe Box) **
      - Do you know what this phrase means?
- Look at Info (Maybe box)
  - Do you understand what you are seeing?
    - What would you do if you wanted to remove temple run?
    - And if you decided to install?

**In our second and third tests, “Maybe Box” was renamed to “Bookmarks”**
iGeneration Usability Testing Plan

Purpose
Validate and gain feedback for the three app ideas that aim to promote digital and analog creativity

Goals
● Conduct concept task analysis sessions with users to validate and improve the design of the three apps.
● Synthesize tasks observations and integrate design feedback into the next design iteration of the app concepts.

Dates
Saturday April 14

Location
Children’s Creativity Museum Innovation Lab
Location requirements:
● As close to “normal” environments for each user type.
● Space to create
● Enough participants that fit target user group.

Participants
Visitors to the CCM

Number of participants:
At least 10

Participant requirements:
● Kids ages 6 to 10
● Frequent users of tablets and/or smartphones
● Users must sign release form at testing session

Testing schedule
● Each session is scheduled for 10 minutes per kid.
● Additional time spent talking to parents if they’re available.
● Record audio of each session.
● Synthesize results the following day or two.
Methodology

- Use qualitative research practice of task analysis/shadowing to identify possible pain points and opportunities.
- Participants will be asked to "think aloud" while performing tasks (see below for definition on "Thinking aloud" protocol).
- Participants will be given 3 tasks, depending on time spent on each task.

Set-up
Participants will sit at a table with the facilitator. Parents may also participate. Facilitiator will walk through each task individually with each child through paper prototypes. Additional activities and surveys can be completed while participants are waiting.

I’m Bored and Interact Paper Prototypes
Final Flows and Prototypes

I'm Bored App Flow Chart
Interact App Flow Chart
A selection of screens from the final prototypes follow.

I’m Bored home screen (above). Drawing prompt screen (below)
Interact continue a story screen (above). Interact home screen (below).
TOP Left: I'm Bored home screen  Right: Gallery for I'm Bored
BOTTOM Left: Interact Read a Story Screen. Right: Finished story scene.
What do you want to do? Pick a door to begin.
Let's spend some time offline...

Go find 5 items from your recycling bin or craft corner.

Use them to build an amusement park ride from the future.

(ask your parents for help, if you need it)
Did you finish building an amusement park ride? Share it to add it to your gallery and earn badges!
Let's spend some time offline...
Find some paper and markers and draw a scene about a...

rooster
marbles
lake

Draw it!  New Prompt
Did you finish your drawing? Share it to add it to your gallery and earn badges!
Let’s spend some time offline...
Go on a scavenger hunt!

Look for these items:
1. Pair of matching dirty socks.
2. Tube of toothpaste.
3. Photo of grandma.
4. Purple crayon.
5. Your favorite tie of dad’s.
6. Something that makes an awful noise.
7. Find the word “special” on something in the house.
8. Clean the lint out of the dryer. (Show me that you did it!)
9. Find an object with all the colors of the rainbow on it.
10. Find something that smells really good.
Did you find all ten items?
Share them on your gallery and earn badges!

Share it!
New Prompt
Dad started a story with you. Go to The Penguin Chase

Mom added a page to The Lonely Tree

Austin wants you to start a story with him.

Dad added a page
Draw or write a story about a... penguin and a monster in the woods.
Read a Story

Start a new story

The Burning Bush
Artichoke Hearts
The Red Bumble Bee
SUNNY NIGHTS
The Fastest Runner
Black Thunder
Continue a story

A Day in Outer Space
Written By Austin and Me

OLIVIA MUSTANG
Written By Dad and Me

The Lonely Tree
Written By Mom and Me

Start a new story
on a bright sunny day,
a sad and lonely tree cried...
until
Make a movie about a seven-legged octopus.
Create a game about a cat + a bag of money + on an island
What do you want to do? Pick a door to begin.
Let's spend some time offline...
Find some paper and markers and draw a scene about a...

rooster

marbles

lake
Did you finish your drawing? Share it to add it to your gallery and earn badges!
Create a game about
a cat
+ a bag of money
+ on an island

slide to unlock
Dad started a story with you. Go to The Penguin Chase

Mom added a page to The Lonely Tree

Austin wants you to start a story with him.

Dad added a page to the Tallest Living Yellow Beanstalk
Draw or write a story about... a penguin + a monster in the woods.
Continue a story

OLIVIA MUSTANG

WRITTEN BY DAD AND ME
The red bumble bee flew through a field of sunflowers,

hoping to turn yellow...
The Lonely Tree

until