Protect Me: An interactive mobile educational tool for children to help and prevent sexual abuse.

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Protect Me

An interactive mobile educational tool for children to help and prevent sexual abuse.

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Abstract

Recently, cases of child sexual abuse have drawn considerable attention in China. According to the data released by the China Children's Culture and Arts Foundation, the number of childhood sexual abuse cases reported by the media in 2018 was 318. However, the lagging sex education provides criminals with chances to escape prosecution. Many children who have been sexually abused do not understand what sexual behavior is, do not even know where they have been hurt, and can't tell which part of their body has been violated. In China, 90% of parents do not talk with their children about "sex". Less than 6% of parents communicate with their children about sexual intercourse and contraception.

Today, more and more people begin to pay attention to sexuality education. However, sex education is still lacking due to reasons like teachers and parents lacking the relevant experience and methods to teach children well, and the insufficient attention of relevant departments, and so on. The children's education on the prevention of sexual abuse has a long way to go.

"ProtectMe" is an educational app for 3 to 10 years-old children that teaches them how to identify and hopefully prevent sexual abuse. By analyzing a large number of real-life cases of sexual abuse, the app will teach children how to choose to protect themselves in every dangerous situation, as well as to teach them the parts of their body and distinguish
between safe and unsafe physical contact. Using a gamification approach, this app is committed to delivering accurate and authentic knowledge effectively. It will also actively guide parents to participate and gives them some professional guidance.

Compared to books, a mobile app is also a more attractive, engaging, and cost-effective educational method. Through this kind of edutainment, children can build awareness of protecting their own body, learn to identify potential risk factors in the environment, and seek help from trusted people in times of danger. More importantly, it helps to form a linkage between home, school, and social forces.

On the road of popularizing the use of children's' sexual education, the cruel truth and the resistance of reality are never reasons for stopping. However, on the topic of preventing sexual abuse of children, it is hoped that the injured children can receive proper care and protection. At the same time, the relevant laws and systems will be sound and implemented, and related work will continue to gain attention and follow-up.

**Keywords:** Sex education, Support, Children, Sexual Abuse, Education, Child safety
Introduction

Situation Analysis

Child sexual assault is a major social problem that exists globally.

According to statistics reported from Chinese media, there were 317 sexually assaulted cases in 2018, involving more than 750 children. Among the cases of child sexual abuse, 210 acquaintances committed crimes, accounting for 66.25%. Over 90% are girls, but boys are also a group that cannot be ignored. Schools and other places for children's activities are a high incidence of sexual assault cases.

These are just the cases exposed by the media. The official hidden rate of child sexual assault cases is 1: 7. That is to say, the exposure of just one case publicly can mean that seven unreported cases have taken place.

Problem Statement

Preventing sexual abuse of children is the responsibility of the entire society. Among them, parents play an irreplaceable role in the process of preventing abuse. Most children in our country have not received good sex education or anti-aggression education.

Today's parents generally underestimate the prevalence of child sexual assault. Therefore, few parents discuss the topic of preventing sexual assault with their children. Even if some parents want to discuss this topic with their children, the information they tell their
children is often inaccurate, resulting in many children not even realizing that the injury has occurred after the child received the violation.

**Context**

The implementation of the application aims to achieve following the objectives: Let children know primary sexual education, more and more children can learn it in an easy way, having an engaging learning experience, and teaching them how to identify and hopefully prevent sexual abuse.

To achieve these objectives, four approaches were implemented in this project after a wide range of research.

**Scientific content**

Regarding how to prevent sexual abuse of children, the official domestic sex education book also gives the following teaching guidelines. Including what is child sexual assault, what are their actions, what kind of people may be sexual assailters, what are the typical sexual assailter means, establish a psychological basis for children to say no, create a healthy family environment, what is privacy, what is the physical limit, be brave to say "No" to unwilling things, tell your parents about anything.

Although they are relatively independent parts of the book, we can see that each aspect is not separate. They are interconnected and support each other. So I will connect them in
the application, from basic common sense to understanding child sexual abuse, how to identify, how to prevent and to seek help, improve protection awareness, etc., and finally form a closed loop to get a better result.

Phone / Pad Platform

When everything in life has turned digital, learning through digital media is the fitting design of learning for a modern student. Education once meant high consumption, but things have changed a lot. Even ordinary families can afford mobile phones and download applications. Learning with mobile apps is also more sustainable than traditional learning methods, including paper, pencil, and pen. For developers, they can also make faster updates and iterations for better results.

More critical, digital media makes it easier for children to understand. Books easily give children a feeling of boredom and tiring. And when they are replaced with colorful pages and moving animations, learning can be fun. Experts say that apps in education can make children more interactive and activate better engagement between children and parents. Interaction tendency in children is enhanced by mobile applications.

Finally, based on such platforms, it helps to diversify learning methods and simplify the popularization.

All kinds of educating methods
According to my research, a good learning application should be inspiring, exploratory, and open. It should also be invested in educators and curriculum developers, or it can prove to be a useful learning tool in educational research. Firstly, to create a more immersive experience for children, I’d like to develop a picture narratively. It can immerse children as a main character from the first view, allowing them to interact with the content.

For most of the content, I’d like to use voice explanation and animation to convey them compared to communicate only through text. It fills in conceptual gaps and allows you to explain details that are difficult to express visually. When the voice-over matches the visuals, it can even enhance the idea you've stated and given it more effect. And then cooperate with different interactive methods such as rich gesture operations and gamification to make it fun and exciting for kids. A study identified some of the key elements of gamification. These elements were found to increase student engagement and interest in e-learning courses.

For example, a personalized profile or use your avatar to create your own version; create chapters to divide actions (and learning) to build interest and help retain; create some motivation to move on, such as accumulating points, earning badges, or reaching some status. Or you can make it as social as possible, and offer a way to turn those rewards into something tangible they can use outside of the learning course.

**Visual design for children**
Children today are very picky. After growing up with your iPhone and iPad, you can't just throw stuffed toys on their legs and expect them to be entertained. Children have high demands on the products they use and love. That's why to make a compelling product, and you must start designing for your child. All design styles should take into account children's preferences.

Cartoons are pretty much universally appealing to children, and kids love for all-things-animated. I will incorporate several characters or mascots into the design and branding to strengthen children's connection to my product, they have personalities, and all the stories revolve around them.

Bright colors go hand in hand with children's brands. In contrast to silent or neutral tones, children are attracted to the brightest colors on the color wheel. Compared to brown or soft pink shades, primary colors (such as red, yellow, and blue) or secondary colors (such as orange, green, and purple) are more attractive to young people (Deanna deBara, 2017). Since many users still don't know how to read, it's vital to place icons and images to help them understand what can be done. The icons should be simple, large to attract attention, and related to the action to be taken. It is best to use direct icons, as it is difficult to understand more abstract icons.

**Design Process and Solution**
Target User

The target users are children aged 3 to 10. I interviewed several parents of students of different ages to understand their views and practices on child sex education and prevention of sexual assault (Figure 1). We can understand that although they do some child sex education, it is not comprehensive. At this stage, the topic of preventing child sexual abuse is something that most parents ignore. Many children do not have the relevant awareness and need to be educated. For older children, they do have opportunities to contact and learn relevant knowledge in schools and other places and have a better sense of self-protection. Moreover, this way of using an app to educate is more suitable for children aged 3 to 10 and achieves better education results.

<table>
<thead>
<tr>
<th>P1</th>
<th>P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father - 5 yrs old daughter</td>
<td>Mother - 14 yrs old son</td>
</tr>
<tr>
<td>Aware of statistics on SexEd, teen pregnancy</td>
<td>SexEd: Age of 11 - book and conversation + school</td>
</tr>
<tr>
<td>Challenges: Getting started or kids talking in public</td>
<td>Uncomfortable. Prefer husband talking to son</td>
</tr>
<tr>
<td>2 approaches: Jump to the topic or use some kind of reference (watch a movie or cartoon)</td>
<td>Mixed feelings about SexEd program at school</td>
</tr>
<tr>
<td>Researched books in library and online content</td>
<td>Positive about interactive app</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P3</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother - 5 yrs old daughter</td>
<td>Assistant Principle, Elementary School</td>
</tr>
<tr>
<td>Unsure of how to answer some questions</td>
<td>“Parent Night” - shows content before kids see</td>
</tr>
<tr>
<td>Plans to researched books and apps</td>
<td>Flexibility: Parents can opt out, separate session for kids with special needs</td>
</tr>
<tr>
<td>Little concerned about appropriateness of the content of an app.</td>
<td>Boys &amp; girls separate session but same info</td>
</tr>
<tr>
<td></td>
<td>Feels that current content is outdated</td>
</tr>
</tbody>
</table>

Figure 1. Interview documentation
User research

By reading a lot of research materials and communicating with experts, I better understand this user group.

Although children are usually literate at this age, they don't like it. They generally ignore written instructions and read them only without other help. It's a period of imagination and creativity, and they love stories. And they're good at using devices like laptops, iPads, or mom's phones, and they know how to scroll, slide, and navigate. They need big pictures, lack of user patience, we need to generate some type of response for each action such as immediate visual and audio feedback. Avoid not only the use of complex words but also the use of strange foreign words and phrases.

They seek to solve problems and have the confidence to solve them. Appropriate use of micro-conflicts creates difficulties and allows them to resolve disagreements creatively.

There are tests that can be used to test learning outcomes and give them encouragement or rewards to provide them with continuous motivation.

This is a very special group of users. It is hard for them to sit there for a long time. And it is very easy to lose patience and be distracted. In the design process, you need to pay special attention to the above details.

Competitive Analysis
At present, there are several prominent applications about children's sex education in the U.S market, such as Clementine Wants to Know: Where Do Babies Come From? (Figure 2)

The app presents a large amount of information on the topic in the form of an interactive animated e-book. The story begins with a child called Clementine, who is expecting a new sibling and also has lots of questions.

In China, there is almost no application in related fields. I can barely find one, It is just a combination of pictures and audio commentary. It is just a direct conversion of some sex education books. For children, compared with reading books, it does not take advantage of their carrier.

At the same time, there are many children's education products that I can learn in the U.S market. They are famous for their cute design style, smooth animation, and unique interaction methods such as The Human Body (Figure 3). Users can see what we are made of and how we work. You can learn the skeletal, muscular, digestive systems, hearings, intestine by exploring an interactive model.

Children can generate significant interest from the beginning and continuously increase their desire to explore in the game, making it easier for children to understand relatively complex knowledge and virtually improve the efficiency of learning.

**Brainstorming and Ideation**
I explored and brainstormed from the aspects of teaching content, design, game mode, and goals (*Figure 4*). Especially in expanding a variety of interaction methods, to make it more entertaining. I thought about a lot, such as finding difference games, simulating camera actions, voice interactions, video interactions, reactive games, working with parents to complete, maze games, control small characters.

*Figure 4. Brainstorming sketch*

Although interactive content can attract and retain users, finding the right way for each particular piece of content remains a challenge. Interacting for the sake of interaction does not help much.

So I first select a few key contents from it and start to expand outwards, such as from the differences of boys' and girls' bodies to the interpretation of private parts, and then choose a suitable interaction method such as zoom in and out to enhance its fun. Step forward to the scene of improper clothing, choose analog photography, and other forms to expand. Using this as a method, I made a few sketches as follows (*Figure 5*).
Develop of Information and Design Ideations

After a long period of research, it was finally determined that the app is narrative and interactive, and there are two main parts. The goal of part one is for teaching children what the private part is. There are two small games to help children better understand it in this part. It also the pavement for the next part; the second part is mainly for preventing sexual abuse by teaching them what dangerous situations are and how to react to these situations.

User flow
Figure 6. User flow

The user flow is the deliverable visualizing the complete path that users follow across the whole solution. As you can see (Figure 6), it shows that the story starts with two children and Gigi. Gigi is an anthropomorphic game console figure with lots of functions. For getting the certified badge, they should go through the following content: finding inappropriate wearing scenes, checking what the private part is, trying the dress-up game, learning different alerts, and how to react to them.

Color study \  typeface and icon
To adapt to children's preferences, I chose high saturation and bright colors. Icons are simple and easy for children to understand. The design of the main characters is lively and has vivid expressions. Finally, they are combined to form the main icon (Figure 7).

**Interface**

**Guiding page**
At the beginning (Figure 8), our three main characters appeared and brought out the background of the story. In order to win the medal, children must complete the corresponding story line as required. They will be played in an automatic character dialogue. This guide animation is to attract children's attention, let them enter the characters, and immerse themselves in the backstory.

Figure 9. Guiding page 2

Enter the tool introduction page here (Figure 9). Gigi is an anthropomorphic image of a game console with lots of functions. Users can zoom in and out of the target, view internal details, and take photos by using it. Through step-by-step guidance and let the
children try it for themselves, they can better learn common function operations and lay the foundation for later use.

**Part one**

This part of the design is mainly to allow children to understand better the fundamental differences between male and female sexual organs and what are the privacy parts of the body.

**Figure 10.** Find inappropriate wearing situations

In the first act (*Figure 10*), the children need to find four situations in this big scene that they think are inappropriately dressed, and operate the game machine to take photos. These inappropriate situations include naked bodies in restaurants, swimming pools, buses and outdoors, etc. All operations are accompanied by sound effects and specific guidelines. When the child finds all the scenes, he will enter the next scene.
By creating a small challenge first, increasing their interest. And connecting it with real life, they can better apply what they have learned to reality.

**Figure 11. Learn what the private part is**

Here (*Figure 11*), children may have doubts as to why they are misbehaving. We will start to teach the difference between boys and girls and tell them what privacy is. Learning from real-life scenarios and then extending to related primary common sense education, progressive relationships can help children strengthen their understanding.
Figure 12. Learn what the private part is

Moving the enlarged joystick (Figure 12), we can see a more detailed display of the private parts of boys and girls, telling them the differences and usefulness. Use the comparison method to let them find the same and different points, and help them learn better.

Figure 13. Dress-up game
Then they will play a small dress-up game to dress him or her (Figure 13). After learning from the previous part, this little game helps to increase the interest and further consolidate the content learned.

*Figure 14. Get a first badge*

Here you have completed all the first part of the teaching and earned the badge (Figure 14). By encouraging them, they can build a sense of accomplishment and have the interest and motivation to continue learning.

**Part Two**

Knowing what privacy is, this part will teach children to identify child sexual abuse and how to protect themselves adequately.
**Figure 15.** Touch、see、talk、alone and hold alert

In this scene (*Figure 15*), children will learn what the touch alert, see alert, talk alert, alone alert, and hold alert is through animation one by one. This combination of animation and speech is suitable for children of this age and helps them understand better.

**Figure 16.** Shout、run and tell
Then tell the children three ways to deal with these situations, which are shout, run and tell. For each method, there will be a further explanation (Figure 16). Use short words to impress them more easily and quickly to remember. When they encounter dangerous situations, they have the ability to react immediately.

Figure 17. Shout

In the part of shouting (Figure 17), children will be taught what to say when they meet alerting situations. For here, they can click different body parts of these characters on the screen to see some specific rejective words. Combining with the actual situation, help them establish practical self-protection methods to achieve better prevention of related violations.
Figure 18. Get a second page

You finally finish all the tasks and get a safe badge (Figure 18). Help them build a sense of accomplishment and satisfaction and generate confidence.

Figure 19. Storybook

Click the book icon, you can check all chapters here (Figure 19). They can learn to consolidate again. Shown in the form of book chapters, lively and interesting.
Evaluation & Discussion

Usability testing

I did three times testings. After the prototype, I invited my peers to review the paper prototype, finding as many errors as possible before it became the digital version.

After the first-version design, I evaluated the App according to the heuristic evaluations for finding the usability problems in a user interface design. Let a small set of evaluators examine the interface and judge its compliance with recognized usability principles.

After revising the design, I invited three kids (7~9 years old) and two parents, observing their actions while using the App. Then asked their thoughts after the usability testing.

Imagine RIT

In the Imagine RIT, there are several children and parents tried this product. They were asked to fill a questionnaire. From the result, most of them gave positive ideas (Figure 20).
Conclusion

The purpose of this project is to help children learn how to prevent sexual abuse through fun and scientific learning. Through popularization, it can help change the lack of sexual education in China and the frequent occurrence of various sexual abuse cases. Apart from its social value. I also saw and learned how to design an excellent children's product. The essence of creating successful outcomes for them is to understand the differences and similarities between them and adults. Children think differently, but they have good ways
to deal with the world around them. They differ from adults in many ways: cognitive ability, classification, reasoning, emotional control, logic, memory, motor skills, not to mention their behavior.

For the future, how to better link with parents, how to expand the content, and continuously improve to adapt to their new skills are all essential points to consider. I hope that one day, I can make this product to help the current situation of sex education of Chinese children.
Sources for Imagery

Figure 2

https://s3.amazonaws.com/poly/screenshots.angel.co/Project/a4/881750/
26b2fd7bcb1bbd2f3250c02760176750-original.jpg

Figure 3

http://www.kidtech.co/uploads/1-humanbody-multiple-384x512.PNG

Reference


Appendix

Interview Questions

• How old are your kids?

• Are they boys or girls?

• Have you heard some childhood sexual abuse cases, are you worried about them?

• Did you have experience teaching your kids about sexual education or how to protect themselves?

• What was the hardest part about it?

• What was your kid’s reaction?

• What age were your kids when you educate child sexuality?

• Do you think relative sex education is essential?

• Did you ever search for professional books or apps in purpose to teach them?

• What do you think about sex education in school? Is that useful or protectively or enough?

• Did your child had a class about preventing sexual abuse in school?
- We want to make an application for kids for better sex education and, finally, help prevent child sexual abuse. Would you introduce this kind of sex education app to your kids?
- What kind of content or information would you like to see in the app?
- Do you have worries about this kind of app?

**Imagine RIT Questionnaire**

**Educational application for sex education**

*Hi, This is a research questionnaire for my thesis project. Thanks for your help!*

<table>
<thead>
<tr>
<th>Gender:</th>
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<tbody>
<tr>
<td>您的回答</td>
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<table>
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<tr>
<th>Age:</th>
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<tbody>
<tr>
<td>您的回答</td>
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<table>
<thead>
<tr>
<th>Satisfaction with style &amp; design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Very satisfied</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Was the navigation easy to use?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Very easy</td>
</tr>
</tbody>
</table>
Do you think the game inside is fun to play?
- They are full of fun
- Some of them are fun
- Not at all

Do you think our content is appropriate for kids?
- Yes
- No
- Maybe

Do you think it is useful for helping prevent sexual abuse for kids?
- Yes
- No
- Maybe

Compare to usual ways, such as learning in class or by books, do you think it is a more effective way to learn?
- Yes
- No
- Not sure
- Learning by books is more useful
- Learning in class is more useful

Will you introduce the product to your kids or others?
- Yes
- No
- Not sure

Do you like the app name?
- Yes
- No
- I have a better idea

Do you have any suggestions for the product?

您的回答