Review Article

Conceptualizing Digital Divide and Identifying Factors of Digital Exclusion in Higher Education through Systematic Literature Review

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Abstract

Our civilization is being transformed by information and communication technology. Over the last two decades, technology has permeated every element of our social and cultural life. The use of internet-enabled devices is fast rising, making online surfing, access to social media and cross-border communication easier. These new technologies are making educational resources more accessible to individuals all across the world. ICTs have long been recognized as an important and critical condition for overcoming social exclusion since they contribute to improved education, governance, and health care, and hence may function as a facilitator for social inclusion. However, the rise of ICTs has not benefitted everyone equally. Digital exclusion occurs when some digital technologies contribute to constraints and exclusion from community engagement. This research attempts to demonstrate how the variables responsible for social exclusion contribute to digital exclusion, which in turn contributes to the extension of socioeconomic supremacy in education. The purpose of this study is to highlight the basic issues surrounding digital exclusion, which is currently in its early phases of research.

Keywords: Digital Divide, Digital & Social Exclusion, and Higher Education.

Introduction

Education is regarded as the foundation of any country, and every citizen has a full (fundamental) right to receive a quality education. It can change the life of an individual by reducing poverty and improving health, gender equality, peace, and stability in their life (World Bank, 2022). When we look at education beyond its traditional confines, we find it at the centre of all our actions. Whatever we do, we know and whatever we know has been learned either by instruction or observation and assimilation. Education is important and cohesive in society, which is why society and knowledge can never be separated. A proper education aids in our empowerment. It is the most powerful tool for social transformation (Justice Watch Foundation, n.a.; Mohan, 2012). Education has the potential to transform society by providing opportunities and experiences that prepare individuals to adapt to the changing needs of society. Education is also seen as a tool for bridging the gap between rich and poor. It is thought to bring equality; more precisely can bring equity to everyone and provide a fair playing field. As a result, every country's first priority has been education. It serves as a tool for achieving equality among the country's citizens (Walker et. all, 2019). As a result, the constitution of India mandates free and compulsory primary education for all. Education is a constantly changing and evolving

process. To remain relevant in today's society, educational methods and formats must evolve alongside it.

We are living in the 21st century, which is known as the 'Digital Era', which is an example of educational evolution and the people who live in it (particularly the educational personnel) are known as 'Digital Natives'. As we know, the method and techniques of education are evolving over time, and the emergence of ICT and e-learning is the most significant change of this era. In the last two decades, technology has infiltrated virtually every aspect of society and our social and cultural lives. We are living in a high-tech worldwide culture, and ICT may be found almost everywhere (Warschauer, 2003). The usage of internet-enabled devices, which facilitate web browsing and give access to social media and cross-border communication, is rapidly increasing (Baranghi & Sheth, 2014). These new technologies enable more people around the world to gain access to educational learning resources.

In the past few decades, ICT has affected the educational environment at all levels to enable learners to achieve the set educational goals. Higher education is comparatively more affected one among these. Higher education of high quality and relevance can provide students with the knowledge, skills, and competencies they need to succeed in life. In India, it is improving over time, and technology is playing a significant role. The government and private sectors of India have taken a number of important steps to promote e-learning in higher education. EDUSAT satellite, National Mission on Education through Information and Communication Technology, National Program on Technology Enhanced Learning, Virtual Labs, E-yantra, E-Shodh Sindhu, E-PG Pathshala, Shiksha.com, and others are among these measures (Kaushal, N., n.a.).

When we see ICT in the higher education context, it is embedded in the form of virtual learning environment (Sims, Vidgen & Powell, 2008). The Massive Open Online Courses (MOOCs) and other video conferencing technologies are used by/in several universities to provide multimodal instruction that transcends time and space (KHALIET l., 2016). ICTs have for long been regarded as a **"**necessary and key condition for overcoming social exclusion (since they contribute towards) improved education, government, and health care, too, and thus can be a multiplying factor for social inclusion**"** (Warschauer, 2003, p. 30). ICTs have not, however, benefited everyone. There is an existence of digital exclusion in the society. It was addressed in the European Union's research and innovation programme named "Platform for ICT for Learning and Inclusion" as an notion. For certain persons, digital technologies result in limits and exclusion from community engagement; this process is known as digital exclusion (European Commission, 2014). There are two terms, 'barriers' and 'divide', which are used to describe digitally excluded persons and it also refers to the same set of variables that cause social exclusion. However, there is a scarcity of facts and expertise when it comes to digital exclusion in education (Khalid, 2014).

Conceptual Discussion

E-learning

With the introduction of the computer and internet in the late 20th century, e-learning tools and delivery methods expanded. The first MAC in the 1980s enabled individuals to have computers in their homes (The Evolution and History of E-Learning, n.a.). According to Dr. Nandita Kaushal "A learning system based on formalized teaching but with

the help of electronic resources is known as E-learning". She also stated that e-learning is facilitated and supported by ICT to enable people to learn from anywhere and anytime. That means learning based out of class with the help of electronic devices, i.e. computers, mobile phones & internet, is known as e-learning (The Economic Times, 2022). It has different meanings in different contexts. Here, the researchers see it in the higher education context; it relates to the internet-based flexible distribution of information and educational programming (Campbell, 2004). It also characterized by active learner-centered pedagogies (Harel, 1991; McDougall & Betts, 1997 in Nicholson, 2007).

Digital Divide

The term 'Digital Divide' is defined as the distinction between those who have access to new information technologies and those who do not have it. Those who have the access known as "haves" and those who do not are known as "have-nots". There is a digital divide, but it is not as simple as haves and not haves. The distinction between high, medium, low, and non-users will always exist (Clark, 2003, p. 663; Sims et al., 2008, p. 431). That is why this term is a debatable or can say disputed concept that nowadays is based on the simple question of owning or not owning. In other words a divide between those who can and cannot afford a computer over time (Liebenberg et al., 2012).

Digital Exclusion

Over the period of time, the definition of digital exclusion has evolved. Earlier, it was limited to only the "user / non-user" distinction. Now a more comprehensive examination of various levels of internet use and skill divisions exists (Carnegie UK Trust, 2016b cited in Sanders, 2020). If we broadly define it, digital exclusion occurs when a segment of the population continues to have unequal access to and capacity to use ICT, which is necessary for full participation in society (Schejter, 2015; Warren, 2007, cited in Sanders, 2020).

Social Exclusion

According to Collins Dictionary, "Social exclusion is the act of making certain groups of people within a society feel isolated and unimportant". Despite the fact that there is no universally agreed-upon definition or benchmark for social exclusion, lack of involvement in society lies at the heart of practically every definition proposed by academics. Overall, social exclusion refers to a situation in which people are unable to fully engage in economic, social, political, or cultural life, as well as the process that leads to and maintains that position (United Nations, 2016, p. 18).In developing countries, social exclusion is widespread, paradoxical, and harsh. When ICT is introduced into the picture, it tends to "exacerbate social exclusion" (Phipps, 2000, in Tambulasi, 2009, p. 120) by recreating "existing social networks of inclusion and exclusion" (David, 2003, p. 236 cited in Tambulasi, 2009, p. 120). In developing nations, "unequal access to ICTs adds a new dimension to the social exclusion debate" (Durieux, 2003, p. 22 cited in Tambulasi, 2009, p. 120). The growing divides between the "haves and have nots"; the "information rich and information poor," and the "knowledge rich/poor" are causes for concern (Phipps, 2000, p. 40-1).

The central argument of this paper is that most developing countries already have high levels of social exclusion due to a variety of factors such as poverty, gender discrimination, low education, rural residence, and government policies and institutions, and in this

sense, ICTs only widen and perpetuate this exclusion by highlighting the socio-economic elitism that already exists in society (Tambulasi, 2009, p. 119).

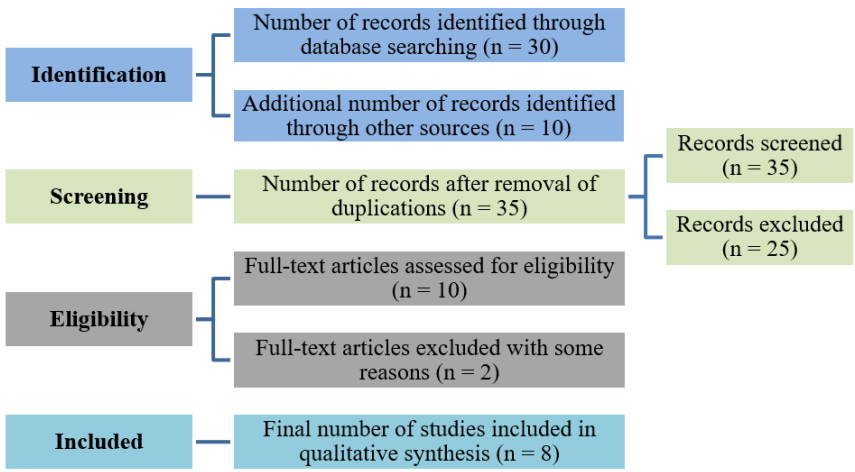
This research aims to identify the factors that lead to digital exclusion and, as a result, social exclusion for particular members of society. The following research question guides this paper's investigation of these issues: What factors play a role in social and digital exclusion in education? How these factors are reinforcing the current social classes? The paper contains two main sections. In the first section, selected articles are categorized and analyzed according to different time periods; this is followed by arguments and conclusions based on analysis in the first section.

Methodology

Digital exclusion is a relatively new idea, dating back only a decade or so. Digital divide, internet access, material access, and other studies relating to this subject are limited. Thorough literature research has been conducted in order to investigate the above-mentioned concerns about digital and social marginalization. A total of thirty related research papers, dissertations, and a thesis were chosen for this study, with 10 research papers and theses being chosen based on their relevance to the goal of this work. These studies were specifically chosen to look at the evolution of arguments about the digital divide and digital exclusion over the last two decades. Second, studies were chosen that would aid the author in a better understanding of the concept in developing countries, with a special emphasis on India.

The papers were chosen using the 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram' (Moher et al., 2009), which consists of four steps: identification, screening, eligibility, and inclusion (See Figure 1). This approach identified three databases: Google Scholar, Research Gate, and Sodhganga. Different combinations of the keywords "higher education", "digital exclusion", "digital divide", "e-learning" and "social exclusion" were used to search both abstracts and complete papers.

Figure-1: PRISMA flow diagram of selected reviews based on identified key words



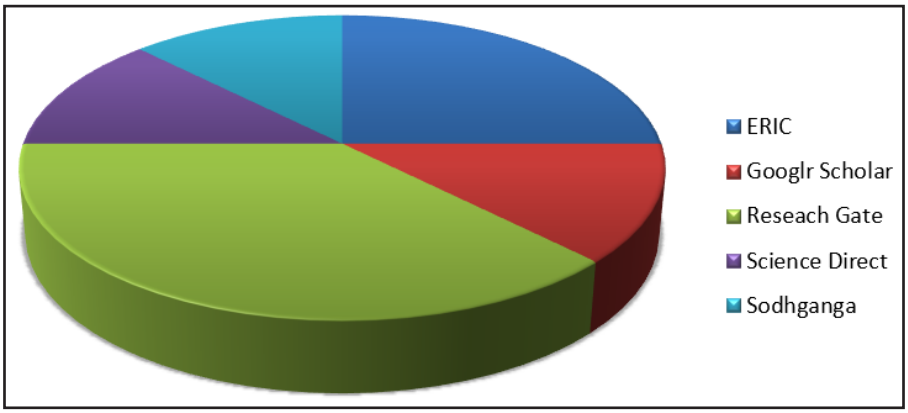
During the search, approximately 100 papers were discovered, including both full-text and abstracts. In this study, 30 papers from the years 2000 to 2017 were chosen. Other sources yielded a total of ten articles. After the duplicate article was removed, 35 articles remained. Ten articles were chosen for screening based on their relevance to the study, such as the presence of more than two keywords, time period, and nation. Articles from both developing, i.e. Indonesia, India, China, South Africa etc. and developed countries, i.e. UK, England, Australia, America, Britain, etc were picked. The Education Resources Information Center (ERIC) and Emerald were also used as other sources to locate the other ten papers. Finally, eight research papers were chosen, one of which is an M.Phil. Thesis. The publications were chosen for analysis based on their relevance to the research.

Qualitative Analysis and Interpretation of the Articles

Overview of the Articles

The articles cover both developing and developed country's experiences & evidence of digital exclusion and the digital divide, which in turn leads to social exclusion and socio-economic elitism in the Higher Education context/education.

Figure-2: Source-wise distribution of research papers selected for the study



The distribution of papers is as follows: two research papers derived from ERIC, one other from Google Scholar, three research papers taken from Research Gate, and one from Science Direct and one M.Phil. The thesis is also included for analysis, which is published on Sodhganga. All the research papers and the thesis are published in different journals as follows: one paper published in Procedia - Social and Behavioral Sciences, one paper published in the South African Journal of Libraries and Information Sciences, one more paper published in Communication of the Association for Information System, one other paper published in British Educational Research Journal, other journal are Information Research: An International Electronic Journal, Telecommunication Policy & Journal of Information, Communication and Ethics in Society. This is a complex and interdisciplinary research subject, as evidenced by the mix of different research fields. Most of the research papers collected primary quantitative data with the support of qualitative data one research paper is a systematic literature review to understand the change in the concept of digital divide and digital exclusion. The list of articles/

papers is given in the appendix section of the paper on the basis of qualitative analysis of the articles.

Systematic Literature Review

The papers chosen span a wide spectrum of experiences and evidence connected to digital exclusion and its link to the growth of new social exclusion in developing and industrialized countries like South Africa, England, India, the UK, Australia, etc.

In a study, Khalid & Pedersen (2016) attempt to identify the fundamental causes that lead to digital exclusion in higher education. They observed the reasons that lead to social exclusion also lead to digital exclusion, and these causes, in turn, result in social exclusion of those who are already marginalized, describing it as a 'Vicious Cycle'. The observed factors are classified into three categories: Digital exclusion which resulted from a lack of hardware devices & internet services, Social exclusion which includes low income, lack of inspiration and commitment, ICT – escaping as the norm, and mental and physical disability, and the third one is Accessibility which includes differences in ICT literacy and information literacy, as well as the divide between rural and urban locations. As per the analysis of their paper, these factors are layered and intertwined. The studies on the digital exclusion, digital divide and hurdles in the adoption of ICT have found similar factors and reasons in higher education, despite similarities these factors perceived differently in different circumstances and social contexts (Khalid & Pedersen, 2016).

In another study, Naidoo and Raju (2012) found that African students at Durban University of Technology in information literacy courses varied in their ICT competencies and owing differences in access and familiarity with computers and the internet. That is why they faced issues in attending that program. This study also revealed that "… inequitable computer access impacts on students' abilities to function effectively in an online environment… students with diverse digital expertise in the same classroom poses a problem to teaching IL, especially when the lesson includes online lessons"(Naidoo and Raju, 2012, p.38). According to them below three factors are the features of digital exclusion: 1. Crisis of funds to provide computer hardware and pay for Internet accessibility; 2. A lack of interaction (including psychopathic inability), self-belief, understanding, and/or motivation (and lack of opportunity to remedy this); and 3. Lack of public internet access due to distance coupled with a lack of transportation or physical mobility.

The same factors are found in the study of Sims et al. (2008), which clearly indicates that the reasons for digital exclusion can be generalized or at the very least classified. They note two significant objections to e-learning as a means of increasing higher education enrollment. The first one is access to technology and the second one is learning's applicability as a means of including a population that has previously been excluded from higher education. They concluded that "without particular measures to overcome the digital divide, current practices in higher education can only reinforce socioeconomic, cultural, ethnic and gender divides in access to higher education". They also argued that lowering time and place barriers is a key part of including nontraditional students in higher education, and if students need to go to campus to use computer facilities, place barriers are not lowered, and time barriers are not lowered if facilities are not open 24/7 (Sims et al. 2005, p.440).

In contrast to the study of Sims et al. (2008) in the study of Gorard et al. (2000), the authors challenge the pre-argument

that time and space obstacles decreased by the use of learning technologies, and the researchers also investigate whether learning technologies and ICT are being utilized to increase the number of "non-traditional students" in higher education. Gorard et al. (2000) defined a "non-traditional student" as a student from a vulnerable group, who is exposed to a biased, elitist class attending higher education in their study. According to them, for pupils who are digitally and socially excluded, the usage of ICT and its benefits (for example, access independent of time and geography) is not that beneficial. Technology may also cause or exacerbate existing inequities to participate in lifelong learning. They also argued that the culture of ICT is often youthful, white, middle-class, and male rather than the working-class, elderly, female, or ethnic minority. This leads to the conclusion that, in the short to medium term, access to the Internet will be divided along socioeconomic, gender, and ethnic lines, with old patterns of exclusion remaining. Low-income groups are unable to use the Internet due to a lack of skills and access to technology, and the cost of equipment and internet connectivity is unlikely to attract poorer populations. Furthermore, as access patterns and the technology necessary for access evolve, individuals who are currently excluded will be forced to play catch-up (Godard et al., 2000).

These findings are corroborated by Clarida (2015) findings, which show that organizational factors, such as course content or virtual learning environment navigation, have a greater influence on digital exclusion than intrinsic characteristics, such as individual technological skills. It demonstrates that the component of digital delivery in the university structure was more likely to induce exclusion than features of diverse students. According to the findings, digital exclusion cannot be anticipated or addressed by categorizing pupils based on gender, age, ethnicity, region, socioeconomic level, or educational background. Age has little bearing on digital exclusion. However, younger and older students saw this exclusion differently; younger students perceived difficulty utilizing unfamiliar technology, but older students perceived it as a great learning experience. The findings of this research also suggested that "there is no typical attribute that is more closely associated with digital exclusion or inclusion of some form or other" (Clarida et al., 2015, p.99).

Smeaton et al. (2017) in their study, explore the online information experiences of individuals who are experiencing socioeconomic disadvantage. The study tries to capture the lived experiences of digitally excluded personnel. They found that from having technological skills to being willing to move into various information realms, there are numerous issues to solve in order to enable socioeconomically disadvantaged folks to make use of online information. In this research paper, four themes emerged from analyzing the experiences of socioeconomic disadvantaged groups, which are: endless information journey, uncontrolled information space, inadequate information space & essential information space.

An M.Phil. thesis done by Swalehin, M. (2010) based in India, discussed about four digital divides which are emerging in this new IT environment. The first is an internal conflict between the technologically enabled rich and poor. The second linguistic cultural divide primarily exists between English and other languages. The third is the disparity in access to information technology between affluent and poor countries. "Finally, there is the emergent intra-national phenomenon of the 'digerati', an affluent elite characterized by skills appropriate to information-

based industries and technologies, by growing affluence and influence unrelated to the traditional sources of elite status, and by obsessive focus, especially among young people, on cutting edge technologies, disregard for convention and authority, and indifference to the values of traditional hierarchies" (Swalehin, M., 2010, p. 177).

Tambulasi, R.I.C. (2009) is the last study that was examined in order to meet the goal of this work. He attempted to determine the extent to which ICTs serve as a tool to perpetuate social exclusion in developing nations and discovered that developing countries are already experiencing social exclusion, and ICTs exacerbate this social marginalisation and exclusion. He argued that "there is apathy in the use of ICT facilities in most developing countries thereby making ICTs fail to perform as an instrument of integration". People, despite the existence of ICT infrastructure, prefer conventional modes of communication and information gathering in the majority of cases. He concluded that due to a lack of suitable ICT networked infrastructure, indifference to the use of ICT, and sustainability issues, ICT infrastructure does not operate as a tool of social integration (Tambulasi, 2009).

Discussion and Suggestion

Researchers found that people who are socially disadvantaged are also digitally excluded regardless of the nation of origin (Brown & Czerniewicz, 2010; Lane, 2009; Warren, 2007). "There is a "vicious cycle" between social exclusion and digital exclusion, social exclusion leads to digital exclusion, which in turn perpetuates and exacerbates that social exclusion" (Warren, 2007, p. 379). One measure of social exclusion is that the most disadvantaged social groups use ICTs the least (Sims et al., 2008). The underlying causes of social exclusion can include "income deprivation, social deprivation including poor education or health, disengagement and marginalization (i.e. withdrawal and rejection), and local services: public and private, infrastructure" (Warren, 2007, p. 378), low income, low motivation, and an accepted norm that ICT is not necessary (Sims et al., 2008). This is true within both developed and developing countries, including South Africa (Brown & Czerniewicz, 2010; Naidoo & Raju, 2012), 'India' (Swalehin, 2010) and the 'USA' (Madigan & Goodfellow, 2005).

There are various perspectives on the digital divide. Political scientists define the digital divide in terms of who rules and who is dominated. Geographers examine the digital divide in terms of both geography and location. The digital divide is viewed as a technological issue by engineers. The digital divide is viewed by economists in terms of income, wealth, and poverty. Sociologists define the digital divide as unequal access based on socioeconomic level, social class, ethnicity and race, caste, and gender. Educators regard this as a difficulty that must be overcome in order to market courses globally through distance education agreements. Feminists claim that internet access is gendered (Swalehin, M., 2010).

E-learning, contrary to popular opinion, allows the inclusion of a bigger audience and mass education, but the reality is quite different. According to the arguments, people are encountering difficulties as a result of e-learning. According to Walker et al., "Inequalities of income are compounded with other inequalities of gender, ethnicity, disability, and geography to form a suffocating web of exclusion... In India, the median number of years of education girls from the poorest families receive is zero, compared to 9.1 years for girls from the richest families" (Walker et al., 2019).

India is a developing country, and

findings show that developing countries are already facing the issue of social exclusion. As per the recommendations of the New Education Policy, 2020, the Indian education system is introducing digital technology at all levels of education. And the condition of India in terms of access to digital technology is very critical. According to a survey by the Telecom Regulatory Authority of India (TRAI), total internet density in India was 49 per cent in 2018. Rural area users accounted for 25 per cent, while urban area accounted for 98 per cent (TRAI, 2018). Here, we see the vast gap in the data between rural and urban populations. One more latest data published by TRAI reflects that the country had over 1,160 million wireless customers in February 2020, which was up from 1,010 million in February 2016. According to the figures, urban customers increased by 74 million, while rural subscribers increased by 86 million (TRAI, 2020). This suggested an increase in basic telecom facilities rather than digital progression.

India has one of the world's largest gender discrepancies too. According to the GSMA's (Global System for Mobile Communication) 2020 Mobile Gender Gap Report, only 21 per cent of women in India utilize mobile internet, compared to 42 per cent of men. According to the survey, in India, 79 per cent of men own a cell phone while only 63 per cent of women do (GSMA, 2020 in BYJU'S, n.a.). Having internet facilities or access does not guarantee that one can use it. In this reference data shows that only 40 per cent of the Indian pupils in the age group of 15 to 29 years had basic digital literacy (NSO report; The Hindu, 2020, 08 Sep.). Without a concerted effort to bridge the digital divide, the socio-economic, cultural, ethnic, and gender divides will only widen (Sims et al., 2005).

After having looked at the above analysis, as a researcher, my measure concern is how we can fill this digital exclusivity gap? I want to give some suggestions which can be used to overcome these issues:

- The Government should focus on the development of network infrastructure in educational institutions, i.e. universities, colleges, etc., in public places with special reference to rural areas.
- Education and training should be given to students to search and find the needed information.
- Appropriate action to ensure the sustainable integration of the socially excluded groups.
- Charitable organizations can work in this field. They can provide recycled computers in minimal amounts or free to low-income households. This can be combined with Wifi too. Because the barrier of time and place is an essential factor in including nontraditional students in higher education. Etc.

Conclusion

Social inequality is a worldwide phenomenon, and it is necessary to comprehend and challenge the digital inequities that exist among students, affluent and poor, rural and urban, and in private and public schools. The widely held notion that digital technology would erase all injustices is based on an unrealistic vision. It is critical to recognize that social and digital inequalities cannot be eliminated only through the Internet. This paper focuses on finding the factors that result in digital exclusion and, in turn, social exclusion of some people of the society. This extensive literature results indicate that there exist digital disparities in society. These discrepancies are created by the same factors that cause socioeconomic inequality, i.e. low income, vulnerability, rural location etc. Some other common

factors are also identified in the present study, i.e. lack of hardware devices, digital literacy, accessibility, motivation, internet access etc. This study also confirms that there is a 'Digital Vicious Cycle' and access to ICTs is not enough or is not the only concern to delineate the Vicious Cycle. In this regard, poverty is prominent, or can say, crucial dimension to any kind/form of exclusion**.** These comprehensive literature review findings are critical for policy purposes; policymakers may utilize the findings to implement suitable interventions to assure the socially excluded groups' long-term integration.

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Appendix

Table-1: List of Papers Selected in Present Systematic Literature Review

S. No.	Researcher Name	Title of the paper/ thesis	Database	Journal
1.	Clarida, B. H.	"Strategies for digital inclusion: Towards a pedagogy for embracing and sustaining students' diversity and engagement with inline learning"	ERIC	Journal of Education
2.	Kathleen Smeaton, Christine S. Bruce, Hilary Hughes & Kate Devis	"The online life of individual experiencing socio economic disadvantage: how do they experience information?"	ERIC	Information Research: An International Electronic Journal
3.	Stephen Gorard, Neil Selwyn & Sara Williams	"Must Try Harder! Problems Facing Technological Solution to Non-participation in Adult Learning"	Google Scholar	British Educational Research Journal

4.	Julian Sims, Philip Powell & Richard Vidgen	'E-learning and the Digital Divide: Perpetuating Cultural and Socio-Economic Elitism in Higher Education'	Research Gate	Communication of the Association for Information System
5.	Md. Saifuddin Khalid & Mette Jun Lykkegaard Pederson	'Digital Exclusion in Higher Education Context: A Systematic Literature Review'	Research Gate	Procedia - Social and Behavioral Sciences
6.	Segarani Naidoo & Jaya Raju	'Impact of the digital divide on information literacy training in higher education context'	Research Gate	South African Journal of Libraries and Information Sciences
7.	Richard I. C. Tambulai	"Pushed to the abyss of exclusion: ICT and social exclusion in developing countries"	Academia/ Science Direct	Journal of Information, Communication and Ethics in Society
8.	Md. Swalehin	'Digital divide: A Sociological Analysis'	Sodhganga	Sodhganga