THE DIGITAL DIVIDE IN ADULT EDUCATION: THEORETICAL PERSPECTIVES ON ACCESS AND EQUITY

Lars Arnold Ritter
University of Library Studies
and Information Technologies
Bulgaria
l.ritter@unibit.bg

ABSTRACT

The digital divide has increasingly turned out to be a big hindrance to academic equality and especially so in the case of adult learning. This divide includes the differences in access to digital infrastructure, literacy, and learner motivation and is disproportionately impacted by the disadvantaged adult learners. This study comprises a theoretical discussion of the digital divide issue in adult education among individuals that are structurally disadvantaged. It addresses the multidimensional nature of the gap, highlighting the marginalization of adults who do not have access to digital platforms and whose low levels of technology knowhow poses a barrier on the path to learning. The study also examines the role of motivational factors like perceived relevance and confidence of using digital technologies in the success of learners in taking up and utilizing digital learning opportunities. The study will combine different theoretical schools of thought on access, equity, and inclusion in order to ensure a deeper insight on the issues surrounding the digital divide in adult education institutions. The study highlights the necessity of specific interventions that can be developed to fill the gap due to the collision of the concept of infrastructure, digital competence, and motivation to enhance inclusive learning conditions. Finally, practical recommendations proposed to policymakers and educators in the study will encourage the adoption of the policies which are more than just an improvement of digital access, as the promotion of digital literacy and the involvement of learners are currently being much more prioritized. In this way, the study can be positioned within wider contexts of educational equity, with a focus on the importance of digital technologies that have become a source of new forms of education inequality as well as a leading capacity to reduce existing educational inequalities. The digital divide needs to be acknowledged and reduced to provide adult learners with more chances to be included in and socially mobile areas of the digitalized age of studying.

Keywords: Digital Divide, Adult Education, Digital Literacy, Educational Equity, Structural Disadvantage.

INTRODUCTION

Digital divide has gained much recognition in academic perspective especially considering access to education by the adults. With the further establishment of digital platforms into the educational system, the divide between users of the platform and those who do not access it has increased greatly. According to Sydorenko et al. (2024), adult learners, especially those who have disadvantaged backgrounds, cannot overcome significant obstacles to the implementation of digital learning. Such barriers do not only concern the existence to the technological technology itself but also the skills and interests in using these technologies efficiently. Citizenship in the modern world of education presupposes the use of digital tools. Adults cannot perform digital education, which is taking the centerstage as the main mode of learning, without appropriate technology or without access to the internet. Welling and Kubicek (2000) indicate that the lack of digit base infrastructure characterized by the use of

broadband internet, computers, and mobile devices has left a large percentage of adult learners at a huge disadvantage that restricts their chances of educational progress. Access however is not a sufficient condition to bridge the digital divide. Besides infrastructure, digitality which means being able to use digital tools is also very important. According to Huxhold et al. (2020), this lack of skills in general, especially in elderly people and in those with poor educational background is a major issue in narrowing the digital divide in adult learning. Just as relevant are the incentive reasons which determine the manner in which the adult learners will interact with digital learning. In most instances, digital learning will involve a specific dosage of confidence among the learners on whether they can learn to use digital platforms and on how they are going to use the contents. According to the study conducted by Ferrante et al. (2024), adult learners are more likely to continue the process in digital learning environments when they feel that the content is relevant to their personal or professional objectives. Moreover, inspiration also plays an essential role in eliminating psychological barriers to the use of technology including fear or closed mentality against the digital products. The paper aims at answering, under the theoretical ranking of the digital divide in adult learning, considerations around the convergence of the concept of access to technology, digital literacy and learner motivation. With the analysis of such factors, the study aims at widening the discussion regarding educational equity and the impact of digital technology on extending or mitigating preexisting inequalities in adult learning.

LITERATURE REVIEW
Effects of digital divide on adult learning
This constitutes one of the biggest obstacles of equity in education particularly in adult education whereby an individual needs the prospect of life-long education. Kovac et al. (2024) state that the digital divide consists not only of access to the said technologies but also of an ability to utilize them. The focus of the solution to this barrier should be on digital literacy, and without it, adult learners face the concern of being stuck out of the educational opportunities available online, especially after a majority of the educational sphere shifted towards it. The effects of such exclusion are particularly acute among adults with marginalized backgrounds such as low-income earned citizens, adult learners and people with less prior education, because they are less prepared to acquire digital education due to its skills and infrastructure requirements. Increase in online learning resources and platforms, especially due to the COVID-19 disease, has led to the emergence of the increasing gap, concerning the access to digital learning materials. Stiller and Trkulja (2024) also stress that adults living in rural regions, poor households and older generations experience an increased difficulty regarding digital assets and participation in online education. This gap is not only about hardware and times of access and internet connectivity, but also about the disparity of digital skills and the corresponding infrastructure to be able to access modern technologies and educational tools. This denies the people access to these resources and further enhances pre-existing educational disparities in giving undue advantage to some groups. The disparity grows more pronounced, as educational systems move toward digital space in greater numbers. Adults lacking the needed tools and skills are left out of the educational opportunities that might provide them the means of improving their lives in their fields (personal or professional). This has subsequently highlighted the significance of bridging the digital divide that may facilitate inclusivity and education equality that were gained in the move towards digital formats.

Digital Literacy as a Barrier to Education
Digital literacy, or the capability of individuals to gain access to, comprehend, and apply the online technologies, is a main determinant of the possibility of adult learners to attain digital

education. Morte et al., (2025) refer to digital literacy as one of the greatest challenges of marginalized adult learners which causes them not being able to enjoy the digital education programs to the full extent. These learners, usually with a socio-economic disadvantage, are usually not good at basic digital literacy aptitudes, like navigating websites, and communicating effectively using digital resources, and identifying learning materials that are available on-line which have relevance to them. In the absence of such basic skills adults can no longer use online courses, online discussions, or online assignments. According to Rathmann, Guimar, and Kosmerl (2023), the EU policies play a major role in the digital transformation of adult learning since they not only affect the national plans but also contribute to the cultivation of digital competencies in such countries as Germany and Portugal

Digital literacy is also a major challenge among the adult learners or those who lack the chance to acquire digital skills because of their poor exposure to technology in their past learning environments. This may not just be about being conversant with the use a computer or smartphone, as Ferrante et al. (2024) insist: it is more about learning how to use technology to consume and interact with educational material, communicate with teachers and classmates and navigate an educational landscape that is getting more and more challenging to navigate. Moreover, Digital transformation in adult and continuing education demands a complex. organizational approach to issues connected to the insufficiency of infrastructure and personnel presence, which is why it is necessary to pursue a professional development strategy and support leadership in the sphere of education (Bernhard-Skala, 2019). Digital learning may end up being a stressful and lonely experience to the people lacking such abilities. In addition to that, there is a tendency to associate digital literacy with the socio-economic status and this divides the gap even further. Individuals in families with low income might lack resources and opportunity to acquire the required digital skills. This causes a spiral effect and those who lack digital skills are more exposed to the systems in which people do not have the opportunities to learn and build their skills. This has been the major reason why the skills gap on digital literacy has only served to widen gaps on educational outcome level and especially in adult learners who have interests in learning to advance their careers of personal improvements through learning.

The Role of Motivation in Digital Education

Motivation is as important as access and digital literacy in establishing whether adult learners will succeed or fail in digital education. There exist factors to motivation, including the perceived applicability of the learning content, the comfort or the feelings of the learners about their capability of using digital tools, and the support offered by the teaching institutions (Kovac et al., 2024). Motivation especially plays a key role during adult education, where the learner may be juggling between education and other unavoidable commitments in life like work or family. When learners find motivation in education and struggle with a barrier like technology anxiety or restricted access to digital resources, there are more chances of them pushing through the struggles and continuing to pursue digital education.

Welling and Kubicek (2000) underline the importance of the idea that learners are more likely to remain involved with the digital learning programs that they see as being relevant to their personal or professional objectives. An intrinsic motivation that is linked to persistence and success is created by the relevance of the material used. Conversely, adult learners lose motivation in cases where the material content is not relevant to their individual needs or the program cannot engage the learners as they become easily disengaged or drop out of the

digital education program. Self-confidence also has a close relation to learner motivation. The individuals who feel that they possess strong digital skills have higher chances in negotiating technology and explore the digital contents. Conversely, some of the learners may fear that they might lack the digital skills or they have a bad history with technology and therefore, feel anxious or not driven enough to engage without any effort in online learning. Consequently, it is important to encourage motivation and confidence in order to enhance the success of adult learners in digital learning.

METHODOLOGY

The current study utilizes a qualitative method of study, where literature analysis is the central research strategy to determine the theoretical insights of digital divide in adult education. The study uses literature available in the academic community. Using these scholarly sources and synthesizing them, the study will also intend to find how digital divide afflicts adult learners, especially those that have an underprivileged background and how these scholars suggest solutions to these problems.

The research design followed in this study is a detailed literature review. It involves a deliberate review of associated academic papers, which is why one could single out the fundamental drivers that widen the divide, including accessibility to internet as well as the desire to learn. This literature review refers to the studies which emphasize the interaction between all these factors and their influence on the effectiveness of the engagement of adult learners in the digital education. Among the important themes is the non-access to technology devices and consistent internet connection, which is a major challenge to most adult learners. According to Huxhold, Hees, and Webster (2020), such disproportion in access, especially among the adults in the low-income families or rural locations, only hinders their chance to join online education and impairs their learning opportunities. The other key theme identified in the literature is digital literacy. According to Kovac et al. (2024), digital literacy is not only a question of possessing some basic digital resources, but also an understanding of how one may navigate complex online spaces and how one may interact with digital material critically. Morte-Nadal and Esteban-Navarro (2025) also note that most adult learners, including those with marginalized economic and social backgrounds, have severe difficulties acquiring the digital literacy skills they need. These dilemmas impair their success in terms of digital education environments as learners fail in performing some tasks such as using internet-based learning facilities, online research, engaging multimedia contents amongst others.

The literature also looks into the role of Learner motivation. According to research conducted by Welling and Kubicek (2000) and Ferrante et al., (2024), motivation is an important determinant of whether adult learners are likely to continue with digital learning. The way the learning material is regarded as relevant and the confidence the learner has in the use of technology also plays a key role in his/her engagement and success. Kovac et al. (2024) note that when learners feel that digital education is relevant to them on a personal or professional level, there is better chance of their retention and successful completion of their courses. On the other hand, learners with low confidence to utilize digital tools or who do not believe in the usefulness of digital education might not attend digital learning or even quit.

The study is guided by a number of theoretical perspectives. Firstly, the theory of social equity and inclusion is employed in order to describe the systematic gaps that stand in the way of adult learners, i.e. they are unable to access technology and education. Huxhold et al. (2020) write about the way that the inequities in education may be alleviated by the proposal

of equal access to digital devices and networks to all people. Digital literacy theories are also important in this study because through it, adult learners would be motivated to acquire these abilities that would enable them achieve success in digital education. Ferrante et al. (2024) remark that digital literacy also covers a wide array of skills, starting with simple navigational abilities to critical-thinking and teamwork in online settings. Motivation theories are also important to determining why some adult learners excel in digital education and others fail. Welling and Kubicek (2000) state that relevance of this content and self-confidence in dealing with technology impact greatly on motivation. The motivational theories emphasize that psychological barriers depicted by low confidence in digital tools are the key to bussing digital learning environments.

RESULTS

The findings of this study indicate three main drivers of the digital divide in adult learning to include access to technology, digital literacy and motivation. These elements are highly intertwined and thus impact and add to one another ultimately resulting in learning inequality among adult learners particularly those who have poor backgrounds.

Access to Technology

Access to technology was reported as the greatest determining factor to impede digital learning amongst the adult students. This observation is in line with the previous studies that have shown that learners with low household income and living in rural communities are unequally vulnerable to the lack of access to the digital infrastructure (Huxhold, Hees, & Webster, 2020). It was found out that the adult learners frequently lack the required devices, either the computers or the tablet ones, and a great extent of the population have trouble with unstable or slow internet connection. According to Welling and Kubicek (2000), in cases where learners in underserved areas get access to the internet, the available bandwidth and infrastructure are often not sufficient to allow them to be engaged in online learning. The study findings concur with published reports by Kovac et al. (2024) regarding the idea that mobile phones have assumed the top position during the digital access system but, the devices with the same characteristics are not usually fitted to enable total engagement in digitized training. The use of mobile phones will seriously impair the activities like accessing course materials, logging to video lectures or even completion of assignments. Therefore, the aspect of technology access is still the focus of the adult learners, especially the ones in low-income communities or in rural settings where not only the access to internet is extremely restricted, but to devices as well. As Figure 1 shows, the number of internet users rose among people in different age groups considerably over the same period (2002-2014) but it rose most among older age groups (55-69 and 70-85 years).

Figure 1: Availability of the internet in per cent: age category based on time:
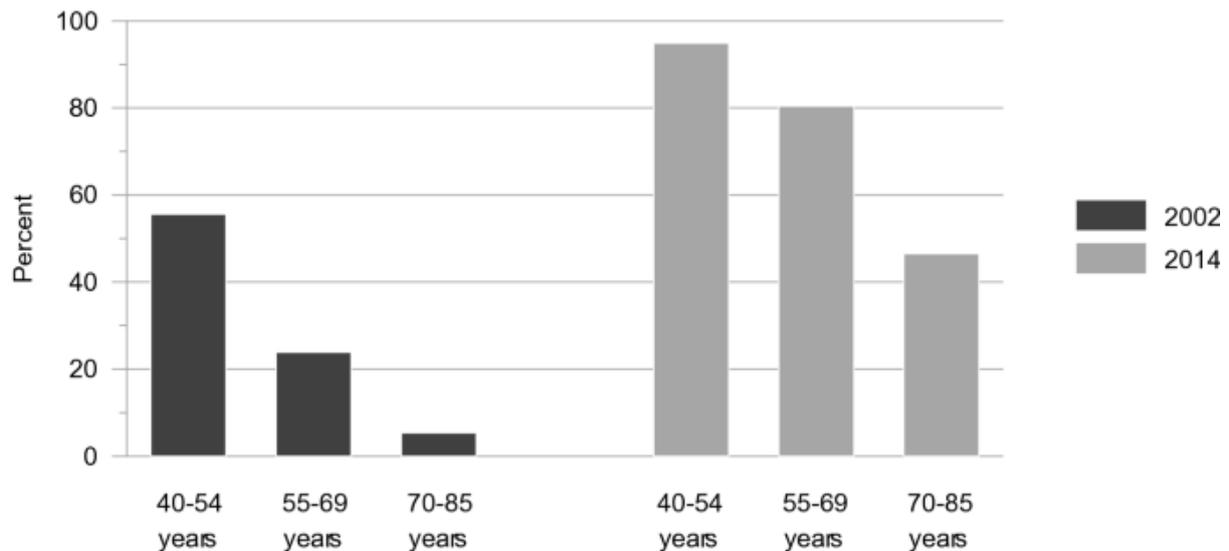
Source: Huxhold, Hees, & Webster, 2020)

Digital Literacy

Digital literacy was another determinant that came out by affecting the success of learners in digital education. Past research provided by Kovac et al. (2024) and Egloffstein and Ifenthaler (2021) emphasize the need to improve digital literacy among adult students and those with limited formal education or advanced age. The information gathered within this study attests to the fact that most adult learners are faced with numerous challenges when it comes to simple digital tasks like navigating learning management systems, or searching through various materials, or even the efficient use of collaborative tools. These difficulties greatly affect their capacity to interact with course material and do assignments. Low levels of digital literacy also increase the chances of learners being frustrated by using digital platforms, thus jeopardizing their levels of engagement in its use, or even the withdrawal of the learners in use of online courses (Morte-Nadal & Esteban-Navarro, 2025). This applies especially to those learners who have never acquired the required skills of operating in the digital environment. To bridge the gap, it is important to make all learners digital literate as digital learning continues to become a part of the main focus in adult learning. According to the digital literacy model (Reddy, Chaudhary, & Hussein, 2023), media literacy and information literacy are vital elements of education in the 21st century

Figure digital literacy framework
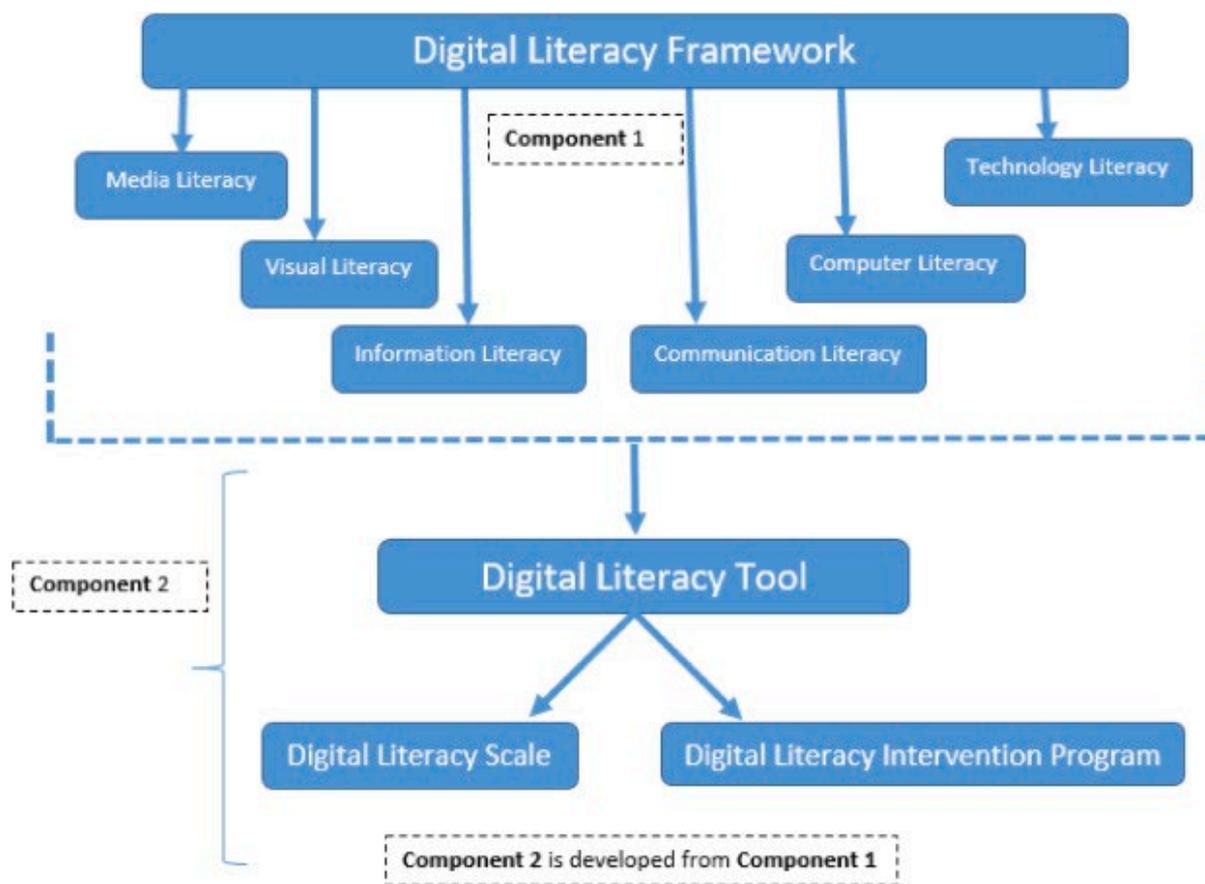
Source:(Reddy, Chaudhary, & Hussein, 2023)

Learner Motivation

The research has also established the motivation to be a very important success factor in the area of digital learning. Students, who feel that the material they study in their online learning is important to their personal or career objectives, will commit themselves to the learning experience and stick through the difficulties. According to the research carried by Ferrante et al. (2024), adult learners are better positioned to break the technology-related hurdles once they comprehend the practical utility of interacting with digital learning. In such a situation, they tend to stay long in the course. Conversely, students, who fail to see a correlation between the topic and likely utility of course content or feel that the content is not pertinent to their objectives have higher tendencies of withdrawing. Self-confidence in using the digital tool also impacts on motivation. Students who have a higher level of digital confidence will also perform better in a digital learning situation because they are less afraid of technology and more eager to learn about new tools and resources (Sydorenko et al., 2024). Findings of this study confirm that the digitally less confident learners will not remain online students, meaning that development of motivation and an increase in digital self-confidence should be considered in order to maximize the outcomes of such learners.

DISCUSSION

The findings of the present study stress the necessity of an all-embracing strategy of overcoming the digital gap in adult education. Although the question of better access to technology is important, it is evident that this is not the only variable that will enable all

learners to have an opportunity to engage in digital learning freely. Digital divide is not a simple problem whose resolution would simply mean solving infrastructural challenges.

Improving Access to Technology
Access to technology is important, but it is not the end of the answer to digital divide. According to Welling and Kubicek (2000) along with Huxhold et al. (2020), most adult learners, especially those low income or rural students find it hard to receive the devices and internet connection to use. The public policy should work on the enhancement of broadband infrastructure as well as affordable technology to all learners. Community programs, government subsidies and public-private unions can be helpful in equipping adult learners who experience barriers to access with the required resources. In addition, the opportunities of providing learners with the appropriate devices to communicate with and receive the online education should be provided, as the Kovac et al. (2024) argue. The prevalence of mobile phones is one thing, but they might not suffice in complicated activities in digital education. With this, educational facilities and governments should collaborate to ensure that there is availability of sufficient devices, especially to the adult learners who are not in a position to spend in their own devices.

Enhancing Digital Literacy
The results of this study support the essential importance of the need to enhance digital literacy among adult learners. Digital literacy, as Egloffstein and Ifenthaler (2021) comment, is critical to accessing educational materials as well as participating genuinely in them. Adult learners especially those who have not been exposed to much technology in the past are true in this aspect. Institutions need to make digital literacy training a priority to succeed in digital education both in terms of basic training (e.g., learning how to use devices and navigate digital platforms) and the more advanced (e.g., interpretation of information, engagement in online conversations, or use of digital tools to cooperate). Moreover, like Morte-Nadal and Esteban-Navarro (2025) note, these programs of digital literacy must be permanent, and there must be a chance to improve the skills regularly. Digital technology changes at a very fast rate and educationists need to ensure that learners can change with the new tools and platforms. It is important to provide possibilities of lifelong learning in the field of digital literacy and make sure that adult students will not become obsolete in the face of the ever-evolving technical progress.

Fostering Learner Motivation
Motivation is vital in making adult learners succeed in digital learning. In this study, it is clear that adult learners could be more engaged when they believe that the content is relevant to the intended objectives and significant. Most adult learners tend to get motivated when the learning process relates directly to their personal and professional goals as indicated by Ferrante et al. (2024). The educational institutions have to focus on adjusting digital education programs to be more practical and adaptable so that the students can observe immediate effect of their studies in their careers or personal development. In addition, self-confidence regarding the use of digital resources can also be one of the main aspects of motivation. According to Sydorenko et al. (2024), more confident learners concerning digital skills will find it easier to explore the content or engage with it and continue the process despite the challenges. Examples of institutions can assist in this by supplying digital mentors, peer support network, and making resources available that can help a learner create confidence in applying technology. To sum up, access alone to the digital divide in adult education can not be achieved. Based on the findings, the best strategy to be adopted is multi-factorial, which entails enhancement of access to technology, enhancement of digital literacy,

and learner motivation. These three factors that are interdependent can help the educational institutions to make sure that all the adult learners receive the tools, skills and support that they require to flourish in the digital learning environment.

CONCLUSIONS

This study has revealed that the digital disparity in adult learning is a major impediment to educational equity, especially to low-income students. The results lead to the conclusion that access to technology, digital literacy, and student motivation should become the factors that define whether adult learners have chances to succeed in digital education. Although it is crucial to increase access to technology, it is obvious that implementing a more practical strategy is necessary to cover up the limits presented by low digital skills and lack of motivation. To effectively overcome the issue with the digital divide, educational establishments should implement the strategies that not only aim at offering digital tools but also at enhancing digital literacy and developing motivation among learners. The growth of digital infrastructure, increased digital literacy programs, and creation of positive learning environments where confidence and involvement are developed need to be priorities in their policies. The holistic approach to addressing the digital divide enables policymakers and educators to ensure that every adult learner is provided with opportunities to succeed in the digital age, irrespective of the differences in social-economic background. With the growing role of the digital technologies in the educational process, it will be of paramount importance to ensure that adults will be given the skills, confidence, and motivation, which are needed in education, to support educational equality and lifelong learning.

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