



Barriers affecting the use of technology at Adult Community Learning centres in Mpumalanga Province: An Exploration of Gert Sibande District

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ABSTRACT

This qualitative study explores the barriers affecting the use of technology at Adult Community Learning Centres (ACLCs) in the Gert Sibande District, Mpumalanga Province, South Africa. Although digital technologies are widely promoted as tools for lifelong learning, employability, and social inclusion, their integration into adult community education remains uneven and limited, particularly in rural and marginalised contexts. Guided by the theory of andragogy, the study examines how socio-economic conditions, institutional realities, and adult learners' experiences shape technology use in ACLCs. An interpretive qualitative research design was employed, with data generated through semi-structured interviews and non-participant observations conducted at selected centres. The data was thematically analysed to identify recurring barriers to technology integration. The findings reveal that interrelated challenges, including poverty, limited access to digital devices, low digital literacy levels, inadequate training, unreliable internet connectivity, and shortages of functional technological resources within the centres, limit technology use. Infrastructural inequalities, insufficient institutional support, and weak implementation of technology-related policies further intensify these barriers. The study argues that without context-sensitive and adequately resourced interventions, technology initiatives may reinforce existing educational inequalities rather than promote empowerment and inclusion. The study recommends improved investment in digital infrastructure, continuous digital literacy training for educators and learners, and the development of inclusive technology policies that respond to the realities of adult community education.

Keywords: Adult Community Learning Centres, Technology Use, Digital Inequality, Andragogy, Qualitative Inquiry.

INTRODUCTION

The rapid growth of digital technologies has drastically changed education systems worldwide. How knowledge is accessed, imparted and utilized has been redefined in formal and informal learning environments. One of the promising aspects of technology in adult education is its ability to serve as an impetus to lifelong learning, employment, civic involvement and social integration. This applies

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especially to the most disadvantaged groups of society.¹ Several international agencies, such as UNESCO and OECD, have cast digital literacy as a core skill in the presently fast-paced world.

Nevertheless, several scholars who take a critical approach have warned that access to the benefits of technology cannot be taken for granted since it is intricately intertwined with long-standing social, economic and institutional inequalities.

In the South African context, the introduction of technology into adult education cannot be detached from the existing socio-economic inequalities, which have their roots in apartheid, the disparity between rural and urban areas and the general socio-economic exclusion. Adult Community Learning Centres (ACLCs) constitute the Community Education and Training (CET) sector and are intended to be the avenue for adults, especially those who had been historically excluded from formal education, to gain education that is not only accessible to them but also relevant. Policy instruments highlight technology as an important element for good access and quality enhancement in the Post-School Education and Training sector. Still, the use of technology in ACLCs has been empirically noted to be patchy, poorly resourced and unevenly implemented.²

The province of Mpumalanga, and particularly the Gert Sibande District, is a case in point of the above-mentioned contradictions. Being predominantly rural and having an unemployment rate and poverty level that are both very high, the district is a complex case where, on one hand, adult learners have educational and aspirational needs and, on the other hand, there is the reality of them living in such harsh conditions that there is very little or almost no digital infrastructure to speak of. While the general belief and often the expectation is that technology will bring about learner autonomy, flexibility and more access to information, the lived reality of the majority of adult learners who do not have the devices, the connectivity and the skills that are needed to go online, thus getting cut off from this information, is hidden behind these assumptions.³ Therefore, through technology, empowerment may not be achieved and exclusion practised on a large scale as a result of technology having been used as a cause and effect.

This study maintains that a deeper understanding of the obstacles to technology use in ACLCs can only be achieved if, besides the focus on access, one also dissects the socio-economic, pedagogical and institutional dimensions that shape adult education milieus. By being based on andragogy, the study places the main emphasis on adult learners' experiences, their current knowledge and the limitations of their immediate environment. At the same time, the study critically evaluates whether technology usage is in accordance with or contrary to adult learning principles.⁴ Focusing on Gert Sibande, the research work can provide evidence-based inputs from the ground to the worldwide discussion on the digital divide, adult education and the pursuit of social justice in the developing world.

Therefore, the objective of this study is to investigate the barriers that limit the use of technology in Adult Community Learning Centres in Mpumalanga Province, South Africa. Within a qualitative framework, this study sheds light on technology in the everyday lives of both the learners and their facilitators, the limitations of the same and, finally, the consequences these barriers have on the provision of equitable and qualitative adult learning experiences. In this way, the study intends to contribute to the academic discourse on the topic of technology in adult community education and serve as a reference for policymakers and practitioners within the CET sector.

¹ N. Selwyn, *Education and Technology: Key Issues and Debates*, 2nd ed. (Bloomsbury, 2016); E Boeren, "Lifelong Learning and Technology Use among Adults: A Critical Review," *Studies in Continuing Education* 41, no. 3 (2019): 309–24; Jan Van Dijk, *The Digital Divide* (John Wiley & Sons, 2020).

² V. McKay, "Policy–Practice Gaps in Technology Integration in South African ACLCs," *South African Journal of Education* 38, no. 3 (2018): 1–12; S Walters, "Technology in Adult Education: Barriers and Opportunities," *Adult Education Quarterly* 70, no. 1 (2020): 3–22.

³ T. Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South," *Information Technologies & International Development* 16 (2020): 1–19; E., Adera, et.al., "Digital Literacy and Mobile Learning in Sub-Saharan Africa," *Education and Information Technologies* 19, no. 3 (2014): 473–89.

⁴ M. S Knowles, *The Modern Practice of Adult Education: From Pedagogy to Andragogy* (Cambridge Books, 1980); Sharan B Merriam and Laura L Bierema, *Adult Learning: Linking Theory and Practice* (John Wiley & Sons, 2013).

LITERATURE REVIEW

Scholars have continuously debated the incorporation of the technological revolution into adult education. More specifically, they have concentrated on the possibilities of using technology for easy access to education, an increase in flexibility in the methods of studying, and the promotion of learner autonomy. Nevertheless, a considerable amount of critical literature warns against taking for granted the fact that just because the use of technology is promoted in education, it automatically leads to learning outcomes. This study engages with the literature coming from worldwide, African, and South African scholars who, among other things, explore the ways in which technological integration in adult education is impacted by socio-economic inequalities, institutional conditions, and pedagogical orientations.

Global perspective on technology in adult education

Digital technologies are no longer considered one more novelty in the realm of adult learning, but rather, they are envisioned as indispensable tools fuelling the whole process of lifelong learning, workforce development, and social participation. Research from various regions, such as Europe, North America, and Asia, confirms the effectiveness of using online platforms, mobile learning, and blended learning models to accommodate adult learners' diverse life commitments and to support self-directed learning.⁵ One reason why technology is so intertwined with education nowadays is that it offers great flexibility in terms of time and place, thereby enabling adult learners to balance their work and family life with their education. On the other hand, scholars warn that technology-based learning cannot thrive without a good pedagogical design, a strong learner support system, and content that resonates with the learner's socio-cultural background.⁶

Several authors clarify that the whole area of technology use in adult education is framed within technocratic discourses that, for example, take as granted the communicative norms and assume that everyone has similar access and is skilled in the use of technology, so they do not consider that social and economic inequalities exist and may hamper the learners.⁷ Thus, the mere availability of digital devices does not necessarily mean learners' immersion or improvement of their learning outcomes. Hargittai also points out that there are great differences in the levels of digital literacy across the population, which therefore results in unequal opportunities for learning how to use and, eventually, benefit from the digital world.⁸

Technology, inequality, and adult learning in the Global South

In the Global South, the virtues of educational technology are overshadowed by the structural constraints that relate to poverty, infrastructure, and governance. On the one hand, mobile technologies and affordable devices have allowed people to get access to information, but on the other hand, the learning process has faced many obstacles due to the lack of a constant internet connection, the irregularity of the electricity supply and the use of a device by several people at a time.⁹ Research findings demonstrate that adults do not always have access to a device; they rely on a public or shared facility, and the technical support is minimal; therefore, they may become demotivated and frustrated, which will eventually lead to their disengagement from digital learning.¹⁰

Besides the above, an educational program for adults in a developing context most probably will emphasize literacy and skills training, with digital literacy being considered more of an add-on

⁵ Boeren, "Lifelong Learning and Technology Use among Adults: A Critical Review"; Barbara Means, Marianne Bakia, and Robert Murphy, *Learning Online: What Research Tells Us about Whether, When and How* (Routledge, 2014); OECD, *Skills for 21st Century Learning: Insights from International Assessments* (OECD Publishing, 2021).

⁶ Arthur Cropley and Chris Knapper, *Lifelong Learning in Higher Education* (routledge, 2021); Selwyn, *Education and Technology: Key Issues and Debates*, 2016.

⁷ Selwyn, *Education and Technology: Key Issues and Debates*, 2011; Van Dijk, *The Digital Divide*.

⁸ E. Hargittai, "The Digital Skills Gap: Implications for Access and Learning," *Communications of the ACM* 61, no. 10 (2018): 54–61.

⁹ Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South"; Adera, et.al., "Digital Literacy and Mobile Learning in Sub-Saharan Africa."

¹⁰ T. James, "Mobile Learning in African Adult Education: Opportunities and Constraints," *International Journal of Educational Development* 68 (2019): 48–56; L. Adam and A. Tatnall, "Technology and Development: Opportunities and Challenges for Adult Learning in Developing Contexts," *International Review of Education* 63, no. 5 (2017): 587–606.

than a core part of the program.¹¹ This neglect of technology in curriculum development is one of the factors that serve as a barrier for adult learners towards getting the required digital skills for their full participation in the digital economy. Those who research this area argue that if intervention does not take into consideration the local socio-economic context, then it is likely that the existing inequalities will not only be deepened but also that the community's dependency on external support will be prolonged.¹²

South African scholarship on technology in Adult and Community Education

The South African literature underlines that while it is imperative to integrate technology in Adult and Community Education, this is not easily achieved because the sector is so varied and hence, it is heavily influenced by local factors. The CET sector, which is responsible for ACLCs, is charged with the responsibility of making learning accessible to all; however, most of the centres continually experience a lack of resources, and this is evidenced by the fact that the few existing staff members are overburdened and technological equipment, if any, is often obsolete or out of order.¹³ Besides, with its inherent challenges of extreme poverty, poor infrastructure, and digital connectivity, the Gert Sibande District is a good example of how the problems are multiplied in rural and semi-rural areas.¹⁴

Literature points out that, among other things, limited digital literacy of learners and educators, lack of professional development, and absence of formalized technology policies can be regarded as some of the reasons why technology use in ACLCs is further limited.¹⁵ There are cases when devices are at people's disposal, but the lack of training, that is, contextual training and pedagogically relevant learning materials, stands in the way of the learners being able to interact with the technology in any meaningful way. Furthermore, the study innovatively points out that an essential prerequisite for the success of an adult learning process is the application of the theories that relate to adult learners. This aspect ensures that the use of technology is first and foremost aimed at the needs of learners, considers their previous experience, and is consistent with problem-centred learning.¹⁶

Policy, practice gaps and systemic challenges

Proponents of technology in education argue that, if well implemented, it might remedy some of the structural imbalances in the education system, mainly regarding access and quality. Evidence, however, has been persistently pointing out that what is happening at the centre level is the opposite of what the policy framework had envisaged.¹⁷ The reality of funding, physical infrastructure, and implementation management is unfortunately such that the gap between the most and the least consists of the most vulnerable who live in rural areas and in marginalised communities. Therefore, this can be confirmed most when the supply of educational technology is considered together with systemic, socio-economic, and institutional conditions to prevent exacerbation of existing educational inequalities.¹⁸

Learner experiences and pedagogical considerations

Research trends point to the fact that the technology realm is often a reflection of adult learners' personal lives, encompassing their life stories, motives, and the relevance of technology (for them). Adult learners who return to education are said to be characterised by having had different kinds

¹¹ Walters, "Technology in Adult Education: Barriers and Opportunities."

¹² Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South"; Adam and Tatnall, "Technology and Development: Opportunities and Challenges for Adult Learning in Developing Contexts."

¹³ McKay, "Policy-Practice Gaps in Technology Integration in South African ACLCs"; I Baatjes and V McKay, "Challenges in the South African Adult Education Sector," *South African Journal of Education* 36, no. 2 (2016): 1-9.

¹⁴ S. Walters and J. Watters, "Digital Access and Adult Learning in Rural South Africa," *Journal of Education and Human Development* 8, no. 2 (2019): 23-35.

¹⁵ Czerniewicz et al., "A Wake-up Call: Equity, Inequality and Covid-19 Emergency Remote Teaching and Learning."

¹⁶ Merriam and Bierema, *Adult Learning: Linking Theory and Practice*; M. S Knowles, E. F Holton, and R. A Swanson, *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*, 8th ed (Routledge, 2015).

¹⁷ Department of Higher Education and Training (DHET), "White Paper for Post-School Education and Training," Pretoria: Government Printer, 2013, [https://www.dhet.gov.za/SiteAssets/White Paper for Post-School Education and Training.pdf](https://www.dhet.gov.za/SiteAssets/White%20Paper%20for%20Post-School%20Education%20and%20Training.pdf); McKay, "Policy-Practice Gaps in Technology Integration in South African ACLCs."

¹⁸ Czerniewicz et al., "A Wake-up Call: Equity, Inequality and Covid-19 Emergency Remote Teaching and Learning"; Walters, "Technology in Adult Education: Barriers and Opportunities."

of experiences in their learning; they are not too comfortable or confident in the use of digital environments, and they have a bunch of competing socio-economic responsibilities. All this, of course, leaves its mark on learners' engagement level with technology.¹⁹ In support of the above, studies reveal that the process of technology integration ought to be in line with the learner's environment, culturally relevant, and there should be steps that would guide learners towards skill development and confidence.²⁰

According to the learners, even in cases where devices and internet connections are available, it is the usability, relevance, and level of support that lure them to use the digital tools. They get irritated when the content is not tailored to their needs or when the support services are inadequate, indicating that, in technology-mediated learning, adult learning principles should be given due consideration. It has been established that the use of pedagogical strategies that put the learner at the centre, are problem-oriented, and allow a certain degree of flexibility can be one of the ways of improving what learners do and get from the learning.²¹

Synthesis and research gaps

Globally, and in the case of the Global South and South Africa, there is an agreement that technology has somewhat of a magic touch in adult learning, and it can make learning very interesting and rewarding, but the snag is that the benefits are very unevenly spread.²² The review of the literature shows that there is a wide range of difficulties that one encounters when trying to incorporate technology into the teaching and learning process, such as socio-economic issues, infrastructural deficiencies, lack of digital competencies, and policy practice discontinuities. The authors of critical studies demand more elaborated and context-sensitive research with adult learners' experiences as a starting point and incorporating adult learning theories to demonstrate the guidelines for technology integration.²³

This study will fill the literature gaps by exploring the challenges to technology use in the context of ACLCs in the Gert Sibande district. The study employs qualitative, participant-centred methods that focus on the empirical material and then link the data obtained to the andragogical principles and the body of literature on critical digital inequalities. In doing so, the study sheds light on the various dimensions of human experiences, the institutional attendant factors, and the policy framework that collectively influence technology use in adult community education.

THEORETICAL FRAMEWORK

Andragogy is the theory of adult learning on which this research project is based. It was first articulated by Knowles in 1980 and 1984 and later elaborated by other scholars of adult education. Andragogy serves as a theoretical framework for the study of how adults learn and how instructional methods, for example, the use of technology, should fit the specific learning traits of adults. While pedagogical models generally view learners as dependent on the teacher and capable of only little or no knowledge acquisition by themselves, andragogy, accordingly, emphasizes learner independence, learners' experiential knowledge, their learning relevance and problem-centred learning orientation.

The six key adult learning principles that relate to Andragogy are: the adult learners' principle of knowing why they are learning something; principle of adults' self-concept as being autonomous and self-directed individuals; principle that adults come with a variety of experiences that can be a great resource in the learning process; principle of readiness to learn that is associated with individual social roles; principle of a person being problem centred rather than subject

¹⁹ S. D Brookfield, *The Power of Critical Theory for Adult Learning and Teaching* (Open University Press, 2005); G Foley, *Theoretical Foundations of Adult Education* (Allen & Unwin, 2011).

²⁰ Boeren, "Lifelong Learning and Technology Use among Adults: A Critical Review"; Selwyn, *Education and Technology: Key Issues and Debates*, 2016.

²¹ Merriam and Bierema, *Adult Learning: Linking Theory and Practice*; Knowles, Holton, and Swanson, *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*.

²² Selwyn, *Education and Technology: Key Issues and Debates*, 2011; Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South"; Brookfield, *The Power of Critical Theory for Adult Learning and Teaching*.

²³ Selwyn, *Education and Technology: Key Issues and Debates*, 2011; Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South"; Brookfield, *The Power of Critical Theory for Adult Learning and Teaching*.

centred in his/her learning; principle of adults' motivation which is mostly internal.²⁴ All these principles could be very helpful in discovering the kind of adult community education that is happening in the Adult Community Learning Centres, where the students coming back to school are usually a long way from the simple, clean, neat and straightforward portraits of learning that schoolteachers like to depict. These students may have had times of exclusion, working for a living, raising families, and living in poverty.

Andragogy is a useful lens to look through when trying to find out if digital devices are helping or hindering adults in the achievement of learning outcomes, especially with regard to learner autonomy and agency. A pedagogue viewed through an andragogy lens sees technology as a means through which learners can enhance their level of independent learning, can access information in a very flexible manner, and can also learn experientially and collaboratively. With the help of digital learning platforms, learners can also utilize their life experiences, relate to real-life problems and learn at their own pace depending on their context.²⁵

On the other hand, andragogy also invites us to see technology usage, which is substandard, not only as inadequately resourced and supported but also as having been imposed on the learners without consultation or consideration of their contexts. When adult learners do not have the devices, the internet, or the knowledge of how to use the technology, technology will most likely be a source of more dependence, greater anxiety and deeper exclusion. Therefore, this goes against the central idea in andragogy of having a strong learner self-concept and being motivated from within. Under these conditions, technology will be more or less a symbol of progress than a pedagogic means.²⁶

For this study, it is important to note that the use of andragogy does not imply that the framework of adult education is neutral or universal but, rather, it is seen as a situated and contestable framework that necessarily needs to be critically examined within socio-economic and institutional contexts. Some scholars have raised concerns about the uncritical use of Andragogy, which they contend may result in power relations and structural constraints being hidden, especially when Andragogy is being applied in contexts of poverty and inequality.²⁷ As such, the employment of Andragogy in this study is self-reflexive, and considers how adult learners become self-directed in their learning is determined by their physical surroundings, by support systems in the institutions they attend and by policies.

In the case of South African ACLC, adult learners are often confronted with the challenge of a lack of freedom of choice and limited access to educational resources; thus, Andragogy here needs to be related to structural empowerment and constraints. Consequently, to the extent that Andragogy helps us understand the tension between the government's intention of digitally empowered lifelong learners and the reality of unresourced community education, the theory is being used to disclose this scenario. By merging Andragogy with the interpretative framework of a critique of digital inequality, this study obtains a solid theoretical foundation to analyse the impact of technology access barriers on adult learners' agency, involvement and achievement of their learning goals.

Therefore, through this conceptualization, this theory, the researchers consider the use of technology in adult education as an issue which is largely not confined to the field of pedagogy but which overlaps with social and political domains. Andragogy is thus used both as an explanatory and as a critical lens. It enables one to better understand the effects of technology integration on equity, empowerment and social justice within the context of Adult Community Learning Centres.

METHODOLOGY

This study used a qualitative research approach underpinned by an interpretive paradigm to investigate the barriers to technology use in ACLCs. A qualitative methodology adequately captured the detailed contextualised understanding of participants' experiences, attitudes, and interpretations of technology use, without the intention of quantifying variables or testing hypotheses. The interpretive

²⁴ Knowles, Holton, and Swanson, *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*.

²⁵ Merriam and Bierema, *Adult Learning: Linking Theory and Practice*; Boeren, "Lifelong Learning and Technology Use among Adults: A Critical Review."

²⁶ Selwyn, *Education and Technology: Key Issues and Debates*, 2011; Van Dijk, *The Digital Divide*.

²⁷ Brookfield, *The Power of Critical Theory for Adult Learning and Teaching*; Foley, *Theoretical Foundations of Adult Education*.

perspective sees reality as being socially constructed and considers that knowledge of technology use in adult education is created through the interaction between the researcher and the participants.²⁸

Research design

This study was a qualitative case study, and the case was ACLCs in the Gert Sibande District of Mpumalanga Province. Case study research is an in-depth research method that focuses on one phenomenon within its real-life context and allows for the study of complex social, institutional, and pedagogical dynamics that influence adult learning environments.²⁹ Gert Sibande District was a first-choice case based on its mostly rural character, socio-economic challenges, and the key role of ACLCs in providing learning opportunities for the marginalised adult population.

Research site and context

The research was carried out in the selected Adult Community Learning Centres under the CET sector of the Gert Sibande District. The centres cater to adult learners with different educational levels; some of them may have had little formal education, while others seek vocational or skills development. The centres often have limited infrastructure, scarce funds, and unequal access to digital technologies; thus, they are suitable places for studying barriers to technology use.

Participants and sampling strategy

Adults enrolled at the centres and educators teaching at the centres were the participants. The researcher used purposive sampling to identify the individuals who could provide in-depth, relevant information on technology use and its associated problems. Adult learners were selected based on their presence in the centres and their experience, albeit limited, with technology-mediated learning activities. Educators were selected based on their facilitation roles in the centres. This sampling method allowed for the collection of diverse views, considerably improving the depth and validity of the results.

Data generation methods

Data were collected through semi-structured interviews and non-participant observations. Semi-structured interviews offered versatility but at the same time ensured that the topics of access, skills, training, and institutional support were completely covered. The interviews gave the interviewees the opportunity to express their experiences in their own words, allowing the researcher to investigate deeper into meanings and ask for clarification. Nonparticipant observations worked with interview data in that they gave the researchers a glimpse of the actual teaching activities, the availability of technological tools, and the regularity of technology use or non-use within the centres. Observation notes were taken to record what was seen and other situational factors.

Data analysis procedures

Data were analysed using thematic analysis as outlined by Braun and Clarke.³⁰ The analysis involved a methodical, repetitive procedure: getting familiar with the data, coming up with the first codes, developing, and refining the themes. Coding was focused on identifying the themes that emerged from the data (inductive) and those that were theoretically suggested by the andragogical framework (deductive) of the study. The researchers were reflexive when carrying out the analysis, and this was evidenced by how they continued to review their own presuppositions and the validity of their interpretations.

²⁸ J. W. Creswell and C. N. Poth, *Qualitative Inquiry and Research Design: Choosing among Five Approaches (4th Ed.)* (Sage, 2018);

Sharan B. Merriam and Elizabeth J. Tisdell, *Qualitative Research*, 4th ed. (San Francisco: Jossey-Bass, 2016).

²⁹ Robert K Yin, *Case Study Research and Applications*, vol. 6 (Sage Thousand Oaks, CA, 2018).

³⁰ V. Braun and V. Clarke, "Using Thematic Analysis in Psychology," *Qualitative Research in Psychology* 3, no. 2 (2006): 77–101.

Trustworthiness and rigour

The researchers used different strategies to ensure that the research was viewed as trustworthy and rigorous through the lenses of credibility, dependability, confirmability, and transferability.³¹ Credibility was supported through the researchers' spending enough time at the research sites and triangulating data collection methods. Dependability was achieved through the documentation of research procedures and data analysis in the form of an audit trail. The researchers kept a reflective journal and used direct quotes from the participants, thus showing the reader that the interpretations were grounded in the participants' narratives. To support transferability, the researchers provided thick descriptions of the research context.

Ethical considerations

The research obtained an ethical certificate from the Turfloop Research Ethics Committee. The researchers received the authority to carry out the research from the appropriate CET authorities as well as from the managers of the centres. The participants were informed about the objective of the study, that their participation was totally voluntary, and that they could terminate their participation at any time without incurring any penalty. Informed consent was obtained before data collection, and confidentiality and anonymity were maintained using pseudonyms and secure data storage.

PRESENTATION OF FINDINGS AND DISCUSSION

This section presents and critically discusses the study on the barriers that affect the use of technology at ACLCs in the Gert Sibande District of Mpumalanga Province. The findings are organised thematically and integrated with relevant literature and the theoretical framework of andragogy. The voices of the participants are presented in italics to highlight the lived experiences of adult learners and educators. The discussion further demonstrates how structural, institutional, pedagogical, and socio-economic factors interact to shape technology use within adult community education contexts.

Economic Barriers and Digital Exclusion

The findings revealed that poverty and financial exclusion constitute major barriers to technology use among adult learners. Most participants indicated that they could not afford digital devices, internet data, or stable connectivity due to their socio-economic circumstances. One learner explained,

"Technology is important, but food and bills come first; I cannot afford a device for learning."

Another participant stated,

"We have one phone in the house, and I share it with my children, so I cannot use it for studying whenever I want."

These findings demonstrate that technology access is strongly shaped by economic realities and household survival priorities.

The findings corroborate studies conducted in the Global South, which found that poverty and economic inequality continue to limit digital participation among adult learners.³² The findings also align with the arguments of Jan van Dijk, who maintains that digital inequality extends beyond access to devices and includes socio-economic conditions that determine opportunities for participation. In the context of ACLCs, the inability to afford technological resources undermines the capacity of adult learners to engage in self-directed and flexible learning, which are key principles of andragogy. Therefore, the findings suggest that policies promoting technology integration without addressing economic inequality may unintentionally reinforce educational exclusion.

³¹ Yvonna S. Lincoln and Egon G. Guba, "Ethics: The Failure of Positivist Science," *The Review of Higher Education* 12, no. 3 (1989): 221–40, <https://doi.org/10.1353/rhe.1989.0017>.

³² Unwin et al., "Digital Inequalities in Sub-Saharan Africa: Perspectives from the Global South"; James, "Mobile Learning in African Adult Education: Opportunities and Constraints."

Limited Digital Literacy and Skills Development

The study also found that both learners and educators possessed limited digital literacy skills, which negatively affected meaningful engagement with technology. The participants explained that they lacked confidence and adequate training to use digital devices effectively.

One learner stated,

“Even when we have a computer, I do not know how to use it properly, and no one has shown me.”

Another learner added,

“We are expected to use the tablets, but we only know basic things. It is frustrating.”

These responses reveal that access to technology alone does not automatically translate into meaningful participation in learning. These findings are consistent with Hargittai’s argument that digital skills inequalities contribute significantly to unequal educational participation.³³ Similarly, the findings support Czerniewicz et al., who observed that insufficient digital competencies among learners and educators became a major obstacle to technology-mediated learning in under-resourced educational environments.³⁴ From an andragogical perspective, limited digital literacy undermines learner autonomy, confidence, and self-directed learning, which are central principles of adult education.³⁵ Therefore, the findings indicate that digital literacy training should form a central component of adult community education programmes rather than being treated as an optional or secondary skill.

Infrastructural and Institutional Constraints

The findings additionally revealed that ACLCs experience severe infrastructural and institutional challenges that hinder technology integration. Participants reported shortages of functional computers, unstable internet connectivity, and limited technological resources within the centres.

One educator explained,

“Our computers are old, and several are broken, so we are unable to do what we want.”

Similarly, one learner stated,

“Sometimes the internet is not working, so we are not able to access the lessons online even if we know how to use the device.”

Observations carried out at the centres further confirmed the limited availability of technological equipment and inconsistent internet access.

These findings strongly support South African studies that identify infrastructural deficiencies and inadequate funding as persistent challenges within the Community Education and Training sector.³⁶ The findings also confirm the argument advanced by Baatjes and McKay that adult education centres in South Africa continue to operate under conditions of resource scarcity and institutional neglect.³⁷ While national policy frameworks advocate for technology integration and digital inclusion, the findings reveal a substantial gap between policy aspirations and implementation realities. Therefore, the findings suggest that meaningful technology integration requires sustained infrastructural investment, maintenance support, and institutional commitment.

Pedagogical and Contextual Challenges

The study further found that pedagogical and contextual factors influence how technology is utilised within ACLCs. Educators indicated that they lack professional development opportunities related to

³³ Hargittai, “The Digital Skills Gap: Implications for Access and Learning.”

³⁴ Czerniewicz et al., “A Wake-up Call: Equity, Inequality and Covid-19 Emergency Remote Teaching and Learning.”

³⁵ Knowles, Holton, and Swanson, *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*.

³⁶ McKay, “Policy–Practice Gaps in Technology Integration in South African ACLCs”; Walters and Watters, “Digital Access and Adult Learning in Rural South Africa.”

³⁷ Baatjes and McKay, “Challenges in the South African Adult Education Sector.”

technology integration, while learners reported that some digital learning materials were irrelevant to their lived experiences and educational needs. One educator stated,

“We are not taught how to incorporate technology into our lessons, so most of the time we just use the traditional way.”

A learner similarly explained,

“Sometimes the lessons on the tablet are too advanced or not relevant to our needs.”

These findings indicate that technology integration cannot be separated from the pedagogical realities of adult learning environments.

The findings align with Merriam and Bierema’s argument that adult learning is most effective when teaching approaches are learner-centred, contextually relevant, and problem-oriented.³⁸ The findings also support the position of Stephen Brookfield, who argues that adult education should recognise learners’ social realities, experiences, and contexts.³⁹ In contrast to technocratic assumptions that technology automatically improves educational outcomes, the study demonstrates that poorly contextualised digital learning may alienate learners and reduce participation. The findings therefore extend existing scholarship by showing that successful technology integration in ACLCs depends not only on access to devices but also on pedagogically meaningful and socially relevant learning experiences.

Learner Motivation, Confidence and Technology Engagement

The findings also revealed that learner motivation, confidence, and self-perception significantly shape engagement with technology. Some participants described feelings of anxiety, embarrassment, and fear when interacting with digital technologies, particularly when they lacked prior exposure or confidence. One learner explained,

“I would like to use the tablet for my studies, but when the lessons have no connection to my job or day-to-day activities, then I lose interest.”

Another participant admitted,

“It embarrasses me when I cannot do something on the computer while others can, so sometimes I do not even try.”

These responses demonstrate that emotional and psychological factors influence the willingness of adult learners to engage with digital learning. These findings resonate with the andragogical principles advanced by Malcolm Knowles, which emphasise self-concept, intrinsic motivation, and experiential learning in adult education. The findings also agree with Selwyn’s observation that emotional dimensions of digital learning are frequently overlooked within educational technology discussions.⁴⁰ Adult learners who perceive technology as intimidating or irrelevant may disengage from technology-mediated learning despite the availability of devices and internet access. Therefore, the findings suggest that supportive and confidence-building learning environments are necessary to encourage meaningful participation in digital learning.

Technology Use, Social Justice and Adult Education

Overall, the findings of this study demonstrate that barriers affecting technology use in ACLCs are interconnected and mutually reinforcing. Economic hardship, infrastructural deficiencies, limited digital literacy, weak institutional support, pedagogical limitations, and learner confidence collectively shape the experiences of adult learners and educators. The findings support the arguments of Neil

³⁸ Merriam and Bierema, *Adult Learning: Linking Theory and Practice*.

³⁹ Brookfield, *The Power of Critical Theory for Adult Learning and Teaching*.

⁴⁰ Selwyn, *Education and Technology: Key Issues and Debates*, 2016.

Selwyn and van Dijk, who maintain that technology in education often reproduces existing social inequalities when broader structural conditions are ignored.⁴¹

Through the lens of andragogy, the study demonstrates that meaningful technology integration in adult community education requires approaches that recognise adult learners' experiences, motivations, socio-economic realities, and learning contexts. The findings, therefore, contribute to scholarship on adult education and digital inequality by illustrating that technology use in ACLCs is not simply a technical issue but also a matter of social justice, equity, and institutional transformation. Unless technology initiatives are accompanied by sustained socio-economic and institutional support, the goals of empowerment, inclusion, and lifelong learning are unlikely to be realised within marginalised adult learning communities.

RECOMMENDATIONS

To address these barriers, it is recommended that government and policy stakeholders undertake targeted interventions to support technology integration in ACLCs, including the provision of functional digital devices, reliable internet access, and maintenance support. Comprehensive training programmes should be implemented for both learners and educators, focusing on practical digital literacy and pedagogically appropriate use of technology that aligns with adult learning principles. Policy frameworks must prioritise resource allocation to under-resourced centres, ensure context-sensitive curriculum integration of digital tools, and promote participatory planning that incorporates adult learners' perspectives. Furthermore, monitoring and evaluation mechanisms must be established to assess the effectiveness of technology initiatives, identify persistent gaps, and inform iterative improvements. Collectively, these measures can facilitate more equitable, meaningful, and sustainable integration of technology into adult community education, improving learner agency, access to knowledge, and socio-economic empowerment within marginalised communities.

CONCLUSION

This study has critically examined the barriers affecting the use of technology at Adult Community Learning Centres in the Gert Sibande District of Mpumalanga Province, revealing that technological integration is profoundly constrained by a combination of economic, infrastructural, pedagogical, and socio-contextual factors. Adult learners face financial limitations that restrict device ownership, limited digital literacy and training opportunities that curtail meaningful engagement, and inadequate technological resources at the centres that impede consistent use. These barriers are compounded by pedagogical and contextual misalignments, including insufficient educator capacity to integrate technology and a lack of alignment between digital tools and adult learners' needs. Through an andragogical lens, the study demonstrates that these constraints undermine the autonomy, agency, and capacity of learners for self-directed, problem-centred learning, highlighting the disjunction between policy aspirations for digital inclusion and the lived realities of adult learners. By foregrounding participant voices, the research highlights the need to situate technology initiatives within socio-economic, institutional, and pedagogical realities, providing empirically grounded insights into the structural and practical challenges that perpetuate digital exclusion in adult education.

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⁴¹ Neil Selwyn, *Education and Technology: Key Issues and Debates* (Bloomsbury Publishing, 2021); Van Dijk, *The Digital Divide*.

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