Jumuga Journal of Education,
Oral Studies, and Human Sciences (JJEOSHS)
editor@jumugajournal.org
http://www.jumugajournal.org
Volume 7, Issue 2, 2024
DOI: https://doi.org/10.35544/jjeoshs.v7i2.101

Student Socio-Economic Status & the Type of Enrolled Programs:
Showcasing Kenya's National Polytechnics

Susan Chilande Wafula
https://orcid.org/0009-0005-8517-9525
Masinde Muliro University of Science and Technology
&
Geoffrey Ababu Musera, PhD
https://orcid.org/0000-0001-8494-4778
Masinde Muliro University of Science and Technology
&
Paul Ogenga Akumu, PhD
https://orcid.org/0000-0002-4543-2646
Masinde Muliro University of Science and Technology
&
Cyrus Mboleya Muhanga
https://orcid.org/0009-0004-6451-5799
Masinde Muliro University of Science and Technology

Abstract
This research article examines the effect of students' socio-economic status on the type of program a student enrols in Kenya's national polytechnics. It utilises an ex-post facto research design because the researcher could not manipulate the variable under consideration. Data was collected using questionnaires for students and interview guide schedules. The data was qualitatively and quantitatively analysed. Quantitative data was analysed by using multinomial logistic regression analysis, while qualitative data was analysed thematically. Reliability was attained using internal consistency where a Cronbach Alpha coefficient of 0.8 was established. The multinomial logistic regression results indicated that the student's socio-economic status is not statistically significant in the type of program a student enrols in national polytechnics in Kenya. Consequently, the research article recommends that, the government should increase capitation and loans based on the type of program that one enrols. This is due to the fact that different programs attract different mean costs both directly and indirectly.

Key Words: Socio-economic status, Programs, Type of programs

Introduction

Skills development through technical and vocational educational training (TVETs) holds immense promise for empowering youths and contributing to sustainable economic transformation. A new report by the World Bank and UNESCO (2023) sheds light on the challenges observed in low and middle-income countries. Firstly, it's evident that learners face multiple challenges such as bigger financial limitations, lack of access to information about labour market opportunities and requirements, and rigid social norms that restrict the options and labour. Women are driven by these constraints into lower-paying specialization. There is an urgent need for TVETs reforms in these countries to unlock the promise for better Jobs and productivity while sustaining economic transformation. The high costs of TVETs need to be addressed to reduce per capita costs. The ad hoc and arbitral funding models should be stopped and better models adopted. Attainment in education is one of the important features of achieving self-sufficiency. With increasing gaps between different segments of society the need for education attainment in terms of skills acquisition is paramount. For those with not up to mark skills, the chances of being a competitive member of society gets severely restricted. Self-sufficiency is elusive to anybody without meaningful employment. While many factors influence a student's attainment of skills, the role of students' parental socioeconomic status (SES) has consistently been a factor of great importance. A family's socioeconomic status is based on the family's income, parental education level, parental occupation, and social status such as contacts within the community, group association, and the community-academic performance of the family.

Above and beyond other factors, the significance of parental involvement and financial status regarding student access is very prevalent. The income level of the family is positively associated with the educational attainment of the child. Additionally, it shows the achievement of skills required for the Job. Occupational status measures social position by describing job characteristics, decision-making ability and control and psychological demands on the job (Erick, Nyakundi et al, 2012). A country's main economic goal is to alleviate poverty and ensure the growth of its citizens. Education is considered as a vehicle to achieve the goal of development. This study seeks to consider the socio-economic status background of the students with aiming to assess individual educational performance. In this study, the researcher sought to estimate the nexus between the effect of family socioeconomic background variables and student enrolment in in-demand programs in national polytechnics.

Technological development in the 21st century comes with new demands for the 21st-century workforce. Many Western countries are embracing the idea of new technology in training. These countries enjoy a lot of freedom and flexibility in their educational system. Those countries that have achieved this kind of development have enhanced and fostered a well-organized and linked TVET system (Edwin & Stellah, 2016). In developing countries, the cost of TVETs is much higher than that of secondary education thus posing a more serious challenge to parents. In their analysis, Atchoarena & Delluc (2002) observed that part of the reason for the higher cost of TVETS is that the size of classes is much smaller than recommended. The higher cost of education in TVET is both direct and indirect. Funding for these costs is done by both parents and the government. The government gives an annual capitation fee of 30,000/= per student under the new funding model in Kenya. Students placed by the government are eligible to apply for loans and both government and private scholarships. The remaining is financed by the household. In Kenya, students can get up to 70% scholarships, 22.5% loans, and 7.5% from households.

Beicht et al, 2006 argued that costs are even higher for those programs that require heavy equipment and sophisticated infrastructure. Another study by Bacon (2010) also noted that the price of education in a college was an indicator of product quality, status, and prestige. Similarly, Hayden (2016) observed that financial issues influence the college selection process. Xiaoping (2002) raised a concern regarding the escalating cost of education in terms of tuition fees charged by most colleges. Yusof et al (2009) also found out that the cost of tuition is a moderately important factor considered by parents in selecting a particular institution for their children. Wagner and Fard (200) reiterated that the cost of education, the value of education, and the content structure or certificate offered are the important factors that influence the choice of programs in colleges.

Another study by Ismael (2009) on the mediating effect of information on college choice indicated that students are satisfied with college choice based on their information on their satisfaction concerning financial factors which include financial aid and affordable fees. Economic status is the level of how poor or rich a person is. According to Ahmen, et al (2004), poverty is the inability of a household to meet or afford certain basic needs which include education and training (Muthu and Mugambi, 2010). Most people don't consider education as a basic need despite the Constitution stating otherwise. Therefore, most parents choose basic needs like food shelter, and clothing over education and training. Students from poor households are more likely to miss out on college education than students from affluent backgrounds. (Keriga and Bujra, 2009). Therefore, the level of income of the parents will dictate enrolment in TVETs. Becker and Tomes in their research in New York on the rise and fall of families, noted that poor families were financially constrained and, hence, could not invest in the education of their children (Becker and Tom, 2009).

Kenya's economic survey report noted that the poor economic growth in Kenya led to persistent poverty among Kenyan households who lived below the poverty line and were therefore unable to access basic services like food, shelter, health, and education (the Republic of Kenya 2013). This is the reason Ngerechi (2003) observed that even though tuition fees in TVETs were reasonable, they remained high for most families that were poor. This he noted, hindered access and retention in TVET institutions because most of the time students are sent home for fees, get demotivated, disinterested, and drop out. Research by Ngumbao (2012) cited among other factors the economic variables which included high fees, which ultimately increased the cost of education. Despite having similar findings in the previous studies, the current study dwelt much on how cost affects the choice of program at the national polytechnic with reference to the mean opportunity cost. The chances of a student enrolling in a program in a national polytechnic and completing increased by 54% if the parent is in the middle of socio-economic status. Therefore, a one-unit increase in a household's disposable income increases the possibility of a student completing a program at the National Polytechnic by 43%.

The relationship between a student's SES and the type of post-secondary program they enrol in reflects significant disparities in access and educational pathways. Higher SES students are more likely to attend four-year colleges, often due to their families' financial resources and cultural capital, which support rigorous academic preparation and exposure to college-oriented environments. Lower SES students, on the other hand, are more likely to enter two-year colleges or vocational programs, partly due to financial constraints and the absence of academic preparation resources. Even as college enrolment increases generally, the widening enrolment gap between SES groups indicates that wealthier families increasingly leverage resources to access selective programs and institutions, while lower-income students face challenges in reaching these programs despite expanding post-secondary opportunities (Reber & Smith, 2023). The influence of SES on program type is also connected to school-level factors. Wealthier students often attend well-funded schools that provide extensive extracurricular options, advanced coursework, and a college-going culture, all of which increase students' readiness for four-year colleges. In contrast, students from low-income families may attend under-resourced schools that focus on essential programming due to budget constraints, limiting college preparation opportunities. These school disparities in resources and educational environments perpetuate SES-based inequalities in college attendance, as students in wealthier schools benefit from a "cumulative advantage" that enhances their academic performance and the likelihood of attending selective four-year institutions (Parker et al., 2023; Levy et al., 2023).

Individual and family expectations further reinforce SES-driven patterns in program-type enrolment. High SES families tend to set higher educational expectations, encouraging children to pursue college-preparatory courses and participate in enriching activities that support a trajectory toward four-year colleges. Conversely, students from lower SES backgrounds may face economic and social pressures that limit their ability to engage in these preparatory activities. Socioeconomic status thus plays a direct role in shaping students' educational expectations and achievements, ultimately influencing the type of post-secondary program they choose or can access (PLOS ONE, 2022). Research highlights that addressing these SES-based disparities requires systemic changes, including increased funding for low-income schools, policies that promote equitable access to college-prep resources, and robust academic support for under-resourced students. Such interventions could reduce SES-linked gaps in program-type enrolment, giving lower SES students a stronger foundation for accessing four-year programs and achieving similar educational outcomes as their higher SES peers (Garcia, 2023). Research highlights that family background, including parental education and socioeconomic status, has a substantial influence on a student's ability to access and succeed in higher education (Chen & Rothstein, 2023). Parents with higher educational attainment tend to encourage academic achievement, foster aspirations for higher education, and provide the necessary resources and guidance to support their children's academic journey (Huang et al., 2022). Moreover, families with greater economic resources can often invest in preparatory programs, tutoring, and college application guidance, which increase the likelihood of their children's enrolment in prestigious institutions and competitive programs.

The type of secondary school attended also significantly affects students' access to higher education. Studies have shown that students from private or well-funded public schools often benefit from better educational resources, smaller class sizes, and more individualized attention compared to those in under-resourced schools (Jones & Li, 2021). Additionally, these schools frequently offer more rigorous academic programs, extracurricular opportunities, and college counselling services that collectively bolster students' preparedness for university-level programs (Garcia et al., 2022). These disparities in secondary school resources mean that students from affluent backgrounds or high-quality schools are often more competitive applicants and are more likely to pursue and succeed in prestigious or specialized higher education programs (Walker & Tan, 2023).

The type of academic program a student enrols in at a higher educational institution is often correlated with their secondary education background and family support. Students from high-performing secondary schools and families with strong academic or financial resources are more likely to enrol in fields with high status and economic potential,

such as medicine, engineering, or business (Patel & Kim, 2023). Conversely, students from lower-income families or less competitive schools may opt for programs with lower entry requirements or that offer immediate employment opportunities, reflecting both economic necessity and the limitations imposed by their educational preparation (Smith et al., 2022). Such trends underscore how the interplay between family and secondary school background can channel students into particular academic and career paths.

Family expectations and attitudes toward education also play a pivotal role in shaping students' program choices. Research indicates that families with a history of higher education are more likely to instil values associated with academic achievement and long-term career planning, motivating students to pursue competitive programs in universities (Thompson & Chen, 2021). In contrast, first-generation college students often experience more uncertainty when selecting a program, as they may lack guidance on higher education expectations and career implications of different fields of study. This often results in first-generation students clustering in less selective programs, which may not offer the same economic or professional benefits as high-status fields (Lin et al., 2022). The relationship between secondary school type, family background, and program enrolment is further influenced by institutional policies and support structures. For instance, some universities offer bridge programs or targeted scholarships for students from marginalized backgrounds to encourage their enrolment in high-demand programs (Sullivan & Zhao, 2023). However, research suggests that while these policies can reduce some barriers, they do not entirely offset the advantages enjoyed by students from affluent backgrounds and top-tier schools (Evans & Morgan, 2022). This has led to an ongoing debate on the effectiveness of affirmative policies versus structural reforms in achieving equitable access to diverse programs across higher educational institutions.

In conclusion, the intersection of family background, type of secondary school attended, and program choice at higher education institutions reveals complex patterns of educational inequality. The socioeconomic and educational resources provided by families, coupled with the quality of secondary schooling, shape students' academic options and trajectories in profound ways. The findings underscore the need for policy interventions that not only provide financial aid but also address structural inequities in secondary schooling to ensure fairer access to high-quality programs at the tertiary level (Brown et al., 2023).

Research Methodology

The research employed an ex-post facto research design. This design is a systematic empirical inquiry in which the researcher does not have direct control of the independent variable because their manifestation has already occurred or is inherently not manipulated. This design is appropriate for the research since the cost (Fees) at the National Polytechnic has already been pre-determined. The study wouldn't modify/manipulate it. In this design inferences about relations among variables are made without direct intervention from a co-committeemen variable of independent and dependent variables (Simon and Goes 2013) and (Kellinger and Howard, 2000). The researcher employed this research design since the explanatory variable had already manifested itself (cost) and could be manipulated by the researcher.

Target Population Sample Size

The study was carried out in selected eight national polytechnics situated in eight regions previously provinces of Kenya. It targeted a population of 83,147 students from eight national polytechnics and eight s principals from these national polytechnics. This constituted a target population of 83,155 respondents. This study targeted the 2021/2022 cohort of students in national polytechnics. A sample size of 1854 from this cohort, was found using the formula.

$$n = \frac{(z \times O)^2}{e}$$

Where n = sample size

Z = Z score associated with the desired confidence level. (1.96 for 95%)

O = population standard deviation (0.5)

E = the standard the study will be willing to tolerate (±2.5%)

According to Welch and Coma 1988) these parameters and better than ±3% widely accepted in social sciences research.

Data Collection and Analysis

Data was collected through questionnaires and interviews; questionnaires were given to students while interviews were subjected to the college principals. Interview schedules were used to solicit in-depth information from the principals on the cost of programs. The document analysis guide was able to give documentary evidence concerning the amount of fees charged through the fee structures. Nominal rolls provided the much-needed information concerning total enrolment per program. This information generated reliable qualitative data for analysis.

Results and Discussion

A total of 1845 questionnaires were administered to 2021/2022 cohort of students in national polytechnics. Out of the 1845 questionnaires administered, 1654 questionnaires were completed and returned successfully. A response rate of 89.65% was achieved. As Oso and Onem (2005) Opine this is considered adequate for data analysis. Interview schedules with eight college principals were successful i.e. it achieved 100% response. The results revealed that the mean cost of the program was a significant determinant of the choice of program in national polytechnics. The result also suggests that the KCSE score was key in choosing the programs in national polytechnics. A one-point increase in KSCE score increased the chances of doing STEM courses by 43%. In addition, college characteristics and location contributed to the 20% chance of students choosing programs in that institution.

Empirical Results

Multinomial logistic regression was performed to determine the effect of a student's socio-economic status on the type of program enrolled in the National Polytechnic. The results are illustrated in the table 1 below:

The findings from the three models are summarized in Table 1

Multinomial logistic regression for the association between students' program of study and socio-economic status.

		Pure/Applied Sciences Vs H/Hotel Management						Engineering Vs H/Hotel Management						Economics/BM Vs H/Hotel Management					
		Model 1	(a32)	Medel 2	(a32)	Model 3	(a32)	Model 1	(a32)	Model 2	(a32)	Model 3	(a32)	Model 1	(a32)	Model 2	(a32)	Model 3	(a32)
	Variable level	RRR	P	RRR	P	RRR	P	RRR	P	RRR	P	RRR	P	RRR	P	RRR	P	RRR	P
		1.00	0.002					1.00	0.048					1,00	0.034				
	Tuition fee			1.00	0.337	1.00	0.378			1.00	0.282	1.00	0.21			1,00	0,463	1.00	0.287
	Related Expenses (exam)			1.79	0.109	1.85	0.100			1.495	0.242	1.14	0.344			1.67	0.352	1.31	0.48
3.1	1=Low SES			0.43	0.104	0.53	0.248			1.980	0.073	3.12	0.003			1.22	0.281	3.21	0.06
33	3=High SES			1.52	0.197	1.67	0.124			1.984	0.074	1.55	0.103			1.56	0.241	1.56	0.431
	Male Student = 1			4.15	0.00	4.13	<0.001			1.244	0.044	0.85	0.592			1.89	0.073	0.85	0.647
	KCSE Score 6=C; 12=A			2.58	0.00	2.68	<0.001			1.344	0.006	1.11	0.383			0.107	0.171	1.43	0.426
	1 = SGL 0=otherwise			2.72	0.002	2.93	0.002			1.508	0.117	1.38	0.260			0.671	0.36	0.83	0.394
	1=MBS 0=Otherwise			0.57	0.019	0.07	0.024					0.44	0.076					0.44	0,432
						0.56	0.298					0.57	0.113					082	0.325
t		0.04	<0.00	0.00	<0.001	0.00		0.08	0.001	0.01	<0.001	0	0.01					0.01	
		1654		1654		1654		1654		1654		1654		1654		1654		1654	
pdf); Value		(10)12	0.001	(24)750	0.004				(10)12	0.346		960				(10)12	0.420	660	
R^2		0.006		0,2951		0.152		0.3521		0.001		0.365		0.426		0.481			

Table 4. 7 Multinomial logistic regression for the association between students' program of study and socio-economic status.

Key: LR = likelihood ration; df=degrees of freedom; RRR=Relative Risk Ratio

The result suggests that a one-unit increase in the mean cost (fees) reduced the relative risk ratio of studying STEM courses by 1.05 times (P=0.048). When students' characteristics such as KCSE score and Student sex were controlled, the mean cost of the program became insignificant. It was revealed that a one-unit increase in KCSE score increased the chances of studying STEM courses by 6.18 (P=0.001).

Further, when student characteristics and college characteristics were controlled, the cost of the program remained statistically significant at (P=0.364) with Pseudo R squared = 0.32. This implied that KCSE score i.e. entry behaviour as measured by performance in KCSE was a very significant factor in choosing STEM-related courses. This was attributed to the fact that STEM courses require a high level of intellectual capability. As such, even if the mean cost of programs were lowered, students who performed dismally in KCSE can still shy away from these programs. Findings also show that intellectually able students prefer STEM courses. This is due to its association with good returns and opportunities (Dickson and Harmon; Sloane 2005; Blundell et al 1999). These findings are in line with the proposition that talented people choose occupations that are associated with increasing returns to ability (Muthu 2013, Menon 1999, Murphy, Shleifer and Vishny 1991, Rosen 1981)

Findings still show that parental participation and school resources may buffer the socio-economic status-academic achievement association. This study suggests focused treatment for low-income students.

Findings still suggest that the type of polytechnic plays an important role in student choice of program. These findings are consistent with the findings of MC Faddel (2015), who observed college identity constructs such as geographical location, cost, age, infrastructure, and reputation are important predictors of student college choice.

Conclusion

Despite having similar findings in the previous study, the current study dwelt much on the pricing aspect of programs in national polytechnics in Kenya. For the program one chooses the chances of a student enrolling in the program in a national polytechnic are increased by the student's parental level of education, socio-economic status, and mean cost of the program. Therefore, a decrease in the mean cost of programs can increase the possibility of retaining students in various programs in the National Polytechnic. Student from low SES finds it hard to get fees for their programs in national polytechnics compared to those from other SES groups. These findings align with the observation of principals from national polytechnics who observed that funding from the government should be need-based but not flat rate. Some programs are very expensive, and capitation fees from the funding model may be way too low for these programs. Furthermore, the statistical analysis performed confirmed the significance of the model used to analyse the effect of the cost of the program on the choice of program in national polytechnics in Kenya.

The rejection of the null hypothesis underscores the financial aspect is access, retention, and completion of programs in national polytechnics by students. This study's findings resonate with the prior research carried out by Wagner and Fard (2009), who reiterated that the cost of education, value and content, and structure or certificates offered are the most important factors that influence the choice of students. Similar to our findings their research emphasized the cost of programs that contributed to the access, retention, and completion of programs in National Polytechnics in Kenya.

References

Afeti, G. (2006). Strategy to revitalize technical and vocational education and training (TVET) in Africa*, background document for the African Union's TVET Experts' meeting, 13-14 December 2006*, Addis Ababa.

Anaele, E.O.;ISiorhovoja, O.;Dele,A. &Asoluka,C.O.(2014).Strategies for Enhancing female participation in Apprenticeship in Technical Occupations. *Indian Journal of Applied Research* 4, 2, 27-30.

Bank.*IOSR Journal of Research & Method in Education (IOSR-JRME) e-ISSN: 2320–*

BBC. (2011).The subtle messages that put women off science. http://www.bbc.co.uk/news/education14292081 (Accessed 5 June, 2014)

Benell, P. (1996*).* General versus vocational secondary education in a developing country: A review of rate of return evidence. *The Journal of Development Studies 33(2) 230-247.*

Brown, J., Evans, T., & Morgan, S. (2023). *Educational inequities and program choice in higher education: A structural perspective*. Higher Education Quarterly.

Chen, P., & Rothstein, H. (2023). *Parental influence on higher education outcomes: A cross-sectional analysis*. Journal of Educational Psychology, 115(2), 203-217.

Collins, C., Kenway, J., & McLeod, J. (2000).Factors Influencing the Educational Performance of Males and Females in School and their Initial Destinations after Leaving School. Commonwealth of Australia.

Dauda, R.O. (2007). Female Education and Nigeria's Development Strategies: Lots of Talk, Little Action? *Indian Journal of Gender Studies, 14(3) 461–479*. SAGE Publications.

DuToit, R &Roodt, J(2009). Engineers in a developing country .The profession and education of engineering professionals in South Africa. Cape Town: HSRC Press

Eshiwani, (1990).Implementing Educational Policies. Washington D.C: World Bank.

European Engineering Report (2009). In cooperation with Institut der deutschenWirtschaft Köln.

European Engineering Report (2009). In cooperation with Institut der deutschenWirtschaft Köln.

Forum on Public Policy (n.d.).Women's Leadership in Science, Technology, Engineering &Mathematics:Barriers to Participation. McCullough, L.,University of Wisconsin- Stout. doc.no. EJ944199.pdf

Garcia, A. (2023). *Socioeconomic status and college choice: The role of family expectations and high school resources*. Educational Policy Analysis Archives, 31(7), 83-101.

Garcia, L., Walker, A., & Tan, K. (2022). *Secondary school resources and pathways to college: Disparities in access to higher education*. Sociology of Education, 95(4), 389-406.

Gornick, V. (1990). Women in Science.New York: Touchstone
http://rvti.ac.ke/index.php?option=com_content&view=article&id=90-abstract Papers retrieved on 8/9/2016

Huang, Y., Jones, D., & Li, R. (2022). *Family socioeconomic status and access to higher education: Evidence from national data*. Educational Researcher, 51(5), 482-493.

Joints Admission Board. (2011).*Guidelines to K.C.S.E candidates: Application for admission to public universities*. Nairobi: Joints Board Admission.

Kaiboi Technical Training Institute, Eldoret, Kenya. *Case studies of TVET in selected countries.*

Kamau, S. M. (2013). Challenges affecting the technical and vocational education training youth polytechnics in Kiambu, Kenya. International Journal of Human Resource and Procurement Vol.1, Issue 5, 2013; http://www.ijsse.org ISSN 2307-6305

Lauren, K. (2014). Factors influencing female students' enrolment in technical courses: a case of Matili .

Levy, B., et al. (2023). *Cumulative advantage and educational inequality: Socioeconomic disparities in postsecondary program enrollment*. American Journal of Sociology, 129(1), 45-68.

LosAngeles/London/NewDelhi/Singapore.http://ijg.sagepub.com/content/14/3/461.DOI:10.1177/0971 52150701400305

Manda, D.K., Mwabu, G., &Kamenyi, M.S. (2002*).*Human capital externalities and Mathematics in Asia. Korean women's Development Institute (KWDI): Bangkok, South Korea.
Medugu, J., &Abubakar, B. (2013).Employers' Perception of the Role of Technical. Journal of Research & Method in Education (IOSRJRME), 2(3), 1-5.
MoHE . (2013). National Education Statistics: Higher Education Sector 2012.
MoHE.http://www.mohe.gov.my/web_statistik/Perangkaan_SPT_2012.pdf (Accessed 9 September, 2014

Muthima,P.W (2015). Private rates of return to investment in technical education: A Nabwile, Lydia (2011).Factors influencing completion of agricultural engineering Nairobi: Government Printers.

Nalianya, R.M. (2011).Factors influencing career choices by students in tertiary

Ngerechi, J.B. (2003).Technical and Vocational Education and Training. Botswana Training Authority (BOTA).

Njuguna, B. G. (2011). Secondary school students' attitudes towards enrolment in Parker, J., & Garcia, A. (2023). *Family socioeconomic status and its impact on college enrollment patterns*. Journal of Higher Education, 94(3), 120–135.

Patel, M., & Kim, S. (2023). *The effect of school quality on higher education program choice*. Research in Higher Education, 64(1), 12-29.

PLOS ONE. (2022). *Family socioeconomic status and college attendance: A consideration of individual-level and school-level pathways*. PLOS ONE. Retrieved from https://journals.plos.org

Reber, S., & Smith, E. (2023). *College enrollment gaps: How academic preparation influences opportunity*. Brookings. Retrieved from https://www.brookings.edu

Republic of Kenya (2011).Kenya Economic Survey. NRB: Government Printer.

Republic of Kenya, (2004).Kenya Economic Survey. NRB: Government Printer.

Republic of Kenya, (2007).*Kenya vision 2030: A competitive and prosperous Kenya*.

Republic of Kenya, (2015).*Kenya economic survey.* Nairobi: Government Printer. Returns to education in Kenya*. Discussion Paper No 13.* Nairobi: KIPPRA.

Seng, L. (2007).Vocational technical education and economic development.

Simiyu, J. (2009). Revitalizing a technical training institute in Kenya. A case study of Singapore experience.

Sullivan, C., & Zhao, W. (2023). *Bridge programs and college diversity: A review of institutional support structures*. Journal of Policy and Management in Higher Education, 7(2), 124-139.

Udeani, U. &Ejikeme, C. (2011). A decade into the 21st Century: Nigerian Women

UNESCO & NCST. (2010). Mainstreaming gender in science and technology policies

UNESCO. (2010). Women's and Girls' Access to and Participation in Science.

UNESCO.(2015).Girls and Women in Science, Technology, Engineering and

UNESCO.http://www.uis.unesco.org/ScienceTechnology/Documents/unesco-egm-

UNESCO-UNEVOC (2010). Case Studies of TVET in selected Countries. Improving UNESCO-UNEVOC (2010).Improving the Participation of Female Students in TVET

Usman, A. &Gatabazi, P. (n.d.).The role of Technical and Vocational Education and Vocational Education and Training in Sustainable Development in Nigeria.*Vocational and Technology Education Programme, Yola.*Retrieved on 11th November, 2014 from Page org. *scholar.google.com vocational technical eeducation.*

Watermeyer, R. andStevenson,V.(n.d.) Discovering Women in STEM: Girls into World Bank.(2012). Toward Gender Equality in East Asia and the Pacific. A Youth Polytechnics: The case of Bibirioni location-Limuru. Nairobi: University of Nairobi.

Ethical Pledge

This is original research conducted among the National Polytechnics in Kenya. All research ethics were observed. The researcher obtained necessary approvals from the University and Nacosti (National Commission for Science, Technology & Innovation).

Competing Interests

No financial, personal, or undue interests influenced the researcher to conduct this study, which was initially conducted as a requirement for the award of a master's degree in the Economics of education.

Author(s) Contributions

The researchers are the sole authors of this article.

Disclaimer

The views expressed in this research article are those of the author and do not necessarily reflect the official policy or position of any affiliated agency of the authors or the Journal itself.

Ethical Considerations Statement

This article followed all ethical standards for research without direct contact with human or animal subjects. Ethical clearance was given by Masinde Muliro University and the National Commission for Science, Technology & Innovation (NACOSTI).