The power of photovoice: AI support provides voicing opportunities for children in sex education

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Abstract

In China, the conflict between sexual shame, authoritative family culture and children's desire for self-expression is the major obstacle to implementing sex education. Children's initiative and ability to explore are often excluded from consideration. In this paper, we adopted PARTICIPATORY ACTION RESEARCH (PAR) to investigate family sex education in China. The project involved 12 families participating in a Photovoice workshop to help children visualize abstract life situations and explore the possibilities of children's proactive expression. As a result, Photovoice was found to be an effective way of empowering children to become vocal subjects of sex education, but it cannot rely solely on parents with limited sexual knowledge; it requires the intervention of sex education experts to help children uncover accurate knowledge in their lives. The paper proposes new perspectives on ARTIFICIAL INTELLIGENCE (AI) technology to promote family sex education to accommodate a child-centered focus in various family settings. After that, we conduct a collaborative workshop with families to develop TickTick, an AI-based story-generation application for family sex education. The assessment revealed that AI could empower children to have equal communication with their parents, creating a communication bond for families through self-adaptation to create sex education topics in family settings.

Author keywords

Photovoice; Sex education for children; Artificial intelligence for care; Participatory action research, Participatory design with family.

Introduction

Contradictions

In China, the importance of sex education for children has been recognized due to widespread attention to social problems such as child abuse (Shi et al., 2022; Zhang, 2022). However, parents consider it "embarrassing and awkward" to talk about sex at home and often choose passive education for their lack of proper sexual knowledge. In addition, the authoritarian parenting style is the mainstream education style in China (Kang & Moore, 2011), which means that parents dominate conversations, resulting in a lack of an equal and respectful communication atmosphere in families. This makes children troubled by sexual abuse "lose their voices" out of fear and seldom seek help from their close relatives (Chen et al., 2007; Zhou et al., 2021). Therefore, the key issue for this research is how to empower children to have equal communication so that children can learn proper sexual knowledge in the family.

Photovoice: Establish Collaborative Relationships

The above contradictions led us to explore this complex topic of "parent-children discussion about sex" through the Photovoice of the PAR method. PAR is an approach that integrates education(Gibbs et al., 2018; Groundwater-Smith et al., 2014), investigation and action where children can actively participate in the research process. Photovoice is a collective activity in which participants produce their own images through the creative use of image devices to record themselves and the surrounding communities (Shaw & Robertson, 2008; Wang & Burris, 1997). This method is often used for community engagement and is a powerful tool for transforming people, social relationships and their perceptions of the world (White, 2003).

Discourses of sex and gender exist in the complex life scenarios in which children grow up, shaping their knowledge and perceptions, whereas it is difficult for children to directly describe the sexual issues in their lives (Tong & Chen, 2020). Photovoice is a visual interpretation that can visualize children's abstract life situations and help them proactively voice their stances and opinions. Meanwhile, images give parents insight into their children's thoughts, allowing them to discuss the values involved and build collaborative relationships with children, thus stimulating their willingness for proactive expression.

The powerful influence of Photovoice in sex education has been previously described in many papers (D'Amico et al., 2016; Haynes & Tanner, 2015; Shamrova & Cummings, 2017; Tong & Chen, 2020), but its application in a relatively intimate setting (e.g. in a family) is rare. Therefore, we conducted a Photovoice workshop on family sex education for practical research.

AI Provides a New Perspective on Sex Education

With the extremely unequal resource distribution for sex education in China, experts necessary to conduct PAR can hardly reach every family. Through desk research, we found that AI is a common way to address inequalities in education resources (Zhai et al., 2021). In children's education, AI

is increasingly applied to generate educational content, such as self-adaptive curricula (Chen, 2020) and early education (Coates, 2002; Williams et al., 2019).

AI technology can be tailored to a child-centered focus in all types of family settings, providing a new perspective to promote family sex education. Therefore, we designed and tested the AI application Ticktick by conducting participatory design workshops to validate that AI support can offer children the opportunity to voice their opinion in sex education.

Participatory Action Research Process

TickTick is a PAR program jointly conducted by Hunan University, Qingyou Sex Education Organization, and Changsha Library, aiming to empower Chinese children to actively explore sexual topics. Running from November 2021 to December 2022, the project involved 37 families and 41 children. The project was open to the public for family recruitment and was conducted in a mixed format, both online and offline. The flow of PAR project is shown in Figure 1.

PAR Phase	Methods	Participants
Phase 1: Preliminary Research	Desk research, Focus groups, Expert interviews	Experts: 4, Designers: 7, Families: 20
Phase 2: Photovoice Workshop	Materials, recuitment and training, Action, Reflection	Experts: 1, Designers: 2, Families: 12
Phase 3: Participantory Design	Paper prototypes, User testing	Experts: 1, Designers: 2, Families: 5

Figure 1. PAR research flow, methods in use and participants.

Relevant research materials had been provided to the Academic Ethics Committee of Hunan University for approval prior to the official launch of the project. The research project ensured that children and guardians enrolled in the project were aware of the project content and their basic rights. Given the sensitivity of "sex education for children", we attached importance to protecting children's privacy in terms of their images and descriptions. Approval was obtained for the publication of all photos used for publications.

Photovoice Workshop

Process 1

Prior to the family-oriented Photovoice workshop, we conducted preliminary research through focus groups and expert interviews to determine the workshop format and photography themes and worked with experts to develop a photography guideline. The practice routine of Photovoice includes three parts: recruitment and training, picture-shooting and discussion, and public exhibition (Wang & Burris, 1997). Depending on topics, participants, and the social environment of the research site, the workshop flow, as shown in Figure 2, is flexible for adjustments.

Figure 2. Photovoice flow, including the specific steps and participants involved in each step.

Phase 1. Materials, Recruitment and Training

The research focuses on the development of family sex education for children aged between five and eight. Based on the UNITED NATIONS (UN) guidelines and expert instructions (UNESCO; et al., 2018; UNFPA; & UNESCO;, 2022), we concluded four photography themes and a series of questions (as shown in Figure 3) to facilitate parents to guide the photography process and help children to form in-depth thoughts.

Figure 3. Photovoice guidance: sex education theme and enlightening questions

After completing the recruitment, the team explained the Photovoice method for each family through an online meeting, presented the proposed four photography themes through animations and text descriptions, and provided a photography guide to parents after the meeting. In terms of photography themes, we encouraged parents to guide their children based on the guide; we also asked children to shoot freely according to their own interests and desire for expression.

Phase 2. Participatory Action

After the online session was completed, parents and children worked together on a week-long photo shoot. In the shooting guidelines, we informed parents that they needed to submit 6-8 photographs taken by the children before the workshop starts. During the shooting and submission process, the researcher kept in touch with the families and encouraged parents to fully respect the child's expressed wishes and to cooperate with the child in the picture-shooting.

Phase 3. Participatory Reflection

In this phase, a sex education expert and two designers would take part in the online meetings. Based on children's images, experts and designers would ask questions as guidance. Researchers encouraged children to take the initiative and interpret the pictures they took, while parents acted as listeners, providing necessary complements to children's descriptions when they sought help.

Our enlightening questions for children's descriptions of images followed the SHOWeD approach (Wallerstein & Bernstein, 1988), which seeks answers to the following questions: 1) What do you see here? 2) What is really happening here? 3) How does this relate to Our lives? 4) Why does this condition Exist? 5) What can we Do about it? Then, with proper and systematic knowledge, the expert would explain the images and children's descriptions. The explanation method included storytelling and animation (shown in Figure 4).

Figure 4. The image constitutes screenshots of three out of 12 online meetings, presenting the following scenarios respectively: 1. Experts showed sex education animations to children; 2. Experts discussed with children about photos; and 3. Children shared their daily lives with experts.

Research Finding 1

Images build bridges of equal communication between parents and children

Images are found to be a medium for equal communication between parents and children. Some parents, when participating in online meetings, were more inclined to encourage children to express themselves as time progressed. Parents, children, and sex education experts formed a partnership in the multidimensional interactions, increasing trust between parents and children as well as the children's willingness to express themselves. For example, (as shown in Figure 5) a boy said for the first time to his mother, "I like my tablemate because she sings very well"; and the mother responded, "That's the first time I've ever heard of this, and I am quite curious". The workshop fostered a better understanding between the mother and son, and was also an opportunity for parents to guide children on a proper way to express their "fondness".

The Photovoice approach allows children to take an active lead in activities, empowering them to make decisions on their own. For example, when researchers collected some "ambiguous" images (as shown in Figure 5) and politely asked their parents to confirm whether their children understood the requirements, the mother responded, "this is the girl's opinion upon her understanding of the questions, and I don't know her thoughts, but I'll ask her later". This showed that parents have changed their attitude, choosing to respect their children's expression instead of instilling knowledge.

Photovoice effectively reduces the hindrances of authority and avoidance, but this requires a certain project duration and multiple communications between experts, parents and children involved, so as to achieve a shared and mutually inspiring relationship.

Images as a window into children's lives - Differentiated perceptions of sex education

Children tend to understand and express the same question in a strongly individual manner. For example, when confronted with questions about gender perception, children's photography and interpretations were very different (shown in Figure 5). Children's expressions included, "If it were my best friend (a boy) who liked pink, I would have persuaded him in private to change his color preference," "Boys are not allowed to have long hair and wear dresses, and they are not allowed to like pink," "Blue is the lucky color for boys", the list goes on. Through the window of "images," we observed that sex education exists not only at the textual level, but is also embedded in daily lives. Children are individuals with concrete life experiences, autonomous will and the capacity to act. They are equally important forces in shaping the environment of sexuality and gender discussions as well as community and sociocultural ideas. Their distinctive images can serve as triggers and opportunities for communication that point to similar knowledge about sex education.

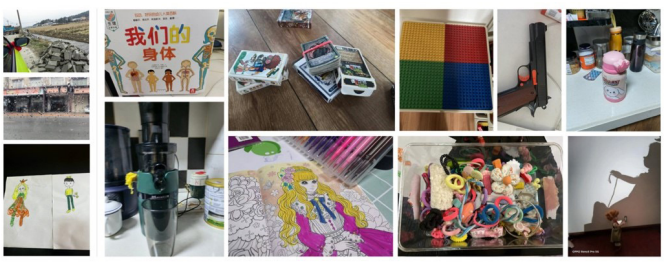

Figure 5. Photographs taken by children during the workshop.

Ability Gap in Story Construction and Knowledge Conversion

We found that parents lacked the ability to uncover sex education topics from daily situations, whereas sex education experts play a key role in knowledge conversion. For example, when confronted with a picture of a juicer (shown in Figure 5), experts could extend it to topics such as family labor division, gender differences, and parent-child relationships with a dynamic and interactive guide to pass on ideas in communication. But for parents, the juicer may be just a household appliance rather than an opportunity for sex education.

Parents also lacked professional knowledge of sex education. For example, a boy took images of a coloring book, "The Human Body: Lift the Flap and Learn" (shown in Figure 5), that he had read with his parents. As the conversation progressed, he asked, "Why does this pregnant mother have amniotic fluid? What is amniotic fluid? Do boys also have amniotic fluid?" Yet his parents did not answer due to their limited knowledge base.

Based on images, children started to think; they then changed their thoughts and behaviors under the expert's guidance on storytelling. For instance, one girl who took pictures of the "Pink Princess Coloring Book" (shown in Figure 5) changed her mind from "boys can't use pink, and girls don't like blue" to "boys can choose any color" at the end of the workshop.

We discovered that images could bring up topics for sex education at a high frequency. Yet, good sex education requires additional supporting media to help parents uncover topics, build stories, and provide expertise to practice Photovoice in daily life.

Participatory Design Workshop

Process 2

Phase 4. Brainstorming--"AI in Sex Education"

Based on findings from the Photovoice workshop, we found that the day-to-day delivery of sex education in Chinese families cannot rely solely on a handful of sex educators. Rather, it's imperative to empower parents so that sex education can be delivered anytime at home. We brainstormed with experts and combined it with desktop research to reveal AI's ability to facilitate family sex education. Considering the elements involved in Photovoice, we regarded image recognition technology as the key.

Phase 5. Participatory Design Workshop

To explore the effectiveness of AI intervention in sex education, we conducted a workshop with participatory design methods. With five participating families in China, we worked with parents, children, and experts to develop a story-generation application, TickTick, for family sex education. The user testing was conducted following the WIZARD OF OZ (WOZ) approach, in which the design metaphor of "photo book/album" proposed by a participant was included in the app.

The concept of TickTick takes the "picture-shooting", a session of the Photovoice method, as the key (shown in Figure 6). With image recognition technology, the app plays the role of the expert in the workshop. It analyzes images taken by chil-

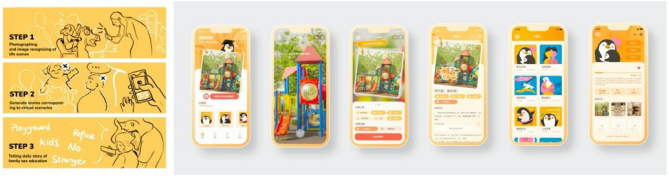

Figure 6. Ticktick usage flow and page display.

dren, captures keywords in the scenarios, generates various topics for sex education, and provides corresponding stories or communication methods, in a bid to spread the core knowledge of boundaries, body organs, etc.

Finding 2. AI empowering sexual education

We found that children enjoyed the experience of "recording their lives and discussing sex education with their parents". They kept taking new photos because they were curious about what kind of storyline the app could generate. Some children commented, "This is fun! I had no idea that the slide could bring such a story when I took the picture".

In addition, we found that images could induce ambiguity in parents' educational goals. For example, seeing the slides in the amusement park image, they would want to tell their children to "protect their genitals when playing around various facilities". On the other hand, the AI-recognized labels would allow parents to choose a label among "Safety", "Friendship", and others, helping parents to communicate with their children about the most important concerns of the moment.

According to the assessment, Ticktick is effective in engaging children in active thinking about sex and leading to behavioral changes, such as abandoning gender stereotypes. In addition, Ticktick creates opportunities for family discussions, in which images become a medium for active idea exchange between parents and children; AI also facilitates family discussions about images to move from life situations to sex education.

Conclusion

PAR integrates education, research, and action, allowing children to receive sex education and express their unique perspectives on sex and sexuality during the research process. It frees parents who lack expertise from the role of authoritative educators; meanwhile, it empowers children by transforming them from passive receivers to proactive learners. The use of Photovoice in family sex education triggers dialogues between children and parents so that they can build a consensus to "learn about sex education together". Moreover, AI technology also enables parents who lack knowledge about sex, making it possible to apply the "Photovoice" approach in family settings.

However, we found that some parents have concerns that using images for sex education may lead to inertia in children's thinking, making them associate various things in their daily lives with sex, which may have a negative impact on them. In this regard, in the future we will conduct long-term research to observe children's performance and find appropriate methods to study the link between images and the scale of sex education. Furthermore, we will also study the scale of artificial intelligence intervention in the process of sex education and form a set of evaluation criteria to provide guidelines for subsequent design.

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