

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya



Omweri, F. S

Lecture, Kampala International University, Dept. Public Administration and Development Studies, Western Campus-Uganda

ABSTRACT: The institutional environment, including staff competence, resource use, and school culture, significantly contributes to student failure, as these factors are major macro-environmental factors. The institutional environment can therefore play a positive role in students' academic performance and improvement. This study examined the complex relationship between core competencies, institutional culture, resource utilization, and academic performance in the field of education. The independent variables consisted of core competencies such as teacher experience, in-service training, and teaching methods; institutional culture, which included rules and regulations, mission and vision, and school routines; and resource utilization, which encompassed instructional materials, infrastructure, and compensation. The dependent variable was academic performance, assessed through student academic scores, transition rates, and completion rates. A qualitative approach was utilized, employing desktop analysis of secondary data. The results revealed significant correlations between core competencies, institutional culture, resource utilization, and academic performance. Educators with extensive experience and relevant training, operating within a supportive institutional culture characterized by clear rules and regulations and a compelling mission and vision, were associated with improved student academic scores, higher transition rates, and increased completion rates. Furthermore, proper allocation of resources, including high-quality instructional materials, robust infrastructure, and competitive compensation for educators, positively influenced academic performance outcomes. These findings emphasize the importance of investing in teacher development, cultivating a positive institutional culture, and optimizing resource allocation to enhance academic performance and promote student success. The study recommends targeted interventions to improve core competencies among educators, foster a supportive institutional environment, and prioritize resource allocation to support effective teaching and learning practices. By implementing these recommendations, educational institutions can create an environment conducive to academic excellence and enhance positive student outcomes.

KEYWORDS: Institutional Environment, Core Competencies, Institutional Culture, Resource Utilization, Academic Performance.

1.0 INTRODUCTION AND CONCEPTUALIZATION

Academic performance is a global goal of educational systems, measured by standardized exams and grade attainment (Yoo et al., 2022). Understanding predictors can inform educational setups and interventions. However, the institutional environment, including staff competence, resource use, and school culture, significantly contributes to student failure, as these factors are major macro-environmental factors. The institutional environment can therefore play a positive role in students' academic performance and improvement (Wenglinisky, 2001). The environment can affect students' learning, grooming, emotional and ethical development. The school environment engages students in positive activities, which are helpful for students. With the support of the school environment, students become supportive, caring, responsible, honest, and well-mannered, and they avoid using foul language and violence and solving behavioral problems (Monteiro et al., 2021). However, the lack of resources in developing countries makes it difficult for them to provide schools with the equipment and training needed to meet the needs of their pupils. As a result, when the government fails to construct schools, parents and neighborhood associations frequently fill the gap. These institutions usually lack adequate personnel and material resources (OECD, 2017).

Numerous studies have demonstrated how important teacher competency is to students' academic achievement. They note that twenty-first-century changes have completely remade the school system and increased demands on teachers' competency. Therefore, the main focus of investigations is on how well teachers are able to provide quality education in the face of swift

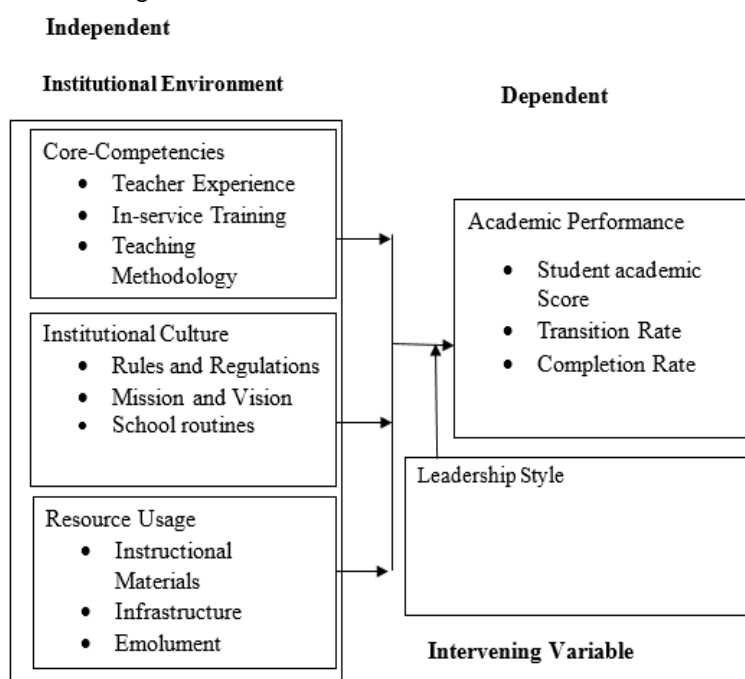
The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

changes. In the United States of America, Shernoff et al. (2017) studied the role of teacher competencies in the implementation of integrated approaches to STEM education. In Taiwan, Fan (2022) examined the link between teacher competencies and academic performance. In Europe, Costes-Onishi and Kwak (2023) examined how teacher competencies and strength contribute to inquiry-based learning. Despite the fact that teachers must conduct formal instruction in classrooms, most teaching occurs outside of these spaces as a result of interactions between students and their surroundings (Arievitch, 2020).

To ensure alignment with the school's goals, educational institutions establish a culture. By doing this, schools associate themselves with specific guidelines, policies, goals, and visions, or they admit students based on predetermined standards. Studies on the institutional culture on academic performance are fairly distributed globally. For example, Ohlson et al. (2016) examined the school culture and student outcomes via a performance framework in Southeastern United States. Rachman et al. (2023) conducted a study on the influence of school culture, principal instructional leadership, and work motivation on the teacher performance of elementary schools in Indonesia. In Mogadishu, Mohamed (2023) conducted a study on the relationship between head teachers' school rules' implementation and student academic performance in secondary schools. In Bulowa et al. (2023), a study was conducted on school culture and academic performance in public secondary schools in Trans Nzoia County, Kenya.

Effective instruction, on the other hand, depends on the allocation of resources. These resources are commonly spent on building physical facilities, purchasing instructional materials, and dealing with emoluments (Stanley & Better, 2023). The amount allocated to education in African nations is typically less than what is considered appropriate (Ohaegbulem, 2023). As a result, parents and other stakeholders are compelled to chip in to supplement the limited appropriation-in-Aid in schools in Africa (Mmassy, 2023). Therefore, the majority of resource utilization studies are conducted in the third world. These studies include the study conducted by Adebunmi (2017) and Alao & Ukpong (2020) in Nigeria and Ndemo and Kwaba (2023) and Ongere and Ogochi (2023) in Kenya. These studies focused on instructional resources and pupil academic achievement in public secondary schools. Remarkably, this study was conducted against the backdrop of reduced school allocations by the Ministry of Education. For instance, education stakeholders in Kenya are concerned about the Sh. 18,101,294,80 total amount owed to schools for the Financial Year 2022–2023. For the 2023–2024 Fiscal Year, the government provided a meager 14% of the required amount—that is, sh3, 327.87 per child—instead of Ksh 22,244. This trend runs counter to the government's pledge to offer free primary and secondary education.

The government regulates the quality of teacher preparation, which is provided by institutions that hold accreditation from the commission on university education. In an effort to bridge the growing teacher-student divide, the government is anticipated to place graduates in classrooms (Amimo, 2016). However, since every school has its own distinct culture, it is challenging to standardize them. But a number of events, such as strikes that are frequently reported in Kenya, pose a threat to the school cultural attack. Nevertheless, it is difficult to standardize school cultures as different schools identify with unique behavior. The cultural attack is, however, threatened by a number of factors, including strikes which are commonly reported in Kenya. Thus, the study has made an effort to determine the links between selected institutional factors and academic performance. The constructs of this study can be demonstrated in the figure below.



Source: Researcher (2023)

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

This conceptual framework shows the interplay between core competencies, institutional culture, resource usage, and academic performance in the educational context. Core competencies consist of teacher experience, in-service training, and teaching methodology. Institutional culture encompasses rules and regulations, mission and vision, and school routines. Resource usage includes instructional materials, infrastructure, and emolument. The dependent variable is academic performance, which is measured through student academic scores, transition rates, and completion rates. It proposed that academic performance was influenced by core competencies, institutional culture, and resource utilization. It was hypothesized that effective core competencies, a supportive institutional culture, and sufficient resource utilization would have a positive impact on academic performance indicators such as student academic scores, transition rates, and completion rates.

1.2 Objectives of the Study

The study was guided by the following three objectives:

- i. To establish the influence of core-competencies on the performance of public secondary schools in Nyamira county.
- ii. To examine the influence of institutional culture on the performance of public secondary schools in Nyamira county.
- iii. To establish the influence of resource usage on the performance of public secondary schools in Nyamira county.

2.0 EMPIRICAL REVIEW

2.1 Core-Competencies and Performance of Public Secondary Schools

Fan (2022) conducted a study in Taiwan on the importance of teachers' core competencies for implementing maker education in primary and secondary schools. In her study, Fan found that teachers' experience is generally recognized as important for core competencies. The study suggests that core competencies in maker education require teachers to work in their professional fields, gain technology knowledge and skills, and build interdisciplinary connections to facilitate project-based learning. The study employed a two-step investigative approach: a focus group discussion and a performance self-assessment survey. Descriptive statistics and analysis of variance were used in this study. While the current study examined the effects of core competence on the performance of secondary schools using mixed research methods in Nyamira County, Kenya, Fan's study focused on maker education in primary and secondary schools using qualitative methods in Taiwan.

Shernoff, Sinha, Bressler, and Ginsburg (2017) conducted a study on teacher education and professional development needs for implementing integrated approaches to STEM (science, technology, engineering, and mathematics) education in the East Coast of the USA. The findings revealed numerous challenges in implementing STEM education. The study used a qualitative, ground-up approach to gather data. However, the current study utilized mixed research methods to determine the effects of core competence on the performance of secondary education in Nyamira County, Kenya.

In another study, Johnson, Wendell, and Watkins (2017) examined the influence of teachers' experience on addressing students' demands in engineering training. The findings indicated that engineering design poses unique challenges to teachers due to unanticipated obstacles arising from an increasing number of students. The study recommended further research and professional development to support teachers in responding to their students' engineering needs. Qualitative research methods, specifically analytical methods based on the grounded theory approach, were employed in this study. However, our study aimed to use desktop qualitative research methods to determine the effects of core competence on the performance of secondary schools in Nyamira County, Kenya, as opposed to engineering training.

Additionally, Love and Wells (2018) investigated the relationship between select technology and science preparation experiences of technology and engineering (T&E) teachers in the United States (US) and their teaching of science content and practices. The study utilized a fully integrated mixed methods design. A random sample of 55 Foundations of Technology (FoT) teachers from 12 US county school systems within an International Technology and Engineering Educators Association consortium state participated in an online survey, leading to the purposeful selection of eight teachers for classroom observations. Data collected from surveys, classroom observations, curriculum content analyses, and interviews were analyzed to examine the relationships between various preparation factors and the teaching of science content and practices. Love and Wells' study aimed to inform the preparation needs of US T&E educators, while our current study sought to determine the effects of core competence on the performance of secondary schools in Nyamira County, Kenya.

Furthermore, Ross and Cozzens (2016) conducted a study on the essential core competencies for instructional leadership and their impact on school climate. The study identified 13 core competencies necessary for effective principal leadership that influenced school climate. Among these competencies, the study found that the greatest impact on school climate was associated with principals respecting the ideas of others and eliminating biases. Although 11 of the 13 core competencies were statistically significant in the perceptions of private and public teachers, a Bonferroni adjustment revealed that only five core competencies were significant. However, the analyses showed no statistically significant evidence to support differences in teachers' perceptions

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

of school climate between private and public schools. Ross and Cozzens' study was quantitative, focusing on core competencies for instructional leadership and their impact on school climate, while our current study used desktop qualitative research approaches to determine the effects of core competence on the performance of secondary schools in Nyamira County, Kenya.

2.2 Institutional Culture and Performance of Public Secondary Schools

Fitria (2018) examined the influence of organizational culture and trust on teacher performance in private secondary schools in Palembang, Indonesia. This quantitative study used path analysis technique. The sample consisted of 326 teachers from 1,773 private junior high school teachers in Palembang. The findings showed a direct positive effect of organizational culture on teacher performance. In contrast, the current study investigated the effects of institutional culture on the performance of public secondary schools using desktop qualitative research methods in Nyamira County, Kenya.

Van, Mosoge, Swanepoel, and Coetsee (2005) explored organizational culture and academic achievement in secondary schools using qualitative methodologies. The study identified organizational culture as a key factor characterized by many variables. The research findings indicated that high-achieving schools had a healthy and positive organizational culture, while low-achieving schools did not. A positive organizational culture had an exceptionally positive influence on school members and guided their behavior towards achieving the school's goals. However, the current study focused on the effects of institutional culture on the performance of public secondary schools in Nyamira County, Kenya.

Additionally, Zhou, Bundorf, Le Chang, Huang, and Xue (2011) aimed to measure perceptions of organizational culture among employees of public hospitals in China and examine whether these perceptions were associated with hospital performance. The study collected data from hospital, employee, and patient surveys conducted in 87 Chinese public hospitals in 2009. Quantitative data was analyzed using factor analysis to measure organizational culture. The findings showed that employees perceived Chinese public hospitals as having a stronger emphasis on internal rules and regulations, but weaker in empowerment. Hospitals that emphasized cost control were more profitable and had higher rates of outpatient visits and bed days per physician per day, but lower patient satisfaction levels. On the other hand, hospitals with perceived customer-focused cultures had longer length of stay but lower patient satisfaction. In contrast to Zhou, Bundorf, Le Chang, Huang, and Xue's study on public hospitals in China, the current study focused on the effects of institutional culture on the performance of public secondary schools in Nyamira County, Kenya.

Furthermore, Mwangi and Waithaka (2018) conducted a study on organizational culture and performance of public universities in Kenya. The data was collected through questionnaires and analyzed both quantitatively and qualitatively. The study involved 66 deans of schools, 172 heads of departments, and 28 leaders, and the Statistical Package for Social Studies (SPSS) was used for analysis. The study found a significant and positive effect of organizational culture on the performance of public universities in the Mount Kenya Region. In contrast to Mwangi and Waithaka's study on public universities, the current study focused on the effects of institutional culture on the performance of public secondary schools.

2.3 Resource Utilization and Performance of Public Secondary Schools

Akinsolu (2012) conducted a study to evaluate whether public secondary schools in Nigeria effectively use allocated resources to produce graduates with minimal wastage. The study employed a correlational design and utilized stratified random sampling to select 250 Local Government Areas (LGAs) from the six geo-political zones, representing 32% of the total LGAs. From the 250 sampled LGAs, 136 public secondary schools were selected using the sample proportion to size method. To collect data on the independent and dependent variables, the study used the Resource Utilization Questionnaire (RUQ) and the Internal Efficiency Questionnaire (IEQ), respectively. The instruments were pre-tested using the test-retest method. The findings indicated that resources play a crucial role in the educational system's production function. Unlike Akinsolu's quantitative design, the current study employed a desktop qualitative design to examine the impact of resource utilization on the performance of public secondary schools in Nyamira County, Kenya.

In a study conducted by Ong'amo, Ondigi, and Omariba (2017) in Siaya District, the effects of biology teaching and learning resource utilization on students' academic performance in public secondary schools were investigated. The researchers sampled twenty-three schools out of ninety-two public secondary schools, using stratified random sampling. Teacher respondents were either purposively or randomly selected. Various data collection methods were employed, including questionnaires, checklists, observation schedules, and interview guides for head teachers. The study found that textbooks were the most commonly used teaching and learning resources, while audiovisual resources were the least used. However, the research also revealed that academic performance was not solely determined by resource availability or utilization. Factors such as teacher qualification, pedagogy, attitudes, and students' entry behavior also influenced academic performance. In contrast to Ong'amo, Ondigi, and

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

Omariba's study on biology teaching and learning resource utilization in Siaya District, the current study focused on the effects of resource utilization on the performance of public secondary schools in Nyamira County, Kenya.

Additionally, Konyango (2011) conducted a study on the impact of resource utilization on the performance of physics in KCSE in public secondary schools in Ugunja/Ugenya districts, Kenya. The study sampled schools based on their boarding, day, and mixed status using random and stratified random sampling techniques. Data was collected through questionnaires for students and teachers, as well as interviews with principals. Both descriptive and inferential statistics were used to analyze the data. The findings indicated that schools which effectively utilized resources showed improved performance in physics. While Konyango focused on the utilization of resources and its effect on performance, the current study examines the effects of resource utilization on the performance of public secondary schools in Nyamira County, Kenya.

Similarly, Adeniran (2020) conducted research on the influence of teaching and learning resources on students' performance in senior secondary schools in Gusau Local Government, Zamfara State, Nigeria. The study utilized a descriptive design and collected data through questionnaires to obtain responses from the participants in order to answer the research questions and hypotheses. The population of the study included all teachers in Senior Secondary Schools in Zamfara State, Nigeria. A total of 50 teachers were selected using stratified sampling technique from five selected Senior Secondary Schools in Gusau metropolis of Zamfara State, Nigeria. The study revealed that teaching and learning materials were not adequately available, and the limited resources that were available were not efficiently utilized by teachers due to their lack of skills and knowledge in resource utilization. The study employed a quantitative research design to examine the influence of teaching and learning resources on students' performance in senior secondary schools in Gusau Local Government, Zamfara State, Nigeria, while the current study uses a desktop qualitative research methodology to explore the effects of resource utilization on the performance of public secondary schools in Nyamira County, Kenya.

Besides, Pitan (2012) conducted a study that explored the relationship between human resource utilization and internal efficiency in secondary schools in the Ibadan North Local Government Area of Oyo State, Nigeria. The study used a descriptive survey design and employed purposive sampling to select eight out of 22 public secondary schools in the local government area. Data analysis involved simple percentages and Pearson Product Moment Correlation. The results indicated a significant positive relationship between student-teacher ratio (STR) and wastage ratio ($r = .7959$; $p < 0.05$). However, no significant relationship was found between teacher quality (in terms of qualification), teachers' workload, and wastage ratio ($r = -0.121$; $p > 0.05$ and $r = -0.127$; $p > 0.05$, respectively). Utilizing an input-output analysis of the sampled schools, the study revealed a highly positive relationship between resource utilization and internal efficiency of the school system ($r = 0.8367$; $p < 0.05$). The performance of students in public examinations demonstrated a high level of wastage (students' failure), indicating an inefficient system. Pitan's study focused on the relationship between human resource utilization and internal efficiency in secondary schools in Ibadan North Local Government Area of Oyo State, Nigeria. In contrast, the current study aims to examine the impact of resource utilization on the performance of public secondary schools in Nyamira County, Kenya.

3.0 CONCLUSION

The following conclusions were drawn from this study's analysis of the empirical research on the relationships between academic performance, institutional culture, resource utilization, and core competencies: First, core competencies—like teaching experience, professional development, and instructional strategies—have a major influence on academic performance. Educators who possess extensive experience and receive relevant training are more likely to employ effective teaching methods, resulting in improved student academic scores, higher graduation rates, and increased completion rates. Secondly, efficient resource allocation, including instructional materials, facilities, and compensation, is essential to support effective teaching and learning practices. Institutions that prioritize resource allocation to provide high-quality instructional materials, robust facilities, and competitive compensation for educators tend to achieve better academic performance outcomes. Thirdly, institutional culture plays a crucial role in shaping educational outcomes. Educational institutions that have clear policies and procedures, a compelling mission and vision, and well-established school routines provide a conducive learning environment, which fosters student success and academic achievement. Fourthly, the academic performance of students, which includes their academic scores, graduation rates, and completion rates, serves as a crucial indicator of the overall effectiveness of educational systems. Higher academic performance is typically linked to a combination of effective core competencies, a supportive institutional culture, and optimal utilization of resources.

4.0 RECOMMENDATIONS

Government funding should be allocated towards investments in teacher development. Universities and colleges should prioritize ongoing professional development programs, such as TPAD, to enhance teachers' experience and skills. By sponsoring innovative

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

teaching approaches and providing opportunities for in-service training, educators can deliver high-quality instruction and improve student outcomes.

It is important for schools to cultivate a positive institutional culture. This can be achieved by the school administration fostering a strong institutional culture that includes well-defined procedures, a compelling goal and vision, and clear rules and regulations. By establishing a welcoming and inclusive learning environment, student motivation, engagement, and academic performance can be enhanced.

Institutions should strategically allocate their resources to ensure an adequate provision of teaching materials, infrastructure, and honorarium. Prioritizing investments in materials that directly support instruction and learning can raise educational standards and improve student achievement.

REFERENCES

- 1) Adebunmi, Y. (2017, November 1). Resources Availability in Basic Schools in Kwara State of Nigeria: Implications for Instructional Supervision. *JURNAL PENDIDIKAN MALAYSIA*, 42(2), 127–133. <https://doi.org/10.17576/jpen-2017-42.02-06>
- 2) Adeniran, S. A. (2020). Influence of Teaching and Learning Resources on Student's Performance in Senior Secondary Schools in Gusau Local Government, Zamfara State. *The Eurasia Proceedings of Educational and Social Sciences*, 18, 124-131.
- 3) Akinsolu, A. O. (2012). Resource utilization and internal efficiency in Nigerian secondary schools: Implications for socio problems of education. *International Journal of Sociology and Anthropology*, 4(1), 23.
- 4) Alao, O. E., & Ukpong, M. J. (2020, December 31). Instructional Resources and Effective Pedagogy of Financial Accounting in Secondary Schools, Lagos, Nigeria. *International Business Education Journal*, 13, 94–108.
- 5) Amimo, C. (2016, October). Private Universities in Kenya Seek Alternative Ways to Manage Change in Teacher Education Curriculum in Compliance with the Commission for University Education Reforms. *Australian Journal of Teacher Education*, 41(10), 1–14.
- 6) Arieviditch, I. M. (2020, December). Reprint of: The vision of Developmental Teaching and Learning and Bloom's Taxonomy of educational objectives. *Learning, Culture and Social Interaction*, 27, 100473.
- 7) Bulowa, J., Likoko, S., & Maiyo, J. (2023, March 24). School Culture and Academic Performance in Public Secondary Schools in Trans Nzoia County, Kenya. *International Journal of Scientific and Research Publications*, 13(3).
- 8) Costes-Onishi, P., & Kwek, D. (2023, August). Technical skills vs meaning-making: Teacher competencies and strength of inquiry-based learning in aesthetic inquiry. *Teaching and Teacher Education*, 130, 104152.
- 9) Fitria, H. (2018). The influence of organizational culture and trust through the teacher performance in the private secondary school in Palembang. *International Journal of Scientific & Technology Research*, 7(7), 82-86.
- 10) Johnson, A. W., Wendell, K. B., & Watkins, J. (2017). Examining experienced teachers' noticing of and responses to students' engineering. *Journal of Pre-College Engineering Education Research (J-PEER)*, 7(1), 2.
- 11) Konyango, O. B. (2011). Impact of resource utilization on the performance of physics in KCSE in public secondary schools in Ugunja/Ugenya districts, Kenya. Unpublished Master of Education thesis, Kenyatta University, Kenya.
- 12) Mmassy, Z. (2023, June 30). Internal Education Stakeholders' Views on Parents Involvement in Public Secondary Schools' Affairs in Kilosa District in Morogoro Region. *Journal of Adult Education in Tanzania*, 25(1), 139–156.
- 13) Mohamed O. A. I. (2023, March 10). The Relationship between Head Teachers' School Rules' Implementation and Student Academic Performance In Secondary Schools. *Journal of Namibian Studies: History Politics Culture*, 33.
- 14) Monteiro, V., Carvalho, C., & Santos, N. N. (2021, June 25). Creating a Supportive Classroom Environment through Effective Feedback: Effects on Students' School Identification and Behavioral Engagement. *Frontiers in Education*, 6.
- 15) Mwangi, R. W., & Waithaka, P. (2018). Organizational culture and performance of public universities in Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(2), 288-313.
- 16) Ndemo, D. O., & Kwaba, J. (2023). Influence of Instructional Resources on Pupil Academic Achievement in Public Secondary Schools: A Case of Manga Sub-County Nyamira County, Kenya. *East African Journal of Education Studies*, 6(2), 315-322.
- 17) Ohaegbulem, E. U. (2023, December 31). Comparing the Budgetary Allocations to the Education Sectors of Nigeria and Some African Countries (1999-2021) in View of UNESCO's Benchmarks. *American Journal of Applied Statistics and Economics*, 3(1), 15–23.
- 18) Ohlson, M., Swanson, A., Adams-Manning, A., & Byrd, A. (2016). A Culture of Success--Examining School Culture and Student Outcomes via a Performance Framework. *Journal of Education and Learning*, 5(1), 114-127.
- 19) Ong'amo, B. L., Ondigi, S. R., & Omariba, A. (2017). Effect of utilization of biology teaching and learning resources on students' academic performance in secondary schools in Siaya District-Kenya.

The Nexus between Institutional Environment and Academic Performance of Public Secondary Schools in Nyamira County, Kenya

- 20) Ongere, R. N., & Ogochi, G. (2023). Assessment of the School Resources Availability in Public Day Secondary Schools in Kenya: Case of Manga Sub-County. *East African Journal of Education Studies*, 6(3), 287-296.
- 21) Organization for Economic Co-operation and Development. (2017). *The Funding of School Education: Connecting Resources and Learning*. OECD Publishing.
- 22) Rachman, A., Suriansyah, A., & Effendi, R. (2023, May 18). The Influence of School Culture, Principal Instructional Leadership and Work Motivation on the Teacher Performance of Elementary School. *International Journal of Social Science and Human Research*, 06(05).
- 23) Ross, D. J., & Cozzens, J. A. (2016). The Principalship: Essential Core Competencies for Instructional Leadership and Its Impact on School Climate. *Journal of Education and Training Studies*, 4(9), 162-176.
- 24) Shernoff, D. J., Sinha, S., Bressler, D. M., & Ginsburg, L. (2017, June 17). Assessing teacher education and professional development needs for the implementation of integrated approaches to STEM education. *International Journal of STEM Education*, 4(1).
- 25) Stanley, O., & Better, O. (2023, January 13). Survey of Commonly Used Instructional Materials in the Teaching and Learning of the English Language. *Journal of Language and Linguistics in Society*, 31, 31–41.
- 26) Yoo, S., Mun, C., Cheon, M., Lee, O., Rhee, Y., & Ha, H. (2022). A Study on the Factors Affecting Academic Achievement in the Non-Face-to-Face Class Environment Due to COVID-19: Focusing on Computer Liberal Arts Education Class. *Sustainability*, 14(11), 6547.
- 27) Zhou, P., Bundorf, K., Le Chang, J., Huang, J. X., & Xue, D. (2011). Organizational culture and its relationship with hospital performance in public hospitals in China. *Health services research*, 46(6pt2), 2139-2160.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.