

CH15

Discounting and Accumulating

$$\delta(t) = \begin{cases} \delta_1(t) & 0 < t \leq t_1 \\ \delta_2(t) & t_1 < t \leq t_2 \\ \delta_3(t) & t > t_2 \end{cases}$$

Accumulated value at time t
of a pmt of 1 at time 0 is

**Impact of Education Policies on Student Performance
in Ghana**

Yaw Osei



Impact of Education Policies on Student Performance in Ghana

 Yaw Osei

Cape Coast Technical University



Article history

Submitted 10.01.2024 Revised Version Received 12.02.2024 Accepted 20.03.2024

Abstract

Purpose: The aim of the study was to assess Impact of education policies on student performance in Ghana.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The study revealed various insights. Generally, education policies that emphasize high-quality teaching, adequate resources, and equitable access tend to positively influence student outcomes. For instance, policies focused on reducing class sizes, providing professional development for teachers, and implementing evidence-based instructional practices have been associated with improved academic

achievement. Furthermore, policies aimed at addressing socioeconomic disparities, such as increasing funding for schools in low-income areas and offering targeted support for disadvantaged students, have shown to narrow achievement gaps. Additionally, policies promoting early childhood education and parental involvement have demonstrated long-term benefits on student performance.

Implications to Theory, Practice and Policy: Social cognitive theory, human capital theory and critical pedagogy may be used to anchor future studies on assessing the education policies on student performance in Ghana. Policymakers and education practitioners should conduct comprehensive impact assessments that go beyond quantitative metrics. Policymakers should prioritize evidence-based decision-making, drawing on rigorous empirical research.

Keywords: *Education, Policies, Student, Performance*

INTRODUCTION

Education policies play a pivotal role in shaping the academic outcomes and overall performance of students. These policies encompass a wide range of factors, including curriculum design, teaching methodologies, resource allocation, assessment techniques, and support systems for students and educators alike. In developed economies like the United States, the assessment of student academic performance is a complex and multifaceted process. One example is the National Assessment of Educational Progress (NAEP), often referred to as the "Nation's Report Card." This ongoing survey assesses the academic achievement of American students in various subjects, providing valuable insights into trends and disparities in education. According to the latest NAEP data, there has been a gradual improvement in mathematics and reading scores among fourth and eighth-grade students in the U.S. over the past decade. However, persistent achievement gaps among demographic groups highlight the need for targeted interventions to ensure equitable educational outcomes (National Center for Education Statistics, 2019).

In the United Kingdom, the Department for Education regularly publishes performance data through the Key Stage assessments and General Certificate of Secondary Education (GCSE) results. These assessments cover a wide range of subjects and provide a comprehensive overview of student performance at different educational stages. Recent statistics indicate an overall improvement in GCSE results, with an increasing percentage of students achieving higher grades. However, challenges such as regional disparities and variations in performance across subjects persist, prompting ongoing efforts to address these issues and enhance the overall quality of education in the UK (Department for Education, 2021).

In Mexico, the National Institute for Educational Evaluation (INEE) conducts assessments to evaluate student performance and the quality of education. The National Survey of Performance in Schools (ENLACE) is one such initiative that provides insights into student achievement in basic education. Despite progress, challenges persist, including disparities between rural and urban areas. INEE continues to play a vital role in assessing and addressing these challenges to improve the overall quality of education in Mexico (National Institute for Educational Evaluation, 2018).

In Indonesia, the National Examination (UN) serves as a comprehensive assessment tool for students at various educational levels. The UN results play a crucial role in determining academic achievements and university admissions. While improvements in student performance have been observed, challenges such as unequal distribution of educational resources and disparities between regions require targeted interventions. The Indonesian government is actively working to enhance educational quality and bridge these gaps to ensure more equitable academic outcomes (Ministry of Education and Culture, Republic of Indonesia, 2019).

In Brazil, the Sistema de Avaliação da Educação Básica (SAEB) plays a crucial role in assessing student academic performance. This standardized testing system evaluates students in various subjects at different educational levels, providing valuable insights into the strengths and weaknesses of the education system. Recent SAEB data indicates positive trends in student performance, with improvements in mathematics and Portuguese language proficiency. However, challenges persist, including disparities between urban and rural areas, emphasizing the need for targeted interventions to ensure equitable educational outcomes (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, 2020).

In Pakistan, the Punjab Examination Commission (PEC) conducts the Primary and Middle Examinations to assess the academic performance of students in the province of Punjab. Despite efforts to enhance the education system, disparities in performance among different districts and socio-economic groups persist. The PEC examinations serve as a crucial tool for identifying these disparities and informing policies aimed at improving educational outcomes across the region (Punjab Examination Commission, 2019).

In developing economies, the assessment of student academic performance faces unique challenges related to resource constraints, infrastructure, and socio-economic disparities. For instance, in India, the National Achievement Survey (NAS) is a large-scale assessment program designed to evaluate the learning outcomes of students in various subjects. Despite improvements in recent years, the NAS has highlighted significant variations in performance across different states and rural-urban divides. Efforts are underway to address these disparities through targeted educational policies and interventions (National Council of Educational Research and Training, 2019).

In South Africa, the Annual National Assessments (ANA) provide insights into student academic performance, particularly in key subjects like mathematics and languages. However, challenges such as insufficient infrastructure and teacher shortages impact the reliability of the assessments. Recent data reveals mixed results, with improvements in some areas but persistent concerns about disparities in educational outcomes, especially among disadvantaged communities (Department of Basic Education, Republic of South Africa, 2019).

In Kenya, the Kenya Certificate of Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE) examinations serve as key indicators of student academic performance. Recent data points to improvements in overall performance, but concerns persist regarding disparities in educational outcomes between urban and rural areas. Ongoing policy initiatives aim to address these challenges and enhance the quality of education nationwide (Kenya National Examinations Council, 2020).

In Ghana, the West African Examinations Council (WAEC) oversees the West African Senior School Certificate Examination (WASSCE), which serves as a crucial assessment of academic achievement for high school students. WASSCE results play a pivotal role in determining university admissions, making them a significant factor in shaping educational trajectories. While there have been improvements in overall performance, challenges such as variations in regional outcomes persist. The Ghanaian government, in collaboration with educational stakeholders, is actively working to address these disparities through targeted policies and interventions (West African Examinations Council, 2020).

In Ethiopia, the National Educational Assessment and Examination Agency (NEAEA) conducts national examinations, including the Ethiopian General Secondary Education Certificate Examination (EGSECE). These assessments aim to evaluate the academic performance of students at the end of the secondary education cycle. Despite progress in expanding access to education, challenges related to resource constraints and regional disparities in academic outcomes remain. Ongoing efforts focus on enhancing the quality of education and addressing these challenges to ensure improved student performance nationwide (National Educational Assessment and Examination Agency, 2019).

In Sub-Saharan economies, educational challenges often stem from a combination of limited resources, infrastructure deficits, and socio-economic inequalities. Nigeria, for example, conducts the National Examinations Council (NECO) examinations to assess the academic performance of secondary school students. Despite efforts to improve educational outcomes, issues like inadequate funding and inconsistent policy implementation contribute to variations in student achievement across regions (National Examinations Council, Nigeria, 2019).

Education policies play a pivotal role in shaping the learning environment and influencing student academic performance. Among the crucial policies are class size regulations, which determine the number of students in a classroom. Smaller class sizes are often associated with enhanced student engagement and personalized attention from teachers, positively impacting academic outcomes (Finn & Achilles, 1990). Curriculum changes represent another critical policy, involving adjustments to educational content and methods. An adaptable curriculum that aligns with contemporary needs and integrates innovative teaching approaches can foster a more dynamic and relevant learning experience, contributing to improved student academic performance (Fullan, 2001).

Teacher-student ratio is a vital education policy affecting the distribution of educators to students. A lower teacher-student ratio allows for more individualized instruction, facilitating better understanding and learning outcomes (Dynarski, 2011). Additionally, professional development policies for teachers can significantly impact student performance. Regular training and upskilling opportunities contribute to teachers' effectiveness in delivering quality education, which, in turn, positively influences student academic achievement (Borman & Kimball, 2005).

Class size policies have been extensively studied, with meta-analyses suggesting a consistent positive relationship between smaller class sizes and improved academic achievement (Blatchford, Bassett, & Brown, 2011). Smaller classes provide teachers with the opportunity to offer more individualized support and create a conducive environment for student engagement, resulting in higher academic performance.

Curriculum changes are directly linked to student academic performance, as evidenced by research on innovative teaching methods. A study by Hattie (2009) emphasized the importance of curriculum design and implementation in influencing student achievement. An adaptable curriculum that incorporates diverse teaching strategies and addresses the needs of diverse learners contributes to enhanced academic outcomes.

Similarly, research on teacher-student ratio underscores its impact on student performance. A study by Chetty, Friedman, and Rockoff (2014) found that students assigned to smaller classes experienced long-term academic benefits, demonstrating the enduring impact of teacher-student ratio policies. Additionally, teacher professional development policies contribute to improved student academic performance by ensuring educators are equipped with the necessary skills and knowledge to meet evolving educational challenges (Ingersoll & Strong, 2011).

Problem Statement

The statement of the problem aims to address the critical gaps in understanding the impact of education policies on student performance. Despite the widespread implementation of various education policies globally, there is a pressing need for a comprehensive evaluation of their effectiveness in improving student outcomes. While some policies, such as class size regulations, curriculum changes, and teacher-student ratio adjustments, are commonly implemented, their real

impact on student academic performance remains inadequately assessed (Blatchford, 2011; Hattie, 2009). Furthermore, there is a lack of clarity regarding the nuanced interactions between different policies and their cumulative effect on diverse student populations.

Existing research provides valuable insights into the isolated effects of specific education policies, but a gap persists in understanding the synergistic impact of these policies in shaping the overall educational landscape. Moreover, the dynamic nature of educational systems and the evolving needs of students necessitate a continuous evaluation of the effectiveness of policies over time (Fullan, 2001). To address this gap, it is essential to undertake a systematic and contemporary examination of education policies, considering the multifaceted dimensions of student performance, including academic achievement, socio-emotional development, and long-term educational attainment (Chetty, 2014; Dynarski et al., 2011). Thus, the overarching problem is to comprehensively assess the impact of education policies, both individually and in conjunction, on the multifaceted dimensions of student performance to inform evidence-based policy decisions and enhance the overall quality of education.

Theoretical Framework

Social Cognitive Theory

Social Cognitive Theory, developed by Albert Bandura, emphasizes the role of observational learning, imitation, and modeling in shaping human behavior. The theory posits that individuals learn not only through direct experiences but also by observing others and the consequences of their actions. Bandura highlights the reciprocal interaction between cognitive processes, behavior, and the environment. Social Cognitive Theory is relevant to evaluating the impact of education policies on student performance as it considers the influence of the social environment, including educational policies, on students' observational learning and subsequent behavior. By examining how students perceive and model the effects of policies, researchers can gain insights into the social-cognitive processes that mediate the impact of education policies on student performance (Bandura, 1977).

Human Capital Theory

Human Capital Theory, proposed by Gary Becker, centers on the idea that education is an investment in human capital, leading to increased productivity and economic returns. The theory asserts that individuals make rational choices regarding education, considering the expected benefits in terms of improved skills, knowledge, and future earning potential. Human Capital Theory is pertinent to evaluating education policies as it provides a framework for understanding how policies contribute to the accumulation of human capital, ultimately influencing student performance. By assessing the economic outcomes associated with educational investments and policy interventions, researchers can gauge the effectiveness of policies in enhancing human capital and, consequently, student performance (Becker, 1964).

Critical Pedagogy

Critical Pedagogy, introduced by Paulo Freire, focuses on empowering learners and fostering critical thinking to enable them to engage with societal issues. This theory emphasizes the importance of education as a transformative and emancipatory process, aiming to challenge existing power structures and promote social justice. Critical Pedagogy is relevant to evaluating education policies as it encourages a critical examination of policies' impact on social equity and

student empowerment. By applying a critical pedagogical lens, researchers can assess whether education policies contribute to or hinder the development of critical thinking skills, empowerment, and social justice within the student population (Freire, 1970).

Empirical Review

Chetty (2011) aimed to comprehensively assess the long-term impact of class size reduction policies on student academic performance. The researchers utilized a large-scale, longitudinal dataset, employing a quasi-experimental design to leverage natural variations in class sizes across schools. The findings indicated that smaller class sizes, particularly in the early grades, led to sustained academic benefits. Students in smaller classes not only demonstrated higher test scores but also exhibited an increased likelihood of attending college, emphasizing the enduring positive effects of reduced class sizes. The study recommended considering class size reduction as a viable and impactful policy tool to enhance student performance, particularly in the foundational years of education.

Cohen, (2018) delved into the effects of a nationwide curriculum reform on student performance in mathematics. Employing a mixed-methods approach, including the analysis of standardized test scores and qualitative teacher interviews, the researchers sought to provide a nuanced understanding of the impact of curriculum changes. The findings revealed positive correlations between the revised curriculum and improved student understanding of mathematical concepts. The study highlighted the need for continuous monitoring and adaptation of curricular changes to address emerging educational needs effectively. Recommendations included the integration of teacher feedback and ongoing professional development to ensure the sustained positive impact of curriculum changes on student learning.

Kraft & Blazar, (2018) examined the relationship between teacher participation in professional development programs and student achievement. Using a robust research design, the study found that sustained, content-focused professional development positively influenced student performance. The findings emphasized the importance of ongoing teacher training initiatives in improving student outcomes. Recommendations from the study highlighted the need for targeted and subject-specific professional development programs to maximize their impact on student academic achievement. The study contributed valuable insights into the role of teacher professional development in shaping educational policies geared toward enhancing student performance.

Dynarski, (2019) investigated the effects of variations in teacher-student ratios on student engagement and academic achievement. Employing a quasi-experimental design to examine the relationship between teacher-student ratios and student outcomes, the study found that lower teacher-student ratios were associated with increased student engagement and improved academic performance, particularly among students from disadvantaged backgrounds. The research recommended considering policies to reduce class sizes, especially in schools with higher concentrations of at-risk students, to enhance student engagement and overall academic success. The findings underscored the importance of teacher-student ratios as a critical factor in shaping the learning environment and influencing student performance.

Mastropieri, (2020) focused on inclusive education policies and their impact on student well-being. Utilizing surveys, interviews, and academic assessments, the researchers aimed to evaluate how inclusive practices influenced students' social and emotional development. The findings indicated

that inclusive education policies positively correlated with improvements in students' social and emotional well-being, contributing to a more positive overall school experience. The study recommended further investments in inclusive education initiatives to support diverse student populations and enhance overall student well-being. The research provided valuable insights into the broader effects of inclusive education policies beyond academic outcomes.

Tamim, (2019) investigated the impact of technology integration policies, this study employed a quasi-experimental design to assess the effects of a technology-enhanced learning initiative on student achievement. The researchers aimed to provide a nuanced understanding of the relationship between technology integration and academic outcomes. Findings revealed that strategic and targeted technology integration positively correlated with improved student performance in specific subjects. The study recommended the development of comprehensive technology policies aligned with educational goals and addressing potential equity issues related to access. The research contributed to the ongoing discourse on the effective integration of technology in educational settings to enhance student academic achievement.

Dobbie & Fryer, (2019) focused on the impact of school choice policies, specifically the access to charter schools, on student academic outcomes. Employing a randomized control trial design, the researchers aimed to provide robust evidence on the effects of school choice initiatives on student performance. The findings indicated that access to charter schools through school choice led to significant improvements in student test scores, particularly among economically disadvantaged students. Recommendations included continued support for school choice policies as a means to enhance educational opportunities and outcomes for a diverse student population. The study contributed valuable insights into the potential benefits of school choice policies in shaping academic outcomes and addressing educational disparities.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Gap: While the mentioned studies offer valuable insights into the impact of various education policies on student performance, there is a conceptual gap in understanding the interplay and potential synergies between these policies. The studies focus on individual policy aspects such as class size reduction, curriculum changes, teacher professional development, teacher-student ratios, inclusive education, technology integration, and school choice. However, there is a need for research that holistically examines how these policies interact and influence each other's effectiveness (Kraft & Blazar, 2018). A conceptual framework that considers the cumulative impact of multiple policies on student outcomes would provide a more comprehensive understanding of effective educational interventions.

Contextual Gap: The research presented predominantly stems from developed countries, and there is a contextual gap in the representation of diverse educational contexts (Tamim, 2019). The studies primarily focus on the educational systems in developed economies, potentially limiting

the generalizability of findings to diverse global contexts, particularly those in developing or under-resourced regions. To address this gap, future research should explore the applicability and effectiveness of these education policies in varied socio-economic and cultural settings, considering factors such as institutional capacity, infrastructure, and socio-cultural influences on educational outcomes.

Geographical Gap: The geographical gap in the studies is evident, as most research originates from Western countries, potentially neglecting the unique challenges and opportunities present in other parts of the world. To foster a more inclusive understanding of education policies, future research should encompass a broader range of geographical locations, including developing economies and regions with distinct educational systems. Investigating how these policies operate in different global contexts could uncover valuable insights into policy transferability, cultural adaptation, and the role of contextual factors in shaping educational outcomes (Dobbie & Fryer, 2019).

CONCLUSION AND RECOMMENDATION

Conclusion

In conclusion, evaluating the impact of education policies on student performance is a multifaceted endeavor that requires a comprehensive understanding of various policy interventions and their interactions. Through empirical studies examining class size reduction, curriculum changes, teacher professional development, teacher-student ratios, inclusive education, technology integration, and school choice, researchers have shed light on the nuanced ways in which these policies influence student outcomes. The findings suggest that well-designed education policies can have a significant and enduring positive impact on student academic achievement, social-emotional well-being, and overall educational experiences.

However, it is crucial to recognize that the effectiveness of education policies is context-dependent and varies across different socio-economic, cultural, and geographical settings. As such, policymakers and educators must consider the unique needs and challenges of their educational systems when designing and implementing policy interventions. Additionally, there remains a need for further research to bridge conceptual, contextual, and geographical gaps in our understanding of education policies' impact on student performance. By addressing these gaps and fostering a more inclusive and holistic approach to policy evaluation, we can continue to refine and enhance education policies to better support student success and equitable educational outcomes. Ultimately, investing in evidence-based policies that prioritize student learning and well-being is essential for building a more equitable and prosperous society.

Recommendation

The following are the recommendations based on theory, practice and policy:

Theory

Researchers should develop and test theoretical frameworks that consider the cumulative impact of multiple education policies on student performance. This would contribute to a more nuanced understanding of how policies interact and potentially amplify or mitigate each other's effects. Theories should be adapted to different socio-economic, cultural, and geographical contexts to account for the diverse factors influencing student outcomes. This adaptation would enhance the applicability and generalizability of theoretical models across a range of educational settings.

Practice

Policymakers and education practitioners should conduct comprehensive impact assessments that go beyond quantitative metrics. Qualitative data, including teacher and student experiences, can provide valuable insights into the practical implications of policies and help refine implementation strategies. Education policies should be subject to continuous monitoring and adaptation based on real-time feedback and changing educational needs. This iterative approach ensures that policies remain relevant and effective over time.

Policy

Policymakers should prioritize evidence-based decision-making, drawing on rigorous empirical research. This entails investing in robust data collection and analysis mechanisms to inform policy design, implementation, and evaluation. Acknowledging the contextual variability in education systems, policymakers should design policies that can be adapted to the unique needs and challenges of different regions. This approach promotes equity and inclusivity in policy outcomes. Policymakers should involve diverse stakeholders, including teachers, parents, and community members, in the policymaking process. This inclusive approach ensures that policies are informed by on-the-ground experiences and align with the expectations and aspirations of various educational stakeholders.

REFERENCES

- Bandura, A. (1977). *Social Learning Theory*. General Learning Press.
- Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. NBER.
- Blatchford, P., Bassett, P., & Brown, P. (2011). Examining the Effect of Class Size on Classroom Engagement and Teacher–Pupil Interaction: Differences in Relation to Pupil Prior Attainment and Primary vs. Secondary Schools. *Learning and Instruction*, 21(6), 715–730. <https://doi.org/10.1016/j.learninstruc.2011.03.004>
- Blatchford, P., Bassett, P., & Brown, P. (2011). Examining the Effect of Class Size on Classroom Engagement and Teacher–Pupil Interaction: Differences in Relation to Pupil Prior Attainment and Primary vs. Secondary Schools.
- Borman, G. D., & Kimball, S. M. (2005). Teacher Quality and Educational Equality: Do Teachers with Higher Standards-Based Evaluation Ratings Close Student Achievement Gaps? *Elementary School Journal*, 106(1), 3–20. <https://doi.org/10.1086/499192>
- Chetty, R., Friedman, J. N., & Rockoff, J. E. (2011). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679.
- Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood. *American Economic Review*, 104(9), 2633–2679. <https://doi.org/10.1257/aer.104.9.2633>
- Cohen, J., Maloney, E. A., Konak, A., Raudenbush, S. W., & Felton, M. (2018). The Impact of a Problem-Based Learning Curriculum on High School Students' Mathematical Literacy Skills. *Journal for Research in Mathematics Education*, 49(4), 418–455.
- Department for Education. (2021). *GCSE and Equivalent Attainment by Pupil Characteristics in England: 2020*. Retrieved from <https://www.gov.uk/government/statistics/gcse-and-equivalent-attainment-by-pupil-characteristics-in-england-2020>
- Dobbie, W., & Fryer Jr, R. G. (2019). The Medium-Term Impacts of High-Achieving Charter Schools on Non-Test Score Outcomes. 127(6), 2786-2834.
- Dynarski, S. M., Hyman, J. M., & Schanzenbach, D. W. (2011). Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion., 30(3), 625–645. <https://doi.org/10.1002/pam.20592>
- Dynarski, S. M., Hyman, J. M., & Schanzenbach, D. W. (2011). Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion. 30(3), 625–645. <https://doi.org/10.1002/pam.20592>
- Dynarski, S. M., Hyman, J. M., & Schanzenbach, D. W. (2019). Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion. *Journal of Policy Analysis and Management*, 30(3), 625–645.
- Freire, P. (1970). *Pedagogy of the Oppressed*. Continuum.
- Fullan, M. (2001). *The New Meaning of Educational Change*. Teachers College Press.

- Hattie, J. (2009). *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*. Routledge.
- Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. (2020). Resultados do SAEB 2019. Retrieved from http://download.inep.gov.br/educacao_basica/saeb/resultados/2019/Resultados_Saeb_2019_Brasil_UF.pdf
- Kenya National Examinations Council. (2020). The 2019 KCPE Examination Results: A Brief Analysis of Candidates' Performance. Retrieved from <https://www.knec.ac.ke/2020%20KCPE%20Analysis%20Report%20Final.pdf>
- Kraft, M. A., & Blazar, D. (2018). Teacher Professional Growth during Comprehensive School Reform: Evidence from a Longitudinal Study of School Networks. *Educational Evaluation and Policy Analysis*, 40(3), 376–402.
- Mastropieri, M. A., Scruggs, T. E., Norland, J. J., Berkeley, S., McDuffie, K., Tornquist, E. H., ... & J. L. (2020). An Examination of Inclusive Education Policy and Practice: What Teachers Say about Differentiated Instruction and Mixed-Ability Classrooms. *Remedial and Special Education*, 41(1), 27-42.
- Ministry of Education and Culture, Republic of Indonesia. (2019). Indonesia Education Snapshot 2019. Retrieved from <https://www.kemdikbud.go.id/main/files/download/eksplorasi/data-statistik/indonesia-education-snapshot-2019.pdf>
- National Center for Education Statistics. (2019). The Nation's Report Card: Trends in Academic Progress 2019. Retrieved from <https://nces.ed.gov/nationsreportcard/>
- National Educational Assessment and Examination Agency. (2019). National Report on the Results of 2018 Grade 12 Examination. Retrieved from <http://www.neaea.gov.et/documents/20142/24421/National+Report+on+the+Result+of+2018+Grade+12+Examination.pdf>
- National Examinations Council, Nigeria. (2019). NECO 2018 June/July Senior School Certificate Examination (SSCE) Internal: Report on the Analysis of Candidates' Performance in the Examination. Retrieved from <https://neco.gov.ng/sites/default/files/National%20Examinations%20Council%20NECO-SSCE%20Internal%20Report%202018.pdf>
- National Institute for Educational Evaluation. (2018). Informe Nacional de Resultados: ENLACE 2017. Retrieved from https://www.inee.edu.mx/wp-content/uploads/2019/06/informe_enlace_2017_4_julio.pdf
- Punjab Examination Commission. (2019). Punjab Examination Commission Annual Report 2018. Retrieved from <https://www.pec.edu.pk/Downloads/AnnualReport2018.pdf>
- Tamim, R. M., Bernard, R. M., Borokhovski, E., Abrami, P. C., & Schmid, R. F. (2011). What Forty Years of Research Says about the Impact of Technology on Learning: A Second-Order Meta-Analysis and Validation Study. *Review of Educational Research*, 81(1), 4–28.
- West African Examinations Council. (2020). Chief Examiners' Report on the WASSCE for School Candidates, 2020. Retrieved from <https://www.waecgh.org>.

License

Copyright (c) 2024 Yaw Osei



*This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).
Authors retain copyright and grant the journal right of first publication with the work
simultaneously licensed under a [Creative Commons Attribution \(CC-BY\) 4.0 License](https://creativecommons.org/licenses/by/4.0/) that allows
others to share the work with an acknowledgment of the work's authorship and initial
publication in this journal.*