International Journal of Research in Education Humanities and Commerce

Volume 06, Issue 02 "March - April 2025"

ISSN 2583-0333

INFLUENCE OF BLENDED TEACHING AND LEARNING STRATEGIES; A COMPARISON OF STUDENTS' ACADEMIC PERFORMANCES IN BLENDED LEARNING AND FACE-TO-FACE LEARNING APPROACHES' AT KENYA MEDICAL TRAINING COLLEGE (KMTC) IN NYANZA REGION, KENYA

COLLINS MOSES OWUOR (MBChB/MMed)
KCA University/ Kenya Medical Training College – Nairobi, Kenya

IGNATIUS MUNYIRI (PhD)
KCA University – Nairobi, Kenya

JACKSON MWANGI (PhD)
KCA University – Nairobi, Kenya Grace Achieng' Otieno (Bpharm/MPharm)
KMTC, Nairobi

https://doi.org/10.37602/IJREHC.2025.6222

ABSTRACT

Background: This research explores the impact of blended teaching and learning approaches on students' academic performance at Kenya Medical Training Colleges (KMTC) in the Nyanza Region of Kenya.

Methodology: The research used a mixed descriptive cross-sectional method, combining qualitative and quantitative data collecting methods across 14 KMTC campuses, covering roughly 13.3% of the student population (9,954 students). Fisher's method was used to choose a sample of 280 students, which was then stratified and randomized. Structured questionnaires, interviews, and focus group discussions were utilized to collect data, which was then evaluated statistically using Pearson correlation and Multiple Logistic Regression.

Findings: The study discovered a considerable difference in students' academic performance in online and face-to-face exams. Students did better in virtual examinations (mean score 68.875%) than in face-to-face examinations (mean score 60.0568%). Correlational studies revealed that gender and age had no significant influence on academic achievement in both learning approaches.

Discussion: The findings indicated that blended learning techniques can improve students' academic performance while creating a welcoming and fair learning environment. However, the efficiency of these tactics may be determined by factors including administrative support and instructor readiness.

Conclusion: Blended learning techniques considerably enhance students' academic performance in medical training, emphasizing the need for more effective educational approaches in Kenya's medical training field.

Study Limits and Future Directions: The research sample size and scope is restricted. Further study should look at the long-term effects of blended learning and the development of student-specific support services. Additionally, subsequent studies should explore the optimal strategies for blended learning systems in medical training institutions for maximized effectiveness.

Keywords: Students' Academic Performance, Blended Learning, KMTC, Face-to-Face Learning, Nyanza Region, Kenya, Educational approaches, Medical Training.

1.0 INTRODUCTION

Blended learning, an educational model that combines traditional classroom approach with technology breakthroughs, is rapidly becoming acknowledged as excellent for medical education across the globe. It blends classroom lessons with computerized simulations and online resources to reduce costs and increase scheduling efficiency while building a solid basis in scientific and clinical abilities (Fitzgerald et al., 2021). Internationally, there is a movement toward e-learning in medical institutions, which can take numerous forms such as independent learning, e-learning, and mobile education, with an emphasis on applying theoretical concepts in clinical situations.

In Africa, blended learning concerns the issue of restricted access to educational tools and facilities. It offers high-quality medical training at a lesser cost, catering to individuals who cannot pay standard university tuition or have limited access to conventional colleges. The blended approach improves student engagement, allows for real-time contact, and provides customized attention, which is critical in locations with limited educational resources (Bock et al., 2021).

The post-COVID-19 era saw a significant transformation in educational techniques, particularly in medical training in Kenya. The government's decision to resume regular learning underscored the importance of a balanced approach that includes both academic knowledge and practical abilities. Blended teaching and learning evolved as a method to overcome the skills gap that exists between student performance in practical and theoretical elements of medical education (Odhiambo, 2018; Owuor, C., et, al., 2021).

Kenya Medical Training College (KMTC) has been a pioneer in implementing online academic programs, especially during and after the COVID-19 pandemic. The institution's strategic plan calls for improving digital infrastructure and incorporating blended teaching and learning into the curriculum, with a focus on digital platforms for syllabus covering and evaluations (Gachanja et al., 2021; Owuor, C., et al., 2024). KMTC's blended learning method, which combines online lectures with in-person sessions, strives to develop a culture of perpetual learning and ready students for future careers in healthcare.

1.1 Statement of the Problem

Despite the growing student population and increasing demand for flexible, innovative training methods at Kenya Medical Training College (KMTC), traditional face-to-face teaching remains the predominant approach. However, the impact of blended learning, which combines online and in-person instruction, on students' academic performance and satisfaction has not been adequately studied. This research aims to fill that gap by evaluating the effectiveness of

Volume 06, Issue 02 "March - April 2025"

ISSN 2583-0333

blended learning compared to traditional methods in improving academic outcomes at KMTC campuses in the Nyanza region, providing critical insights for future curriculum development in medical training.

1.2 Purpose of the Study

This study aims to investigate the influence of blended teaching strategies on medical training in Kenya Medical Training College (KMTC) campuses in the Nyanza region of Kenya by comparing blended learning approaches with traditional face-to-face instruction in improving students academic outcomes.

1.3 Study Objective

This research will evaluate students' academic performance in blended and face-to-face learning modalities applied to support training initiatives among KMTC students as its primary objective. It aims to assess the effectiveness of blended learning in improving students' academic performance and participation in medical education compared to face-to-face methods, in line with KMTC's strategic goals and addressing larger educational concerns in Kenya and Africa. The secondary objectives include an assessment of the associations between demographic factors such as age and gender with students' academic performance in online and face-to-face learning approaches at KMTC. Moreover, the student's perspectives of the efficacy and the learning experiences provided by the blended learning approach at KMTC will be evaluated.

2.0 MATERIALS AND METHODS

2.1 Research Design

A mixed descriptive cross-sectional study design was used, with qualitative and quantitative data collected to provide a full description of the problem. This methodology enabled a thorough knowledge of the link between factors and the attitudes, views, and experiences that influence the conduct of the population being studied (Martin et al., 2013).

2.2 Study Location and Population

The study was carried out at the Kenya Medical Training College (KMTC) in Kenya's Nyanza region, which has 14 campuses: Kisii, Nyamira, Nyamache, Kuria, Migori, Rachuonyo, Homa-bay, Kisumu, Lake Victoria, Kombewa, Rera, Bondo, Siaya, and Ugenya. These campuses accounted for roughly 13.3% of the KMTC student body, or 9,954 students.

2.3 Sampling Procedure

The campuses were chosen using a purposive selection strategy that prioritized convenience and accessibility. The sample size of 280 students was calculated using Fisher's et al. method. Participants were selected using proportionate stratified and simple random sampling approaches, assuring diversity across departments, gender, age, degree of study, and campus location.

Table 1 Sampling Grid

KMTC Campus	Students Population	Percentage	Cumulative Percent	Proportionate Sample per College
KMTC Kisumu	1532	15.4	15.4	43
KMTC Homabay	1100	11.0	26.4	31
KMTC Lake Victoria	622	6.2	32.6	17
KMTC Kisii	1211	12.1	44.7	34
KMTC Nyamira	706	7.1	51.8	20
KMTC Migori	420	4.2	56.0	12
KMTC Nyamache	210	2.1	58.1	6
KMTC Kombewa	1031	10.3	68.4	29
KMTC Bondo	600	6.0	74.4	17
KMTC Rera	270	2.7	77.1	7
KMTC Ugenya	300	3.0	80.1	8
KMTC Siaya	1234	12.4	92.5	35
KMTC Rachuonyo	248	2.5	95.0	7
KMTC Kuria	500	5.0	100.0	14
TOTAL	**9954**		**100.0**	**280**

2.4 Data Collection Techniques

Data was obtained using structured and semi-structured questionnaires, Focus Group Discussions (FGDs), and key informant interviews. Questionnaires were conducted using a secure online platform to ensure data confidentiality and security. Interviews and FGDs offered qualitative information about the lecturers' responsibilities and students' opinions.

2.5 Ethical Considerations

The research maintained ethical principles and received clearance from KCA University's graduate school dean, the National Commission for Science, Technology, and Innovation (NACOSTI) license No: NACOSTI/P/23/2358, and the KMTC administration. Participants' rights were honored, with voluntary consent, privacy, and secrecy maintained.

2.6 Research Validity and Reliability

A pilot study, expert evaluation, appropriate sampling, and statistical testing were used to confirm the instrument's validity and reliability. Cronbach's alpha coefficient ($\alpha = 0.86$) confirmed the internal coherence of the questionnaires (Kennedy, 2022). Inter-rater reliability tests revealed that the interviews and the Focused Group Discussions (FGDs) had a high degree of agreement between the coders, kappa coefficient = 0.87 (Halimoon et al., 2021). Therefore, the data gathering tools were consistent and accurate.

2.7 Data Analysis Techniques

Volume 06, Issue 02 "March - April 2025"

ISSN 2583-0333

The data was analyzed using descriptive statistics and SPSS version 28. To investigate significant correlations and predict linkages, several statistical methods were used, including the Pearson correlation test and the Pearson Product Moment Co-relation.

3.0 RESULTS

The findings below captures the study's outcomes which sought to compare the students' academic performance in blended and face-to-face educational approaches at the Kenya Medical Training Colleges in Nyanza region of Kenya. The research targeted 280 respondents out of whom 264 respondents returned filled questionnaires providing a response rate of 84.6% which is considered appropriate for analysis in studies involving institutions such as colleges since it is greater than 80% (Fincham, 2008).

The primary finding was a comparative assessment of students' academic performance in online and face-to-face examinations. The results indicated that online examinations had a greater mean score (68.8750) than face-to-face exams (60.0568). Similarly, the median (70.5000 > 60.000), mode (72.00 > 51.00) and standard deviation (12.54125 > 9.87084) was greater in online than in face-to-face examinations respectively. The range for academic performance in online examinations, with a standard deviation of 12.54125, was 68% (between 20% and 88%) which implied that the data set for these examinations was spread out from the mean. Conversely, in face-to-face examinations that reported a standard deviation of 9.878084, the range was 40% (between 41% and 81%) implying that the data set for these examinations was clustered around the mean.

Table 2. Average Academic Performance in KMTC's Blended Learning Approach

		Average Performance in	
		Online Exam	Face-face-Exam
N	Valid	264	264
	Missing	0	0
Mean		68.8750	60.0568
Median		70.5000	60.0000
Mode		72.00	51.00
Std. Deviation		12.54125	9.87084
Range		68.00	40.00
Minimum		20.00	41.00
Maximum		88.00	81.00

The research used a Pearson correlational analysis to examine the association between gender and students' academic performance in both educational approaches. The P-value test results for gender were 0.556 and 0.635 in online and face-to-face examinations respectively. Since the values are greater than 0.01, the researcher concluded that gender had no significant impact on the examination results. Secondly, the Pearson Product Moment Co-relation was used to test for the association between age and student's academic performance in both learning

environments. Results indicated a weak association between age and online (.240) as well as face-to-face (.240) examinations. Additionally, the P-value for age to online (0.033<0.05) and face-to-face (0.025<0.05) revealed a weak significant association between the variables.

Table 3. Correlation Analysis of Gender and Academic Performance

Correlations			
		Average Performance in	
		Online Exam	Face-face-Exam
Respondents Gender	Pearson Correlation	.064	.052
	Sig. (2-tailed)	.555	.635
	Covariance	.399	.249
***. Correlation is significant at the 0.01 level (2-tailed).*			
b. Listwise N=263			

Table 4. Correlation Analysis of Age and Academic Performance

		Average Performance in	
		Online Exam	Face-face-Exam
Indicate your age bracket.	Pearson Correlation	.227*	.240*
	Sig. (2-tailed)	.033	.025
	Covariance	2.361	1.958
	N	264	264

The research also evaluated students' engagement with online learning resources to complement face-to-face learning, providing numerical data on their interaction and dedication to online learning. Several metrics including percentage of students involved in online sessions and accessibility of internet-enabled devices were employed. 88.6% of the students reported having access to a smartphone or laptop, while 11.4% reported inaccessibility. 89.8% of the respondents confirmed the existence of blended teaching approach in their campuses with 10.2% reporting only the face-to-face method. The percentages highlight some extensive use of both educational approaches across various KMTC campuses. The withdrawal rate was 61.4% after enrollment in online classes whereas 38.6% of the students were dedicated to the sessions. This indicate a need to support the blended learning approach adequately to boost retention.

Finally, students' perspectives of blended learning were assessed, with an emphasis on their perceived efficacy and satisfaction with this learning approach. The application of knowledge obtained from online sessions into practice revealed a neutral perception with a standard deviation of 1.317 which is close to one. Similarly, the perceived cost differences between both educational approaches reported a standard deviation of 1.354 which is close to one suggesting the responses were clustered at a neutral opinion. A standard deviation of 1.512 revealed a multi-modal effect with a majority of the responses highlighting neutrality when respondents were asked about the effectiveness of online learning for busy or remote medical students. Student's views on flexibility in online learning environments indicated neutrality at a standard

deviation of 1.405. Moreover, the respondents maintained neutrality when describing the impact of the blended approach on teacher continuity and student access to digital resources. The figures indicate a standard deviation of 1.434 which means the responses were clustered around the neutral opinion.

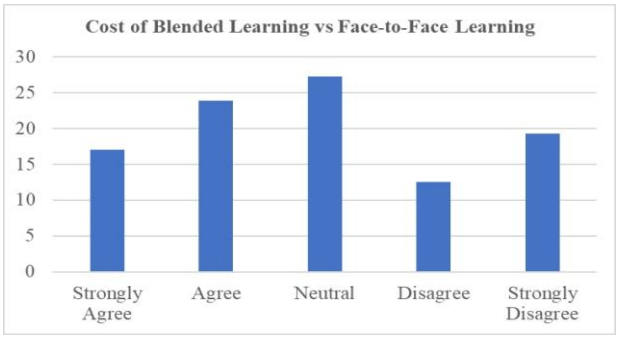

Figure 1. Bar Graph Showing Perceived Cost Differences Between the Educational Approaches

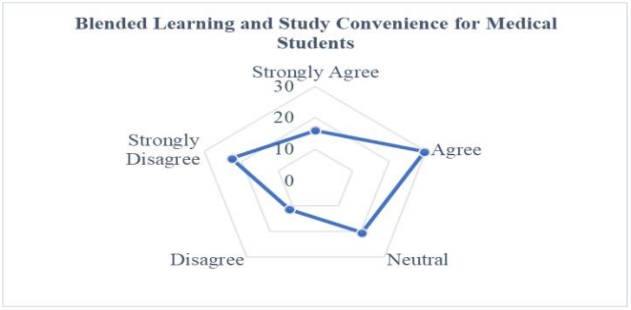

Figure 2. Radar Plot for Students' views on flexibility in Online Learning Environments

4.0 DISCUSSION

This research found the blended learning method used to supplement the face-to-face method at Kenya Medical Training Colleges (KMTC) in the Nyanza region of Kenya to be effective in improving students' academic performance. The results show that blended learning significantly enhanced students' academic performance, notably in online exams. This is consistent with earlier studies that indicates blended learning might improve exam performance and student motivation (Fitzgerald et al., 2021).

Secondly, the research underscores the importance of lecturers' proficiency in technology and academics for blended learning potency. It implies that regular professional growth is needed for lecturers to successfully transition to blended teaching approaches. The training should cover the technicalities of electronic systems and creative methodological ways of using these systems to enhance the learning process. This is fundamental to effectively transitioning to blended teaching techniques, as evidenced by other studies that identified university support as an essential to sustainable implementation (Kintu et al., 2017; Dziuban et al., 2018).

Volume 06, Issue 02 "March - April 2025"

ISSN 2583-0333

Notably, the study reports varied students' satisfaction with the blended learning experience. Although several found it educational and adaptive, a substantial number indicated disengagement or discontent, emphasizing the importance of individualized methods to address the different requirements of students. This mirrors with the results of a study that discovered improved educational outcomes attributed to more student involvement (Bolliger & Halupa, 2018). In contrast, a research revealed no significant distinction in academic results between conventional and blended learning, although retention ratings differed, showing the subtlety of blended learning's influence (Korkmaz & Karakus, 2009).

The report proposes some changes to KMTC's faculty development practices. The administration should provide clear criteria for student evaluations in blended learning settings and collect students' input occasionally to improve educational experiences. This guarantees that exams are fair, concise, and depict students' knowledge and competence. Future study should include longitudinal research on students' academic performance in blended learning contexts and a thorough evaluation of factors influencing students' satisfaction. The results would inform adjustments to the blended learning systems to enhance their efficacy. Additionally, research should focus on determining the optimal blended learning strategies for medical schools. The outcomes would lead to the formulation of procedures and standards for quality medical education, eventually adding to the medical sector and students' competency.

5.0 CONCLUSION

The research found that blended learning considerably enhances students' academic performance in medical college, with students scoring better on online examinations. The results exhibit the possibilities of blended learning to improve educational outcomes within KMTC. Major recommendations are to adjust the faculty development practices to prioritize technological and educational competencies, developing clear assessment standards for blended learning, and soliciting student input occasionally to improve the learning experience. Further studies should comprise longitudinal research examining students' academic performance, thorough investigation of factors influencing students' satisfaction, and the identification of optimal strategies for blended learning in medical school. The research emphasizes the necessity of continuous improvement and modification in blended learning approaches for improved educational efficacy in medical school.

5.1 Acknowledgement

I sincerely thank the Kenya Medical Training College (KMTC) for their significant help and resources throughout this study effort. Their collaboration, entry to campuses, and student engagement were critical to the study's success. I am also grateful to the KMTC students who kindly gave their time and expertise. Their enthusiastic concentration increased the comprehensiveness and high standard of the findings. My supervisors, Dr Ignatius Nyaga Munyiri and Dr. Jackson Mwangi, deserve special mention for their steadfast leadership and competence. Their encouragement and support were crucial at every level of this project. I want to thank my friends and family for their unwavering tolerance, understanding, and encouragement throughout the study's difficult period. Finally, I thank the larger academic and research community for establishing the framework for blended learning. This undertaking has been a team effort, and I am thankful to everyone participating.

5.2 Conflicts of Interest

The author states that there are no conflicts of interest in the publishing of this work. This comprises any financial, personal, or professional motives that might be considered to have impacted the outcomes provided in this research.

REFERENCES

Bock, A., Kniha, K., Goloborodko, E., Lemos, M., Rittich, A. B., Möhlhenrich, S. C., Rafai, N., Hölzle, F., & Modabber, A. (2021). Effectiveness of face-to-face, blended and e-learning in teaching the application of local anaesthesia: a randomised study. BMC Medical Education, 21(1). https://doi.org/10.1186/s12909-021-02569-z

Bolliger, D. U., & Halupa, C. (2018). Online student perceptions of engagement, transactional distance, and outcomes. Distance Education, 39(3), 299–316. https://doi.org/10.1080/01587919.2018.1476845

Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning: the new normal and emerging technologies. International Journal of Educational Technology in Higher Education, 15(1). https://doi.org/10.1186/s41239-017-0087-5

Fincham, J. E. (2008). Response rates and responsiveness for surveys, standards, and the Journal. American Journal of Pharmaceutical Education, 72(2), 43. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2384218/

Fitzgerald, D. A., Scott, K. M., & Ryan, M. S. (2021). Blended and e-learning in pediatric education: harnessing lessons learned from the COVID-19 pandemic. European Journal of Pediatrics. https://doi.org/10.1007/s00431-021-04149-1

Gachanja, F., Mwangi, N., & Gicheru, W. (2021). E-learning in medical education during COVID-19 pandemic: experiences of a research course at Kenya Medical Training College. BMC Medical Education, 21(1). https://doi.org/10.1186/s12909-021-03050-7

Halimoon, H., Mukhtar, M. I., & Roddin, R. (2021). Validity and Reliability of Practical Teaching Practice Instruments among Construction Technology Lecturers in Vocational Colleges. Journal of Technical Education and Training, 13(3), 162–171. http://penerbit.uthm.edu.my/ojs/index.php/JTET/article/view/7912

Kennedy, I. (2022). Sample Size Determination in Test-Retest and Cronbach Alpha Reliability Estimates. British Journal of Contemporary Education, 2(1), 17–29. https://doi.org/10.52589/bjce-fy266hk9

Korkmaz, O., & Karakus, U. (2009). The Impact of Blended Learning Model on Student Attitudes towards Geography Course and Their Critical Thinking Dispositions and Levels. Turkish Online Journal of Educational Technology, 8(4), 51–63. https://www.learntechlib.org/p/59974/

Martin Lee Abbott, & McKinney, J. (2013). Understanding and Applying Research Design. John Wiley & Sons.

Odhiambo, G. (2018). The role of Kenyan universities in national development. FIRE: Forum for International Research in Education, 4(3). https://doi.org/10.32865/fire20184324

Owuor, C., Tshombe, D., Musuya, A., and Otieno, G (2021) "FACTORS AFFECTING STUDENTS ASSESSMENTS PERFORMANCE: CASE OF KENYA MEDICAL TRAINING COLLEGE (AN OPERATIONAL STUDY OF KMTC)". African Journal of Education and Practice, 7(2). https://www.iprjb.org/journals/index.php/AJEP/article/download/1257/1373

Owuor, C., Otieno, O. G., Kinyua, K., Shunet, N. S., Muirugi, H. M., and Otieno, S. A (2024) "SOCIODEMOGRAPHIC RISK FACTORS OF MENTAL HEALTH AND ACADEMIC PERFORMANCE IN THE CONTEXT OF ADOPTION OF ADOPTION OF INNOVATIVE TECHNOLOGIES AT THE KENYA MEDICAL TRAINING COLLEGE (KMTC): A CRITICAL REVIEW OF LITERATURE". International Journal of Research in Education Humanities and Commerce. https://doi.org/10.37602/IJREHC.2024.5502

