



# Moving Beyond the Digital Divide: Developing a Psychological Perspective of Digital Inequality

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## ABSTRACT

*Modern society is rapidly being divided into those who have access and are comfortable using information technology – the ‘haves’ – and those who do not have access and are not comfortable using information technology – the ‘have-nots’. Commonly referred to as the digital divide, this phenomenon is having far reaching social and economic implications. Many organisations and individuals have invested time, money and energy into establishing programmes and resources that can help bridge the growing digital divide. The efforts of these individuals and organisations have been focused by the current research into the digital divide, which takes primarily a socio-economic perspective. According to current research the primary factors influencing the development and growth of the digital divide are income, employment and education.*

*Very few studies have considered the social, psychological or cultural barriers that may contribute to the digital divide. This paper will outline a research project aimed at exploring the psychology of the digital divide. The research will use the Social Cognitive Theory by Bandura<sup>1</sup> to examine the psychology of the information and technology gap in community. This theory postulates that a person will act according to their perceived capabilities and the anticipated consequences of their actions. Participants in the study will be novice Internet users drawn from Brisbane Australia and San Jose USA. Self-administered surveys will be used for data collection. The surveys will gather data on demographics and Internet usage. The Internet Self Efficacy Scale developed by Eastin and LaRose<sup>2</sup> will be included. A Pilot Study was conducted from March to July 2002. Participants were obtained from the San Jose Public Library Service and the Brisbane City Council Public Library Service. The key findings of the study are discussed. The current research will assist organisations and individuals in community who are interested in developing strategies for bridging the emerging information and technology gap and will lend support to the existence of a Social Digital Divide as proposed by Harper<sup>3</sup>.*

## INTRODUCTION

The digital divide between Information and Communication Technology (ICT) ‘haves’ and ‘have-nots’ has been a topic of considerable discussion since the US federal government released its 1995 report on household access to technologies such as the telephone, computers and the Internet. Since this time many organisations have endeavoured to bridge the digital divide through a diverse range of initiatives and projects. These initiatives and projects have been developed based on the current understanding of the digital divide. An understanding that has been developed primarily from a socio-economic perspective. According to current studies<sup>4, 5</sup> the primary factors contributing to the digital divide are income, employment and education. As personal computer prices have fallen and Internet services to the household are becoming increas-

ingly less expensive the socio-economic perspective of the digital divide becomes less convincing. Recent criticism<sup>6, 7</sup> of these studies have suggested that their failure to consider the psychological, social and cultural barriers to the digital divide need to be identified and explored. If all members of community are to be allowed to become active citizens and if community organisations are to develop services and resources that will contribute to bridging the digital divide efforts must be made to more clearly understand the social, psychological and cultural differences that contribute to its development.

This paper discussed a current research project into the psychological barriers of the digital divide. The paper is divided into two parts. Part one considers what is the digital divide. A brief picture of the digital inequality in Australia and the United States is outlined. The limitations of current studies are discussed. Part two outlines the current research project. The research approach, expected outcomes and methodological limitations and implications are discussed.

## THE DIGITAL DIVIDE

### Defining and Quantifying the Divide

The phrase *digital divide* has become the accepted manner for referring to “the social implication of unequal access of some sectors of community to Information and Communication Technology [ICT] and the acquisition of necessary skills”<sup>8</sup>. The term has been derived from the commonly held belief that access to Information and Communication Technology (ICT) such as the Internet, and the ability to use this technology is necessary for members of community if they are to fully participate in economic, political and social life.

Studies examining the Digital Divide abound. Two recent studies have been conducted in the United States<sup>9</sup> and Australia<sup>10</sup>. Both studies sought to establish a statistical snapshot of the current state of their nation’s involvement with technology such as the Internet and computers. In the second of the studies in the US the NTIA acknowledged that the Digital Divide “is now one of America’s leading economic and civil rights issues”<sup>11</sup>. This statement is no less true for Australia. The findings from both the US and the Australian studies highlight several interlocking factors, which heighten the Digital Divide: race and ethnicity, geography, income, education level, employment status and physical disability. Individuals who can be identified through these factors are more likely to represent the ‘havenots’ in the digital divide.

### Two Digital Divides?

Several commentaries<sup>12, 13</sup> have emerged in recent years discussing the current studies measuring and quantifying the Digital Divide. In 2001 Yung, Qui and Kim considered the question “What is the Digital

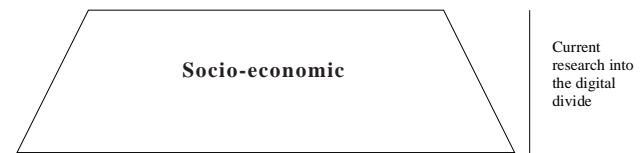
Divide? Does it mean mere ownership of Internet connections...or does the digital divide describe more fundamental inequalities in people's connection to communication technologies?"<sup>14</sup>. In considering this question the authors suggested that the current studies exploring the digital divide were limited by their focus on three primary measuring techniques. These techniques include: a *dichotomous comparison* which focuses on the issue of simple access or ownership (ie. computer owner vs. non owner); a *time based measure*, where more time spent online is equated to "regular use"; and a *measure of activities conducted online*, where frequency of engaging in activities such as online banking, online shopping are measured. Yung, Qiu and Kim suggest that these measures fail to consider the social context in which people incorporate technology. The authors suggest that the personal and social effects of the Internet must be considered in comprehending the more subtle aspects of the digital divide. Yung, Qiu and Kim suggest that once people have access to the Internet the questions to be addressed is how can and do they construct meaning from their being connected. They conclude "existing inequalities even after gaining access to the Internet can directly affect the capacity and the desire of people to utilise their connections for purposes of social mobility"<sup>15</sup>.

Vernon Harper<sup>16</sup> in a recent discussion paper suggests the existence of two digital divides: Access Digital Divide (ADD) and Social Digital Divide (SDD). The Access Digital Divide (ADD) is based upon cost factors and is frequently discussed in terms of the presences of computers of Internet access in the household. The Social Digital Divide (SDD) is "a product of differences that are based on perception, culture and interpersonal relationships that contribute to the gap in computer and Internet penetration"<sup>17</sup>. Harper recommends that the scholarly community build research that explores the social, psychological and cultural differences that contribute to the Social Digital Divide (SDD). Harper concludes by stating "the issues surrounding the digital divide must be redefined away from the hardware and towards humanity"<sup>18</sup>. The need to focus more on the human aspects of the digital divide and less on the technological aspects was further voiced by Lynette Kvasny<sup>19</sup>. In her recent Doctoral dissertation Kvasny explored the cultural dimensions that contribute to digital divide in the United States. Kvasny suggests that her study "goes beyond describing the digital divide to analyzing *digital inequality*"<sup>20</sup>. Kvasny uses the concept of *digital inequality* "to signify a shift and distinction in focus from *access* to *use* of information and technology"<sup>21</sup>.

One of the first studies examining the psychology of the digital divide was undertaken at Michigan State University. Conducted by Matthew Eastin and Robert LaRose<sup>22</sup> the study examines the digital divide from the perspective of Bandura's Social Cognitive Theory<sup>23</sup>. This theory postulates that a person will act according to their perceived capabilities and the anticipated consequences of their actions. Self-efficacy is the primary component of the theory. Bandura describes self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances"<sup>24</sup>. According to Bandura self-efficacy is domain specific and as such there is no one all-purpose measure. Eastin and LaRose developed and validated an Internet Self-Efficacy Scale (ISE) for the purposes of their study. Using university students the study findings indicate that self-efficacy is a significant predictor of Internet use. The study however, failed to ascertain if the students represented the socio-economic perspective of the digital divide.

In the following year a study exploring the computer self-efficacy of African American high school students was undertaken by Foster<sup>25</sup>. The study examined the possibility that there are psychological components behind African American students' reluctance to use technology. The study's results indicate that African American high school students have a lower computer self-efficacy than non African American students. Foster concluded that whilst economic factors may have a role to play in preventing African American students from integrating computer technology into their lives the internal factors of an individual must also be taken into consideration. The social and cultural factors unique to the study's participants suggest that the findings may not be easily generalised to the wider population.

Figure 1. The first piece to the digital divide puzzle



The digital divide is a complex phenomenon. Many studies to-date have taken the socio-economic perspective of the digital divide where income, employment and education are the primary factors influencing the development and growth of the digital divide. Whilst these studies provide a valid and important understanding of the phenomenon the studies represent only a small proportion of all there is to know. In short the current socio-economic studies of the digital divide have provided only the first piece to the digital divide puzzle. (See Figure 1).

The psychological, social and cultural factors that may contribute to the digital divide are only now just beginning to be explored. Further studies exploring the psychological, social and cultural factors that prevent an individual from embracing technology into their lives would help in providing a more detailed understanding of the digital divide in society. Efforts must be made to more clearly understand the socio-psychological and cultural differences that contribute to the digital divide will ultimately ensure that all individuals have the opportunity to become active community citizens and allow organizations involved in establishing program and initiatives to do so with greater efficiency and effectiveness. Figure 2 represents the new pieces to the digital divide puzzle that these studies would add.

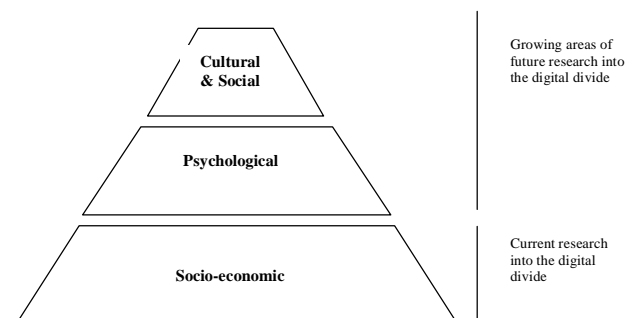
## THE RESEARCH PROJECT

### The Research Aim

The research project explores the psychological factors that contribute to the digital divide. The study is focused by the basic question: are there internal forces causing members of society to choose not to integrate information and communication technology such as the Internet into their lives? The main aim of the research is to explore the notion of the Social Digital Divide using the Internet Self-Efficacy (ISE) Scale<sup>26</sup> with novice Internet users within community. This will be achieved by:

1. Measuring the Self-Efficacy of novice Internet users.
2. Determining if there is a difference in Internet Self-Efficacy between novice Internet users who represent the "Socio-economic Digital Divide" and those who do not belong to the "Socio-economic Digital Divide".

Figure 2. The many pieces of the digital divide puzzle



### Research Approach

Self-Administered surveys will be used in data gathering. Participants will be novice Internet users from Brisbane Australia and San Jose United States. The survey instrument will consist of three sections: The first section seeks information on *Demographic* details such as gender, age, employment status, income level and education level. The second section gathers data on the participants *Internet Use*. Data gathered included where they obtain access to the Internet, length of involvement with the Internet, self-perception of Internet skill and frequency of Internet use. The third section gathers data using the *Internet Self-Efficacy Scale* by Eastin and LaRose<sup>27</sup>.

### Pilot Study

Ethical clearance was obtained for the survey instrument. A Pilot Study was conducted from March to July 2002.

### The Sample

Public library's in both the US and Australia have invested large amounts of time, money and energy into establishing programmes and activities that will assist in bridging the digital divide within community. There are over 1500 public library facilities in Australia located in rural, inner city, suburban and remote areas<sup>28</sup>. In Australia the public library is the most visited cultural venue with 99.4 million visits during 1999-2000<sup>29</sup>. Overall almost 50% of the Australian population are members of the Australian public library services. Whilst statistics on library membership and use for the US was not available anecdotal evidence suggests a similar level of community support. The commitment demonstrated by public library services in both the US and Australia in providing support to all members of community to access and use information technology such as the Internet and the obvious support and use by members of the Australian community suggests that the public library is a logical starting point to access study participants. Six library branches in total were used in the pilot study, two from Brisbane and 4 from San Jose. 19 participants took part in the study, 11 males and 8 females. The participants were aged between 31 and 70 with over half aged older than 60.

### Key Findings

Two key points emerged as issues for consideration as a result of the pilot study. The areas were (i) the content of the Internet self-efficacy scale; and (ii) the availability and access to the desired participants.

The current study used the Internet Self Efficacy Scale (ISE) developed by Eastin and LaRose<sup>30</sup>. The scale was developed using 171 first year university students at the Michigan State University. The mean age of the participants was 21. This study is the first time that the scale is being used with members of the general public. The current study's results suggest that the ISE is not applicable for use with members of the general public. University students, even those who perceive themselves as novice Internet users, may have a more highly developed knowledge and understanding of the Internet than members of the general public. According to Bandura<sup>31</sup> measures of self-efficacy must be tailored to meet the specific "reading level" of the population being examined. This point was further supported by many of the participants being unsure of many word or phrases from the scale, including: "internet hardware", "internet software", "internet program", online discussion group" and "hypertext". Consequently, it may be suggested that the "reading level" of participants in the current study (i.e. members of the general public who are novice internet users) is significantly different to that of the "reading level" of the participants used to develop the original self efficacy scale (i.e. university students who are novice internet users). Three other Internet self-efficacy scales were tested on the current study's sample with similar findings. The current study will need to develop an Internet self-efficacy scale for use with members of the general public.

The library services in Brisbane and San Jose did not provide access to a broad sample range. Overall only one fifth of the library users approached identified themselves as novice Internet users and was will-

ing to take part in the study. Participants in the study were predominantly older and frequently retired members of the community. Accessing such a small sample of the entire population does not allow for generalizability of the results to the wider population. The findings could be directly related to the small number of branches used for data gathering for each library service and as such conducting the study over a longer period of time and at more branches may yield different results. However, it would be strongly recommended that alternative avenues for obtaining study participants should be explored as a means of supplementing those obtained via the public library system.

### Expected Outcomes and Significance of the Research

This research is significant because it develops a new theoretical framework through which to view the division between information haves and information have-nots within society. The research will illustrate that the digital divide involves more than just the availability of resources and funds to access those resources. It incorporates the internal forces of an individual that motivates them to use or integrate technology into their lives. Using the Social Cognitive Theory by Bandura to examine these internal forces this research will add another layer of understanding to the digital divide pyramid. The findings of the study will provide support to the existence of the Social Digital Divide as proposed by Harper<sup>32</sup>.

In addition, this is the first time that Internet self-efficacy has been explored within the context of the wider community. Existing studies that have examined self-efficacy have done so using university or high school students. The differences in these groups suggest that these studies cannot be generalised to the broader population. Equally important is that this is the first time a study exploring Internet self-efficacy and the digital divide will take place in Australia. The majority of studies to date have originated from the United States. The research will develop an Internet self-efficacy scale that is appropriate for use within the context of the general population.

This research is important because it expands current understanding of a phenomenon that has far reaching social and economic implications. The research will allow a more concise understanding of *what is* and *who represents* the digital inequality in society. Developing a clear and comprehensive picture of the forces behind the division in society between 'haves' and 'have-nots' is a vital step in bridging the gap. This research will allow organisations involved in the digital divide solution, to develop and tailor services and programs to more accurately and effectively narrow the gap between information rich and information poor. As a consequence real steps can be made in bridging the gap between the 'haves' and the 'have-nots' in society. Thus, allowing for all members of community to have an equal chance of establishing and maintaining productive personal and professional lives in this rapidly emerging digital age.

### CONCLUSION

The digital divide is a complex phenomenon. Developing a more sophisticated understanding of this phenomenon will aid organisations such as the public library in developing programmes and resources that can more effectively bridge the gap between information and technology 'haves' and 'havenots'. By examining the psychology of the digital divide using Bandura's Social Cognitive Theory<sup>33</sup> this study will expand our current understanding of the digital divide and lend support to the existence of the Social Digital Divide as proposed by Harper<sup>34</sup>.

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