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Overcoming the digital divide through the promotion of digital reading

Tom Wilson and Elena Maceviciute
Digital Media Lab, Faculty of Communication, Vilnius University, Lithuania

Abstract. Inequalities in access and use of information and communication technologies are usually labelled the digital divide, which implies a strong gap between those who have access and use technologies and those who do not. The public library can play a significant role in enabling a society in overcoming the divide, which is a consequence of inequalities in the distribution of wealth, and the consequent inequalities in access to the appropriate technologies and networks. This paper describes an ongoing project in Lithuania, which aims to test the possibilities of digital reading as means of overcoming the digital divide.

Key-words: experimental research, natural experiment, digital divide, digital reading, public libraries

1. Introduction

The idea of the digital divide emerged in the 1990s following publication of *Falling through the Net*, by the NTIA (1995) in the USA. Initially, the divide related to the ability of people to access the Internet, and the focus was upon extending connection throughout a given country. However, merely increasing the possibility of connecting to the Internet does not reduce the divide for everyone. Income inequalities prevent some people from paying for Internet connection. This divide may be narrowing; e.g., the Internet World Stats site shows that in March 2017 almost half of the world's population (49.7%) now has access to the Internet. In Africa only 28.3% of the population has access, whereas in North America, the proportion is 88.1% (Internet World Stats, 2017a). In Europe, inequalities also exist, with 43.4% penetration in the Ukraine, compared with 100% in Iceland. Lithuania, our country of interest has 84.8% penetration, placing it in the top half in Europe (Internet World Stats, 2017b). The key question is whether or not all of those connected can derive the full benefit of Internet use. Research shows that it is not the case and this type of digital divide follows the usual pattern of social categorical inequalities (van Deursen and Helsper, 2015).

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Reducing the digital divide is an important task, as more and more activities move online and those excluded socially offline may suffer even more through digital exclusion. Most of the effort to close the divide is directed towards providing wider and better physical access. The gap in digital skills and usage is also addressed, predominantly through public and non-governmental organizations, by providing training in computer and Internet skills. The most important organizations are schools and public libraries. Sometimes, the projects can reach a national scale, as with the projects providing access to the Internet through public libraries, conducted in a number of countries by the Bill and Melinda Gates Foundation, together with governmental bodies (such as Ministries of Culture or Education).

All such interventions use digital technologies and resources to attract and motivate people in general, and non-users in particular, to use the Internet and its resources. We were captured by the idea of digital reading as means of narrowing the digital divide, as previous research on reading in print has revealed that the proximity of books, a supportive social environment and strong motivation are important in acquiring reading skills of young people from socially and economically vulnerable groups and, as a result, increase their chances of social mobility (Levy et al., 2014). Digital reading could become a natural extension of reading promotion within public libraries and also target the problem of digital technology use.

Digital reading takes on a variety of forms; new technologies, genres, and means of text presentation emerge. Questions of interest for us are: whether digital reading will increase the audience's motivation to use media; which tools help the development of skills needed to use ICT; whether digital reading tools increase motivation to participate and develop skills; which digital reading tools and media are preferred by different vulnerable social groups and which benefit these groups most in terms of social inclusion? A modest start in this direction is implemented in an on-going two-year project in Lithuania.

This paper introduces the project, focusing on the experimental design and methods of assessing whether the intervention affects the motivation of the participants to use digital technologies and increase their digital skills.

2. Previous research

Experimental methods are rarely employed in library research and are relatively uncommon in social research generally, although such methods are not unknown, for example, in social work (see, e.g., Gorey, 1996) and in education (e.g., McConnell, 2002) and there are well-known examples in other fields, such as the Hawthorn experiments (Mayo, 1949). In laboratory, the experimental situation is completely under the control of the researcher. Standardised methods are employed which call for exact measurement of the variables involved and the effects experienced.

A second type is the field experiment, which is conducted in the ordinary life-world of the participants. Here the researcher can manipulate the independent variable in the study, but cannot control the other variables that may affect the situation. One advantage of the field experiment is that it can be scaled up to include many more people, and there is increased face validity because of the experiment taking place in the everyday world, rather than in the laboratory.

Finally, there is the natural experiment, in which the investigator controls none of the variables, but simply compares groups of individuals who have experienced different life histories.

Public libraries are always 'experimenting', of course: trying out new systems and new ways of working, but these experiments are rarely reported in the research literature; they are simply part of managing library systems.

Some experimental research does exist, however, usually of the field experiment type, since the 'real world' of the library is the setting: for example, Baker (1985) carried out an experiment on the display of recommended titles in two small public libraries, finding that the location of the displayed material was the key factor in explaining the increased circulation of these books. In another example, Drumm and Havens (2006) report a 'virtual librarian' experiment, in which librarians interact with faculty and students in virtual learning environments. Also, Scupola and Nicolajsen (2013) report on an experiment involving the use of a blog to allow users to generate ideas about library service development.

The role of the public library in helping to overcome the digital divide has been promoted ever since the phenomenon was recognised; famously, President Bill Clinton said that by 2020, 'every classroom, every clinic, every library, and every hospital in America' would be connected to the Internet (Clinton, 1994). This aim, at least for libraries, has been attained earlier than planned, since Kinney reported that, 'Virtually every public library in the United States provides public access Internet computers, and libraries and the public increasingly see Internet provision as a role central to the mission of the public library' (Kinney, 2010, p. 105).

Some indication of how public library Internet connection is used in the USA is found in the report of the Impact Study by the University of Washington Information School. The survey participants are self-selected and, as a result, no firm statistical confidence is offered, but the report (Crandall and Becker, 2018) is based on data provided by 91,557 people across the USA. The results show a great diversity in use of the technology, including for education, for business, for e-commerce, and for social inclusion. Many respondents had Internet connection at home, but used the public library which had a higher connection speed.

Public libraries provide not only access to the Internet, but also training in the use of the Internet: in the Impact Survey, 59% of users reported having one-to-one assistance in the previous twelve months. This kind of impact is happening elsewhere: e.g., a study of one library in Cape Town, South Africa (Khati, 2013), showed that one of the benefits of Internet connection in the public library was the associated computer literacy instruction. In the UK, the People's Network was established to provide Internet connection in all public libraries and its Website reports:

'In total the network in libraries offers over 60 million hours of computer use every year, most of it free, with access to a wide range of software and digital content… all supported by trained and supportive staff.' (People's Network, 2009).

With the loss of more than 8,000 library staff in the UK since the Government's austerity programme began, after the financial crisis in 2008 (BBC News, 2016), it is doubtful to what extent any services are 'supported by trained and supportive staff'.

The situation in Lithuania mirrors that of other countries in the European Union: more than 98% of the 1,200 public libraries in Lithuania offer Internet access. Twenty per cent of users have accessed the Internet during visits to the public library in 2015 (Libraries and skills…, 2015) and this number increased to 34% of users in 2017 (Verikienė et al., 2017). This has been made possible partly through grants from the Minister of the Interior, to provide access in rural areas, and partly through grants received from the Bill and Melinda Gates Foundation (Lipeikaite and Sadunisvili, 2012). One of the tasks of the projects, Libraries for Innovation I and II, was to reduce the digital divide and pay special attention to vulnerable groups, such as rural residents, seniors, or the disabled. In comparison with the base-line data (Rutkauskienė, 2009), the impact studies in cities and rural areas have shown that training in digital skills helped in attracting new users from special groups (Lipeikaite and Sadunishvili, 2012).

3. The Lithuanian project

Our project is financed by the Research Council of Lithuania under its 'Welfare Society' programme, which called for projects aimed at understanding and, where possible, reducing disparities in service provision. The Project began in 2017 and, at the time of writing this paper, all preparatory work had been completed, the selected public libraries had agreed to participate; recruitment of participants to a training programme has been completed in two libraries and is on-going in the third, and the experimental intervention has been designed and planned.

In Lithuania, there are a number of studies of the socially excluded groups that show the same roots of digital divide as elsewhere in the developed world. The relational inequalities run along the lines of urban/rural, high/low income,

employed/ unemployed, healthy/disabled, high/low educated categories (Idzelytė et al., 2007; Dzemydienė and Naujikienė, 2013; Aleksandravičius, 2014; Šuminas, 2012).

The latest survey of the use of cultural products and services has shown that the ownership, buying and sharing of printed books reflects the same categorical inequalities, except the sex and ethnic group category. Women and non-Lithuanians are more likely to own large numbers of books, women buy and share them more frequently and read more. Books are read by 64 per cent of Lithuanian inhabitants. Digital books are read by every fifth inhabitant (21%). Men and women read digital books with equal frequency, but digital books are more popular among younger (up to 40 years) persons with higher education and working in culture-related sphere. The income divide is less visible in this group. (Verikienė et al., 2017, pp. 141-146).

These data seem to confirm some research studies showing that new media has increased reading, and that reading skills become more significant and help in diminishing the digital divide (Griswold at al., 2005). Digital texts help by their ready availability and easy access through wide-spread technologies (McNab, 2016).

According to the same survey, 31 per cent of Lithuanian inhabitants attend public libraries, and half of them are frequent users. So, we have decided to test the possibilities of digital reading and the role of public libraries in providing access and training in digital reading and creative skills.

Research aims and design

The aim of the research is to determine the link between reading, digital reading and the digital divide and the participation of Lithuanian citizens in social life. We follow the assumption that digital reading and the creative use of media may be the appropriate tool to reduce the digital divide.
Within this broad aim, we intend to carry out the following sub-tasks:

1. To identify what relative inequalities occur among people, their social positions and resources from the point of view of reading and other media usage.
2. To show correlations between digital reading, creative use of media and civil and social inclusion or exclusion.
3. To prepare recommendations to public authorities regarding the reduction of the digital divide by developing digital reading motivation and skills.

The first aim was achieved by examining the existing research literature and statistical data on social inequalities in Lithuania. The third aim will be prepared

after the experimental phase is completed. Now we are at the start of investigating the second issue.

In our Project, it is difficult to see what method, other than field experiment, could have been employed, since we are interested in determining whether intervening in people's lives can have an impact on their behaviour. We also intended to reach to the groups who have fewer social and economic advantages, but first of all, who have less access to digital technologies and services as well as poor digital skills. We do not see information researchers solving deep categorical *income* inequality, but at least we may help in finding ways to increase social inclusion and access to the benefits offered by digital technologies. We saw public libraries as our natural partners and it occurs that most public libraries are involved in social inclusion programmes and projects. Several expressed a wish to collaborate with us and we work with three public libraries with different characteristics. The libraries submitted an application to the Cultural Council for additional resources to support their involvement in experimental interventions, which was successful.

We expected that our future participants will lack interest in reading as well as digital skills. Thus, we tried to find the types of texts that could be attractive, easy to read and also stimulate interest in the text itself. Our attention was drawn by success of a Lithuanian graphic novel *Ten litas* (Anušauskaitė and Jord, 2014), which received awards and increased the popularity of comic books in Lithuania. One of our partner libraries already had experience in working with comic books and collaborating with experts in using this medium for reading promotion (Mitkus and Nedzinskaitė-Mitkė, 2015) and we have attracted the publisher of comic books, "Aukso žuvys", to assist in our venture as a partner in the library project.

Our experimental intervention involves training in reading and creating comic books in three different settings. Ethical issues are significant in this kind of research: the participants must accept that, although the intervention is intended to make a beneficial impact on their lives, the data will be used for academic research purposes and, perhaps, to guide policies relating to the digital divide. The Project staff makes these issues clear, so that participants engage with the training programme voluntarily.

The libraries that we have involved are working with three potentially 'digitally disadvantaged' groups: senior people (through the Third age university), teenagers from low income families (through a day-care centre), and people with hearing impairment (collaborating with a local association of disabled persons). The librarians have confirmed that many people from these groups had poor digital skills and low motivation to use technology, except people with hearing disability. But this group experienced significant difficulties in reading. In all three cases, we attempted to recruit those who do not, at present, use

digital technologies. This was not entirely possible, and we included some whose use is low or minimal or restricted to certain devices, such as the mobile phone.

We have produced a scheme of training identifying certain features in the courses important for measuring the impact of the experimental intervention. The duration of training of eight weeks for 8-12 participants was agreed at the time of preparing application for library funding. However, each library was free to create its own approach and select the means of training that would be best suited to their audience.

Table 1. Learning outcomes and general scheme of the training

1: Understanding a comic book as a unity of image and text. Reading images and text: understanding event, mood, time line from composition, colour, line and text.
2: Using main functions of tablet computer: switch on, off, touch screen, key-board, Wi-Fi connection.
3: Meaningful elements of the comic book: story, images, text bubbles. Elements of plot, recognizing story and its main nodes.
4: Understanding logic of the touch screen. What do the icons mean and how they help us.
5: Use of Internet search function. Finding Lithuanian and foreign comic books on the Internet.
6: Understanding a graphic story: writing (telling) it in words.
7: Comprehension of a digital graphic story: actors, events, environment of action. Reading *Ten litas* graphic story, analysing how the characters and events are expressed in words and image elements.
8: Understanding the significance of the story in a comic book. Converting a story into image medium.
9: Using an app for creating a comic strip. Using a tablet computer for other functions: taking pictures, writing, creating text bubbles.
10: Understand the relations between a text and a image and the logic of image sequencing.
11: Working with the app for creating comic strips.
12: Creating a comic strip.
13: Uploading a comic strip to a comic space. Sharing one's own comic strip with other participants.
14: Discussing created comic strips critically using the totality of knowledge acquired during the learning period.

15: Increased interest in the activities of public library.

The learning outcomes are entirely pragmatic and are tied closely to the possible tasks in each training session. The important thing for us is to follow the process of acquiring digital literacy and reading skills. Both types of skills are interwoven within the practical and discussion tasks and we expect to follow the progress of acquisition of digital skills and increasing motivation for reading in general. A side effect of social inclusion might be produced by the collaborative learning process taking place in the library. We will note if this happens, but our direct objective is to increase the willingness to use digital technology for different purposes and the actual change in skills, attitudes and behaviour relating to digital technology that would signify success (or failure) of the intervention.

Evaluation of the intervention will be both formative and summative: formative, in that the evaluation of each training module will inform the presentation of the next, and summative – the overall impact of the intervention will be determined by the feedback from the participants, regarding the extent to which participation in the Project has affected their interest in, use of, and benefits derived from access to the Internet. Another thread will follow if there is a change of attitude towards reading and libraries.

A short feedback questionnaire (produced in a coloured graphic format) will be used at the end of each training session, to determine the success of the specific module and, as noted above, to learn how the delivery of training might be improved.

In the middle of the intervention a focus group will be used to test if the participants find the intervention useful, satisfying and interesting. It will help to identify weak points in the training that may be different for three groups and adjust the remaining training or try some other tools, methods and texts for maintaining the interest of the participants. We also expect that a number of participants will drop out from the training for various reasons. In each case we will try to find out the reason and assess the skills acquired so far.

At the end of the training programme, the interviews will be repeated, to see how far the baseline has shifted for the participants. For this reason some of the questions from the base-line schedule will be repeated in the same form as at the start of the training. A further iteration of the interviews will be carried out some three months after the end of the training programme, to discover how far the learning achieved has continued to be used and what further impact the participants have experienced.

4. Conclusion

World-wide, public libraries are seen as valuable agents in policies that seek to overcome the digital inequalities existing in all societies. They develop from their own resources, or from grants, the necessary technological infrastructure to help citizens to overcome the first level of the divide, that is, access to the technology and to Internet connection. They also, through their computer literacy programmes help users to develop the necessary skills to make use of the technology and, as the University of Washington Impact Study demonstrates, often do so on a one-to-one basis, although workshops and group instruction are also employed.

Our own study is more specifically focused: the technology already exists in the libraries, and the librarians are already well-accustomed to provide training and help in using the technology and accessing appropriate information resources. We seek to discover the impact of digital reading on the participants' use of the resources and, in particular, the impact within three well-defined, typically disadvantaged groups in society. The project will employ a novel experimental technique, which will require participants to discover and read information in order to produce their own 'comic strip' – although the French *band dessiné*, might be a more appropriate term, since there will not necessarily be anything 'comic' about what is produced.

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