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Systematic Review of the Role of Open and Distance Education in Achieving the Sustainable Development Goals (SDGs)

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Abstract. Despite extensive research that recognizes the potential of open and distance learning (ODL) to enhance inclusivity and access to quality education for all, as reported in previous studies, there is a dearth of research that synthesizes the role of ODL as a mechanism for achieving the Sustainable Development Goals (SDGs). A systematic review of the role of ODL in achieving the SDGs is needed to ascertain the contributory role of ODL in the transition from the Millennium Development Goals (MDGs) to the SDGs. Considering this, the objective of this systematic review was to synthesize the role of ODL in achieving the SDGs. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework was used to incorporate the papers that were taken into consideration for this review. We conducted a review search for studies published between 2014 and 2024 in PubMed, PsychINFO, Academic Resources Information Center, SAGE, CINAHL, and Google Scholar. This study assessed 18 papers in total that satisfied the inclusion criteria. Thematic analysis of the included studies in this systematic review yielded findings indicating that the ODL method is instrumental in achieving lifelong learning, ensuring educational equity and quality, expanding access to education, and enhancing the globalization of education. It is recommended that more institutions get involved in this endeavor and that all levels of government work together to devise policies and regulations that will improve the acceptance and quality of ODL programs.

Keywords: affordable learning; MDGs; open and distance learning; quality education; SDGs

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1. Introduction

In the year 2000, the Millennium Development Goals (MDGs) were announced. The majority of United Nations members implemented the required measures to achieve the goals, especially in the area of accessible and high-quality education. However, by the end of 2015, a number of issues had prevented the goals from being fully achieved. This compelled the United Nations to create a new set of objectives known as the Sustainable Development Goals (SDGs), including education for all as a crucial target to be accomplished by 2030 (United Nations, 2020).

Education is an instrument that can be used to guarantee change and provide a pathway for every individual to achieve a decent livelihood (United Nations, 2020). Thus, the fourth of the seventeen SDGs aims to achieve universal access to high-quality, equitable education and opportunities for lifelong learning by 2030. The United Nations further emphasized the need to put education at the forefront of development with the creation of the 17 agendas or SDGs to be achieved by the year 2030, consisting of 169 targets for all participating countries. The SDGs, also known as the Global Goals, were established to sustain the MDGs after they expired in September 2015 (Akintolu & Uleanya, 2021).

According to Kanwar (2017), achieving SDG 4 would be a tremendous success, but it would take fresh ideas and creative thinking to overcome the numerous obstacles in the road. There is still a huge gap between the supply and demand of education, posing one of the biggest obstacles to SDG 4. Because of this, achieving SDG 4 would necessitate more work in addition to the current system, where there are insufficient institutions to accommodate the current number of eligible applicants. Therefore, to relieve the overcrowded traditional universities and to open access to university education for students who fulfill admission requirements, there is a necessity to establish an open and distance learning (ODL) education system (Jimoh, 2013). In other words, there is a greater need for ODL options in pursuit of university education, especially when there are few enrollment spaces in traditional universities.

The concept of an ODL education system focuses on open access to education. Pityana (2019) described ODL as a type of education delivery model that promises to address the persistent problem of limited access to higher education. It has the potential to make higher education more accessible and encourage more people to enroll in it. Similarly, ODL (UNISA, 2018) is a type of learning model that endeavors to bridge the time, geographical, economic, social, educational, and communication distance between academics and the students, the institutions and the students, the learning materials and the students, and among the students themselves.

Osikomaiya (2020) asserted that ODL is not a new model of the education system, as it continues to play a critical role in disseminating educational content and reaching out to different students across the globe, most of whom were previously denied opportunities to higher education due to one reason or another. According to Jegede (2016), openness and access disregard age, prior academic achievement,

and other variables that erroneously constitute obstacles in the way of education as a lifetime endeavor. To put it differently, ODL makes it possible for a considerable number of eligible individuals to pursue their education at their convenience and from any place. It also contributes to the provision of high-quality education to a large number of students, which assists in realizing the SDGs in education to a considerable extent (Elfert, 2019). Pityana (2019) further emphasized the benefit of ODL by pointing out that it is more cost-effective compared to the traditional contact mode of universities. Both de Moura et al. (2020) and Paechter et al. (2020) reported a favorable correlation between learning achievements and flexibility in selecting learning strategies and information sharing with peers.

An ODL program can be a handy and effective way to attain SDG 4 in many ways. Online courses are opened and offered through online platforms, which is an important tool for achieving Goal 4 of the SDGs (Patru & Venkataraman, 2016). ODL can also play a crucial role in reducing the “digital divide” and strengthening the “democratization of education” (Anshu & Awadhiya, 2017). Furthermore, as noted by Fozdar and Kumar (2007), ODL offers access to quality education in a cost-effective way, irrespective of students’ location. Furthermore, ODL is essential to achieving SDG 4. A well-established, properly regulated ODL, supported by technology, can increase access, equity, quality, and relevance, and narrow the gap between what is taught at tertiary education institutions and what is demanded by economies and societies (Gokool-Ramdoo & Rumjaun, 2016; United Nations, 2020).

Long-term behavioral patterns are influenced by quality education, which also, in a larger sense, shapes the direction of human civilization as a whole. Advancement of SDG 4, in other words, is crucial to achieving the other SDGs (Narayan, 2017). Thus, improved education has a positive influence on so many other areas. In short, quality education has the power to make the world a better place and to achieve the SDGs. According to Maile (2016), ODL institutions account for 65% of learner enrolment globally, and it addresses one of the quests to provide citizens a second chance to access quality education. Maile (2016) further stated that the ODL institutions globally accommodate millions of students. As at 2021, an estimated five million students in Africa were enrolled in distance education institutions, with the forecast that the number would keep growing exponentially in the next few years (Akintolu & Uleanya, 2021). As an academic field, ODL is multifaceted and transcends many disciplines. It is the heart of all distance learning institutions.

Shava et al. (2021) noted that ODL is a powerful tool for achieving SDG 4 by promoting inclusive, equitable, and quality education for all. It enhances access to education, reduces inequality, improves teacher training, and supports lifelong learning and skill development. According to Adedoyin and Soykan (2023), through the flexibility and scalability of ODL, it is possible to address educational disparities, promote sustainable learning models, and contribute to global efforts toward achieving the SDGs.

Despite extensive research that recognizes the potential of ODL to enhance inclusiveness and access to quality education for all, as reported in previous studies (Gokool-Ramdoos & Rumjaun, 2016; MacKinnon et al., 2016; Uvalić-Trumbić & Daniel, 2016), there is a dearth of research that synthesizes the role of ODL as a mechanism for achieving the SDGs (Adebagbo & Adewoye, 2024; Afrouz & Crisp, 2021). Therefore, a systematic review of the role of ODL in achieving the SDGs is needed to ascertain the contributory role of ODL in the transition from the MDGs to the SDGs (Wals & Benavot, 2017). Considering this, the objective of this systematic review was to synthesize the role of ODL in achieving the SDGs. Accordingly, the research question for this study was:

- *What are the roles of ODL in achieving the Sustainable Development Goals?*

2. Methods

In this section, the methodological procedures followed in this study are presented. The major topics are the selection framework, information and data sources, inclusion and exclusion criteria, and the coding method. Lastly, the analysis and synthesis of the data are discussed.

2.1 Selection Framework

This study utilized a systematic literature review. According to Boland et al. (2017), the goal of a systematic literature review is to locate, evaluate, and compile the best available data while closely adhering to the rules of scientific methodology. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2009 framework was utilized to combine the publications that were taken into consideration in the investigation (Moher et al., 2009). A rapid search was done of the empirical literature on the roles of ODL in achieving the SDGs, published between 2014 and 2024. The literature search was conducted to locate any research that discussed how ODL enhances achievement of the SDGs.

2.2 Information and Data Sources

In order to access peer-reviewed articles, a literature search was carried out using several search engines. The databases searched were Academic Search Complete, Africa Wide Information, PsycINFO, CINAHL, Academic Resources Information Center, and SAGE. These databases cover psychology and related disciplines, including behavioral and social sciences (Percy et al., 2015). Key phrases and concepts were combined to create the search codes, which included terms such as “distance learning”, “open and distance learning + quality education”, “affordable learning”, and “SDGs and MDGs”. Figure 1 presents a diagrammatic summary of the selection procedure. Two research assistants carefully examined each article, reviewing the abstracts and titles in order to choose which articles would be included in a full-text review in accordance with the inclusion criteria. This helped to ensure the reliability of the data that were sourced.

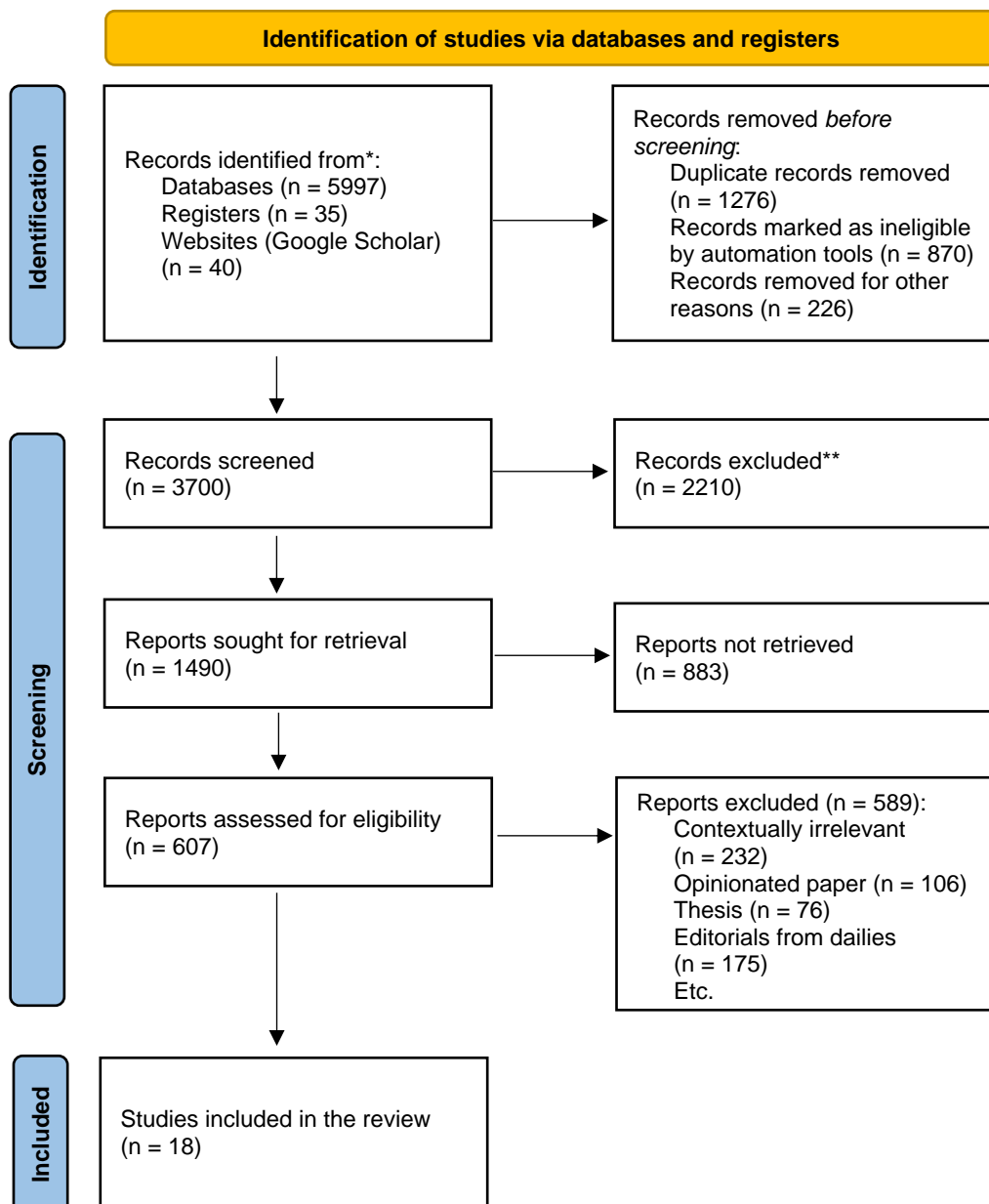


Figure 1: Summary of selection process

Searches across six databases, registries, and websites yielded a total of 6072 articles, as Figure 1 illustrates. We removed 2372 articles as a result of being duplicates or ineligibility. As a result, just 3700 items remained for screening. Still, 607 articles qualified for a full-text review. We performed additional filtering to eliminate publications that were not appropriate. Consequently, there were 587 articles left. Eighteen articles were included for examination after we further scrutinized the publications in light of the specified inclusion and exclusion criteria. After closely examining the papers in accordance with the inclusion and exclusion criteria, we chose the eighteen publications for review.

2.3 Inclusion and Exclusion Criteria

Once a viable study was identified, the complete article was examined to determine whether it met the inclusion requirements. Only research that met each of the following inclusion requirements was considered: (a) the study investigated the impact of ODL on sustainable development; (b) the study was published between 2014 and 2024; and (c) the study was published in the English language. The following categories of papers were excluded from consideration: (a) those that do not address the role of ODL and (b) those that were not published in peer-reviewed publications. To guarantee the reliability of the data sourced, two research assistants examined each article, reviewing the abstracts and titles. Based on this information, they determined which publications would be included in a full-text review, as specified in the inclusion criteria.

2.4 Coding Method

After identifying studies that match the inclusion criteria, the next stage involved using a coding system to conduct comparisons. It is important for the coding strategy to be both universally applicable and sufficiently specialized to identify different types of research (Özcan, 2008). Therefore, this study's coding process comprised three primary sections and eight questions in all. The first segment was named "Study identity". In this section, there were five questions. The number of studies, the names of the authors, the year and place of the study, and the publisher's name were all included to determine the study identity. "Study content" was the second section and comprised two questions (Özcan, 2008). The third and last component was titled "Study data". This part included descriptive statistical data such as sample size and mean values.

2.5 Data Analysis and Synthesis

Eighteen studies, of which most were quantitative in nature, were determined to be appropriate for the review based on the final search results. Clarke (2007) argued that in cases where the methodology technique is so heterogeneous, a systematic review does not need to combine study results to provide an average estimate. Consequently, the data in this study were synthesized through the method of narrative synthesis utilizing thematic analysis (Ritchie et al., 2014). Thematic data analysis, according to Percy et al. (2015), is a broad method for finding, analyzing, and reporting patterns in data.

We used thematic analysis to synthesize the data in six steps. First, we read and reread the material to become familiar with it, simultaneously also creating codes. Second, using the study research question as a guide, we created preliminary codes from the data. Coding is the methodical classification process and identification of meaningful data related to the main research objectives (Braun & Clarke, 2013). To determine what was and was not related to the topics, the third step involved searching for themes. Any mention of how ODL enhances the SDGs was included. This gave us the groundwork to start analyzing possible codes. While constructing the themes, we explained the significance of each theme. In the fourth step, we looked for information to help us answer the research questions. This gave room to develop the themes further and review them as they changed. Some of the themes that had first emerged throughout this process gave way to one another, while other themes were condensed into smaller parts. In the

fifth step, we assigned each theme a name and defined it, along with the data that were being collected.

To minimize bias and promote credibility, as recommended by Saldaña (2015), we collaborated throughout the process, reviewing and commenting on each other's work. After finishing the thematic analysis on half of the articles individually, we exchanged papers to confirm each other's conclusions and gathered to talk about any areas of disagreement or ambiguity. Table 1 below provides a profile of the 18 papers that were reviewed for this systematic review study.

Table 1: Profile of studies included in the review

Author/s	Research design	Participants and sample size	Focus of the study	Reported roles of ODL in achieving the SDGs
1. Ukaoha et al. (2019)	Quantitative survey	N = 120	Reaching sustainable development objectives through ODL	<ul style="list-style-type: none"> – Enables fair and equal access to education for all-encompassing national development. – Offers education to everyone in an effort to lessen or completely eradicate poverty and illiteracy. – Helps reduce capacity limitations in the areas of rural development, human resources, and the economy. – Offers a way to improve the higher education industry so that schools can adapt to the demands, changes, and advancements of the modern world.
2. Mathew and Iloanya (2022)	Web-based surveys	N = 34	Benefits and challenges of ODL in Africa	<ul style="list-style-type: none"> – Enables learning at own pace. – Increases access to education. – Promotes higher-order thinking skills. – Facilitates access to the latest information and content sharing.
3. Aderinoye and Ojokheta (2014)	Qualitative interviews	N = 76	Using ODL as a tool for sustainable development	<ul style="list-style-type: none"> – Promotes quality education. – Provides relevant skills for decent work. – Enables universal youth literacy. – Provides citizenship education for sustainable development.
4. Olajire et al. (2021)	Descriptive survey	N = 4568	The contribution of ODL to sustainable development	<ul style="list-style-type: none"> – Lowers the cost of education. – Relieves congestion at traditional universities. – Enables more individuals to work and learn. – Opens up access to university education.
5. van den Berg (2020)	Quantitative survey	N = 153	Achieving the Sustainable	<ul style="list-style-type: none"> – Provides access to affordable education.

			Development Goals through the use of ODL	<ul style="list-style-type: none"> - Reduces educational inequality. - Offers teacher training and professional development. - Grants privilege for people to acquire education. - Offers opportunities for affordable education at all levels.
6. Kusmaryono et al. (2021)	Content analysis	N = 43	Effectiveness of distance learning: problems, opportunities, challenges, and predictions	<ul style="list-style-type: none"> - Helps achieve “education for all” and increases the accessibility and affordability of education. - Enhances capacity building. - Promotes flexible learning methods. - Enables a collaborative, interactive, and effective learning environment.
7. Mutoka (2023)	Qualitative research approach	N = 72	Provision of higher education through the ODL mode	<ul style="list-style-type: none"> - Supports students to become independent - Allows access to and interaction with tutors - Enables self-directed learning
8. Azhari and Fajri (2021)	Mixed method	N = 127	Benefits of ODL	<ul style="list-style-type: none"> - Helps in providing affordable education. - Offers learning flexibility in space and time. - Provides a flexible learning mode. - Supports skill development and employment.
9. Arul (2016)	Quantitative survey	N = 220	ODL: benefits and challenges	<ul style="list-style-type: none"> - Enables learning in own space. - Improves access to education. - Offers global learning opportunity.
10. Osikomaiya (2020)	Descriptive survey	N = 245	Influence of remote and open learning on in-service teachers’ professional development for sustainable development	<ul style="list-style-type: none"> - Is cheap, accessible, and affordable. - Encourages learning at own pace. - Offers excellent opportunities to study with new technologies.
11. Sridharan et al. (2018)	Mixed method	N = 17	The potential for an online learning environment to help achieve sustainable development objectives	<ul style="list-style-type: none"> - Empowers individuals through education. - Assists in developing national capacities.
12. Shava et al. (2021)	Quantitative survey	N = 92	ODL as a sustainable	<ul style="list-style-type: none"> - Provides access to education and training resources.

			development mechanism	<ul style="list-style-type: none"> - Is valuable in providing quality, inclusive education. - Provides access to quality education in a cost-effective way. - Is an avenue to acquire citizenship education for sustainable development.
13. Vyas-Doorgapersad (2021)	Quantitative descriptive	N = 75	ODL for sustainable development in India	<ul style="list-style-type: none"> - Extends access and improves the quality of education. - Is flexible and learner-centric. - Offers faster dissemination of technological research to the grassroots level.
14. Mnyanyi and Mbwette (2019)	Qualitative research approach	N = 30	ODL's contribution to development	<ul style="list-style-type: none"> - Makes it possible for a large number of previously unreached individuals to benefit from opportunities for education and training. - Provides flexible and cost-effective vocational education. - Helps in creating a knowledge-based society.
15. Adedoyin and Soykan (2023)	Quantitative questionnaire	N = 243	ODL: challenges and opportunities	<ul style="list-style-type: none"> - Affords learners the flexibility to remotely access educational materials. - Enables learners to engage in educational activities at their own pace and convenience. - Increases access to learning and training opportunities.
16. Bunjongsiri and Pradidthaprecha (2022)	Qualitative/ interview	N = 20	SDGs and sustainability teaching in distance learning	<ul style="list-style-type: none"> - Provides opportunity for personalized, flexible, and asynchronous learning. - Promotes social mobility. - Helps citizens to compete in a worldwide economy, and thus has a multiplier effect across the education system.
17. Azeiteiro et al. (2014)	Semi-structured qualitative interviews	N = 25	E-learning in higher education for sustainable development education	<ul style="list-style-type: none"> - Provides easy access to learning. - Enables academic institutions to connect with underserved populations and new global markets for education.
18. Atolagbe et al. (2017)	Quantitative/ questionnaire	N = 155	Toward achieving quality distance education: challenges and opportunities	<ul style="list-style-type: none"> - Enables democratization of education. - Promotes availability, accessibility of learning opportunities. - Facilitates globalization. - Encourages self-directed and student-centered learning.

3. Findings

Four primary themes emerged following the conclusion of the thematic analysis of the included studies regarding the role of ODL in achieving the SDGs. The themes are 1) achieving lifelong learning, 2) ensuring educational equity and quality, 3) expanding access to education, and 4) enhancing the globalization of education.

3.1 Theme 1: Lifelong Learning

The vast majority of studies reviewed highlight the role of ODL in providing an alternative education approach or opportunity for lifelong learning mainly due to its nature of flexibility in education and learning (Osikomaiya, 2020; Shava et al., 2021). Lifelong learning is the continuous, voluntary pursuit of knowledge for personal or professional development. This approach enhances flexibility, adaptability, critical thinking, and creativity, allowing individuals to stay relevant in an ever-changing world. Embracing lifelong learning fosters a growth mindset, encouraging curiosity and resilience throughout life.

Findings from most of the reviewed studies reveal that ODL helps to promote lifelong learning. In other words, ODL is a significant contributor to lifelong learning for all. Consequently, lifelong learning plays a crucial role in achieving the SDGs by empowering individuals with skills and knowledge that will enable them to contribute to the development of their communities. It also fosters innovations, which encourages creativity and problem-solving, essential for addressing complex global challenges. By integrating lifelong learning into policies and practices, societies can advance toward achieving the SDGs effectively.

3.2 Theme 2: Educational Equity and Quality

Many of the reviewed studies demonstrate that ODL embeds values of equity through increasing access to education for students of different identities and across different geographical and social locations. By “taking the distance out of education”, ODL enhances inclusive and equitable quality education. Inclusive and equitable quality education refers to an educational system that ensures all individuals, regardless of their background, abilities, or circumstances, have access to high-quality learning opportunities. This is reported as a significant role of ODL in achieving the SDGs (Azhari & Fajri, 2021; Mathew & Iloanya, 2022; Ukaoha et al., 2019).

Most studies also reveal that ODL provides an opportunity for educational equity, which is a component of the SDGs. By addressing educational equity, ODL makes a significant contribution toward achieving the SDGs and fostering a more sustainable and equitable future. Ensuring that individuals receive high-quality education, regardless of their background, could improve their learning outcomes and prepare them for future challenges. ODL also supports the professional development of teachers by offering online and flexible training programs. This helps to improve the quality of teaching, contributing to SDG 4.c, which emphasizes increasing the supply of qualified teachers through training.

3.3 Theme 3: Access to Education

The reviewed studies have shown that ODL contributes significantly to the achievement of the SDGs in education by enabling a large number of qualified candidates to access education at their convenience and from any location. It has also helped to provide high-quality education to a large number of students. The concept of an ODL education system focuses on open access to education, removing barriers for marginalized groups, including those with disabilities, low-income families, and ethnic minorities.

ODL is reported as probably the only sustainable system for enhancing seamless access to education and which ensures that everyone can participate in development (Adedoyin & Soykan, 2023; Atolagbe et al., 2017; Vyas-Doorgapersad, 2021). By promoting inclusiveness and accessible education, ODL ensures that inequalities are reduced. ODL is founded on the ideas that education ought to be easily accessible, affordable, and pertinent to the experiences of the underprivileged and offered whenever it is most convenient for them, all of which contribute to raising people's standard of living. Most of the reviewed studies emphasized that ODL is an organized educational activity based on the use of teaching materials in which study constraints are minimized in terms of access or time and place. By leveraging technology and innovative pedagogies, ODL significantly contributes to the overall progress toward achieving the SDGs, ensuring that education remains accessible and relevant in a rapidly changing world.

3.4 Theme 4: Globalization of Education

Reports from the studies reviewed indicate that ODL promotes the globalization of education in several ways. Findings from most of the studies reveal how ODL helps to break geographical barriers, allowing students from diverse backgrounds to access quality education regardless of their location (Bunjongsiri & Pradidthaprecha, 2022; Mnyanyi & Mbwette, 2019; Olajire et al., 2021). Furthermore, the studies indicate that ODL fosters a multicultural learning environment, where students can interact with peers and instructors from around the world, enhancing their understanding of global issues. By reducing the need for physical infrastructures and travel, ODL methods lower the cost of education, making it affordable.

Lastly, ODL leverages technology to provide innovative learning tools and platforms, making education more engaging and interactive for a global audience. By leveraging this aspect, ODL has significantly contributed to a more interconnected and inclusive global education landscape. Overall, most of the reviewed studies reported that ODL has the potential to enhance educational opportunities in order to meet the demands of globalization for sustainable development.

The globalization of education increases access to quality education by enabling the exchange of knowledge, resources, and innovative teaching practices worldwide. International collaboration between educational institutions helps to create a more equitable education system, particularly for marginalized communities, helping to reduce disparities in learning outcomes. The

globalization of education, which is one of the focuses of ODL, serves as a powerful tool for achieving the SDGs by spreading knowledge, skills, and resources across borders. It enables collaborative efforts to address global challenges, encourages the sharing of best practices, and creates a more interconnected world where sustainable development can thrive.

4. Discussion

Several studies in the literature reviewed, conducted across different geographical locations, have reported the potential role of ODL to enhance inclusivity and access to quality education for all (Adedoyin & Soykan, 2023; Kusmaryono et al., 2021; Mathew & Iloanya, 2022). In line with this, this study synthesized the role of ODL as a mechanism for achieving the SDGs. The findings of this systematic review indicate that the ODL mode is instrumental in achieving lifelong learning, ensuring educational equity and quality, expanding access to education, and enhancing the globalization of education.

After thematic analysis of the 18 unique papers reviewed in this study, we found that ODL serves as a mechanism for achieving the SDGs due to the nature of its flexibility and accessibility. Some evidence indicates that ODL has the potential to meet lifelong education needs. By ensuring inclusive and equitable access to high-quality education and lifelong learning for all, the ODL ideology helps in the achievement of the SDGs. Since ODL is flexible, learners can access resources at any time and can often proceed at their own pace, regardless of where they are in the world. These were reported as perceived benefits or roles of ODL in achieving the SDGs (Bunjongsiri & Pradidthaprecha, 2022; Osikomaiya, 2020; Shava et al., 2021).

In line with the findings of this study, Marope (2017) reported that literacy needs to be seen as a tool for the achievement of SDG 4. Marope (2017) further stated that this can be achieved when quality education is enhanced. ODL is recognized as one of the means of achieving this. One of the main ways that ODL contributes to achievement of the SDGs, as revealed from the findings of this study, is by expanding access to education for an increasing number of people, especially those from disadvantaged groups, and making sure that education and training programs are relevant to the changing needs and demands of society.

There is a need for global partnership to support the effective integration of ODL into the existing education systems in all nations, especially developing ones. Although it is unrealistic to anticipate that ODL will completely replace conventional teaching and learning, some disadvantages of the traditional lecture mode have put ODL in an advantaged position. These disadvantages include the requirement that students be present at a certain time, the inability to accommodate the needs of students from diverse backgrounds, and the lack of control over the learning environment and pace.

5. Conclusion

This literature review explored the potential role of ODL in achieving the SDGs. The study concludes that in the information age of advanced learning, ODL is regarded as a crucial medium for accomplishing the SDGs. Further evidence

points to the critical role that ODL plays in achieving SDG 4, which is centered on guaranteeing inclusive and equitable quality education and encouraging opportunities for lifelong learning for everyone. The findings further reveal that ODL helps overcome barriers to education by using technology, flexibility, and accessibility to reach a broader population.

ODL expands access to education, especially for marginalized groups, including women, people in rural areas, people with disabilities, and those who cannot attend traditional schools. This contributes to SDG 4's goal of ensuring that all learners have access to quality education. Furthermore, the findings indicate that ODL promotes lifelong learning by allowing individuals to learn at any stage of life. Whether for personal development, career advancement, or skill acquisition, ODL facilitates continuous education, which is essential for achieving SDG 4.7 (promoting sustainable development through education). Through the use of multimedia, online resources, and interactive platforms, ODL provides high-quality educational content. This helps in meeting the SDG of quality education by offering learners flexible, engaging, and relevant learning experiences. In addition, ODL provides education to remote and underserved communities that may not have access to traditional schooling. This contributes to SDG 4.5, which aims to eliminate disparities in education by providing equal access to learning opportunities for all, regardless of gender, location, or socio-economic background. ODL reduces the costs associated with traditional education, such as transportation, housing, and physical infrastructure. By making education more affordable, ODL helps to close the gap between those who can and cannot afford education, thereby supporting the SDG of equal access to education.

Jegade (2016) noted that nations with limited resources can leverage ODL to accelerate progress toward achieving SDG 4. By embracing ODL, education can be made more accessible, affordable, and scalable through the use of open educational resources such as video lectures and digital learning materials. To enhance this process, it is necessary to initiate a public-private partnership. According to Adebago and Adewoye (2024), partnerships with tech companies, educational non-profit organizations, and international agencies can support the development of digital infrastructure, course content, and technical expertise, minimizing costs and creating sustainable ODL solutions.

6. Recommendations

The outcome of this review suggests that ODL has the potential to contribute to building a robust educational system capable of delivering quality education toward achieving the SDGs. In light of these findings, it is recommended that more academic institutions should support this endeavor and that government at all levels should be involved in developing useful policies and practical regulations that will support raising the standard and acceptability of ODL. Accordingly, ODL institutions should have sufficient funding to address the various issues that face ODL.

Advocating for legislation that prioritizes ODL programs is a crucial role that should be adopted by policymakers. As a result, policymakers should create

adaptable legal frameworks that take into account the dynamic nature of ODL. National policies that support the accreditation of ODL programs can help ensure quality and create legitimacy for ODL certifications. Government can also provide subsidies, grants, or incentives to develop and expand ODL initiatives.

Investing in mobile and low-bandwidth solutions can make ODL accessible to remote areas where Internet connectivity is limited. In line with this, mobile-based learning platforms, radio, and offline digital content should be provided for students who lack stable Internet. By investing in these strategies, ODL can be used to increase access to education, improve learning outcomes, and make progress toward achieving SDG 4 on a larger scale.

7. Limitations

This research has some limitations. First, a literature search was conducted using electronic databases in an attempt to locate all pertinent papers on the role of ODL in achieving the SDGs. However, because of the nature of the search procedure, some studies from other databases might have been omitted even though they fit the inclusion requirements. Notwithstanding, the few studies omitted would not have significantly affected the findings of this present study due to the vast number of research found in the Web of Science literature search. To overcome this possible limitation, we also performed a quick post-hoc search on Google Scholar, which showed that there are relatively few new sources available. Lastly, this review only included published papers from the period 2014 to 2024. This could limit the generalizability of the findings of this study.

8. Suggestion for Further Studies

Most of the studies reviewed in this paper adopted a quantitative research approach. Future studies should consider including more studies that used a qualitative or mixed-method approach, as this could allow more exploration of the study phenomenon. Research of this nature can only be considered exhaustive when studies that derive their findings from various research approaches are included in the review.

9. Declaration of Conflicting Interests

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