

Critical Literacy and Sustainable Development, Appraising Nigerian Education's Status

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Abstract

Critical literacy, described as a combination of the skills needed for independent lifelong learning, is an imperative for the attainment of any of the seventeen Sustainable Development Goals of the United Nations. It develops the individuals to be sensitive to the need to sustain their environments with their acquired knowledge and thereby result in sustainable corporate development. This study, taking the form of critical engagement of secondary data presented in extant literature, delineates the concepts of critical literacy, futures literacy, and sustainable development. It also interrogates the indices of sustainable development and critical literacy to assess Nigerian government and people's readiness to fully integrate the principle of critical literacy for sustainable development into the curricula of all levels of the country's education. Appropriate practical steps to be taken by various stakeholders towards education for sustainable development through critical literacy are recommended.

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Introduction

A necessary offshoot of the United Nations' Millennium Development Goals is packaged as Sustainable Development Goals. This arose from the realisation that development cannot afford to be static. It is also an established fact that literacy is synonymous with knowledge and critical literacy is high level functional knowledge. The extent to which a community is peopled by highly literate members will determine its development level as well as its sustainability. Therefore, whether deliberately or inadvertently, directly or tangentially, any discussion about sustainable development touches on critical literacy. This current discourse thus engages issues surrounding Nigeria's hope of attaining sustainable development with particular focus on the critical literacy provision angle.

Critical Literacy as a Sine Qua non for Sustainable Development

The Brazilian educator Paulo Freire's critical literacy has been a subject of many scholarly endeavours for decades. Critical literacy is also known as "ecopedagogical literacy" (Misiaszek, 2019, p. 695; 2020, p. 747; Kopnina, 2020, p.280) because it emphasises the connection that exists between a learner on one side and the local-global context of learning as well as the use of what is learnt (Anderson, 2019). It is underpinned by critical theories and Freirean popular education movements in Latin America. Critical literacy (CT) is a convention of reasoning abilities, including self-regulation and metacognitive processes and inventive problem solving (Castelló et. al, 2019). Critical literacy is described as a subset of critical pedagogy that encourages learners to challenge what is presented in textbooks or orally by their teachers after critically assessing the submissions contained (Caldwell, 2022).

With adequate emphasis on critical literacy, science and technology education will raise people who go beyond basic knowledge of science to probe into the connection that must exist between science and the society (Castelló et. al, 2019). This would help in domesticating and indigenising scientific innovations rather than borrowing them to destroy or be rendered non-conformable to the peculiarities of particular African societies. Nigerians cannot be described as responsible consumers of technology (Olatunji, 2015). However, critical literacy can elevate Nigerians to the status of responsible consumers (McKay, 2018).

Critical literacy and digital literacy are inter-twined and inter-dependent. Both are important requirements for lifelong and self-regulated learning, which engenders sustainable development (Anthonysamy, Koo & Hew, 2020). People that have critical literacy skills can continue to learn successfully with little or no assistance from a physically present teacher. Hanemann's (2019) observation is that the failure of many societies to treat critical literacy as a lifelong concern portends a gloomy future for their sustainable development.

Critically literate people are needed to tackle the growing challenges of gender inequality, displacement of populations, illiteracy, economic inequity, need for new qualifications and skills (English & Carlsen, 2019), climate change, energy, food security, biodiversity, peace, tolerance, and others (Khushik & Diemer, 2018). It prepares citizens for positive social activism, political commitment and engagement, ethical conducts, cyber activism, and socially helpful qualities (Lozano-Díaz & Fernández-Prados, 2020). A lot of social ills like gender violence, racial

discrimination, religious bigotry, inequality and oppression will be significantly reduced if all people that have gone to school develop their critical thinking abilities (Dill & Zambrana, 2020).

There is the concept of critical energy literacy (Mehmood, Lin, Zhang, Lee & Ren, 2022). The role of constant energy provision in sustainable development is so enormous that both government and the governed need to be well educated as regards critical energy literacy (Wojuola & Alant, 2019; Umoh & Bande, 2021). It is the way to educate the populace about energy production, conservation and improvement. It is common knowledge that inadequate knowledge about and low level of energy production, transmission, and conservation is among the factors keeping Nigeria at the lowest rung of development in all areas of life (Wojuola & Alant, 2019).

Sustainable development is that which takes care of the present as well as the future. Sustainable development is multi-dimensional, intra-generational and inter-generational, touching on socio-economic, cultural, geographical, political spheres and others. Therefore, the sustainable development indices (SDIs) have to be comprehensive, reflecting all the dimensions in space and time (Kwatra, Kumar & Sharma, 2020). What is termed “futures literacy” aimed at sustainable development should thus be very much suited to its pursuit.

Critical thinking is an integral component of futures literacy (Häggström & Schmidt, 2021). Kopnina (2020) describes the challenges of sustainable development as “escalating” and asserts that only “an education for the future” is a good match for the challenges. Education for sustainable development is, however, an inadequately researched area of human endeavour and more statistical and critical evidence is needed to have it integrated into the general framework of education (Khushik & Diemer, 2018).

None of the seventeen sustainable development goals can be satisfactorily attained without literacy (McKay, 2018). For example, water literacy is important for sustainable environmental development (Iranpour, Taghipour & Sarvarinejad, 2021). Nordic education emphasises the concept of “critical thinking” above “critical literacy” (Veum, Layne, Kumpulainen & Vivitsou, 2021). Anderson (2019) observes a strong connection between critical literacy and global competence.

There is a widespread acknowledgement of the interconnectedness of critical literacy, media literacy, and political literacy (Anderson, 2019). The relationship between critical literacy and media literacy that enables citizens to make appropriate use of information from media sources has just been recognised recently (Anderson, 2019). It is people who have, through critical literacy,

developed critical thinking ability that can accommodate divergent perspectives to an issue and thereby contribute to the establishment of true democratic culture (Caldwell, 2022). Critical thinking and creative thinking are among the factors considered relevant to environmental awareness, which is an important component of the requirements for sustainable development (Amran, Perkasa, Satriawan, Jasin & Irwansyah, 2019). Critical thinking and creative thinking are among the factors considered relevant to environmental awareness, which is an important component of the requirements for sustainable development (Amran, Perkasa, Satriawan, Jasin & Irwansyah, 2019).

Indices of Provisions for Critical Literacy Development in Nigerian Education System

The 2030 Sustainable Development Goals are being religiously pursued by advanced economies while it is doubtful if some countries being euphemistically referred to as developing are ready to strive to apprehend the goals by the set time. For example, Nigerian libraries, as significant organs for the realisation of the goals, are dwarfed by the multiple problems of inadequate funding, insufficient staffing, paucity of facilities, poor infrastructure, non-chalance of policy makers, and other ills (Abata-Ebire, Adebawale & Ojokuku, 2018). Electricity is another crucial need for the attainment of the sustainable development goals but Nigeria is far from displaying adequate seriousness about generating, transmitting and distributing electricity despite abundant required natural resources (Yetano Roche, Verolme, Agbaegbu, Binnington, Fishedick & Oladipo, 2020). A study by Otekunrin, Momoh, Ayinde and Otekunrin (2019) ranks Nigeria 43rd of the 52 African countries with regard to actualisation of the SDGs.

Commencing the investigation of a country's readiness for sustainable development through critical literacy from its classrooms is an appropriate step. If a classroom is dominated by textbooks, students' potentials for reflective thinking, problem solving, democratic values, independent as well as corporate decision making and other social skills are hindered (Caldwell, 2022). This, however, is a common spectacle in Nigerian schools at all levels (Ali, Ghani & Ali, 2010; Edoho, Asuquo Inyang & Esuong, 2018).

Irrespective of the field in which children may have interest as future careers, they must be immersed in activities and materials that promote critical thinking right from pre-elementary education level. In a study by Okunuga, Awofala and Osarenren (2020) on 500 secondary school science students in Lagos State of Nigeria, statistically significant positive relationship between the

students' critical thinking ability and achievement in mathematics was recorded. Initial teacher education for pre-service teachers being prepared to teach at that level must thus equip the teachers for the task (Lozano-Díaz & Fernández-Prados, 2020; Caldwell, 2022). It is teachers who have been adequately trained to serve "more like a whistle-blower, artist and rebel hero" rather than mere conduits of ready-made knowledge from the ancient times that can help children develop the skills of "critical questioning" and critical thinking (Häggström & Schmidt, 2020, pp.1732 &1732). It is noteworthy that sustainability education can be built into materials for mathematics teaching though this is yet to be achieved in many cases (Vásquez, García-Alonso, Seckel & Alsina, 2021).

Many world countries are yet to achieve commendable implementation of the "Do it yourself" (DIY), "Do it with others" (DIWO) and "bring your own device" (BYOD) strategies that can foster critical literacy in science subjects (Castelló, et. al, 2019). It is instructive that this being the case with science subjects, the situation with liberal arts subjects that are generally but erroneously considered abstract must be worse. Misiaszek (2020) thus sees integration of ecopedagogy, described as transformative teaching, into all pedagogies as an imperative for truly sustainable developments.

In order to actualise the teaching of critical literacy at all levels of education, it is imperative to make it an integral part of higher education because that is where the workforce to propagate it is developed (Misiaszek, 2019; Goodsett, 2020). Without appropriate pedagogical methods at the tertiary level of education, the attainment of sustainable development would remain elusive (García-Rico, Martínez-Muñoz, Santos-Pastor & Chiva-Bartoll, 2021). Helping medical students to develop critical literacy will empower them to eliminate cognitive biases with their attendant disasters when they graduate into professional practice (Royce, Hayes & Schwartzstein, 2019). Their level of diagnostic accuracy will be proportional to their level of critical analytical ability. Findings from an experiment carried out by Bi, Zhao, Yang and Wang (2019) on Medical Oncology students of Bengbu Medical College underscore the necessity of aiming at critical literacy as a facilitative factor of mastery of learning contents in fields other than the liberal arts. Perhaps a significant response to this crucial need is that components of humanities and social sciences are being embedded into medical education, especially in Western nations (Sharma, 2019).

The term “critical literacy” is said to be rooted in Finnish and Norwegian curriculum documents (Veum, Layne, Kumpulainen & Vivitsou, 2021). It is then pertinent to investigate if critical literacy is emphasised in any curriculum content in Nigeria, at what level and to what extent. Without adequate conscious efforts backed by solid policies based on well researched principles to promote critical literacy, a country will remain behind others as far as development is concerned.

Expertise in the use and teaching of critical literacy is advocated for both pre-service and in-service teachers (Wessel-Powell & Bentley, 2022). This is not an impossibility because local scholars in the English-speaking Caribbean islands and Dutch Isles commendably blend critical literacy with other approaches to deconstruct language policies and instructions (Byfield, 2021). Sustainable development literacy requirements are attested to be obvious in the interdisciplinary study programmes and the curriculum of tertiary education in Slovakia (Tkáčová, Pavlíková, Tvrdoň & Jenisová, 2021).

Critical futures literacy cannot be achieved without engaging students in active sensory-based learning activities (Serin, 2018; Häggström & Schmidt, 2021). Any employed teaching strategies should raise students’ curiosity, challenge them and motivate them to ask questions, scaffolding in socio-constructivist contexts (Sasson, Yehuda & Malkinson, 2018). A teaching approach termed “Thinking Together” by Mercer, Hennessy and Warwick (2019) is one of the surest ways to make students learn critical thinking, listening and speaking while making meaningful contributions to a critical discourse. And this can be facilitated with technology. It has, however, been observed that most teachers of literacies do much more of telling than the type of teaching that gets students engaged. This problem is not limited to Nigeria. According to Sikhakhane Govender and Maphalala (2020), many South African teachers, too, are guilty of sticking to old-fashioned didactic pedagogy.

A lot of theoretical as well as empirical studies have proved that critical thinking skills are elicited when appropriate pedagogic strategies are deployed. After a two-year pretest-posttest quasi experimental study carried out by Sasson, Yehuda and Malkinson (2018) on 72 students (9th and 10th graders), the class taught through a project-based learning, constructivist approach recorded significantly higher order thinking skills than the one taught with the traditional approach despite pronounced similarity in pretest performance scores. Whether a country equips its teachers at the

preservice and in-service stages with enough resources for required innovative teaching skills is the big question.

It is instructive that one of the findings from a study carried out by Din (2020) is that rote learning is a strong impediment to the development of critical literacy in Pakistani undergraduates. Oderinu, Adegbulugbe, Orenuga, and Butali. (2020), recognising the need for critical thinking and the potentials of innovative teaching as its facilitator, carried out a study on 72 dental undergraduates. The class taught with discussion, group activities and problem solving strategies made significantly higher improvement in intellectual simulation and other tasks than the one taught with the traditional method. In an experimental study by Ugwu (2019), the students taught reading comprehension through Student Teams-Achievement Divisions (STAD) and Think-Pair-Share (TPS) had significantly higher scores than their counterparts in the control group. A combination of sophisticated instructional materials and innovative teaching strategies has been found to significantly improve the critical thinking abilities of nomadic children, a population with various disadvantages including defective parental background, unhelpful peer influence and inconsistent dwellings (Pantito, 2020; Koşar, 2021). Unfortunately, most teachers of literacy-related subjects in Nigeria most rarely employ these types of engaging strategies (Danner & Musa, 2019).

When making provisions for the inclusion of critical literacy elements in a country's education system, it will be laudable to apply the principle of inclusion (Kusimo & Chidozie, 2019). Even the so-called disabled citizens must be helped to acquire critical literacy skills (Ferrell, 2021). When no section of the society is rendered unproductive, sustainable development is facilitated. Unfortunately, Nigeria performs woefully with regard to provisions for inclusive education though a decree supporting inclusive education in the country had been promulgated as far back as 1993 (Sambo & Bwoi, 2015).

To inculcate the spirit of critical literacy in learners through the reading of historical books, teachers must encourage more than mere textual reading that produces mere mythologies (Fateh, 2020). All conceivable questions about all the contexts of each book should be addressed thoroughly and discussed extensively. It is, however, widely reported that most teachers of historical books in Nigerian schools merely tell their students historical accounts from books and render the latter dormant recipients of information (Adesote & Fatoki, 2013; Kabombwe, Machila

& Sikayomya, 2020). The students are thereby denied the opportunity to ask and attempt to answer critical questions about the recorded history.

The 21st Century teacher must be focused on facilitating rather than transmitting knowledge, thus helping the learners to construct new knowledge from practical experience (Pande & Bharathi, 2020). They must not be so fixated on predetermined learning outcomes to the detriment of the students' opportunity to develop the spirit of critical thinking and thereby discovering new insights. Problem-based learning environments are to be provided to enhance students' critical thinking skills (Ismail, Harun, Zakaria & Salleh, 2018). As observed by Erikson and Erikson (2019), a teacher's obsession with pre-stated learning outcomes poses the risk of establishing a ceiling that limits students' educational ambitions. For a teacher to be an effective promoter of critical thinking and critical literacy, they must not be afraid of students challenging their views because it is expected that two people who think critically about an issue may not necessarily arrive at the same conclusion. This is one of the dangers of critical literacy identified by Erikson and Erikson (2019). But it is logical to see it as a positive danger because it promotes true learning.

Online information literacy would empower learners to critically dissect issues and make correct deductions from presented verbal and written texts (Goodsett, 2020). There are phenomena such as information overload, misinformation and disinformation arising from the proliferation of the social media and other new media facilities and very easy access to them. There is need to get all citizens immune against the deformation that could result from wrong information. Online information literacy contents are, however, not yet known to be included in school curricula in Nigeria, especially up to the end of secondary school level. University libraries in Nigeria offer courses in information literacy (Baro & Zuokemefa, 2011) but most Nigerian universities are yet to consolidate the contents of their information literacy curricula (Anunobi & Ukwoma, 2016). What happens below that level of education is not organised, either. People just consume every piece of information presented online, many times to their own hurt or other people's destruction, thereby inhibiting sustainable development. As students hone their critical literacy ability, they become more efficient communicators, leaders, team workers as well as people better fit for significant contributions to sustainable development consequent upon more acute cross-national and cross-cultural awareness (Din, 2020).

In developed countries, technologies are now being produced to help students master higher order thinking skills (HOTS) that are essential requirements for contributing the national and global development (Ismail, Harun, Zakaria & Salleh, 2018). In an experiment carried out by Ismail, Harun, Zakaria and Salleh (2018) on selected Form 2 students in a Malaysian secondary school, the findings indicated that the app used had a significant positive effect on the students' critical thinking with $p = 0.000$, $t(35) = 15.072$, $\alpha < 0.05$ between the pre-test score (mean = 7.20, $SD = 3.791$) and the post-test score ($M = 29.97$, $SD = 7.578$).

Appropriate strategies for evaluating teaching-learning effectiveness, whether formative or summative, are integral components of entire pedagogic packages. They are not an appendage to teaching and learning processes. The Nigerian government, therefore, needs to give adequate attention to the ways in which all educational endeavours aimed at inculcating critical literacy in citizens will be evaluated. The pertinent question of whether critical literacy can be assessed is the first to be addressed.

Critical thinking skills can be assessed but with highly innovative evaluative systems managed by equally highly innovative teachers (Sasson, Yehuda, & Malkinson, 2018). Effective test models and materials for testing thinking skills in simulated and real-world contexts have been developed (Shavelson, Zlatkin-Troitschanskaia, Beck, Schmidt & Marino, 2019). Some research efforts have, however, indicted many Nigerian teachers of poor educational evaluation skills (Olutola, Daramola & Sheu, 2016; Ojo, Ajayi & Olusola, 2018). Worse still, the government's attention to education financing and research is abysmally poor (Bello, Othman & Shariffuddin, 2017; Ogunode & Christian, 2021). If this problem persists, much needed direction will be elusive.

Among the banes of converting teachers of other school subjects into facilitators of thinking skills is the misconception that every teacher must be an expert in only a narrow field (Giroux, 2018). Additionally, teacher education institutions in Nigeria are faced with curricular inadequacies, overcrowding of lecture halls and students' hostel accommodations, paucity of necessary resources and deficient learning support as well as a number of inimical non-academic forces (Humphreys, Dunne, Durrani, Sankey & Kaibo, 2020). Only language teachers, especially English Language teachers, are thus seen as saddled with the responsibility of helping students to master literacy skills in Nigerian schools.

Teacher education programmes should thus aim at developing every beneficiary in every field to become a "transformative intellectual" that will include the development of a critical

thinker in every learner in addition to a sound specialist knowledge base (Giroux, 2018, p.183). Sasson, Yehuda and Malkinson (2018), however, have identified a wide gap between teacher education levels and the actual pedagogic practices of teachers. This is an indictment on the various teacher education institutions.

Sasson, Yehuda and Malkinson (2018) also identify inadequate classroom time as one of the factors militating against teachers that may wish to deploy their acquired innovative pedagogic strategies when discharging their duties. The supremacy accorded subject syllabi is one of the causes of the sense of inadequacy of classroom time because teachers see themselves as racing against the syllabi that must be covered at all cost, not minding whether the contents are actually mastered or not. There is thus insufficient time for the depth required for critical consideration of topics.

Disproportionate teacher-pupil, teacher-student, lecturer-student ratios in elementary, secondary and post-secondary educational institutions are a terrible disincentive at every level (Attah & Adebayo, 2018). Critical literacy requires low teacher-learner ratios for stimulating intercourse of ideas. However, most Nigerian teachers are lamenting under the avoidable burden of enervating workload. Basic reading skills are not easy to teach in such situations, talk more of critical reading that requires a lot of teacher-learner and learner-learner interactions to develop.

A primary class with as many as 160 pupils and extremely few textbooks is both an appalling sight and overwhelming challenge to any teacher, no matter how courageous and skilled. Teaching reading effectively to a class like this, as found by Adamu, Tsigas and Zuilkowsk (2022) in a Kano State northern Nigerian elementary school, is a near-impossibility. With most Nigerian classrooms across levels being overcrowded, it means the country is not ready to provide any conducive atmosphere for teaching critical literacy because it will be impossible to teach and test the learners adequately.

As found by OA and Osarenren (2020) from a study carried out on 500 senior secondary school science students in Lagos State of Nigeria, there is a strong positive correlation between critical thinking ability and highly scientific reasoning. There is a strong positive relationship between critical reading ability and critical thinking ability (Ugwu, 2019; Din, 2020). Critical reading is much deeper, more mentally tasking and much more rewarding than ordinary reading (Din, 2020). Likewise, critical literacy is far higher than basic literacy in many respects.

Helping second/foreign language learners to develop critical literacy ability is one of the most crucial purposes of language teaching and learning endeavours in the 21st Century, especially

in the face of the information overload and deliberate as well as inadvertent misinformation engendered by the proliferation of social media platforms (Din, 2020; Javanmard, Shafiee Sarvestani, Mohammadi & Jahani, 2022). Critical literacy is needed to empower its beneficiary to assess information on the vital qualities of objectivity, consistency, integrity and utility (Din, 2020).

The fact that many English Language teachers in Nigeria are not specialists in reading, however, renders them incompetent in teaching that crucial aspect of language studies (Ugwu, 2019). Teachers have to first internalise useful skills. Then they can determine what pedagogic strategies and materials could produce the best results in inculcating the skills in particular sets of learners. Where teachers are found to be inefficient readers and poor teachers of reading, they cannot be expected to adequately teach critical reading.

As can be deduced from one of the submissions by Erikson and Erikson (2019), it is paradoxical to conceive the idea of making critical literacy an expected learning outcome because the learning outcomes model of education is self-limiting while critical literacy is about unlimited freedom of thoughts. Some desired outcomes of education, especially higher education, would not submit themselves to the categories of performative and measurable learning outcomes. Teachers who can effectively combine features from all these seemingly mutually exclusive realities are in high demand.

It is noteworthy that critical literacy is not only about reading; it spans all the four major language skills and their application to daily living. Therefore, the skill of writing should also be given adequate attention when making efforts to help people to inculcate critical literacy. A study by Aika (2020), however, shows that most Nigerian teachers saddled with the responsibility of teaching writing exhibit very low attitude and self-efficacy to this aspect of their duties.

Conclusion

The critical literacy level of the people in a country is a strong determinant of their readiness for sustainable development. Critical literacy, because of its multi-directional impacts, is a necessary ingredient for sustainable development. It is thus logical to conclude that any country that lags behind in the area of raising critically literate citizens will be left behind in matters of sustainable development. Therefore, Nigeria must be committed to providing avenues for her citizens to develop critical literacy.

There is, however, overwhelming evidence to the contrary in the country. The teaching of literacy is still being viewed as an exclusive of language teachers who are not specialists in reading, listening, speaking, and writing. Most classrooms, from the elementary to the tertiary levels, are overcrowded. Innovative pedagogies and instructional materials that facilitate acquisition of critical thinking skills in other countries are non-existent in the country. The current study has, therefore, examined the grey areas to which Nigeria needs to pay more attention in order to enhance the citizens' critical literacy.

Recommendations

1. The government must ensure that every classroom is appropriately sized for intensive teacher-learner as well as learner-learner interactions that will get the learners constantly engaged.
2. The Ministry of Education should deliberately incorporate necessary pedagogical skills for critical literacy into both pre-service and in-service teacher education programmes that all teachers, irrespective of specific disciplines, may be adequately equipped to implement it in their duties.
3. The systems of examination should be revamped to replace all tendencies of rote learning with those that emphasise deep thoughts.
4. The government should provide adequate funds to schools for the procurement of instructional and learning materials that can get learners mentally engaged and challenged.

References

- Abata-Ebire, B. D., Adebowale, J. A., & Ojokuku, B. Y. (2018). Achieving sustainable development goals (SDGs) in Nigeria: the roles of libraries. *International journal of applied technologies in library and information management*, 4(2), 89-95.
- Adamu, A., Tsiga, A. U., & Zuilkowski, S. S. (2022). Teaching reading in northern Nigeria: the challenges of large class size. *Pedagogy, Culture & Society*, 30(2), 225-242.
- Adesote, S. A., & Fatoki, O. R. (2013). The role of ICT in the teaching and learning of history in the 21st century. *Educational Research and Reviews*, 8(21), 2155-2159.
- Aika, P. I. O. (2020). *Teaching writing in Nigerian secondary schools: teachers' attitude toward the teaching of writing and their writing self-efficacy. Journal of Teaching and Teacher Education*, 8(1), 39-51.**
- Ali, Z., Ghani, F., & Ali, A. (2010). The use of instructional technology in private schools and national education policy. *The Dialogue*, 6(2), 161-172.
- Amran, A., Perkasa, M., Satriawan, M., Jasin, I., & Irwansyah, M. (2019, February). Assessing students 21st century attitude and environmental awareness: promoting education for sustainable development through science education. In *Journal of Physics: Conference Series* (Vol. 1157, No. 2, p. 022025). IOP Publishing.
- Anderson, A. (2019). Advancing global citizenship education through global competence and critical literacy: Innovative practices for inclusive childhood education. *SAGE Open*, 9(1), 1-7.
- Anthonyamy, L., Koo, A. C., & Hew, S. H. (2020). Self-regulated learning strategies in higher education: Fostering digital literacy for sustainable lifelong learning. *Education and Information Technologies*, 25(4), 2393-2414.
- Anunobi, C. V., & Ukwoma, S. (2016). Information literacy in Nigerian universities trends, challenges and opportunities. *New Library World*, 117(5/6), 343-359.
- Attah, B. G., & Adebayo, O. J. (2018). Effects of training and workload of teachers on achievement of students in Mathematics in senior schools in Jos Metropolis, Plateau State, Nigeria. *KIU Journal of Humanities*, 3(1), 209-218.
- Baro, E. E., & Zuokemefa, T. (2011). Information literacy programmes in Nigeria: a survey of 36 university libraries. *New Library World*, 112(11/12), 549-565.

- Bello, I., Othman, M. F., & Shariffuddin, M. D. K. (2017). Political economy of education financing in Nigeria. *Asian Journal of Multidisciplinary Studies*, 5(6), 15-25.
- Bi, M., Zhao, Z., Yang, J., & Wang, Y. (2019). Comparison of case-based learning and traditional method in teaching postgraduate students of medical oncology. *Medical teacher*, 41(10), 1124-1128.
- Byfield, L. (2021). Critical Literacy in the Caribbean Isles (English-and Dutch-speaking). In *The Handbook of Critical Literacies* (pp. 254-261). Routledge.
- Caldwell, K. W. (2022). Teaching as apprentices and learning in communities: Novice Social Studies teachers' development of critical literacy practices. Doctor of education Dissertation, University of Michigan-Dearborn
- Castelló, M. E., Pellegrino, V., Argente, D., Gomez-Marquez, J., Gaudenz, U., Randall, G., ... & Rehmann, M. I. (2020). Real and Virtual Biological Science Living Laboratory for Science Teachers' formation: promoting global scientific literacy and critical thinking for sustainable development. In *Proceedings of the MIT LINC 2019 Conference. EPiC Series in Education Science (ISSN: 2516-2306)*, vol 3, feb 2020, p. 27-34. EPiC Education Science.
- Danner, R. B., & Musa, R. (2019). Evaluation of methods teachers use in teaching Shakespearean drama in senior secondary schools in Edo State. *Journal of Teaching and Teacher Education*, 7(2), 87-98.
- Din, M. (2020). Evaluating university students' critical thinking ability as reflected in their critical reading skill: A study at bachelor level in Pakistan. *Thinking Skills and Creativity*, 35, 100627
- Edoho, E. A., Asuquo Inyang, M., & Esuong, U. U. (2018). Understanding of Basic Science and Mathematics Concept. *Journal of Education and Practice*, 9(29), 43-46.
- English, L. M., & Carlsen, A. (2019). Lifelong learning and the Sustainable Development Goals (SDGs): Probing the implications and the effects. *International Review of Education*, 65(2), 205-211.
- Erikson, M. G., & Erikson, M. (2019). Learning outcomes and critical thinking—good intentions in conflict. *Studies in Higher Education*, 44(12), 2293-2303.
- Fateh, M. A. (2020). *A Historical Analysis on Bangladesh Rural Advancement Committee (BRAC) and Abed's Reception of Paulo Freire's Critical Literacy in Designing BRAC's*

- Functional Education Curriculum in Bangladesh from 1972 to 1981* (Doctoral dissertation, Queen's University (Canada)).
- Ferrell, A. L. (2021). Exploring Critical Literacy for Elementary Students with Disabilities. *Equity & Excellence in Education*, 54(4), (1-16.?) Pages 393-408
- García-Rico, L., Martínez-Muñoz, L. F., Santos-Pastor, M. L., & Chiva-Bartoll, O. (2021). Service-learning in physical education teacher education: a pedagogical model towards sustainable development goals. *International Journal of Sustainability in Higher Education*, 22(4), 747-765.
- Giroux, H. A. (2018). Teachers as transformative intellectuals. In *Thinking about schools* (pp. 183-189). Routledge.
- Goodsett, M. (2020). Best practices for teaching and assessing critical thinking in information literacy online learning objects. *The journal of academic librarianship*, 46(5), 102163.
- Häggström, M., & Schmidt, C. (2020). Enhancing children's literacy and ecological literacy through critical place-based pedagogy. *Environmental Education Research*, 26(12), 1729-1745.
- Häggström, M., & Schmidt, C. (2021). Futures literacy – to belong, participate and act!: an educational perspective. *Futures*, 132, 102813.
- Hanemann, U. (2019). Examining the application of the lifelong learning principle to the literacy target in the fourth Sustainable Development Goal (SDG 4). *International Review of Education*, 65(2), 251-275.
- Humphreys, S., Dunne, M., Durrani, N., Sankey, S., & Kaibo, J. (2020). Becoming a teacher: Experiences of female trainees in initial teacher education in Nigeria. *Teaching and Teacher Education*, 87, 102957.
- Iranpour, P., Taghipour, F., & Sarvarinejad, S. B. (2021). Providing a model to promote citizens' water literacy for sustainable development. *مدیریت آموزش علمی ف* - *صدا نامه*, 9(4), 36-21.
- Ismail, N. S., Harun, J., Zakaria, M. A. Z. M., & Salleh, S. M. (2018). The effect of Mobile problem-based learning application DicScience PBL on students' critical thinking. *Thinking Skills and Creativity*, 28, 177-195.
- Javanmard, A., Shafiee Sarvestani, M., Mohammadi, M., & Jahani, J. (2022). A Meta-Synthesis of the Components of Students' Critical Literacy. *Library and Information Science Research*, 12(1), 121-141.

- Kabombwe, Y. M., Machila, N., & Sikayomya, P. (2020). Implementing a History Competency-Based Curriculum: Teaching and Learning Activities for a Zambian School History Classroom. *Multidisciplinary Journal of Language and Social Sciences Education* (2664-083X, Online ISSN: Print ISSN: 2616-4736), 3(3), 18-50.
- Khushik, F., & Diemer, A. (2018). Critical Analysis of Education Policies in Pakistan: A Sustainable Development Perspective. *Social Science Learning Education Journal*, 3(09), 1-16.
- Kopnina, H. (2020). Education for the future? Critical evaluation of education for sustainable development goals. *The Journal of Environmental Education*, 51(4), 280-291.
- Kusimo, A. O., & Chidozie, F. C. (2019). Inclusive education and sustainable development goals: A study of the physically challenged in Nigeria. *Cogent Arts & Humanities*, 6(1), 1684175.
- Lozano-Díaz, A., & Fernández-Prados, J. S. (2020). Educating digital citizens: An opportunity to critical and activist perspective of sustainable development goals. *Sustainability*, 12(18), 7260.
- McKay, V. (2018). Literacy, lifelong learning and sustainable development. *Australian Journal of Adult Learning*, 58(3), 390-425.
- Mercer, N., Hennessy, S., & Warwick, P. (2019). Dialogue, thinking together and digital technology in the classroom: Some educational implications of a continuing line of inquiry. *International Journal of Educational Research*, 97, 187-199.
- Misiaszek, G. W. (2019). Ecopedagogy: teaching critical literacies of ‘development’, ‘sustainability’, and ‘sustainable development’. *Teaching in Higher Education*, 25(5), 615-632.
- Misiaszek, G. W. (2020). Countering post-truths through ecopedagogical literacies: Teaching to critically read ‘development’ and ‘sustainable development’. *Educational Philosophy and Theory*, 52(7), 747-758.
- Misiaszek, G. W. (2020). Countering post-truths through ecopedagogical literacies: Teaching to critically read ‘development’ and ‘sustainable development’. *Educational Philosophy and Theory*, 52(7), 747-758.

- OA, A. A., & Osarenren, U. (2020). Critical thinking acquisition of senior secondary school science students in Lagos state, Nigeria: A predictor of academic achievement. *Journal of Curriculum and Instruction*, 13(1), 59-71.
- Oderinu, O. H., Adegbulugbe, I. C., Orenuga, O. O., & Butali, A. (2020). Comparison of students' perception of problem-based learning and traditional teaching method in a Nigerian dental school. *European Journal of Dental Education*, 24(2), 207-212.
- Ogunode, N. J., & Christian, O. M. (2021). Education financing in Nigeria: Problems and the way forward. *International Journal of Development and Public Policy*, 1(5), 162–174.
- Okunuga, R. O., Awofala, O. A., & Osarenren, U. (2020). Critical thinking acquisition of senior secondary school science students in Lagos State, Nigeria: A predictor of academic achievement. *Journal of Curriculum and Instruction*, 13(1), 43-56.
- Olatunji, S.O. (2015). Facilitating technology transfer for sustainable development through indigenous-language-medium education in Nigeria: A synthesis of research findings. *Journal of Education in Developing Areas*, 23(1), 106-114.
- Olutola, A. T., Daramola, D. S., & Sheu, A. L. (2016). Assessing teachers' perspective of challenges militating against implementation of school based assessment in South West, Nigeria. *Journal of Science, Technology, Mathematics and Education (JOSTMED)*, 12(1), 220-228.
- Otekunrin, O. A., Momoh, S., Ayinde, I. A., & Otekunrin, O. A. (2019). How far has Africa gone in achieving sustainable development goals? Exploring African dataset. *Data in brief*, 27, 104647 pp.1-6.
- Pande, M., & Bharathi, S. V. (2020). Theoretical foundations of design thinking—A constructivism learning approach to design thinking. *Thinking Skills and Creativity*, 36, 100637.
- Pantito, B. (2020). Development of teaching critical reading skills through reading strategies for enhancing readers based linguistics synthesis. *Mahachula Academic Journal*, 7(2), 330-342.
- Royce, C. S., Hayes, M. M., & Schwartzstein, R. M. (2019). Teaching critical thinking: a case for instruction in cognitive biases to reduce diagnostic errors and improve patient safety. *Academic Medicine*, 94(2), 187-194.

- Sambo, A. M., & Bwoi, G. M. (2015). Administration of inclusive education in Nigerian schools: Issues and implementation strategies.
- Sasson, I., Yehuda, I., & Malkinson, N. (2018). Fostering the skills of critical thinking and question-posing in a project-based learning environment. *Thinking Skills and Creativity*, 29, 203-212.
- Serin, H. (2018). A comparison of teacher-centered and student-centered approaches in educational settings. *International Journal of Social Sciences & Educational Studies*, 5(1), 164-167.
- Shavelson, R. J., Zlatkin-Troitschanskaia, O., Beck, K., Schmidt, S., & Marino, J. P. (2019). Assessment of university students' critical thinking: Next generation performance assessment. *International Journal of Testing*, 19(4), 337-362.
- Tkáčová, H., Pavlíková, M., Tvrdoň, M., & Jenisová, Z. (2021). The use of media in the field of individual responsibility for sustainable development in schools: A proposal for an approach to learning about sustainable development. *Sustainability*, 13(8), 4138.
- Ugwu, E. O. (2019). Effect of student teams-achievement divisions and think-pair-share on students' interest in reading comprehension. *Journal of Educational Research and Practice*, 9(1), 218-237.
- Vásquez, C., García-Alonso, I., Seckel, M. J., & Alsina, Á. (2021). Education for Sustainable Development in Primary Education textbooks—An educational approach from statistical and probabilistic literacy. *Sustainability*, 13(6), 3115.
- Veum, A., Layne, H., Kumpulainen, K., & Vivitsou, M. (2021). Critical literacy in the Nordic education context: Insights from Finland and Norway. In *The Handbook of Critical Literacies* (pp. 273-280). Routledge.
- Wessel-Powell, C., & Bentley, H. (2022). Newcomers, novices, censors, and seasoned advocates navigate risky texts with critical literacy. *The New Educator*, 18(1-2), 61-86.
- Yetano Roche, M., Verolme, H., Agbaegbu, C., Binnington, T., Fishedick, M., & Oladipo, E. O. (2020). Achieving Sustainable Development Goals in Nigeria's power sector: assessment of transition pathways. *Climate Policy*, 20(7), 846-865.