

Research Article

Unlocking Creativity with Playful Probes

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Abstract.

Acquiring data from potential users regarding their daily activities, especially young users or families, can present considerable challenges. Employing playful probes is a method for gathering data from young users; these probes are interactive, intuitive, and visually appealing. This approach allows users to express their thoughts in a non-traditional manner, producing rich qualitative data that can reveal the nuances of their perceptions and behaviors. Although only a few researchers have employed this technique in game design, it has shown great potential in gathering user information for the ideation process. However, there is a need for further exploration of this approach, especially when it comes to children as users. This study seeks to explore the potential of employing playful probes in game design and to identify any obstacles that may arise. Understanding the needs and characteristics of the target users is crucial to adapting the probes to effectively connect with them. By engaging participants in playful and immersive activities, design probes could provide deeper insights into the user and stimulate their creativity, leading to a more efficient final design that accommodates the wants and needs of the users.

Keywords: design probes, playful probes, game design, human-centered design.


1. Background

When researching and designing a game design, and while intending to involve users in the design process, researchers need to understand the potential user's behavior. However, gaining in-depth information about the habits of individuals or families over a specific period is not an easy task. Researchers often face challenges in conducting direct interventions within participants' homes, particularly when required to study multiple families simultaneously. Among various design research methods, cultural probes stand out as a unique data collection technique that still requires significant development. Cultural probes, also known as design probes, are a technique used

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to stimulate ideas in a design process [1]. It is one of the methods within the human-centered design methodology, where this approach is a concept of design that focuses on people by studying how they live and their needs. In this method, users engage in self-observation and reflection on their daily activities and experiences, followed by documenting them. It is particularly effective in gathering in-depth qualitative data, as it involves participants actively in the design research process in an early stage [2], [3], encouraging them to become more aware of their behaviors and thoughts [4]. In addition, Wyeth and Diercke [5] argued that cultural probes have emerged as powerful tools for promoting creativity, engaging users, and stimulating innovative design solutions non-conventionally.

In this study, we want to explore the potential of using playful probes to gather information from the beginning of the game design process, including the obstacles that may be encountered. The goal is to identify key aspects that should be considered when developing materials for playful probes, ensuring they meet the specific needs of the research.

2. Playful Probes

Based on a study by Bernhaupt and colleagues [6], cultural probes come in various forms, such as empathy probes [7], primitive probes [8], reflective probes [8], mobile probes [9], technology probes [10], and playful probes [6]. Playful probing, a term coined by Bernhaupt and colleagues [6], is a technique that enables greater user participation in the research process. Participants are given the freedom to engage in probing activities for an extended period, although this freedom comes with certain time constraints [6]. Playful probes and design probes are similar in that they give participants control over how, when, and what they choose to share [11]. Playful probing involves designing games focused on the research area to facilitate learning and data collection. In another study by Bernhaupt and colleagues [12], they developed two variants of playful probing, creative and playful cultural probing, and found it to be a way to gain deeper insights into the everyday lives of children and their interests in technology. This probing activity encourage individuals to adopt a playful mindset, enabling them to overcome creative blocks and tap into their inherent imaginative capabilities [6].

Research specifically focused on playful probes remains relatively rare, particularly in relation to the involvement of child participant. Rönnerberg [13] study, which involved children as research subjects, indicates that playfulness evidently plays a significant role in motivating children to engage in tasks within a design probe. However, achieving

or defining playfulness within a design probe is not a simple thing to do. In her study, Rönnerberg [13] utilized games as an integrated classroom activity, rather than digital or board games. On the other hand, Christiansen and Gudiksen's [14] study focused on using playful probes to gain deeper insights into the daily lives of teenagers. The findings indicated that playful probes provided access to information about young people using expressive formats such as construction and fantasy play. On the other hand, our observations indicate that Christiansen and Gudiksen's [11] work have not particularly included game elements in their play probes.

A recent study on playful probes by Ribeiro et al. [15] about machine learning adoption in aircraft maintenance shows positive results. They argued that playful probes allowed participants to focus on solving practical scenarios, encouraging reflection on potential changes to their domain practices. Ribeiro's study does not clearly mention who the participants were. Nevertheless, it can be inferred that they were adults, as the study is related to machine learning adoption in aircraft maintenance.

3. The Development of Playful Probes

The development of playful probes has been an evolutionary process, stemming from the broader concept of cultural probes used in various fields of design research [6]. As the gaming industry continues to grow and diversify, playful probes have emerged as a valuable tool for game designers to create more immersive, engaging, and user-centered experiences [3]. In the development of playful probes, one of the fundamental considerations is the alignment of objectives and target audience. Lange-Nielsen et al., [3] highly recommend that designers create tailored probes designed specifically for the recipients of the probes. This entails that designers need to put effort into learning about their players in order to develop appropriate probe materials. This behaviour could result in the exchange of ideas, creative and hopeful thinking, and possibly even the expression of thoughts without regard for what might be considered objective truth or factual data [16]. Moreover, understanding the preferences and characteristics of the target audience is vital in adapting the probes to resonate with players. In addition, Christiansen and Gudiksen recommended [11] the need to strengthen the play triggers and new directions for play types when developing the playful probes. Additionally, knowledge regarding the age of the participant is important to design suitable playful probes for a particular age group.

4. Discussions

Regarding the study mentioned above, we found how playful probes could be able to gather data from participant. First, playful probes offer a highly engaging and immersive experience for participants [17]. Lange-Nielsen et al., [3] argued that playful probes opens up for a playful and autonomous environment for data-gathering which involve learning about individual and shared social practices. By integrating elements of play and creativity, participants are more likely to be actively involved in the probing process. Second, design probes have the unique ability to tap into participants' subconscious thoughts and emotions. Through activities creative expression, participants may reveal insights that they might not have consciously recognized or shared through traditional survey methods [11]. This provides researchers and game designers with a more comprehensive understanding of players' experiences and needs [3], [4]. Third, playful probes stimulate imaginative thinking and encourage participants to explore unconventional ideas. By providing open-ended and playful activities, participants are prompted to think outside the box and propose innovative game mechanics, storylines, or design concepts [8]. This approach can lead to the discovery of novel gameplay features and concepts that may not have been considered through traditional research methods. Fourth, design probes facilitate collaboration and co-creation between researchers, designers, and players. Involving players in the probe development process fosters a sense of ownership and investment in the final game design [3], [16], [18]. This collaborative approach leads to a more inclusive and diverse range of ideas and perspectives, enriching the overall game development process.

On the other hand, the most common issue encountered in data collection using probes is when participants fail to return the probe packages or do not complete the probing tasks at all. This can pose challenges for researchers in analysing the results. Lange-Nielsen and colleague [3] argue that despite its uniqueness, cultural probes as a method is time consuming. Since they do not produce regularly quantifiable outcomes, such as game designs directly linked to the probes, it is challenging to validate their use for the profit and productivity-focused games industry. Past study from Boehner and colleague [19] suggested to caution against being too rigid in how probes are designed and used. They worry that too much structure could suffocate the creativity and innovative aspects found in effective probes. Besides, there is an element of risk in deploying probes; they might fail or bring unexpected results [6]. Furthermore, playful probing is a qualitative data collection activity that naturally involves interpretation. Qualitative research is about interpretation and understanding processes, experiences,

and the meanings people assign to things. As a result, the interpretation of each individual may vary [13].

5. Conclusion

Playful probes offer an innovative way to gather data in the game development process. The potential of playful probes lies not only in their ability to collect insights but also in their power to inspire imaginative ideas and foster collaboration. The data collected through playful probes is often rich, multi-dimensional, and contextually grounded. Researchers and designers can get a holistic view of players' experiences and preferences through the combination of visual representations, narratives, and interactive experiences. This enables them to make informed design decisions.

When developing playful probes, it is essential to ensure that the goals of the probes are closely matched with the interests and needs of the target audience, tailoring them according to the players. A deep understanding of the players' characteristics and preferences is key to creating probes that effectively engage and resonate with them. It is also important to foster an environment in which participants can freely share creative ideas and thoughts, even if they are not strictly based on objective data. Additionally, conducting follow-up interviews after the probe activities can provide more detailed and richer insights, which complement the data gathered through the probes.

However, the utilization of playful probes also facing some challenges, include incomplete task completion by participants, time consumption, difficulty in producing quantifiable outcomes, and the risk of unexpected results. Therefore, some aspects need to be considered for the future researchers when planning to develop and utilize playful probes. Firstly, regular communication with participants can help maintain their engagement and encourage them to complete and return the probes. Techniques such as follow-up emails, calls, or mailings can be used for this purpose. Secondly, it is advisable to keep the probes concise and user-friendly to encourage participation, especially with children as the participant. By implementing a simple design for the probes and ensuring that they do not require excessive time to complete, participant completion can be enhanced. This approach may increase the willingness of participants to complete the playful probes in a timely manner. Thirdly, it is important to involve potential participants at an early stage in the process of designing the study. This involves delivering content to the appropriate individual, at the optimal moment, and via the most efficient medium.

By including participants in the design process, researchers can ensure that the probes are tailored to their needs and preferences, which can ultimately lead to better engagement and participation. Furthermore, as educators and game designers continue to explore innovative approaches to environmental education, playful probes could be a valuable and promising tool in shaping environmentally conscious future generations. Remarkably, collaborating with stakeholders can provide valuable insights into the players' needs and preferences, leading to the creation of more impactful playful probes. Since this method enable respondents to create their own questions, contexts, and outcomes, freeing them from conformity. It will consider the balance between the educational objectives and the playful elements to ensure that the probes are both informative and enjoyable.

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