

A DOCUMENTARY ANALYSIS OF ASSISTIVE TECHNOLOGY AND ENTREPRENEURIAL SKILL DEVELOPMENT FOR LEARNERS WITH AUTISM SPECTRUM DISORDER IN CAMEROON

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Abstract

This study examined assistive technology and entrepreneurial skill development for learners with Autism spectrum disorder in Cameroon through a documentary analysis approach. Policies relating to assistive technology and entrepreneurship education for learners with ASD, analyze the extent of assistive technology integration in entrepreneurial skill development frameworks, identify implementation gaps and challenges, and propose strategies for strengthening inclusive entrepreneurship education through assistive technology. The qualitative research approach was adopted using documentary analysis design. Data was obtained from national policy documents, legal frameworks, curriculum guides, international conventions, institutional reports, scholarly articles, and inclusive education publications related to assistive technology, entrepreneurship education, and ASD and analyzed using thematic analysis. Findings revealed that, limited attention is given to entrepreneurial skill development and assistive technology integration for learners with ASD. The study concluded that assistive technology has significant potential to enhance entrepreneurial competencies, communication, vocational participation, creativity, and independent functioning among learners with ASD when effectively integrated into inclusive educational systems. The study recommended that, improving access to assistive technology and integrating entrepreneurship-oriented assistive learning approaches for learners with ASD will be beneficial.

Keywords: *Assistive technology, Entrepreneurship, Skill Development, Autism Spectrum Disorder, Document Analysis*

Résumé

Cette étude a examiné le rôle des technologies d'assistance dans le développement des compétences entrepreneuriales chez les apprenants présentant un trouble du spectre de l'autisme (TSA) au Cameroun, à travers une analyse documentaire. Elle visait à analyser les politiques relatives aux technologies d'assistance et à l'éducation entrepreneuriale destinées aux apprenants présentant un TSA, à examiner le degré d'intégration de ces technologies



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dans les dispositifs de développement des compétences entrepreneuriales, à identifier les lacunes et les défis liés à leur mise en œuvre, ainsi qu'à proposer des stratégies visant à renforcer l'éducation entrepreneuriale inclusive grâce aux technologies d'assistance. L'étude a adopté une approche qualitative fondée sur une méthode d'analyse documentaire. Les données ont été recueillies à partir de documents de politiques nationales, de cadres juridiques, de guides curriculaires, de conventions internationales, de rapports institutionnels, d'articles scientifiques et de publications relatives à l'éducation inclusive, aux technologies d'assistance, à l'entrepreneuriat et aux troubles du spectre de l'autisme. Ces données ont été analysées à l'aide d'une analyse thématique. Les résultats ont révélé qu'une attention limitée est accordée au développement des compétences entrepreneuriales et à l'intégration des technologies d'assistance chez les apprenants présentant un TSA au Cameroun. L'étude conclut que les technologies d'assistance présentent un potentiel considérable pour renforcer les compétences entrepreneuriales, la communication, la participation aux activités professionnelles, la créativité et l'autonomie fonctionnelle de ces apprenants, lorsqu'elles sont efficacement intégrées dans les systèmes éducatifs inclusifs. Elle recommande notamment l'amélioration de l'accès aux technologies d'assistance et l'intégration d'approches pédagogiques entrepreneuriales adaptées, fondées sur l'utilisation de ces technologies, afin de favoriser l'inclusion éducative, l'autonomisation et la participation socioéconomique des apprenants présentant un TSA.

Mots-clés : *Technologies d'assistance, entrepreneuriat, développement des compétences, trouble du spectre de l'autisme, analyse documentaire.*

Introduction

The twenty-first century has witnessed increasing global recognition of the importance of inclusive education, technological innovation, and entrepreneurship as critical drivers of sustainable development, social inclusion, and economic empowerment. Educational systems across the world are increasingly expected to equip learners with the knowledge, skills, and competencies necessary to participate effectively in rapidly changing economies characterized by technological advancement, innovation, and entrepreneurship (UNESCO, 2023). Consequently, entrepreneurship education has become an important component of educational reforms aimed at promoting creativity, problem-solving, self-reliance, and employability among learners.

At the same time, there has been growing international concern regarding equitable access to educational opportunities for learners with disabilities. Inclusive education has emerged as a key strategy for ensuring that all learners, regardless of their abilities or disabilities, have equal opportunities to participate, learn, and develop skills that prepare them for independent living and productive citizenship (United Nations, 2006). International frameworks such as the Salamanca Statement, the United Nations Convention on the Rights of Persons with Disabilities, and the Sustainable Development Goals emphasize the need for educational systems to provide accessible and inclusive learning environments that support the diverse needs of all learners (UNESCO, 1994; United Nations, 2015).

Among learners with disabilities, learners with autism spectrum disorder (ASD) constitute a group that often requires specialized educational support to achieve optimal

learning outcomes. This group of learners are characterized by challenges in social communication, social interaction, adaptive functioning, and behavioral flexibility, which may affect educational participation and vocational preparation (American Psychiatric Association, 2013). Although many learners with ASD possess unique strengths such as creativity, attention to detail, technological aptitude, and innovative thinking, these strengths may not be fully developed without appropriate educational interventions and support systems (Odom et al., 2018).

Assistive technology has increasingly been recognized as one of the most effective tools for supporting learners with ASD. Assistive technologies encompass a wide range of devices, software applications, communication systems, and digital tools designed to enhance functional capabilities, learning participation, communication, independence, and skill acquisition among individuals with disabilities (Dell, Newton, & Petroff, 2017). Research indicates that assistive technologies can improve communication skills, task completion, self-management, social interaction, and vocational engagement among learners with ASD, thereby creating opportunities for greater educational achievement and economic participation (Knight, McKissick, & Saunders, 2013).

In recent years, entrepreneurship education has gained increasing attention as a means of promoting economic empowerment and reducing unemployment among young people. Entrepreneurial skills such as creativity, innovation, problem-solving, communication, financial literacy, and business management are increasingly regarded as essential competencies for participation in modern economies (European Commission, 2015). For learners with ASD, entrepreneurship may offer alternative pathways to employment by providing opportunities for self-employment, flexible work arrangements, and the utilization of individual strengths and interests. Consequently, integrating assistive technology into entrepreneurship education may enhance the ability of learners with ASD to acquire entrepreneurial competencies and participate more effectively in vocational and economic activities.

It is therefore important to examine existing documentary evidence to determine the extent to which assistive technology is incorporated into entrepreneurship education and vocational development initiatives targeting learners with Autism Spectrum Disorder in Cameroon. Such an examination can provide valuable insights into existing provisions, implementation gaps, challenges, and opportunities for strengthening inclusive educational practices that support entrepreneurial empowerment among learners with ASD.

Review of Related Literature

Autism Spectrum Disorder is a neurodevelopmental condition characterized by persistent difficulties in social communication and social interaction, alongside restricted, repetitive patterns of behavior, interests, or activities. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), ASD manifests differently across individuals, leading to the use of the term “spectrum” to reflect variations in severity, functioning, communication ability, and adaptive behavior (American Psychiatric Association [APA], 2013). Learners with ASD commonly experience difficulties in verbal and non-verbal communication, social engagement, emotional

regulation, sensory processing, executive functioning, and adaptive skills, all of which may influence their educational participation and vocational development (Maenner et al., 2023). However, many learners with ASD also demonstrate strengths such as attention to detail, creativity, visual learning abilities, technological interest, and task consistency, which can be harnessed in entrepreneurial and vocational activities when appropriate support systems are available (Odom et al., 2018).

The increasing prevalence of ASD globally has drawn attention to the educational, social, and economic needs of individuals with the condition. Research suggests that many young adults with ASD experience difficulties transitioning into employment and independent adulthood due to inadequate vocational preparation and limited inclusive support services (Wei et al., 2018). Consequently, educational systems are increasingly encouraged to develop innovative approaches that promote skill acquisition, independence, and employability among learners with ASD.

In Cameroon, awareness and support services for learners with ASD remain limited despite growing recognition of inclusive education. Many schools continue to face challenges related to inadequate specialized personnel, limited teaching resources, insufficient assistive technologies, and inadequate policy implementation for learners with developmental disabilities (Ngwokabuenui, 2015). These limitations may affect opportunities for entrepreneurial and vocational development among learners with ASD.

Assistive technology refers to devices, equipment, software, systems, or services designed to improve the functional capabilities of persons with disabilities. The Individuals with Disabilities Education Act defines assistive technology as any item, product system, or equipment used to increase, maintain, or improve the functional capabilities of individuals with disabilities (IDEA, 2004). Assistive technologies range from low-tech tools such as visual schedules, picture cards, and adapted writing materials to high-tech systems including tablets, communication applications, speech-generating devices, virtual learning platforms, robotics, and digital instructional software. For learners with ASD, assistive technology can support communication, academic engagement, behavioral regulation, independent functioning, and social interaction (Dell, Newton, & Petroff, 2017).

Modern assistive technologies have become increasingly important in inclusive education because they help remove barriers to participation and learning. According to UNESCO (2023), technology-supported learning environments can improve accessibility, learner engagement, creativity, and participation for learners with disabilities. In the case of learners with ASD, assistive technology may enhance communication skills, organization, problem-solving, task completion, and adaptive behavior, which are important competencies in entrepreneurship and vocational activities. Studies have shown that digital tools such as tablets, mobile applications, video modeling, virtual simulations, and communication software can improve functional learning outcomes among learners with ASD (Knight, McKissick, & Saunders, 2013). Assistive technology may therefore provide opportunities for learners with ASD to engage meaningfully in entrepreneurial training, innovation activities, and vocational skill development.

Despite the potentials possessed by learners with ASD and the adequacy of assistive technologies, access to assistive technology in many developing countries remains inadequate. In Cameroon, challenges such as limited funding, poor technological infrastructure, inadequate teacher training, and insufficient policy implementation continue to affect the effective integration of assistive technologies in inclusive education (Tchombe, 2017). These limitations may reduce opportunities for learners with ASD to benefit from technology-supported entrepreneurial learning. Entrepreneurial skill development refers to the process of acquiring knowledge, competencies, attitudes, and practical abilities necessary for identifying opportunities, creating innovative solutions, managing resources, and establishing sustainable economic activities. Entrepreneurship education aims to promote creativity, innovation, self-reliance, problem-solving, leadership, communication, and financial management skills among learners (Hisrich, Peters, & Shepherd, 2017).

Entrepreneurial skills are increasingly considered essential for learners in the 21st century due to rising unemployment, technological advancement, and changing labor market demands. Entrepreneurship education helps learners develop initiative, adaptability, critical thinking, teamwork, and independent living skills that are important for personal and economic development (European Commission, 2015).

For learners with ASD, entrepreneurial skill development may provide alternative pathways to employment and economic participation. Many individuals with ASD encounter difficulties in securing formal employment due to communication barriers, social interaction challenges, and workplace discrimination (Hedley et al., 2018). Entrepreneurship may therefore offer opportunities for self-employment, creativity, and flexible work environments that accommodate individual strengths and needs. Entrepreneurial skill development among learners with ASD may include competencies such as:

- Communication and interpersonal skills,
- Creativity and innovation,
- Digital literacy,
- Vocational and technical skills,
- Financial management,
- Problem-solving,
- Self-management,
- Independent task performance,
- And business planning.

Assistive technology may play an important role in facilitating the acquisition of these competencies by supporting communication, organization, task completion, and participation in practical learning activities. In Cameroon, entrepreneurship education has increasingly been integrated into school curricula as a strategy for promoting self-reliance and addressing youth unemployment. However, concerns remain regarding whether learners with disabilities, especially learners with ASD, are adequately included within entrepreneurship training programs and innovation initiatives. Existing entrepreneurship frameworks may not sufficiently address the individualized learning and communication needs of learners with ASD.

Relationship between Assistive Technology and Entrepreneurial Skill

Development among Learners with ASD

The relationship between assistive technology and entrepreneurial skill development is grounded in the idea that technology can reduce barriers to learning, communication, participation, and independent functioning among learners with disabilities. Assistive technology may enhance learners' ability to acquire entrepreneurial competencies by supporting functional communication, task organization, creativity, problem-solving, and vocational engagement.

For learners with ASD, assistive technologies may facilitate participation in entrepreneurial learning activities through visual supports, communication applications, digital instructional tools, and adaptive learning environments. Technologies such as tablets, video modeling systems, virtual simulations, and speech-generating devices can improve engagement, self-expression, independent work habits, and practical skill acquisition (Bouck, Satsangi, Bartlett, & Weng, 2012).

Innovation and entrepreneurship increasingly rely on digital competence and technological engagement. Learners with ASD often show strong interest in structured technological environments, making assistive technology an important avenue for promoting vocational and entrepreneurial participation. Technology-supported entrepreneurship training may therefore help learners with ASD develop employable skills, self-confidence, creativity, and economic independence. However, the successful integration of assistive technology into entrepreneurial education depends on factors such as policy support, teacher competency, infrastructure availability, curriculum adaptation, funding, and inclusive educational practices. In many developing contexts, including Cameroon, these enabling conditions remain inadequate, thereby limiting opportunities for learners with ASD to benefit fully from technology-supported entrepreneurial education.

This study is therefore conceptualized on the understanding that assistive technology can serve as an enabling mechanism for entrepreneurial skill development among learners with ASD, provided that appropriate policies, curricular frameworks, institutional support systems, and inclusive practices are effectively implemented. Empirical studies on assistive technology, entrepreneurship education, and learners with autism spectrum disorder have increasingly gained attention globally due to the growing emphasis on inclusive education, vocational independence, and technological innovation. Existing literature demonstrates that assistive technology can significantly enhance communication, academic participation, vocational learning, independent functioning, and employability among learners with ASD. However, empirical evidence specifically linking assistive technology to entrepreneurial skill development among learners with ASD remains limited, particularly in developing countries such as Cameroon.

Knight, McKissick, and Saunders (2013) conducted a review of technology-based interventions for learners with ASD and found that digital technologies such as tablets, video modeling systems, and computer-assisted instructional tools improved learners' communication abilities, task completion, and independent learning skills. The study concluded that assistive technologies provide structured and visually supportive learning

environments that enhance participation and functional skill acquisition among learners with ASD. The findings suggest that technology-supported learning may contribute positively to vocational and entrepreneurial competencies that require organization, communication, and independent functioning.

Similarly, Odom et al. (2018) examined technology-aided interventions for adolescents with ASD and reported that assistive technology improved social communication, adaptive behavior, and vocational engagement. The researchers emphasized that learners with ASD often respond positively to structured technological environments because such environments reduce social anxiety and support predictable learning routines. The study further highlighted that technology-supported interventions could facilitate career preparation and transition planning for learners with ASD.

In another study, Bouck, Satsangi, Bartlett, and Weng (2012) investigated the role of assistive technology among students with high-incidence disabilities and found that technological tools enhanced learner participation in practical and vocational tasks. The study indicated that assistive technology supports independence, self-management, and productivity, which are essential components of entrepreneurial development. However, the researchers noted that inadequate teacher training and limited access to technological resources remained major barriers to effective implementation.

Hedley et al. (2018) conducted a systematic review on employment programs for adults with ASD and reported that vocational and technology-supported interventions significantly improved employment readiness and independent living outcomes. The study emphasized that many individuals with ASD possess strengths in structured and technology-oriented tasks, which can be harnessed through innovation and entrepreneurship programs. The researchers recommended greater integration of assistive technology within vocational and entrepreneurial training initiatives for persons with ASD.

In the area of entrepreneurship education, European Commission (2015) reports emphasized that entrepreneurial competencies such as creativity, communication, innovation, digital literacy, and problem-solving can be enhanced through technology-supported learning environments. The report further noted that entrepreneurship education should be inclusive and adaptable to diverse learner needs, including learners with developmental disabilities. Although the report did not focus specifically on ASD, it demonstrated the growing relationship between technology integration and entrepreneurial competence development.

A study conducted by Wei et al. (2018) examined participation in science, technology, engineering, and mathematics (STEM) among students with ASD and found that many learners with ASD demonstrated strong interest and competence in technology-related activities. The study suggested that technology-oriented educational pathways may create opportunities for innovation, creativity, and entrepreneurship among individuals with ASD. The researchers recommended that educational systems should develop specialized programs that combine technological support with vocational and entrepreneurial development.

In Africa, empirical studies on assistive technology and ASD remain limited. However, available studies suggest persistent challenges in accessibility and implementation of technology-supported inclusive education. For instance, Tchombe (2017) examined inclusive education practices in Cameroon and identified inadequate assistive technology resources, limited teacher preparedness, insufficient funding, and weak policy implementation as major barriers affecting learners with disabilities. The study revealed that many inclusive schools lacked technological facilities necessary for supporting individualized learning and vocational development.

Ngwokabuenui (2015) also reported that inclusive education implementation in Cameroon continues to face infrastructural, pedagogical, and policy-related challenges that limit educational participation of learners with disabilities. The study highlighted insufficient integration of adaptive technologies within instructional practices and noted that vocational preparation for learners with disabilities remains poorly developed. Although the study did not specifically address entrepreneurship for learners with ASD, it revealed important gaps in inclusive educational practices relevant to entrepreneurial skill development.

Furthermore, UNESCO (2023) emphasized that technology can enhance inclusion, participation, creativity, and lifelong learning opportunities for learners with disabilities when effectively implemented. The report indicated that digital technologies and assistive devices can support vocational learning and independent functioning among persons with developmental disabilities. However, the report also warned that many low-income countries continue to experience technological inequalities that restrict access to assistive learning tools.

Despite the growing body of international research on assistive technology and ASD, limited empirical attention has been given to entrepreneurial skill development among learners with ASD within the Cameroonian context. Most studies conducted in Cameroon focus primarily on access to inclusive education, teacher attitudes, communication difficulties, infrastructural barriers, and policy implementation, with little emphasis on technology-supported entrepreneurship education for learners with ASD. In addition, there appears to be limited documentary evidence examining the extent to which national policies, curricular frameworks, and institutional guidelines in Cameroon integrate assistive technology into entrepreneurial training for learners with ASD. This gap creates uncertainty regarding how learners with ASD are prepared for innovation, vocational participation, economic independence, and self-reliance within inclusive educational systems.

Statement of the problem

The increasing recognition of the importance of inclusive education, innovation, and entrepreneurship in promoting independent living, economic participation, and social inclusion among persons with disabilities (UNESCO, 2023), has led to entrepreneurship education being regarded as a critical means of equipping learners with practical, vocational, and self-employment skills necessary for functioning effectively in modern economies. Also, assistive technology has emerged as a vital tool for enhancing

communication, learning, participation, and adaptive functioning among learners with disabilities, including those with autism spectrum disorder (ASD) (Dell, Newton, & Petroff, 2017). Technologies such as speech-generating devices, visual support systems, mobile applications, tablets, adaptive software, and digital learning platforms have demonstrated considerable potential in supporting learners with ASD to participate more effectively in educational and vocational activities (Knight, McKissick, & Saunders, 2013).

Autism Spectrum Disorder is characterized by persistent challenges in social communication, social interaction, and adaptive functioning, often accompanied by restricted and repetitive patterns of behavior (American Psychiatric Association, 2013). These characteristics may affect learners' participation in conventional entrepreneurship and vocational education programs by limiting opportunities for communication, collaboration, problem-solving, innovation, and independent task performance. Consequently, learners with ASD may experience difficulties acquiring entrepreneurial competencies necessary for self-employment and economic independence (Hedley et al., 2018). Research has shown that appropriate educational supports, particularly assistive technologies, can enhance communication skills, independence, creativity, and vocational participation among learners with ASD (Odom et al., 2018).

International literature increasingly highlights assistive technology as a key mechanism for reducing barriers to learning and employment among individuals with ASD. Studies indicate that assistive technologies improve learner engagement, support independent functioning, facilitate skill acquisition, and enhance participation in vocational and entrepreneurial activities (Knight et al., 2013; UNESCO, 2023). Consequently, many countries have begun integrating assistive technology into entrepreneurship education and vocational training as part of broader inclusive education reforms aimed at promoting employability and lifelong learning for persons with disabilities.

In Cameroon, efforts have been made to promote inclusive education through national legislation and international commitments, including the Salamanca Statement (UNESCO, 1994), the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006), Sustainable Development Goal 4 on inclusive and equitable quality education (United Nations, 2015), and Law No. 2010/002 relating to the protection and welfare of persons with disabilities. These frameworks advocate equal educational opportunities, accessibility, participation, and skill development for learners with disabilities. Furthermore, entrepreneurship education has increasingly been incorporated into educational reforms as a strategy for addressing youth unemployment and promoting self-reliance among graduates (Tchombe, 2017).

Despite these policy commitments, concerns remain regarding the extent to which learners with ASD are adequately considered within entrepreneurship education and assistive technology implementation frameworks in Cameroon. Existing educational initiatives tend to focus primarily on academic inclusion, while limited attention is given to technology-supported entrepreneurial skill development for learners with ASD (Ngwokabuenui, 2015). Furthermore, although assistive technology is widely recognized internationally as an essential support mechanism for learners with developmental disabilities, evidence from policy documents, curriculum frameworks, teacher training

programs, and institutional guidelines in Cameroon remains fragmented and insufficiently documented. Also, there appears to be limited integration of assistive technology within entrepreneurship curricula, vocational training programs, and inclusive education implementation strategies targeting learners with ASD. There is inadequate documentary evidence synthesizing how national policies, educational frameworks, curricular documents, and scholarly literature address assistive technology and entrepreneurial skill development for learners with ASD in Cameroon. It is against this background that this study seeks to conduct a documentary analysis of assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon.

General Objective

To examine the role of assistive technology in entrepreneurial skill development for learners with autism spectrum disorder in Cameroon through a documentary analysis of policies, curriculum frameworks, and scholarly literature.

Specific Objectives

1. To analyze policy and curriculum provisions relating to assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon.
2. To identify opportunities and challenges associated with the use of assistive technology for entrepreneurial skill development among learners with autism spectrum disorder.
3. To examine gaps in policy, curriculum, and practice regarding assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon.

Research Questions

1. How do existing policies and curriculum frameworks address assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon?
2. What opportunities and challenges are associated with the use of assistive technology for entrepreneurial skill development among learners with autism spectrum disorder?
3. What gaps exist in policy, curriculum, and practice regarding assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon?

Research Methodology

This study adopts a qualitative research approach using a documentary analysis design. The documentary analysis design is suitable because the study focuses on existing written evidence rather than direct field interaction with participants. Data was collected from national policy and legal documents, international frameworks and reports and academic and scholarly literature using a purposive sampling technique in selecting these documents.

Discussion of Findings

Objective One: Policy and Curriculum Provisions Relating to Assistive Technology and Entrepreneurial Skill Development for Learners with Autism Spectrum Disorder in Cameroon

The first objective sought to analyze policy and curriculum provisions relating to assistive technology and entrepreneurial skill development for learners with autism spectrum disorder (ASD) in Cameroon. The documentary analysis revealed that Cameroon has established several legislative and policy frameworks aimed at promoting inclusive education and the rights of persons with disabilities. Notable among these is Law No. 2010/002 relating to the protection and welfare of persons with disabilities, the Education Sector Strategy, and Cameroon's commitment to international frameworks such as the Salamanca Statement and the United Nations Convention on the Rights of Persons with Disabilities.

The analysis further revealed that while these policies advocate educational access, equity, participation, and inclusion, there is limited explicit reference to assistive technology as a mechanism for promoting entrepreneurial skill development among learners with ASD. Similarly, entrepreneurship education is increasingly incorporated into educational curricula as a strategy for promoting self-reliance and employment creation; however, curriculum documents provide little guidance on adapting entrepreneurship instruction to meet the unique needs of learners with ASD.

This finding is consistent with UNESCO (2023), which reported that many countries have adopted inclusive education policies without providing detailed frameworks for implementing assistive technology within educational systems. Similarly, Tchombe (2017) observed that although Cameroon has embraced inclusive education principles, practical implementation remains constrained by limited resources and inadequate policy operationalization.

The findings may be explained through Vygotsky's Sociocultural Theory (1978), which emphasizes the importance of mediational tools in facilitating learning. Assistive technologies serve as important mediational tools that can support communication, problem-solving, and independent learning among learners with ASD. Therefore, the absence of clear policy and curriculum provisions regarding assistive technology may limit opportunities for entrepreneurial competence development among these learners. The findings suggest that while policy foundations exist, there is a need for more explicit policy directives and curriculum frameworks that integrate assistive technology into entrepreneurship education for learners with ASD.

Objective Two: Opportunities and Challenges Associated with the Use of Assistive Technology for Entrepreneurial Skill Development among Learners with Autism Spectrum Disorder

The second objective sought to identify opportunities and challenges associated with the use of assistive technology for entrepreneurial skill development among learners with ASD. The findings revealed several opportunities arising from the integration of assistive technology into entrepreneurship education.

The reviewed literature indicates that assistive technologies enhance communication, independent functioning, creativity, digital literacy, task management, problem-solving, and vocational participation among learners with ASD. Technologies such as communication applications, visual schedules, tablets, speech-generating devices, and digital learning platforms create supportive learning environments that enable learners with ASD to participate more effectively in entrepreneurial learning activities.

The findings support those of Knight, McKissick, and Saunders (2013), who found that technology-based interventions significantly improved communication and academic engagement among learners with ASD. Similarly, Odom et al. (2018) reported that assistive technologies enhance adaptive behavior, vocational readiness, and independent functioning among adolescents with ASD.

The findings also revealed that entrepreneurship education provides opportunities for self-reliance, innovation, creativity, and economic empowerment. For many individuals with ASD, entrepreneurship may offer a viable alternative to traditional employment pathways because it allows flexibility and capitalizes on individual strengths such as attention to detail, technological aptitude, and systematic thinking (Lorenz & Heinitz, 2014).

Despite these opportunities, the analysis identified several challenges limiting effective utilization of assistive technology. These include inadequate funding, limited access to assistive devices, poor technological infrastructure, insufficient teacher training, limited awareness of ASD-specific needs, and weak institutional support mechanisms.

These findings align with Ngwokabuenui (2015), who reported that inadequate educational resources and insufficient teacher preparedness continue to hinder effective implementation of inclusive education in Cameroon. Similarly, UNESCO (2023) noted that access to assistive technology remains a major challenge in many low-income and middle-income countries. The Technology Acceptance Model (Davis, 1989) provides a useful explanation for these findings. According to the model, technology adoption depends on perceived usefulness and ease of use. In situations where teachers lack training and schools lack technological infrastructure; the utilization of assistive technologies is likely to remain limited despite their potential benefits. The findings therefore suggest that although assistive technology offers significant opportunities for entrepreneurial skill development among learners with ASD, these opportunities cannot be fully realized without addressing existing structural and institutional barriers.

Objective Three: Gaps in Policy, Curriculum, and Practice Regarding Assistive Technology and Entrepreneurial Skill Development for Learners with Autism Spectrum Disorder in Cameroon

The third objective sought to examine gaps in policy, curriculum, and practice regarding assistive technology and entrepreneurial skill development for learners with ASD in Cameroon. The documentary analysis revealed significant gaps across all three areas. At the policy level, the findings revealed limited ASD-specific provisions concerning entrepreneurship education and assistive technology implementation. Although disability inclusion is generally addressed, policy documents rarely provide practical

guidelines for supporting entrepreneurial development among learners with ASD through assistive technology.

At the curriculum level, the findings revealed that entrepreneurship education frameworks are largely designed for the general learner population and provide limited accommodation for learners with developmental disabilities. The reviewed curriculum documents rarely address adaptive instructional strategies, technology-supported entrepreneurship learning, or individualized entrepreneurial competence development for learners with ASD. At the practice level, the findings indicated inadequate implementation of inclusive education policies, limited availability of assistive technologies, insufficient teacher competence in technology integration, and weak collaboration among stakeholders involved in disability support and vocational development.

These findings support the observations of Hedley et al. (2018), who reported that individuals with ASD often encounter significant barriers to vocational preparation due to limited specialized supports. Similarly, UNESCO (2020) emphasized that the existence of inclusive policies does not necessarily guarantee meaningful participation unless implementation mechanisms are effectively established.

The findings also support Gardner's Theory of Multiple Intelligences (1983), which emphasizes the importance of recognizing diverse learner strengths and providing individualized learning opportunities. The absence of adapted entrepreneurship curricula and assistive technology support systems may prevent learners with ASD from fully utilizing their strengths and talents. The identified gaps suggest that substantial efforts are required to bridge the disconnect between policy intentions and educational practice. Greater attention should be given to curriculum adaptation, teacher capacity building, assistive technology provision, and the development of entrepreneurship programs that respond to the unique characteristics of learners with ASD.

Conclusively, the findings demonstrate that Cameroon has established a foundation for inclusive education through policy commitments and educational reforms. However, assistive technology and entrepreneurial skill development remain insufficiently integrated within policies, curricula, and educational practices affecting learners with ASD. While assistive technology presents significant opportunities for communication, innovation, creativity, vocational participation, and economic empowerment, numerous challenges and implementation gaps continue to limit its effectiveness. Addressing these gaps will be essential for promoting entrepreneurial competence, self-reliance, and meaningful inclusion of learners with ASD within the Cameroonian educational system.

Implications of the Study

The findings of this study have significant implications for educational policy formulation, curriculum development, instructional practices, teacher professional development, institutional support systems, and the socioeconomic empowerment of learners with autism spectrum disorder (ASD) in Cameroon. The documentary analysis revealed that although Cameroon has established legislative and policy frameworks promoting inclusive education, the integration of assistive technology into entrepreneurial skill development for learners with ASD remains insufficiently addressed. These findings

suggest that achieving meaningful educational inclusion requires moving beyond general policy commitments towards deliberate strategies that promote technological accessibility, practical skill acquisition, vocational independence, and economic participation among learners with ASD.

Implications for Educational Policy and Inclusive Education

The findings imply that existing inclusive education policies in Cameroon require greater attention to the specific educational, technological, and vocational needs of learners with ASD. Although national legislation and international commitments advocate equal educational opportunities for persons with disabilities, the limited explicit provisions for assistive technology-supported entrepreneurship education suggest a gap between policy intentions and implementation. Consequently, educational policymakers should consider developing operational guidelines that explicitly incorporate assistive technology into entrepreneurship education and vocational training programmes for learners with ASD. Such guidelines should address resource allocation, accessibility standards, teacher preparation, curriculum adaptation, and institutional accountability. Strengthening these provisions would contribute to transforming inclusive education from a predominantly access-oriented approach into one that also promotes functional independence, employability, and economic empowerment.

Implications for Curriculum Development and Instructional Practices

The findings have important implications for curriculum planners and educational practitioners responsible for designing and implementing entrepreneurship education programmes. The limited accommodation of learners with ASD within existing entrepreneurship curricula suggests the need for more flexible, differentiated, and technology-supported instructional approaches. Curriculum developers should consider integrating assistive technologies such as visual schedules, communication applications, video modelling, digital simulations, and adaptive learning platforms into entrepreneurial learning activities. These technologies could facilitate the development of communication, creativity, problem-solving, financial literacy, digital competence, and independent task performance. Furthermore, entrepreneurship curricula should recognise individual differences among learners with ASD by providing opportunities for practical, experiential, and personalised learning. Such adaptations would help ensure that entrepreneurial education responds to learners' abilities, interests, communication preferences, and support needs rather than relying exclusively on conventional instructional methods.

Implications for Teacher Education and Professional Development

The study also highlights the importance of teacher competence in the successful integration of assistive technology into entrepreneurial skill development. The identified challenges of inadequate teacher preparation, limited technological knowledge, and insufficient awareness of ASD-specific learning needs suggest that teacher education institutions should strengthen training in inclusive pedagogy, assistive technology applications, and disability-responsive vocational instruction. Both pre-service and in-service teacher education programmes should equip educators with practical competencies in selecting, adapting, and applying appropriate assistive technologies to support entrepreneurial learning. Continuous professional development, collaborative

learning, and specialised training would enhance teachers' confidence and capacity to create accessible learning environments that promote meaningful participation and independent skill acquisition among learners with ASD.

Implications for Institutional Support and Stakeholder Collaboration

The findings further imply that effective assistive technology integration requires coordinated institutional support and collaboration among relevant stakeholders. Educational institutions, government agencies, parents, disability support organisations, technology providers, and entrepreneurship development institutions have complementary roles in creating enabling environments for learners with ASD. Schools and vocational training centres should establish appropriate support mechanisms for identifying learners' technological needs, providing accessible learning resources, and facilitating practical entrepreneurial experiences. Partnerships with private organisations and community-based institutions could also support resource mobilisation, technological innovation, mentorship, and vocational transition opportunities. Such collaborative arrangements would be particularly relevant in Cameroon, where financial limitations and inadequate technological infrastructure continue to constrain inclusive educational practices.

Implications for Entrepreneurial Development and Economic Empowerment

The findings suggest that assistive technology-supported entrepreneurship education could contribute to improving the long-term vocational prospects and economic participation of learners with ASD. By facilitating communication, task organisation, creativity, digital literacy, and independent functioning, assistive technologies may create opportunities for learners to develop competencies relevant to self-employment and other productive economic activities. This implication is particularly important within the Cameroonian context, where access to formal employment can be challenging for persons with disabilities. Nevertheless, entrepreneurial development should be understood as one of several possible pathways towards economic participation rather than a universal alternative to formal employment. Educational programmes should therefore provide learners with ASD with opportunities to explore their interests, develop practical competencies, and make informed decisions about appropriate vocational and entrepreneurial pathways.

Implications for Future Research

The study provides a foundation for further investigation into the relationship between assistive technology and entrepreneurial skill development among learners with ASD in Cameroon. Given its documentary analysis design, the findings primarily reflect existing policy provisions, curriculum frameworks, and scholarly evidence rather than direct observations of learners' entrepreneurial outcomes. Future studies should therefore employ empirical research designs to investigate the availability, accessibility, utilisation, and effectiveness of assistive technologies in educational and vocational settings. Experimental, quasi-experimental, and mixed-methods studies could examine how particular assistive technologies influence entrepreneurial competencies, vocational readiness, and independent functioning among learners with ASD. Further research should also explore the experiences of teachers, parents, learners, school administrators,

and vocational training providers to generate context-specific evidence capable of informing inclusive education policies and interventions.

General Conclusion

This study examined assistive technology and entrepreneurial skill development for learners with autism spectrum disorder in Cameroon through a qualitative documentary analysis of educational policies, curriculum frameworks, international conventions, institutional reports, and relevant scholarly literature. Specifically, the study analysed existing policy and curriculum provisions, identified opportunities and challenges associated with assistive technology integration, and examined gaps in policy, curriculum, and educational practice. The findings revealed that although Cameroon has established a foundation for inclusive education through legislative commitments and educational reforms, insufficient attention has been given to the systematic integration of assistive technology into entrepreneurial skill development programmes specifically designed for learners with ASD.

The study established that assistive technology has considerable potential to facilitate the acquisition of competencies relevant to entrepreneurship, including communication, creativity, problem-solving, digital literacy, task management, vocational participation, and independent functioning. Technologies such as communication applications, visual support systems, tablets, video modelling, and adaptive digital learning platforms can provide accessible and structured learning opportunities that respond to the diverse educational needs of learners with ASD. However, the documentary evidence also revealed persistent challenges associated with inadequate funding, limited technological infrastructure, insufficient teacher preparation, weak institutional support, and the absence of sufficiently adapted entrepreneurship curricula. These challenges suggest that the potential benefits of assistive technology cannot be fully realised without appropriate educational, institutional, and policy support.

Furthermore, the study demonstrated that meaningful inclusion should extend beyond access to conventional academic instruction to encompass practical competencies that prepare learners with ASD for vocational participation, self-reliance, and productive engagement in society. The development of entrepreneurial skills through appropriate assistive technologies represents a promising approach to recognising individual strengths, reducing learning barriers, and expanding opportunities for economic participation. Nevertheless, achieving these outcomes requires deliberate curriculum reforms, investment in accessible technologies, continuous teacher professional development, and stronger collaboration among educational institutions, policymakers, families, and other relevant stakeholders.

In conclusion, the study underscores the need for Cameroon to adopt a more comprehensive and disability-responsive approach to entrepreneurship education by explicitly integrating assistive technology into policies, curricula, and instructional practices for learners with ASD. While the documentary findings demonstrate the potential of such integration, further empirical investigation is necessary to establish its effectiveness within Cameroonian educational settings. Ultimately, strengthening assistive technology-supported entrepreneurial education could contribute to a more

inclusive, equitable, and empowering educational system in which learners with ASD are provided with meaningful opportunities to develop their abilities, achieve greater independence, and participate productively in national socioeconomic development.

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