

# Mobile Probes as an explorative method as well as a tool for reflection: A case of designing a smartphone application for Master's thesis students

Majbrit Pedersen  
Department of Culture and Society  
(Anthropology)  
Aarhus University  
+4561782224  
majbritp@gmail.com

Peter Weibrecht  
Department of Aesthetics and  
Communication (Digital Design)  
Aarhus University  
+4520973705  
stud20094222@hum.au.dk

Charlotte Albrechtsen  
  
Nicholai F. Pedersen  
Centre for Teaching Development and  
Digital Media  
Aarhus University  
Paludan-Müllers Vej 48, Aarhus, DK  
+4521850821  
calbrechtsen; nfp @tdm.au.dk

## ABSTRACT

As part of a project aiming at designing a smartphone application for students writing their Master's thesis, Mobile Probes were used as a method to gain knowledge about thesis writing students' day-to-day life and their work processes. The conducted probe did generate insights into students' daily routines. However, it also proved to have a value beyond the study. Participants in the probe reported how the questions of the probe led them to reflect on their thesis writing practices and in a few cases even develop them, and we suggest that this reflective aspect of the probe should be integrated into the smartphone application.

**General Terms:** Design

## Keywords

Mobile Probes, design practice, explorative research, learning.

## INTRODUCTION

The authors of this paper used Mobile Probes as a method to gain insight into the work processes and daily lives of students writing their Master's thesis at The Faculty of Arts, Aarhus University, Denmark. The purpose of the generated data is to inform and inspire the design of a smartphone application (or app) to support future Master's thesis students at the faculty. The need for such an app and the ideas behind it are presented in a forthcoming article [7], and the process of designing the app is currently in progress.

Below, we present the method of Mobile Probes, the specific research design used in our project as well as the results. The presentation of the results focuses on how the probe led the participants to reflect on their own thesis writing processes. This aspect of the results brings about a discussion of the topic of learning, which is followed by a short conclusion.

## Mobile probes as an explorative method

Mobile Probes as a method is a variant of the method Cultural Probes and was developed by a group of Finnish scholars less than a decade ago [5]. Probing implies that the participants conduct self-documenting activities in their daily settings while engaged in the activities of their everyday life, and the method is used for exploring, collecting data and provoking reactions. It has

proven useful in design projects, often within the field of Human Computer Interaction [2]. When Cultural Probes are used, participants respond to or use physical items like maps, post cards, cameras etc. provided by the researchers [3]. In the case of Mobile Probes, these items are replaced by questions or tasks sent to the participants' mobile phones, which are also used to convey the participants' responses.

We chose to use Mobile Probes based on the method's potential to produce inspiring and unpredicted answers [3] and to generate insight into individual lives in a manner less intrusive than e.g. participant observation. The method furthermore allowed us to collect data from several individuals at the same time, and it let "users become more active contributors instead of being only passive sources of data" ([5], p.44) Finally, Mobile Probes would generate metadata about the participating students' mobile phone usage and habits that other methods could not have done (a point also made by [1]).

The researchers and participants taking part in mobile probing are separated in time and space, and the method only allows for short questions and short answers. These factors impart a porous quality to this type of interview with a wide interpretive space between researcher and respondent. In addition, the answers the method generates are very individualised ([4]) and of a multimodal nature (text, image and/or sound), which imply further interpretive challenges. We sought to meet these challenges by including other types of interviews with the participants in the research design as explained below.

## A RESEARCH DESIGN FOR PROBING MASTER'S THESIS STUDENTS

Eight students (four men and four women) writing their Master's theses at departments of the Faculty of Arts participated in the probe. They used their own smartphones to receive and answer 15 questions or tasks each (that is, altogether 120 questions) during a period of three weeks. To increase the likelihood of the participants going through with the entire study and to encourage creative, inspiring and unexpected answers, we strove to make the probe questions interesting, challenging and fun and to avoid formulating questions that would lead to discomfort or bad conscience. The questions concerned the students' work

environments, factors of motivation, daily work schedules, perceptions of the thesis writing process and strategies used to move the process forward.

All questions were open-ended and could be answered by sending either text or images. 14 of the 15 questions were created in advance and sent to all participants. The one remaining question was created as an individual response to an earlier answer (or in some cases, the absence of an answer) from the participants. Questions were sent at different times of the day and with different intervals – sometimes two questions were sent in a day, and sometimes the questions were three days apart.

The eight participants all took part in individual, structured interviews before the probe was carried out, and all participants except one attended a focus group interview after the probe had ended. The reason for meeting with the participants face-to-face twice was done to obtain a context within which to analyse their short and individualised answers. The focus group was moreover conducted to evaluate the study and the method used and to have participants come up with input and ideas for the thesis app.

## **Data and Results: Reflections and New Practices**

Of the 120 tasks and questions sent to participants, 93 were answered. 81 by text messages and 12 by images. On average, each participant sent 11.6 answers, the highest number being 13 and the lowest number 10.

As expected, Mobile Probes provided a window into the Master's thesis students' everyday lives and their work processes. Among other things, we learned that only a few of the students consider thesis writing a full time occupation, that interpersonal contact is a major motivating factor, and that the supervisor is considered the most significant person when writing a thesis. As a more unexpected result the probe also affected the participating students' processes in a positive way. It did so because it prompted the participants to reflect on their thesis writing processes, which in some cases led to insights that might not have been fostered otherwise.

One example of this was provided by Maria who in the focus group commented on the probe question "What is the best thing that can happen to you today?" She remembered how the question had helped her set a goal for that particular day, which she would otherwise not have done, and that she actually managed to reach her goal. In fact, the work she did that day "actually turned out great". In other words, the question and her reaction to it resulted in a successful experience for Maria.

Julia reflected upon her tendency to use her sofa as an office space. This happened after reviewing a picture she had taken during the probe as a reply to one of the questions, which she was asked to resubmit after the study had ended. In the focus group interview she said: "[...] it was great fun to see it again: 'Oh my God, was I doing my work there [on the sofa]?' A desk might have been more suitable." Julia said that this experience – and the experience of taking other pictures to answer questions as part of the study – has made her consider start taking pictures for reflective purposes while working on her thesis. That is, as a consequence of her participation in the study, Julia has considered

introducing a new method into her practice as a Master's thesis writer.

Another participant, Lise, report actually taking the step of developing her practice inspired by the questions received. In the focus group interview she says that the questions have made her "think deeper about this process thing" and caused her to invent her own "brilliant little visual thing": Every time she has finished a new page, she hangs a post-it note representing the page on the wall by her desk, thereby visualising how her thesis is progressing. Hanging a new note on the wall produces a feeling of success in her, she explains.

## **DISCUSSION: MOBILE PROBES AND LEARNING**

In a learning perspective we find the fact that Mobile Probes led the participants to reflect on their thesis processes very significant. It is far from unusual that an interview situation leads the interviewed person to reflect and thereby causes an inner change in the person ([6], p.45). It seems reasonable to assume that probes can have the same effect on the subjects, as the method just like a more classic interview affects the lifeworlds of the participants. In this case by provoking thoughts about the process of writing a thesis. However, a special quality of Mobile Probes seems to be the method's ability to affect the subjects in situations where they are deeply engaged in their processes.

To highlight the learning potentials of this quality of the method, Donald Schön's theory on reflective learning practice [8] can be illustrative. When answering the probe questions, the students were encouraged to reflect on their actions here and now. This was brought on by questions concerning the students' daily schedules, like the one Maria commented on about her plan for the day. This kind of reflective practice can in Schönian terms be labelled as 'reflection-in-action', because reflection is creating and taking place during a break in the subjects' routines. Furthermore, through questions concerning the students' perceptions of their entire processes – such as: "If your thesis was a city/town, which would it be and why?" – the meta-processual reflective practice that Schön calls 'reflection-on-action' is actualised.

According to Schön, reflective skills is a vital quality in professional practice as it makes the practitioners more equipped to deal with the complex problems of the modern world. As a logical consequence of this, Schön argues that students' abilities to reflect in and on action should be highlighted by educational institutions.

## **CONCLUSION**

As explained above, the conducted mobile probe provided a dual outcome: knowledge and insight for the researchers, and reflections and inspiration for new practices for the participants. Our paper has focused on the latter, and we are currently considering how we may consciously exploit the probe's potential for learning and development when designing a mobile application for students writing their Master's thesis. This could conceivably be done by making reflective questions much like those of the probe part of the app.

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