How to Use Online Probes for Social Science Research

Author: Lili Golmohammadi, University College London, United Kingdom

Discipline: Sociology

Academic Level: Postgraduate

Publishing Company: SAGE Publications Ltd

© 2021 SAGE Publications Ltd All Rights Reserved
Abstract

Online probes are an informal digital method where participants respond to open-ended tasks communicated by any combination of website, social media, apps, and email.

This How-to Guide provides a summary of cultural probes, the development of online probes, and the overlaps and differences between these. It highlights some of the key methodological and disciplinary shifts as cultural probes (and more recently online probes) have evolved across the fields of design and interdisciplinary social science. Following this overview, this guide focuses on providing practical help with formulating, designing, and evaluating engaging online probes. Drawing on research examples of online probes developed during the COVID-19 pandemic, the guide covers key factors for researchers to consider when choosing or designing an appropriate online platform and supports readers in thinking through the pros and cons of using online probes.

Learning Outcomes

By the end of this guide, students should be able to:

- Differentiate between online probes and cultural probes
- Explain key disciplinary and methodological shifts in the evolution of online and cultural probes
- Formulate, design, and evaluate online probes
- Address considerations for selecting or designing a platform for online probes
- Identify the pros and cons of online probes and potential future developments

Introduction

The aim of this guide is two-fold. First, it aims to provide an overview of the distinct and overlapping characteristics of cultural and online probes, and a methodological and disciplinary overview of the evolution of cultural probes – from which online probes have been adapted. By highlighting key disciplinary and methodological shifts, the guide aims to support readers to understand cultural probes as an approach which can inform how to formulate and position online probes in a research design.

The second aim of this guide is to provide practical help for readers interested in using online probes in their research. This will cover formulating, designing, and evaluating engaging and clear online probe tasks, plus key factors to consider when choosing or designing one or more platforms (website, social media, apps, or email) for sending and returning tasks between researchers and participants. This will be supported by research examples of online probes developed during the COVID-19 pandemic.

The final section of this guide outlines some pros and cons of online probes for readers to reflect upon before making a decision on whether to employ them in a study.
What Are Cultural Probes and Online Probes?

Cultural probes were created by Gaver, Dunne, and Pacenti (1999) for The Presence Project, which explored technologies to increase the presence of older adults in their communities. Cultural probes are now most commonly known as an informal, design-led method and approach, involving kits made up of physical objects and accompanying “evocative tasks” (provocation-styled questions or instructions) designed to open up new perspectives on everyday life (Gaver et al., 1999; Gaver et al., 2004). Some traditional cultural probe objects include diaries, voice recorders, disposable cameras, preaddressed and stamped postcards, and maps. These often integrate the tasks in their design. For example, a question might be printed on the back of a postcard, or instructions for things to photograph written on the customised casing of a disposable camera. Cultural probes are usually completed in participants’ own environments (e.g., at work or home) over a set timeframe, often a number of weeks. Participants can choose which and how many they respond to, with completed probes (often called “returns”) collected by researchers at the end of this period, either in person and/or by post.

Online probes – an adaptation of cultural probes – are a digital method where participants respond to similarly open-ended “evocative tasks” communicated by any combination of website, social media, apps, and email. They may involve a number of digitally connected devices, including, but not limited to personal computers, tablets, and smart phones. A key shift with online probes is that researchers provide the tasks but not the physical objects and materials. This shift places particular emphasis on the design and formulation of the tasks and the online platform that will communicate them. Tasks can be returned via text, photo, video, and audio; and, as discussed later, tasks can be formulated to engage participants in analogue formats such as handwritten notes, drawings, and collage and can more broadly encourage participants to engage with physical materials from their own environments.

Online probes have some notable overlaps with mobile probes, another digital method where tasks and returns are sent to and from participants’ and researchers’ mobile (smart) phones: including text, image, video, and audio response options (see Albrechtsen et al., 2017).

It is worth noting that the terms “cultural probes”, “online probes”, and “mobile probes” may be named and defined slightly differently between studies. For example, “online probes” are sometimes also called “digital probes”.

Section Summary

- Online probes are adapted from cultural probes: a design-led method and approach for opening up new perspectives on everyday life.
- Online probes are a digital method where participants respond to open-ended tasks (e.g., questions or instructions) communicated by any combination of website, social media, apps, and email.
- With online probes, researchers provide the tasks but not the physical objects and materials which are a key feature of cultural probes.
The Origins and Evolution of Cultural and Online Probes

This section gives a short history of cultural probes – from which online probes have emerged. Being aware of key disciplinary and methodological shifts in the evolution of cultural probes helps us to better understand them as an approach and can inform how we formulate and position them in our research design.

In their original conceptualisation, cultural probes were part of a speculative and open-ended design approach and methodology, oriented to ways of thinking about technology which challenged traditional problem–solution trajectories in commercial design and human–computer interaction (see Gaver et al., 2004; Boehner et al., 2007). Cultural probe returns (e.g., completed postcards, annotated maps, or disposable camera film) were not formally analysed as data, nor were participants interviewed about them. Rather, these returns provided inspiration that fed (often indirectly) into speculative prototype designs. For example, The Presence Project (Gaver et al., 1999) included the design of a telerobotic chair that would give a participant a view from inside their fish tank (Gaver et al., 2004).

In the past decade or so, cultural probes have been developed as a method within interdisciplinary social science, for example, as part of design sociology (Lupton, 2018) and arts-based engagement ethnography (Kassan et al., 2018). Here, cultural probes are mostly used in combination with conventional social science methods such as interviews, focus groups, or workshops (for an online example, see Couceiro, 2020). Cultural probes are valued as a provocation tool for engaging participants and researchers to explore ideas in less linear and sometimes surprising ways; used with focus groups or workshops, they can also facilitate interactions and discussions between participants in novel ways.

Both the cultural probes’ process and returns in social science contribute to a study’s data. Although most studies that use cultural probes do not extensively detail how this data is analysed, they usually draw on a form of thematic approach. The separation of returns from their original methodology – that is, the way that returns have been analysed as data and information rather than used for inspiration – has been critiqued by Gaver et al. (2004) and Boehner et al. (2007) although some concessions to this evolution in sociological work have since been made (Boehner et. al, 2012).

Cultural probes and online probes can, however, still form part of a design process (including that of participants) in a social science space. For example, in their work on critical data studies, Lupton and Michael (2017) used cultural probes to help focus group participants explore digital dataveillance together in nonlinear ways. One task, The Personal Data Machine, invited participants to design two data-gathering devices (Lupton & Michael, 2017). More recently, Golmohammadi (2020) and Jewitt et al. (2021) combined online probes with design-oriented online workshops. These two studies are discussed in more detail later in this guide.

Section Summary
• Having a clear understanding of the original methodological framing of cultural probes is important, as it helps researchers to make informed decisions about how online probes will be framed within a research design.
• In their original conceptualisation, cultural probes were part of an open-ended and speculative design approach and methodology, with participants not interviewed and returns not formally analysed.
• Cultural probes have evolved in interdisciplinary social science, often used in combination with conventional methods like interviews, focus groups, and workshops (in person or online), with process and returns analysed as data. Within these contexts, cultural probes (and more recently online probes) can be integrated within design-oriented and creative social research.

Formulating, Designing, and Evaluating Online Probes

Attention to how online probes are formulated and designed is central because this can affect the quality and quantity of responses. Probes are optional in nature, and participants can choose which and how many they respond to (although some studies give a suggested number to aim for, e.g., two out of six). Online probes are comprised of tasks, but not the physical objects and materials that are central to cultural probes. As Lupton has pointed out, these physical objects or materials act as useful “reminders of what to do” for participants, and thus present a challenge for online adaptations (2021). With these challenges in mind, this section provides some guidelines for formulating, designing, and evaluating clear and engaging online probe tasks.

Online probe tasks (sometimes also called “prompts”) can take the shape of instructions or questions, but they should on some level be playful, open-ended, and enjoyable to respond to and avoid asking things which generate unambiguous answers. Getting this balance right when formulating tasks can be tricky. Gaver et al. argue that cultural probe tasks should “elicit inspirational responses—not comprehensive information about them [participants], but fragmentary clues about their lives and thoughts” (2004, p. 53). This framing is important to prompt participants (and researchers) to access topics from different angles and think in often unexpected ways.

Because online probes do not provide participants with physical materials, it is helpful to vary the response mediums between tasks. This allows for participants’ varying preferences and levels of confidence. For example, in a related mobile probes study with Masters’ students, Albrechtsen et al. (2017) found participants preferred responding with text; tasks requiring image responses were less preferred. However, in Golmohammadi’s study (2020) of loneliness and touch technologies, the spread was more even. With online probes, some tasks might suggest one specific response medium, for example, “make a short film (max 30 seconds) of…” or “write a one-page script imagining a conversation between…”. Other tasks might suggest several mediums, for example, in Golmohammadi’s study (2020), a task to “Capture a lonely moment” suggested a handwritten note, collage, sketch, map, or photo. With online probes, participants draw on their own materials and objects, and this can lead to more diverse responses. In the above example, one participant chose to write their
handwritten note on the back of a postcard of their home city (which they’d bought with the intention of sending to their family when they had moved there 2 years previously).

When formulating your online probe tasks, there are a few practical points to consider: You might want to give it a reference (e.g., “A”) and key title message (e.g., “Capture a lonely moment”). Below this, include some short, clear instructions, along with suggested response medium(s). Finally, with all tasks, it is helpful to end with a reminder of how to return completed tasks and of whom participants can contact with any questions.

It is also important to attend to the design and presentation of tasks. It can be helpful to support the written text with an accompanying visual (still or moving), as this “stands in for” the physical objects of cultural probes and often helps participants to know what to do. In some cases, an online probe visual might relate directly to a task, while in others the link might be unexpected or abstract. As Markham and Harris (2020) have noted, cultural probes have close ties with the longer-standing use of “prompts” in anthropology and ethnography, where objects or images are used in a similar way to elicit diverse responses, memories, and reflections (Markham & Harris, 2020). Care and attention to the aesthetic of cultural probes, and the pleasure this can bring, was deemed by Gaver et al. as of equal importance to “efficiency or usability” (1999, p. 25) and this has also been found to impact positively on participant engagement (Hanington & Martin, 2012). To see examples of how to formulate, design, and present online probe tasks or prompts, see work by Golmohammadi (2020), Markham and Harris (2020) and Jewitt et al. (2021), all discussed in more detail in the next section.

Once you have formulated and designed your online probes, share and test them (ideally with someone from your participant demographic) to ensure your tasks are clear and engaging, and include enough options for participants who may be less confident working with creative methods and/or online. Aim to provide a variety of tasks and factor in time constraints that your participants might be under by ensuring at least half can be easily completed in under 5 minutes. You can complement these with tasks which allow more time-flexible and/or invested participants to respond in more detail.

Finally, online probes can run the risk of feeling like “homework” (and yet another thing to do online). In a digital age, they face more competition from similar media, in a way that the customised, “analogue” quality of cultural probes do not. Attending to how you formulate and design your online probe tasks, building in playfulness, and ensuring a sense of “no wrong way” to do this can help mitigate the burdensome feeling.

Section Summary

- Formulate online probe tasks to allow for open-ended and creative responses, rather than short, factual, and unambiguous answers.
- Vary online probe tasks to ensure different options for response mediums between and within tasks, and keep at least half your tasks within 5-minute completion time.
- Attend to the aesthetic, design, and presentation of tasks to maximise their engagement. Providing a visual with the text acts as an additional guide for participants.
- To evaluate your online probe tasks, test their clarity, engagement, and variety with other people (preferably from your participant demographic).
Selecting or Designing a Platform for Online Probes

This section outlines considerations for choosing a platform(s) – whether website, social media, apps, and/or email – for your online probes. Key factors to consider include participant demographics, the scale of your study, its contextual orientation (whether you are investigating a changing context), and the pace at which tasks will be communicated and returned.

Online probes can either be given to participants up-front as a “pack” or sent to participants one at a time. The pack concept echoes the original cultural probes’ presentation. One way to present this is through a website, which also can serve as a space for the whole project; tabs with probe tasks can be supported by additional project resources or information. The main aim is to create a clear layout which offers a selection from which participants can choose. Golmohammadi (2020) created two pages of tasks, “Week 1” and “Week 2” under one tab. Each page featured six tasks, from which participants were invited to choose one or two to complete over a week (though they could do more if they wished). Returns could be sent via email or to a project WhatsApp, although all participants (who in this study were aged between 21 and 76), chose the former. These returns were then discussed in follow-up online workshops.

A website can also serve as the repository for probe returns. In “Using Digital Cultural Probes in Design With Children” for example, Iversen and Nielsen (2003) gave their participants phones with camera and dictaphone functions and instructions to record as much as possible from their after-school activities and home life. Researchers uploaded the pictures and audio clips they received to a restricted webpage, which acted as a collaborative space for the children to share their returns with each other as well as with researchers (Iverson & Nielsen, 2003).

Alternatively, researchers may wish to experiment with the temporal rhythms of their online probes. In the “Interactive Skin Probe Pack” Jewitt et al. (2021) emailed participants one task a day for five days. In addition to these daily tasks, they created a PDF pack featuring six tasks, from which participants were invited to select two or three. Participants had been introduced to the online probes in an online session and were then emailed the PDF. They had 10 days to email their returns back to researchers, which informed a follow-up speculative workshop on the future of interactive skin.

Another way to share online probes with participants is through social media. Markham and Harris (2020) posted one prompt a day through Facebook and email groups for 21 days to over 150 participants, with returns shared through these two platforms. This example offers useful insights for approaching online probes via social media when responding to a changing context: researchers had initially planned a menu-based pack approach, similar to the website example from Golmohammadi (2020). However, in response to the need for greater flexibility, as well as to the need to reorder and adapt tasks to respond to a highly fluid situation (i.e., the COVID-19 pandemic and the Black Lives Matter protests), the researchers reworked this plan and instead posted one prompt per day. A prompt- or task-per-day approach may be more useful for projects focused on responding to contexts in flux.
The above examples demonstrate some of the different platform combinations for communicating and returning online probes. For example, when thinking about your demographic, consider which platforms your participant demographic might feel more comfortable using. If you are working with more than 30 participants at a time, it may be more responsive to send and receive tasks on social media and/or email. If your study focuses on a changing context, an online pack setup for your probes may be less flexible, and it may be better to communicate tasks one at a time through the same platforms.

A note on the pace at which you send request tasks to be returned: Tasks presented as a pack (e.g., on a website or as an emailed PDF) offer participants a choice of which tasks they would like to focus on from the start, and they can spend more time on these if they wish. Tasks paced through one-at-a-time communication (e.g., every day or every few days) offer “a sense of surprise” (Markham & Harris, 2020, p. 3) and put them at the forefront of participants’ minds in smaller chunks. But, as with all probes, neither approach guarantees a response!

**Section Summary**

- Platforms for communicating and returning online probes can include any combination of website, social media, apps, and email.
- When deciding which platform(s) to use for your online probes, carefully consider the demographic, scale, contextual orientation, and pacing of tasks in your study.

**Launching Online Probes With Participants**

Once you have designed your online probes, it is important to consider how to “launch” them – how to introduce them to participants.

Online probes might be introduced through an online or in-person meeting or workshop. Alternatively, if you are working with large numbers of participants (e.g., via email and/or social media) you might embed this information at the start of each probe task. It may also be worth considering using an alternative term such as “creative task” (Golmohammadi, 2020), as “probes” can sound strange to some!

When introducing the online probes (verbally or in writing), aim to give participants an overview of how they work and their role in your project. It is also important to explain what you hope participants will gain from doing the tasks and whether you will be speaking to participants about them in follow-up interviews (online or in-person), workshops, or focus groups.

As often happens with creative methods, some participants may feel uncertain or unconfident to undertake online probe tasks. You can help ease these anxieties by reiterating at the end of your introduction and at the bottom of each written task that there is no right or wrong answer and by providing a point of contact for any questions along the way.

When introducing a platform, make sure you explain its layout and functionality clearly. Some things may seem obvious to you but may not be so for your participants! If you introduce the online probes and platform directly to participants, share your screen and give a
demonstration of how to navigate your chosen platform, its key functions, and how to choose and respond to tasks. It is a good idea to allow time for participants to try out the platform while you are there. Invite questions and check in with participants halfway through the set time period to see if they have any questions or need any support. It is important to test out your platform and tasks with a few people from your participant demographic before your study and remember that participants who are less confident working online may find some things confusing.

Section Summary

- Plan how you will launch and explain your online probes to participants.
- Test your online platform(s) and launch with a few people from your participant demographic before the study.

The Pros and Cons of Using Online Probes

There are pros and cons to using online rather than physical cultural probes.

The physical objects and materials included in cultural probes mean certain barriers inherent in online probes are removed. Packs can be sent or given to participants and returned gradually by prestamped and addressed envelopes and/or collected at the end by the researcher. In moving online, researchers may exclude groups who for a variety of reasons cannot access digital devices with an internet connection. In the context of socioeconomic disadvantage, one solution is to provide connected devices (e.g., project smart phones or tablets), although this requires a level of funding and technical support that is not always feasible. Online probes may also be a challenge when working with groups who may have appropriately connected devices but lack the confidence or digital literacy to navigate them (e.g., older age demographics). One option is to offer additional technical support (if this is a possibility).

Despite the above cons, online probes offer some notable pros. Making (and sending) physical cultural probe packs can be time-consuming and costly. In contrast, online probes can be produced, sent, and returned reliably, cheaply, and quickly. For research oriented toward current affairs or real-time developments, online probes have a further advantage of being quickly adapted (and reordered if released individually) to respond to changing circumstances as they happen. In addition, online probes are well-suited to large-scale research projects, including those with a wide national or international scope, as in the case of Markham and Harris’s 21-day autoethnography challenge (2020). Finally, online probes have proved useful in COVID times; in Golmohammadi’s (2020) fieldwork, which began at the start of the first UK lockdown in March 2020, it was questionable as to whether it was ethical to send participants cultural probe packs while there was uncertainty about the extent of viral transmission through the surfaces of physical objects.

Balancing the pros and cons of online probes, it may sometimes seem tempting to leave cultural probes behind. However, the customised “analogue” material character of cultural probes is a central part of their appeal to participants and can be combined with online probes. One way to do this is to work with cultural and online probes at different stages of a
study (e.g., one week of cultural probes and one week of online probes). Alternatively, researchers may decide to send some physical objects and materials in advance, with follow-up online probe tasks (e.g., via social media and/or email). In this way, researchers could experiment differently with pace and engagement.

Section Summary

- Online probes require participants to have appropriately connected digital devices and a certain level of digital literacy, and so may not be a suitable option when working with some groups. In these circumstances, it may be better to use cultural probes in person and/or via mail.
- Online probes cost less and take less time to make, send, and collect than cultural probes. They also provide more flexibility to adapt to changing circumstances and allow for higher participant numbers.
- It is possible to combine online probes with the analogue physicality of cultural probes in productive ways.

Conclusion

This guide has introduced online probes, outlined their origins in cultural probes as a design-based method and approach initially conceptualised by Gaver et al. (1999), and noted key points of connection and differentiation between these two types of probes. It has also discussed the methodological and disciplinary considerations to reflect on when deciding how and why to use online probes in your research and how to combine them with other methods.

In addition, it has offered guidance on the challenges of formulating and designing online probe tasks, including the lack of physical objects and materials that act as a cue and motivation for participants. It has proposed some steps for readers to follow when considering these points – from varying suggested response mediums and timings for tasks, to providing supporting visual materials and checking these through with others. It has also presented some examples of studies which have differently developed and utilised online probes, including in combination with other online methods. These examples have also illustrated the factors and considerations that can help decide which online platform(s) (websites, social media, apps, and/or email) to use as a means of communicating and launching online probes. Finally, this guide has outlined the pros and cons of online probes to support the reader in considering whether to use them in their own work.

Multiple Choice Quiz Questions

1. What is a central feature of online probes?
   a. Online probes use digital technology to send and receive tasks and cultural probes use mail only.
   b. Researchers provide the tasks, but not the physical objects and materials. (CORRECT)
c. The type of tasks with online probes are very differently framed.

2. What is a decisive shift in the use of online and cultural probes since their original conceptualisation in 1999?
   a. They are no longer open-ended.
   b. They are not usually concerned with the future or with design ideas anymore.
   c. They are analysed as data. (CORRECT)

3. What is most important when formulating online probe tasks?
   a. They must be systematically and uniformly framed.
   b. They are open-ended and offer varied response mediums and choice. (CORRECT)
   c. They must be factually oriented to gain clear and unambiguous answers.

4. What key factors need to be considered when selecting or designing a platform(s) for online probes?
   a. It is fine to any online platform, so long as it is free and available to anybody.
   b. It is best to use the latest popular platform as people are most likely to want to engage with it.
   c. That the platform is appropriate to the demographic, scale, context, and timing of your study. (CORRECT)

5. What cons do you need to consider and address when using online probes in your study?
   a. Some groups may need to be provided with more technical support to participate. (CORRECT)
   b. There are no downsides to using online probes because they are free to receive and send and widely accessible from a number of devices.
   c. You cannot combine them with the material physicality of cultural probes.

Acknowledgements

This work was undertaken as a part of the IN-TOUCH project, a European Research Council Consolidator Award (Award Number: 681489).

Further Reading


### Web Resources

- **Probe Tools** – Useful guide to formulating successful probe tasks
- **Doing Fieldwork in a Pandemic – Cultural/Mobile Probes**

### References


Hanington, B., & Martin, B. (2012). *Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions*. Rockport.


Lupton, D. (2021). Cultural/mobile probes. In *Doing fieldwork in a pandemic (crowd-sourced document), revised version*. [https://docs.google.com/document/u/0/d/1clGjGABB2h2qbduTgfqribHmog9B6P0NvMgVuiHZCl8/mobilebasic#h.x70ioi5u7j89](https://docs.google.com/document/u/0/d/1clGjGABB2h2qbduTgfqribHmog9B6P0NvMgVuiHZCl8/mobilebasic#h.x70ioi5u7j89)

