Exploring everyday life in remote schools: A large-scale study with cultural probes and affinity diagrams

Antonia Spiridonidou, Ioanna Kampi, Konstantinos Chorianopoulos
Department of Informatics, Ionian University, Corfu, Greece
choko@ionio.gr

ABSTRACT
In this paper, we describe the process of gathering data from remote schools. We employed cultural probes and analyzed the collected data with the use of the affinity diagrams. This study includes data gathered from more than ten remote schools and involved more than a hundred students and teachers in the process. This is a novelty as previous cultural probes studies have been done on a small scale and have mostly considered urban environments. We found that ICT technologies might not be employed as planned in remote places and that affinity diagrams are more suitable for analyzing unstructured data (e.g., photos, diaries) rather than semi-structured questionnaires. The results of this research provide insights for analyzing cultural probes from remote places.

Keywords
Remote schools, affinity diagrams, cultural probes

INTRODUCTION

This article presents early results on the analysis of cultural probes from remote schools. This work is a part of a larger research program, which investigates the social effects of locative media in an educational setting. Through a collaboration with administrations in education we found secondary education remote schools and an open invitation was sent to them in order to see which wanted to participate in this study. Over 80 responded positively and finally the collaboration was made with 14 of them.

After sending and receiving the probe packages, with all the instructions, the analysis began. For the first step of the analysis, the affinity diagrams method was chosen, as the most appropriate for dealing with so many probes. The affinity diagram method was used in order to:

- Extract information about the students' everyday school life, in order to assess whether and how it differs from the everyday life of students that come from urban schools.
- The same method was used also to see whether the reduced transportation links of each location with Greek urban environments, affects the interpersonal communication of these youths.

This paper is part of a broader empirical study that concerns the introduction of novel Information and Communication Technology (ICT) in primary and secondary education schools. In September 2009, laptop computers were given to all new secondary education students, from the national ministry of education. In addition, it has already been planed that within the next few years new technologies will be available in secondary education schools, such as interactive white board and tablet computers. Hence, a need rises now for tracking the deployment of novel educational ICT, in order to facilitate, understand and adapt them to the particular needs of remote schools.

RELATED WORK

This research is centered on the differences between the remote schools and the urban ones. A question which has occupied several scientists is if different cultural [1], backgrounds require suitable approaches for the introduction of ICT, such as laptops, tablets and interactive whiteboards, in schools. A very popular technique for gathering data from the users is the cultural probes technique. This technique is considered to be one of the most ideal approaches for data collection from sensitive environments, such as schools [5], households [4] and any kind of domestic environment. This paper presents the cultural probes analysis and its early results. The purpose of this analysis is to find evidence on two very important issues, which concern youths that live in marginalized geographic areas.

The cultural probes' analysis is an open end process, because of the large quantity of the collected data and because of its unstructured nature. This provides the designer team with the advantage of a wider comprehension of the users' context [6], a comprehension enhanced radically with the use of the affinity diagrams [2] for the analysis of the probes. The affinity diagrams are considered to be one of the most fitting tools for the probe analysis, especially for qualitative and ethnographic data [2].

The most relevant research (relative to education context) that was conducted, concerns the collaboration of remote school teachers among them, which are geographically distributed [3].

METHODOLOGY

Participants

An open invitation was sent to the secondary education administration office, in order to select the schools, which would participate in this research. This office provided information concerning which schools are remote in

Greece. The open invitation was sent to these schools and the first response was enthusiastic. Eighty schools responded to the open invitation, from which thirty had the necessary characteristics for the project sample. Finally, fourteen were chosen and the cultural probes packages were sent to them. By spring 2009 all the probe packages were sent back to us and the probe collection was complete (Figure 1).

Figure 1 Remote schools are usually located on minor islands

Materials

The probes package included a disposable analog film camera with flash, a 30-page folder, scissors, paper glue, pens, pencils, post-it notes, sticky tape and a CD-R. The package also included a welcome letter as well as instructions for the activities. The teachers and/or the students participating in this project had to record their experience of their everyday life in their remote school, by using the given materials. Groups of 5 to 10 students needed to be formed in order to record personal and also group experience in their school. The instructions made it clear that the given materials were indicative and that the participants were at liberty to use any kind of other materials they thought would be more fitting for them. A set of activities was given. Some activities were intended to provide useful data, while other activities were redundant, but probably fun. The activities were also indicative and they were adjustable to any change of preference.

The proposed activities were:

1. Which are your favorite school courses and which are the ones you don't like? Categorize them as easy, fun, useful.
2. Which occupation would you like to do in the future?
3. You can keep a daily journal noting, in a couple of sentences, in it things that you heard or learned that made an impact on you.
4. Design a device that would help you in a course or in your daily activities.
5. Create a collage which will include technologies that seem interesting and fun to have in your school.
6. Design maps of your region including information about travel instructions.
7. Please take one or more photos of teachers and students meeting points, empty or dodgy places, interesting or boring places, your school building, PC lab, classroom, corridor, cafeteria, window-view.

The instructions provided a timeline of one to two weeks within which all the information needed to be gathered.

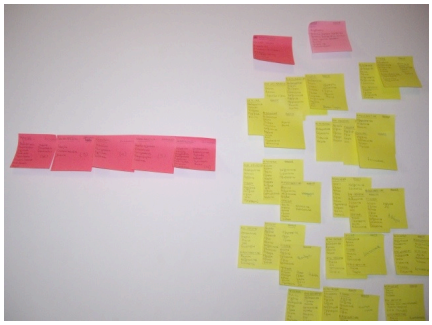
Probe analysis

Several methods of analysis were employed in order to analyze the cultural probes from the remote schools, such as the affinity diagrams, the personas and story cubes for ongoing work.

Due to the unstructured nature of the information provided by probes, the best approach was the affinity diagrams, a method which was developed by Kawakita Jiro, a Japanese anthropologist, in the 1960s [7]. The affinity diagrams can contain a big quantity of data and structure it in a way that makes sense in relation to the question at hand every time. Thereby information is produced and according to the question, the diagram and the structure, results are produced. Affinity diagrams extract information regarding an issue, from a large amount of data. They can also connect various ideas or information and provide solutions to a problem. Therefore it is considered to be an excellent tool, which generates, organizes and consolidates the gathered information.

The steps followed in applying the affinity diagrams are the following:

1. The question to be answered is defined.
2. Record every piece of data separately on post-it note.
3. All sticky note data are placed upon a wall, so that they are visible by all team members.
4. The sticky notes are moved around and placed into common theme categories.
5. The categories' contents are summarized into headers.
6. All the data are listed under the appropriate categories. They are placed under the headers in a way that creates a diagram.
7. Each category/topic is discussed both individually and in relation to others and the frequency of the themes is taken under consideration. The questions of the research guide the above and the results are produced.



8. **Figure 2 Initial taxonomy of data**

Applying all the above we followed some steps:

1. The questions in this study were: "Whether the students' everyday school life differs from the everyday school life of students that come from non–

remote schools" and "If and how the communication degree (ship and airplane routes) of each location with Greek urban environments, affects the character forming process of these youths".

2. Each data was recorded on different sticky notes. If more than one data was included in the situation, multiple notes were written.
3. All the sticky notes were placed on the wall, not according to specific categories, but according to every school, for the first draught (Figure 2).
4. The sticky notes were then moved around and categorized according to the proposed activities which were given via the instructions.
5. The header cards were developed according to subject and a temporary diagram was developed. The categories, headers and diagram were carefully reviewed in order to ensure it was making sense, it was coherent and that there were no ambiguities or any overlapping.
6. The final affinity diagram was formed. Starting from the more general data and converging as we proceeded, the affinity diagram resulted in a little pyramid-like shape (Figure 3).
7. There are two main topics which concern this research and therefore all the data and diagrams were analyzed once for the first topic and then again for the second one. This means that at some occasions there were data that was taken under consideration more than once as it fell within the content of both questions and data that was taken under consideration only once for the question that they were related to.

Figure 3 Data organized in affinity diagram

RESULTS

According to the affinity diagrams analysis, we have extracted early results on the two topics: 1) Students' everyday school life, 2) If and how the communication degree (ship and airplane routes) of each location with Greek urban environments, affects interpersonal communication of the youths.

Most of the young people in the remote areas use in their daily life technologies, but the frequency is not so high. It is clear that the technologies used in everyday life activities include the use of internet, for a variety of purposes such as for listening to music, for communicating with each other (e.g. via facebook and msn), for watching videos as well as for receiving newsfeed about their favorite sports team and/or music groups. The probes' analysis showed that these youths use internet during their free time.

The lack of infrastructure remains one of the biggest setbacks in using the internet. In more detail, the gymnasium of Karpathos faced an internet failure in September and the restoring technician came in April. This shows that the level of technical support is extremely poor and considering that this event occurred at a public facility, one can understand how much more difficult it would be for these youths to have internet access at home. At some occasions the students had to go to another region in order to have internet access. This was the case of a group of students from the gymnasium of Amfipagiton (a small village in the Northern part of Corfu), who move from their village to the bigger neighboring village of Sidari, located a few kilometers away.

We also noticed that all the students owned a mobile phone and that most of them use it quite often for playing games. Some of the youths also own a gamming console like playstation. Despite all the above, it was unexpectedly noticed that most of them preferred to go out and interact with each other, rather than spend their free time on the internet or on their gamming consoles.

These marginalized youths have shown great interest in sports, in family interaction and in tradition and religion.

One would expect that the youths from remote regions, would not have as many technologies as the urban youths and that they would be more occupied with farm activities. As apparent from the above, this is not the case as they do posses, more or less, the same kind of technologies but they prefer not to use them so intensively. There was not even one indication of youths occupying themselves in farm activities; on the contrary most of them appear to be having a very social life with their friends and family.

The fact that these remote schools are usually situated on islands often creates difficulties to the interpersonal communication they have with other places and especially with the Greek urban environments. This situation influences the character forming process of the youths living there.

Communication with people from different cultural, educational backgrounds plays an important role in forming youths' characters as it provides them with a variety of stimuli. As a consequence when youngsters live in urban environments, there is a plethora of choices in everyday activities, which also have a great impact on the young peoples' choices in their professional life. The youth of remote schools do not have the same

possibilities. Most of these regions are very popular tourist destinations during the summer period. This changes radically during winter as for example on the island of Anafi, where there are only three ferryboats visits per week[1], all coming from Greece's main port, provided that the weather permits it. Another example is the island of Karpathos, which seems to be facing the same difficulties. The students from the gymnasium of Karpathos are well aware of this situation and they have expressed it with anxiety:

"…when will there be the new ferry line from Karpathos to Crete? I can't wait! …"

Notably, the majority of the students' choices for carriers fall within the same fields and there isn't much variation among them. Most of the youths choose their occupations in a way that they can be helpful to their fellow citizens. For example at the gymnasium of Kantanos a student declared that he wishes to become an electrician because, as he said:

"…on our island there will always be something broken in need of fixing…"

Other popular occupational choices are teachers in general (from kinder garden to high school professors), the advocate profession, doctors and all types of navy occupations. These choices are indicative of the limited stimuli that are available to these youths. Very few are the cases in which a student had chosen a profession widely different from him/her fellow students. It was also noticed that the students from these remote schools have a very strong sense of helping each other and their whole community. A student from the gymnasium of Vamos gives her point of view, an indicative opinion of the situation:

"… I would like to become a teacher so that I can teach to other children all the things I know…"

CONCLUSION

The first question raised at the beginning of this article was to know if and how the students' everyday school life differs from the everyday life of students that come from non–remote schools. Concerning this question, we showed that marginal youths do obtain modern technologies but they are not accustomed to using them. Furthermore, the fact that the infrastructure is not solid enough promotes a more direct way of communication in addition to the small society which enhances this phenomenon of communicating directly with one another.

The second question was whether the communication degree (ship and airplane routes) of each location with Greek urban environments, affects the interpersonal communication patterns of these youths. As shown above the influence is inevitable and the consequences are even greater for regions with limited transportation links with the urban environments. A lot of the students have it clear in their minds that they are living in remote regions, a fact which was made obvious by the quoting of a student, who, when visiting a nearby city on the same island, referred to it as:

"…the borders of Europe".

[1] FerryBoat connections: http://www.openseas.gr/

ACKNOWLEDGEMENTS

We would like to thank the European Commission (EC) for partially funding this project under the 7th Framework Program (FP7). This work has been developed in the context of project CULT (http://cult.di.ionio.gr). CULT (MC-ERG-2008-230894) is a Marie Curie project. Our thanks also go to the remote schools, their teachers and students who participated in this project

REFERENCES

1. Ackermann, E., Decortis, F., Hourcade, J. P., and Schelhowe, H. 2009. Cultural coding and de-coding as ways of participation: digital media for marginalized young people. In Proceedings of the 8th international Conference on interaction Design and Children IDC '09. ACM, New York, NY, 294-297
2. Beyer, H. and Holtzblatt, K. (1999). Contextual design. Interactions 6(1):32-42.
3. Groth, K., Bogdan, C., Lindquist, S., Räsänen, M., Sandor, O., and Lidskog, T. (2005). Creating a space for increased community feeling among geographically distributed teachers. In Proceedings of the 4th Decennial Conference on Critical Computing: between Sense and Sensibility (CC '05). ACM, New York, NY, 145-148
4. Oumard, M., Mirza, D., Kroy, J., and Chorianopoulos, K. 2008. A cultural probes study on video sharing and social communication on the internet. In Proceedings of the 3rd international Conference on Digital interactive Media in Entertainment and Arts DIMEA '08, vol. 349. ACM, New York, NY, 142-148
5. Wyeth, P. and Diercke, C. (2006). Designing cultural probes for children. In OZCHI '06: Proceedings of the 20th conference of the computer-human interaction special interest group (CHISIG) of Australia on Computer-human interaction: design: activities, artefacts and environments, pages 385-388, New York, NY, USA. ACM Press.
6. Gaver, B., Dunne, T., and Pacenti, E. (1999). Design: Cultural probes. Interactions 6(1):21-29.
7. White E., Behara R. and Babar S. (2002). Mine Customer Experiences: An affinity diagram allows you to organize vast amounts of qualitative data to identify patterns or groupings, pages 63 – 67