

The Digital Divide as a Complex and Dynamic Phenomenon

Identify the research question and describe what you think the authors are attempting to discover.

The authors of this research paper state in the abstract that the purpose of the article is to 'propose a fruitful analytical framework for data' related to the concept of the 'so-called digital divide' (Van Dijk & Hacker, 2003). With the growth of the internet in recent years as an information resource, there has been much debate and discussion about the nature of the gap between those that have access to this new information resource, and those that do not. The gap between these two groups has been dubbed the 'digital divide'. Proponents of the existence of this social divide argue that there is a large group of people who are becoming increasingly isolated as they do not have access to the same resources as the so-called 'information rich'. It is also argued that, in any information society, nobody should be excluded from the full range of information resources.

As well as identifying a significant gap between the information rich and information poor within individual countries, the digital divide is also examined in a global context. Wealthy countries in the West and Asia have been able to develop their communication networks to an advanced level. However, there are a number of countries across the globe that have less well-developed information networks (such as those in Africa). As a result of this disparity, it is argued that there is a possibility that there will be a growing divide between the wealthy, predominantly Western nations and poorer nations such as those in Africa and South America. Many argue that a consequence of this divide is a deepening economic divide as the poorer nations do not have the access to information resources that will enable them to grow and prosper.

Due to the issues that surround the concept of a digital divide, the debate is usually drawn along political lines. There are those that believe that the digital divide does not actually exist and those that believe that it requires government intervention to address the disparity between the information rich and information poor. The debate generally reflects the same divide between those that believe that the market will

resolve these problems independently, and those that believe government should take a more pro-active approach to the issue.

Rather than be drawn into a political debate about the reality of a digital divide and how to address the issues associated with it, van Dijk and Hacker prefer to concentrate on proposing a 'fruitful analytical framework' for data related to the digital divide (Van Dijk & Hacker, 2003). As they indicate in the title to their paper, the authors clearly accept that there is a digital divide and propose to examine the nature and complexity of this divide. The focus of the research paper itself is the digital divide at a local level. That is, they examine the disparity within a specific society rather than on an international level. More specifically, they particularly focus on possession of hardware within the United States and Holland. The paper particularly considers the issue of possession with regards to income, employment, education, age and ethnicity. It is through examining these aspects of society that the authors intend to demonstrate that there is a complex digital divide driven by these factors. The authors aim to identify the main causes of this complex divide and propose policies that effectively address these concerns.

Identify and describe the research methods chosen to answer the research question.

The study itself relies heavily on secondary analysis of quantitative data in order to examine the nature of the digital divide. Throughout the course of their study, they do not present any original data of their own devising, preferring to rely on official governmental statistics throughout due to the availability of longitudinal data. The main resources used by the authors are US Census Bureau data from 1984 to 2000, National Telecommunications and Information Administration (NTIA) data regarding telephone and computer penetration and official Dutch statistics compiled by the Social-Cultural Planning Agency (SCP). They argue that these data sets are particularly useful as they provide longitudinal or time-series data to enable conclusions to be drawn about 'trends in computer and Internet penetration' (Van Dijk & Hacker, 2003). They also suggest that the majority of survey data about computer and Internet penetration is 'unreliable' and 'invalid' to enable definitive conclusions to be drawn from them about the nature of the digital divide. They also

suggest that information from the biannual GUV (Graphics, Visualization and Usability) survey could be used to draw conclusions regarding trends in computer usage. However, according to the authors, these surveys involve '(self-) selective sampling' and are therefore unreliable (Van Dijk & Hacker, 2003).

Although the authors clearly explain where they draw their data from, they give little background information about how these statistics are collected. The authors simply refer to surveys and government statistics without explaining the methodology behind them. Although there are a number of advantages in utilising the research methods chosen by the authors (rigorous sampling, longitudinal data, reduced costs etc), there are some disadvantages to the reliance on secondary analysis. One of the biggest problems with secondary research is the lack of control over how the data is collected. As the researcher is not involved in the process of formulating the survey, it is difficult for them to determine the value of the survey results. This is particularly the case with the US Census Bureau survey. This survey is a supplement to the Current Population Survey which is carried out monthly in the United States. The survey itself is the result of monthly interviews with members of a selected household. Periodically, a supplemental survey is carried out as part of the interview process. The interviewer is required to interview a responsible member of the household over the age of fifteen, who can give proxy answers on behalf of every member of the household over the age of three (CPS Overview, 2002). This could obviously lead to some misleading data being collected as it relies on the accuracy of the participants' responses, as well as their honesty.

The authors examine the data in a number of different ways. Initially, they take the statistics from the GNC survey in the Netherlands which measures digital skills across the country. The statistics from the survey are broken down into three main categories: age, gender and education. There are, however, some problems with the data that they have used. As the data is taken from a representative survey conducted by other researchers, it is difficult to know just how valuable this data is. The presented data gives no indication of how many people were involved in the survey, or an indication of how the sample was chosen. Consequently, it is difficult to determine how useful the information presented actually is and, therefore, how accurate the conclusions are that can be drawn from it. Clearly this data was chosen

in order to provide some context for the study itself.

The authors then present statistics from the US census regarding the usage of a PC at home in the United States. The statistics are divided into four main categories: age, gender, income and education. These statistics are then represented in a series of graphs that display the gaps between differing groups within each category from 1984-2000 (the years that the census information was taken from). Alongside the statistics taken from the US census are similar statistics taken from the SCP survey in the Netherlands. However, whilst ethnicity statistics are reproduced for the US census, there are no equivalent statistics for the Netherlands. Both surveys also do not take into account the impact that gender has on computer ownership. According to the authors, this is due to the fact that in terms of possession of equipment, gender is not 'sufficiently represented in this type of research' (Van Dijk & Hacker, 2003). However, the authors add that in the GVI surveys, the gender gap in using computers and the Internet 'decreased during the 1990s' (Van Dijk & Hacker, 2003). Despite noting that there has been a shrinking of the gap along gender lines, the authors offer no substantial examination as to why this is the case and prefer to focus on the fact that a gap remains. In terms of exploring the nature of the digital divide, it would be interesting to examine how the gap decreased in this case.

Access how appropriate these methods are.

The research method utilised by the authors is not without its problems. As mentioned previously, the use of the data from the Census Bureau is problematic due to the way in which that information is collected. However, there are a number of advantages in utilising secondary analysis as a research method. Firstly, it is a cost effective way of collating a large volume of information. For the researchers to conduct a survey of equal quality including a similar number of respondents would have been prohibitively expensive. Furthermore, by analysing data that has already been collected, the researchers are able to spend valuable time focusing in on the data itself. It is also advantageous as it provides the researcher with longitudinal data that they would otherwise not have access to. This is beneficial as the analysis of longitudinal data means it possible to identify trends over a period of time. This is particularly useful in terms of this study as by examining such data it would reveal the

extent of the digital divide in certain social groups.

As well as the advantages of cost and the availability of longitudinal data, there is also the advantage of what is called the 'unobtrusive method'. As Bryman explains, whenever members of the public are invited to take part in a study, a 'component of their replies or behaviour is likely to be influenced by their knowledge that they are being investigated' (Bryman, 2008, p. 309). By analysing data collected by government agencies, the researchers eliminate the risk of their study influencing the answers of the respondents, thus leading to answers that more closely reflect the reality. Clearly, in terms of cost, emerging trends and unobtrusive collection methods, there are a number of advantages to the application of secondary research methods. However, there are a number of problems with taking this approach.

As previously noted, the Census data is created as a result of interviews held by the Census Bureau with members of a chosen household. As a result of this, the researchers have no control over the process that has been employed, including sampling and interview techniques. This could lead to doubt being cast about the validity of the statistics that have been produced as there has been no control over how they were collected. However, as Bryman argues, secondary data such as this is likely to have been subject to rigorous sampling procedures that can lead to samples that are 'as close to being representative as one is likely to achieve (Bryman, 2008, p. 297). One could argue that there is no reason to believe that data collected by officials is more error prone than that compiled by social researchers (Bryman, 2008, p. 308). The officials that conducted the research for the government are likely to have been well trained in appropriate interviewing techniques and in the importance of accurate data collection. Consequently, there is little reason to believe that the government officials would be any less competent than an experienced social researcher.

There are also difficulties in comparing information from different states that have been collected in different ways. As the data is collected by different agencies, there is obviously a lack of consistency in how this data is presented. For example, the data from the United States indicates a divide along ethnic lines, whereas the Dutch data does not include that category. The Dutch study also divides age into four categories,

whereas the US data divides it into three. Although these are minor variances in the way the data is presented, it makes it difficult to put the information and produce definitive conclusions from both data sets. A comparison would be more practical if there was consistency across the two sets of data.

A further consideration is the lack of multivariate analysis of the data. Without a degree of multivariate analysis, it is difficult to draw conclusions from the data. The Dutch data is the only data within the study that has been subject to multivariate analysis. As it has been analysed in this way, it indicates the relationship between the different variables and enables a better understanding of the factors that impact upon the 'possession, skills and use of information and communication technology' (Van Dijk & Hacker, 2003). As multivariate analysis has not been applied to the US census data, it is difficult to draw substantial conclusions from it. The Dutch analysis is revealing as it suggests that digital skills are more closely related to age and gender. A similar analysis of the US statistics would have enabled more substantive conclusions to be made about the nature of the digital divide and the driving factors behind it.

How convinced were you by the findings from a methodological standpoint and why, ie how have the conduct of the research, and the methodological approaches used, affected your confidence in the findings?

Overall, although the authors present some interesting findings regarding their research into the nature of the digital divide, the methodology utilised isn't wholly convincing. The use of census data certainly saves time and resources, but without the benefit of multivariate analysis, it is difficult to ascertain how valuable the information is. The only example of sophisticated, multivariate analysis is presented from the Dutch studies and there is no such analysis of the US statistics. As the authors admit at the beginning of their paper, the Dutch survey is one of very few that has utilised elaborate regression models to explain the differences in the background variables. If the same had been applied to the US Census data, it would have been possible to draw more sophisticated findings from the statistics.

The issue of over reliance on the Dutch figures is demonstrated with some of the conclusions that are made. For example, the authors conclude from the statistics that 'present digital skills are learned more at work than at schools or at home' (Van Dijk & Hacker 2003). Following from this, the authors claim that 'formal education runs behind because means are lacking and teachers are not sufficiently trained or motivated' (Van Dijk & Hacker, 2003). However, the only data that apparently supports this thesis is taken from a multiple regression of the Dutch statistics on computer usage; there is no data from the census data to support this argument. What the authors do not take into account is that the use of computers in schools is a relatively recent phenomenon. The majority of those who completed the survey may well have had no schooling in computer use whatsoever and would have developed their skills in the workplace. Consequently, with the data available at present, it is difficult to say that the root cause of this is due to a low standard of formal education. A conclusion can only be drawn on educational standards when more data is available, which only underlines the importance of longitudinal data. Consequently, a substantive conclusion about the impact education has on computer skills cannot be made without access to further data.

However, the authors also argue that the data demonstrates that there is not a 'yawning and unbridgeable gap' between two groups. They go on to suggest that the gaps observed show 'relative and gradual differences'. Consequently, they suggest, giving everybody a computer and a network connection will not remove the 'segregation', but there will be deeper differences in skills and usage. This seems to be borne out by the data that they have collected. The data collected from the Dutch survey certainly seems to suggest that there was a stark divide between those with computer skills and those without. According to the GNC Survey, 45% of women have 'no or very few skills' compared to only 28% of men.

In conclusion, whilst some of the authors' findings are convincing, there is a need for more longitudinal data as well as more sophisticated multivariate analysis of the available statistics to enable more concrete conclusions to be drawn. Multivariate data would need to be drawn from the American statistics alongside the Dutch data to enable more meaningful conclusions to be drawn about the nature of the digital divide. As only the Dutch data has been subject to multivariate analysis, it is difficult

to expand their findings on a broader scale. However, as the authors admit at the beginning of the article, at the time they were conducting their research there was little longitudinal data that they could analyse. As a result, the study provides an insight into the nature of the digital divide, but it should not be used to inform policy decisions without further longitudinal data becoming available or additional multivariate analysis being undertaken.

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