

Challenges in the utilization of student-centered learning strategies on academic performance in clinical medicine at the Kenya Medical Training College, Bondo and Siaya campuses, Kenya

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ABSTRACT

Student-centred learning (SCL) places the student at the centre of policies, practices and decision-making in the teaching–learning process. The teacher and the instructor provide the learners and the students with opportunities to learn independently. For many years, there has been a problem with regard to the theory practice gap in student-centred learning at Kenya Medical Training College, as indicated in many studies. Therefore, this study mainly focused on challenges of student-centred learning strategy in clinical medicine at Kenya Medical Training College (KMTTC), Bondo and Siaya Campuses. The study was based on constructivist learning theory developed by Jean Piaget that gave insight to the contributing factors for learning strategy. The study was conducted at Siaya and Bondo Campuses. The study utilized descriptive survey design where stratified random sampling was used to classify the two KMTTC. Purposive sampling was used to select the samples with the required information. Proportionate sampling was employed to select a sample size within the samples that would reflect the numerical strength of the samples selected and finally simple random sampling technique was used to accord each member a chance of being selected and each choice would be independent of any other choice. The target population for the study was 295 students and 25 lecturers. The study used Yamane method to arrive at a sample size of 203 students. Correspondingly, pilot study was carried out and feedback obtained was used to correct research instruments that were afterwards used to collect data in the field. Data was collected through validated questionnaires for students and interviews from lecturers. Descriptive and inferential analysis was utilized to analyze data both qualitatively and quantitatively. The results revealed a significant relationship between challenges of student-centered learning and academic performance (t-statistic = 1.965, p-value = 0.001 < 0.05). The study concluded that student-centered learning in clinical medicine is a transformative approach that aligns educational practice with the evolving demands of healthcare and recommends that programs to train students in time management, self-regulation, and teamwork should be embedded early in the curriculum to support their engagement in SCL.

Key words: Challenges, Learning, Performance, Student-Centered Learning

I. INTRODUCTION

The concept of Student-centered learning was derived from several models. First evolves out of the constructivist learning theory which asserts that knowledge is constructed uniquely and individually in multiple ways. For instance, most learning theories taught in graduate programs describe information acquisition as an individually focused process. This comprises conventional behaviorist viewpoints, which emphasize behavioral modifications as proof of learning, and cognitivist viewpoints, which emphasize the mental processes involved in internalizing and processing knowledge. These viewpoints hold that learning is the result of inputs and outputs that are independent of the holistic learner and that learning is seen as a change in behavior or information processing. These epistemic perspectives are the foundation for numerous instructional design approaches (Parker & Roumell, 2020).

Student-centered learning, also known as learner-centered education, broadly encompasses methods of teaching that shift the focus of instruction from the teacher to the student. In original usage, student-centered learning aims to develop learner autonomy and independence by putting responsibility for the learning path in the hands of students by imparting to them skills, and the basis on how to learn a specific subject and schemata required to measure up to the specific performance requirement. Student-centered instruction focuses on skills and practices that enable lifelong learning and independent problem-solving. Student-centered learning theory and practice are based on the constructivist learning theory that emphasizes the learner's critical role in constructing meaning from new information and prior experience. A paradigm shift in the roles of a teacher from being a supplier of knowledge to that of a facilitator in the process of knowledge building is implied by student-centered learning (Matewere *et al.*, 2022).

In Australia SCL is widely accepted as a highly approach, although it goes by numerous names including personalized learning. Student-centered learning had spread to more than 1,300 educational institutions, both

government and private, (Australian council for educational research). The program focuses on creating positive, participatory environments along with flexible and empowering process. Physical environment support SCL. This allows learners to take time out if they are sick or need to work at home or in the fields then return without having to repeat the same grade. Students move on their own pace, advancing to the next levels of institutions when they are ready (Sarfranz *et al.*, 2022). According to the research which was done in the University of Illinois at Chicago, students perceived that SCL approach which was adopted consistently across the curriculum contributed to the development of information management, critical reasoning and team building skills (Björklund *et al.*, 2022).

A medical Six year study which was done in Helsinki University, which compared traditional and activating instruction, found that the activating grouped developed better study skills and understanding, but were slower in their study (Geng *et al.*, 2019). Students had increased participation, motivation and grades in courses implementing student-centered learning approach, (Van Doren *et al.*, 2021). SCL appears to be reflective of today's society where choice and democracy are important concept. This is a novel concept of an integrated, concise and clinically oriented medical curriculum and many philosophers believe that it makes medical students "practical thinkers" rather than "passive studiers"; encourages exploratory behavior and a comprehensive approach to learning. It improves reasoning skills, logical thinking, communication and teamwork which are essential competencies of a doctor (Chen *et al.*, 2022).

There is a growing paradigm shift in teaching and learning and is increasingly being exported to Africa without contemplating the diverse nature of the evolution. The core rationale of the shift is that the lecture-centered approach is outmoded in the context of the changing times of the information technology (IT) (Sarfranz *et al.*, 2022). Consequently, the focus is increasingly shifting to new ways of capturing the student's attention to learn. In Kenya, it would seem inappropriate that the society is homogenous and this changing trend in uniformly accepted in the education sector.

1.1 Statement of the Problem

The knowledge on medical education has an influence on educators' teaching approaches. If the main objective of an educator is to ensure that students can comprehend most of what she or he teaches, then one must use the most current teaching approaches that will create interest among the students and motivate them to interact and ask questions during the teaching-learning process. Educational psychologists such as John Dewey, Jean Piaget and Lev Vygotsky are proponents of active students' approach to learning and they were primarily responsible for the transition towards student-centred learning. Recently, Kenya overhauled its education system of 8-4-4 that had been in place for over forty years. This system was teacher-centered and encouraged rote learning among the learners. Eventually, the system ended up Channing professionals who were not fit for purpose and hence could not be absorbed by the job market. Despite this paradigm shift towards student-learner, there are some students who are surface learners and like to be told what to learn, how to think and how to answer. They prefer the traditional educational method. Drateru (2019) studied bridging of the gap between theory and practice. The reflection was found as a way to bridge the gap between theory and practice; improved interpersonal, professional and communication skills were also highly valued. These students have been spoon-fed since their primary and secondary schools depriving them of the self and creative thinking and active learning process. There is a big gap and disconnect between theory and practical skills and among the learners and the graduates. This therefore, calls for determination of Challenges of utilization of student-centered learning strategy on academic performance in clinical medicine at Kenya medical training college Bondo and Siaya campuses, Kenya.

1.2 Research Objectives

Determine the challenges of student-centered learning strategy on academic performance in clinical medicine at Kenya Medical Training College, Bondo and Siaya Campuses.

1.3 Research Hypotheses

H0_i: There was no statistically significant challenges of student-centered learning strategy on academic performance in clinical medicine at Kenya Medical Training College, Bondo and Siaya Campuses.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Constructivist Learning Theory

This study was based on constructivist learning theory. This theory holds that learning is at its best when done through constructivist pedagogies; basing on the context of learning, content of learning, and commitment to learning. These allow learners to develop relevance for themselves through personal linkages to new information or learning, and through interaction with other stakeholders within the learning environment. Cognitive constructivism whose proponent is Jean Piaget held that knowledge is actively formulated or constructed by the learner, and focused at what happens in the learner's head. He went ahead to encourage strategies that help students to actively engage with new information.

Whereas social constructivism, fronted by Lev Vygotsky emphasizes the collaborative nature of learning and encourages strategies involving cooperative groups (Chuang, 2021)).

Student centered learning is an approach to education focusing on the students' needs, abilities, interests, and learning styles, rather than needs of others involved in the educational process, such as teachers and administrators. Student's voice is central to the learning experience for every learner (Hassan et al., 2010). The aim of autonomous learning does not involve treating students in isolation, rather, it underpins the need for students to become interdependent learners, who will work with and help each other with the teacher as a guide.

2.2. Empirical Review

Since March 2020, when the global pandemic of Coronavirus disease 2019 (Covid-19) was first recognized, technology has been a requirement in higher education. Under the direction of public health officials, global emergency lockdowns led to the closure of universities and businesses; social distancing measures were implemented to stop the virus's transmission, which led to the suspension of in-person instruction and a shift to online learning. Teachers in the health sciences faced new difficulties as a result of the rapid change in teaching strategies since they had to adapt practical skill instruction for online delivery (Forde & OBrien, 2022).

Internationally, educators have embraced original and cutting-edge approaches to teaching practical skills online, which may not seem like they would be appropriate for distance learning. Staff members used technology to build and create instructional tools for teaching practical skills in order to get over the pedagogical difficulties brought on by the Covid-19 epidemic. In order to teach practical skills remotely, health science educators often use pre-recorded instructional videos, narrated PowerPoint presentations, and live practical sessions with students practicing at home (Forde & OBrien, 2022). Studies on the effectiveness and acceptability of digital technology in the teaching of theoretical knowledge and practical skills, particularly in the fields of surgery, dentistry, nursing, and physiotherapy education, have received the majority of attention. The exploration of the challenges and opportunities posed by digital technology in health science education generally and in the acquisition of practical skills especially is lacking in the literature, nevertheless.

Online learning has become a widely used method of learning in educational settings as a result of the quick development of multimedia and Internet technologies and their widespread use in distance education. Online learning, defined as delivering learning experiences using Internet technology, is not a new idea (Pan, 2022). In the broadest sense, online learning refers to all teaching and learning activities carried out through computer networks, especially the Internet technologies. In the narrowest sense, online learning means that all participants in teaching and learning are online-connected and embedded in computer-mediated environment. Based on fully realizing the educational potential of technology, scholars have described online learning as an activity that combines education with internet technology and ultimately produces or constructs new knowledge. It has also been described as a process that disseminates and offers a full range of knowledge resolutions via the Internet in order to create knowledge and enhance its performance. Similar to how the explicit presumption that online learning is a kind of distant learning has been embedded in scholars' view of the superiority, accessibility, and flexibility of online learning (Pan, 2022)

One of the well-known theories in educational psychology that addresses the connection between cognition and instruction is the cognitive load theory. It has been used in studies pertaining to the development of multimedia instructional materials. As learning is a conscious process, it is difficult and time-consuming. It's possible to classify this learning process as cognitive. Similar to that, it heavily depends on a small amount of working memory and pertinent knowledge from enormous amounts of long-term memory. When learners have access to crucial information and feedback beforehand (such as information provided in 3D), their superfluous cognitive burden in learning environments can be reduced (Matewere *et al.*, 2022). In order to reduce the cognitive load of learners using video-based social media platforms, the visual content that conveys the learning materials must match the learners' tactile processes. Also, the complexity of the learning task is related to the cognitive load that comes from people's prior knowledge. The unnecessary cognitive load of students may grow when an improper instructional strategy is used for teaching or learning. In a setting that supports learning, giving students the right information and feedback can help them focus better, think more clearly, and be more reflective (Matewere *et al.*, 2022)

Interprofessional collaboration amongst pre-qualified students from an expanding range of healthcare professions must be developed utilizing PBL in order to enhance security and maintain safe and effective healthcare. Professional stereotypes may hinder collaboration in practice and education, according to earlier research. In an interdisciplinary setting, belonging to a profession provides a source of professional identity and confidence. As a result, prejudices about professionals are not only held by non-professionals but are also supported by them. The majority of the research has focused on how medical and nursing students are perceived in terms of stereotypes based on their professions (Matewere *et al.*, 2022)

Preceptors and medical instructors are both responsible for and facilitators of the students' learning in clinical settings, and it is the obligation of the students to actively participate in their own learning. From the perspective of the students, the clinical environment has been characterized as unsupportive, for instance due to organizational flaws, a

lack of a relationship between students and preceptors, and preceptors' unfavorable attitudes and behaviors. Inhibitors to learning that result from preceptors' lack of engagement and feedback have also been mentioned by students. Students feel that theory and practice are not clearly connected to one another and that they lack opportunities to reflect with their preceptors as a result of preceptors who are not always accessible or genuinely involved. Finding enough time to supervise students in the clinical context is a major difficulty for preceptors, and this, together with the lack of acknowledgment by the faculty and healthcare organizations, seems to diminish the significance of the role. According to preceptors, it is important to create a balance between overseeing students and caring for patients. There is a chance that the demands of the clinical setting will interfere with monitoring and hinder student learning (Ekstedt *et al.*, 2019).

The challenge for higher education in the twenty-first century is to rethink how knowledge is transmitted and how teachers and students engage during the teaching-learning process. The recent SARS-CoV-2 epidemic has accelerated the need to meet this challenge and increased the necessity to approach the problem from a digitalization viewpoint. To do this, instructional programs that are directed for teaching staff must be created that cover both the use of technology and instructional design with a focus on encouraging the growth of self-regulated learning (SRL) and automatic feedback mechanisms (Sáiz-Manzanares *et al.*, 2022). The active role that students play in their learning and skill development has been reinforced by recent innovations in higher education. Particularly in the case of first-year students, the qualities of students in terms of their academic background, abilities, and motivation are particularly relevant aspects in lesson planning. International research indicates that first-year students have high levels of underachievement and dropout rates, which may be related to the fact that students enter higher education with little background knowledge, few skills in learning strategies, or little understanding of how to learn new course material.

Students require suitable amounts of autonomy or self-regulation mechanisms in their learning if they are to assure an autonomous and active role (Sáiz-Manzanares *et al.*, 2022) Self-regulation is a multifaceted concept that scholars acknowledge as being complex. Resources from the fundamental knowledge, cognitive, metacognitive, emotional, and motivational student domains are frequently incorporated into instruments to assess self-regulation strategies or skills. According to a contextual approach, self-regulation encompasses not only the conventional cognitive and motivational aspects but also the management of emotions, the area of specialized knowledge, and the frequency of use of technology and information. Also, authors now place more emphasis on learning techniques and methods, working memory, inhibitory control, or thinking flexibility than on traditional intelligence or IQ in terms of cognitive and metacognitive components. Self-regulation techniques depend not only on teachers' evaluation and teaching methods but also on other student qualities. At varying degrees, curriculum designs can also be a significant moderating factor in the growth of student self-regulation. Usually, a number of initiatives are launched in an effort to encourage these abilities, particularly self-regulation. When working with particular student subgroups, institutions and teachers may need to use diagnostic tools to pinpoint the cognitive, metacognitive, motivational, and emotional skills that are most lacking (Sáiz-Manzanares *et al.*, 2022).

III. METHODOLOGY

The study was conducted at selected KMTCs in Siaya County. There are a total of five KMTCs in the county namely, Siaya, Bondo, Rera, Ugenya and Ugunja. However, Siaya and Bondo Campuses which are situated in Siaya Sub County and Bondo Sub County respectively were used in the study as they are the only campuses offering the Clinical Medicine program in the County. The study utilized descriptive survey design. Students undertaking Clinical Medicine at KMTC Siaya and Bondo were key participants in the study. The study population were the students and lecturers in the Department of Clinical Medicine in KMTC-Siaya and Bondo campuses. The target population was 295 students and 25 lectures. The inclusion criteria were teachers and the students from the department of Clinical Medicine while the exclusion criteria were students and lecturers absents during the data collection day(s). The students taking other courses other than clinical medicine. Stratified random sampling was used to classify KMTC. Purposive sampling was used to select the samples with the required information. Proportionate sampling was employed to select a sample size within the samples that would reflect the numerical strength of the samples selected and finally simple random sampling technique was used to accord each member a chance of being selected and each choice would be independent of any other choice. In determining the study sample, the researcher was guided by Yamane's formula (Lamola & Yamane, 1967). On the basis of the formula, the researcher arrived at a sample size of 203 students and 24 lecturers.

Data collection tools involved the use validated questionnaires, for students and interviews for lecturers. The researcher incorporated triangulation in the data collection process in order to enhance verification and validation of the collected data. Triangulation is the use of multiple data collection techniques. This multi-faceted approach of data collection gave the researcher an opportunity to corroborate the collected data thus improving on the reliability of the study findings. The data collection instruments were subjected to a validation process. This process included seeking expert opinions from the study supervisors on the appropriateness of items included in the questionnaires. Feedback given by these experts helped in the improvement of the data collection instruments. A pilot study was conducted at Kakamega KMTC which was outside the study area. Cronbach's alpha was used to analyze the reliability measures of

the study instruments. Students' questionnaire had a reliability value of 0.908 showing that these instrument were reliable as indicated by Orodho (2014). To avoid plagiarism, all sources cited in the study were acknowledged.

Ethical considerations were also taken into account during data collection process. Permission to conduct the study in the region was sought from Ethics and Research Committee of MMUST and KMTC- Siaya and Bondo. During the data collection procession, the respondents were assured of the confidentiality of their identities. To ensure this was done, participants were requested not to write their names anywhere on the research instruments. This was necessary because it constituted an explicit willingness of the participants to voluntarily participate in the study. Data was analysed in line with the study objective with the aid of the Statistical Package for Social Sciences (SPSS) Version 27 computer software.

IV. FINDINGS & DISCUSSION

4.1 Response Rate

A total of 215 questionnaires were issued to students and 24 to lecturers. A total of 208 (97%) questionnaires were returned back from students and 24 (100%) from lecturers. Of these 5 (2.4%) of the questionnaires returned from students were dropped out of the tally for having significant gaps in response for variable items. Therefore 203 (94%) questionnaires from students was used in the study for analysis.

4.2 Demographic Distribution

The result in Table 1 shows that 5 (20.8%) of the lecturers in the study were of below 30 years, 14 (58.3%) were between 30-40 years and 5 (20.8%) were above 40 years. This demonstrates that Kenya medical training college have a diverse age distribution for lecturers. In addition, findings on the age of respondents' shows that there was age diversity presentation in the teaching fraternity. Many studies on the effect of age on productivity arrive at a general conclusion that workers aged between 30 and 40 years are most productive at their work stations. This is in agreement with the study as majority of lecturers were between 30 – 40 years. These are also the years when the head lecturers could be the most effective in curriculum supervision and therefore are likely to give truthful responses. The study therefore can be considered to have population validity.

On education level, the results shows that majority of the respondents 18 (75%) had attained the level of Bachelor's degree as the highest level of education followed by 4 (16.7%) with Higher National Diploma level while 2(8.3%) did not specify the level of education. From the results, all respondents were qualified to teach in Kenya medical training college and therefore in a position to provide reliable judgment on determination of utilization of student-centred learning strategy in clinical medicine at Kenya medical training college. On the other hand, the results shows that majority of the respondents 21 (87.5%) were full time lecturers while 3 (12.5%) were part time lecturers. The respondents therefore had adequate time to influence, observe, and make correct judgments on determination of utilization of student-centred learning strategy in clinical medicine at Kenya medical training college.

Table 1

Summary of the Demographics Characteristics of Lecturers

Lecturers' Demographic Characteristic		Frequency	Percent
Age	Below 30 years	5	20.8
	30-40 years	14	58.3
	Above 40 years	5	20.8
Education level	Higher national Diploma	4	16.7
	University degree	18	75.0
	Other (specify)	2	4.3
Medical level of education	Diploma	2	8.3
	Degree	20	83.3
	None	2	8.3
Employment	Full time lecturer	21	87.5
	Part time Lecturer	3	12.5

The results in Table 2 shows that 36(17.7%) of students were below 20 years, 155(76.4%) were between the age of 20-30 years while 12 (5.9%) were above 30 years. In addition, findings on the age of respondents' shows that there was age diversity presentation in the students fraternity. Furthermore, from the analysis of age, it was clear that the students were old enough to understand determination of utilization of student-centred learning strategy in clinical medicine at Kenya medical training college.

On the year of study, the results shows that majority of the respondents 76 (37.4%) were in their third year of study followed by 71(35%) were in second year and 56 (27.6%) were in the first year of study. The results shows an equal distribution from all the classes participating in the study. Since majority of students were third year students who had gone through the system from year 1, they were able to understand the student-centred learning strategy and felt its impact in clinical therefore give honest opinion on determination of utilization of student-centred learning strategy in clinical medicine at Kenya medical training college. The results also shows that 85(41.9%) of the students had obtained B-(minus) as mean grade, 53(26.1%) had obtained B (plain), 26 (12.8%) had obtained C+ (plus) while 39(19.2%) had obtained C (plain) as the entry behaviour to Kenya medical training college. From the results, all respondents were qualified to join the Kenya medical training college and therefore in a position to provide reliable judgment on determination of utilization of student-centred learning strategy in clinical medicine.

Table 2

Summary of the Demographics Characteristics of the Students

Students' Demographic Characteristics	Frequency	Percent	
Age	Below 20 years	36	17.7
	20-30 years	155	76.4
	Above 30 years	12	5.9
Year of study	First year	56	27.6
	Second Year	71	35.0
	Third Year	76	37.4
Level of professional study	Ordinary/Basic Diploma	203	100.0
KCSE mean grade	C	39	19.2
	C+	26	12.8
	B-	85	41.9
	B	53	26.1

4.3 Analysis of Likert Scale

The researcher sought to find out challenges of utilizing the student centered learning strategy. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results of the likert is shown in Table 3. On the availability of internet facility 107(52.8%) of the respondents agreed that internet facility is available for students' use in your campus centered. 20(9.9%) of the respondents could neither agree nor disagree. 76(37.4%) of the respondents disagreed with the statement. The mean score was 2.86 with standard deviation of 1.520, this shows that majority of the respondents agreed with the statement that agreed that internet facility is available for students' use in your campus centered. The item mean was below the composite mean of 3.195 indicating a negative influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.453 indicating a wider spread in response for the item than the variable. This findings concur with the findings of Panda *et al* (2021) that lack of collaboration and/or poor communication between the students, educators, and clinical staff, issues with the instruction they receive, the number of students, and organizational quality were identified as some of the main factors that negatively affect the students' learning.

On the availability of Moodle, You-Tube, Twitter and Skype in the campus centered. 112(55.2%) of the respondents disagreed with the statement. 34(16.7%) of the respondents neither agreed nor disagreed. 57(28.1%) of the respondents agreed that Moodle, You-Tube, Twitter and Skype is available in the campus centered. The mean score was 3.53 with standard deviation of 1.343, this shows that majority of the respondents disagreed with the statement. The item mean was above the composite mean of 3.195 indicating a positive influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.453 indicating a small spread in response for the item than the variable. The study concurs with the study by (Forde & OBrien, 2022) that the use of cutting-edge technologies in the classroom, such as virtual simulations of clinical settings, has grown in popularity in recent years, giving students a special chance to reinforce their practical skill development through clinical practice that is digitally improved.

On the use of electronic library materials/ Programs, 85(41.9%) of the respondents disagreed, 27(13.3%) neither agreed nor disagreed. 91(44.8%) of the respondents agreed that they use electronic library materials/ Programs is in the campus centered. The mean score was 3.06 with standard deviation of 1.485, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 3.195 indicating a negative influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.453 indicating a wider spread in response for the item than the variable. The results agree with the study by Pan, (2022) that online learning has become a widely used method of learning in educational settings as a result of the quick development of

multimedia and Internet technologies and their widespread use in distance education. Online learning, defined as delivering learning experiences using Internet technology, is not a new idea.

On whether they use videos, tapes, computer assisted learning facility, 107(52.8%) of the respondents disagreed, 18(8.9%) of the respondents were neutral while 78(38.4%) of the respondents agreed that they use videos, tapes, computer assisted learning facility. The mean score was 3.33 with standard deviation of 1.484, this shows that majority of the respondents disagreed with the statement that they use videos, tapes, computer assisted learning facility. The item mean was above the composite mean of 3.195 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.453 indicating a wider spread in response for the item than the variable. In addition to this results, higher education students' prior characteristics are very uniform, and teachers' curriculum and instruction are good examples of knowledge transfer. Consequently, the knowledge conversion theory can be used to improve learning outcomes for college students as they enhance their skills.

Table 3

Challenges of Utilizing the Student Centered Learning Strategy

Technology/ Facility	SA	A	UD	D	SD	Mean	Std
Internet Facility	47(23.2%)	60(29.6%)	20(9.9%)	27(13.3%)	49(24.1%)	2.86	1.520
Moodle, You- Tube, Twitter, Skype	16(7.9%)	41(20.2%)	34(16.7%)	44(21.7%)	68(33.5%)	3.53	1.343
Electronic Library materials/ Programs	36(17.7%)	55(27.1%)	27(13.3%)	31(15.3%)	54(26.6%)	3.06	1.485
Videos, Tapes, Computer Assisted Learning Facility	28(13.8%)	50(24.6%)	18(8.9%)	41(20.2%)	66(32.5%)	3.33	1.484
Composite mean and Std						3.195	1.453

The researcher sought to find out challenges teaching and learning strategy. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results of the likert is shown in Table 4. From Table 4, the results shows that 87(42.8%) of the respondents agree that over 75% of teaching and learning is done through computer-based technologies in the campus, 22(10.8%) of the respondents were neutral while 94(46.3%) disagree. The mean score was 3.12 with standard deviation of 1.504 this shows that majority of the respondents disagreed with the statement. The item mean was above the composite mean of 2.97 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.459 indicating a wider spread in response for the item than the variable. The results also shows that 95(46.8%) of the respondents agree that 50% of teaching and learning is done through computer-based technologies in the campus, 25(12.3%) were neutral, while 83(40.9%) disagree. The mean score was 2.95 with standard deviation of 1.427, this shows that majority of the respondents agreed with the statement that 50% of teaching and learning is done through computer-based technologies in the campus. The item mean was below the composite mean of 2.97 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.459 indicating a small spread in response for the item than the variable. On the other hand, the results shows that 87(42.9%) of the respondents agreed that 25% of teaching and learning is done through computer-based technologies in the campus. 41(20.2%) were undecided, while 75(37%) of the respondents disagree. The mean score was 2.95 with standard deviation of 1.306, this shows that majority of the respondents agreed with the statement that 25% of teaching and learning is done through computer-based technologies in the campus. The item mean was below the composite mean of 2.97 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.459 indicating a small spread in response for the item than the variable. Lastly, the results shows that 99(48.7%) of the respondents agree that over below 25% of teaching and learning is done through computer-based technologies in the campus, 19(9.4%) of the respondents were neutral while 85(41.8%) disagree. The mean score was 2.86 with standard deviation of 1.598 this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.97 indicating a negative influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.459 indicating a wider spread in response for the item than the variable. Based on this results, the challenge for higher education in the twenty-first century is to rethink how knowledge is transmitted and how teachers and students engage during the teaching-learning process. The recent COVID-19 epidemic has accelerated the need to meet this challenge and increased the necessity to approach the problem from a digitalization viewpoint. To do this, instructional programs that are directed for teaching staff must be created that cover both the use of technology and instructional design with a focus on encouraging the growth of self-regulated learning (SRL) and automatic feedback mechanisms (Sáiz-Manzanares *et al.*, 2022).

Table 4*Challenges of Teaching and Learning*

Percentage	SA	A	UD	D	SD	Mean	Std
Over 75%	38(18.7%)	49(24.1%)	22(10.8%)	39(19.2%)	55(27.1%)	3.12	1.504
50%	38(18.7%)	57(28.1%)	25(12.3%)	43(21.2%)	40(19.7%)	2.95	1.427
25%	30(14.8%)	57(28.1%)	41(20.2%)	44(21.7%)	31(15.3%)	2.95	1.306
Below 25%	63(31%)	36(17.7%)	19(9.4%)	36(17.7%)	49(24.1%)	2.86	1.598
Composite mean and Std						2.97	1.459

The researcher sought to find out the number of KMTC lecturers in comparison with learning activities demand. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results of the likert is shown in Table 5. From the findings 21(10.3%) of respondents could not agree or disagree that the number of KMTC lecturers in comparison with learning activities demand is excellent. 110(54.2%) of the respondents agreed that the number of KMTC lecturers in comparison with learning activities demand is excellent. 72(35.5%) disagreed. The mean score was 2.75 with standard deviation of 1.548, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.818 indicating a negative influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.424 indicating a wider spread in response for the item than the variable. The results also shows that 23(11.3%) of the respondents could neither agree nor disagree, 56(27.6%) disagreed. It was found that 124(61.1%) agreed that that the number of KMTC lecturers in comparison with learning activities demand is good. The mean score was 2.62 with standard deviation of 1.262, this shows that majority of the respondents agreed with the statement that the number of KMTC lecturers in comparison with learning activities demand is good. The item mean was below the composite mean of 2.818 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.424 indicating a small spread in response for the item than the variable. On whether the number of KMTC lecturers in comparison with learning activities demand is fair. 33(16.3%) of the respondents could neither agree nor disagree. 62(30.5%) disagreed while 108(53.2%) of the respondents agreed that the number of KMTC lecturers in comparison with learning activities demand is fair. The mean score was 2.73 with standard deviation of 1.282, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.818 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.424 indicating a small spread in response for the item than the variable. Lastly, the results also shows that 78(38.4%) of the respondents agree, 16(7.9%) were undecided while 109(53.7%) disagreed. The findings showed that majority of the respondents disagree that the number of KMTC lecturers in comparison with learning activities demand is poor. The mean score was 3.17 with standard deviation of 1.605. The item mean was above the composite mean of 2.818 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.424 indicating a wider spread in response for the item than the variable. For SCL to succeed, there must be a positive clinical learning environment with adequate learning opportunities and attention to the requirements of the students. Clinical learning takes place in intricate healthcare environments, and how and what students learn there greatly depends on their experiences. When asking questions to attain learning objectives, students should feel motivated and secure in their surroundings. The interaction between the student, preceptor, and teacher is extremely important for the clinical learning environment and student supervision to support student learning. Medical educators play a crucial and multifaceted role in supervision, including encouraging, supporting, resolving issues, and monitoring (Ekstedt *et al.*, 2019).

Table 5*The Number of KMTC Lecturers in Comparison with Learning Activities*

Remarks	SA	A	UD	D	SD	Mean	Std
Excellent	59(29.1%)	51(25.1%)	21(10.3%)	26(12.8%)	46(22.7%)	2.75	1.548
Good	33(16.3%)	91(44.8%)	23(11.3%)	32(15.8%)	24(11.8%)	2.62	1.262
Fair	34(16.7%)	74(36.5%)	33(16.3%)	37(18.2%)	25(12.3%)	2.73	1.282
Poor	55(27.1%)	23(11.3%)	16(7.9%)	51(25.1%)	58(28.6%)	3.17	1.605
Composite mean and Std						2.818	1.424

The researcher sought to find out the challenges of class size. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results are shown in Table 6. The results shows that 123(60.5%) of the respondents agreed that the class size is excellent, 15(7.4%) of the respondents neither agreed nor disagreed while 65(32%) of the respondents disagreed. The mean score was 2.61 with standard deviation of 1.513, this shows that majority of the respondents agreed with the



statement that the class size in regard to maximum academic interaction with teachers and other learning resources is excellent. The item mean was below the composite mean of 2.825 indicating a negative influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.389 indicating a wider spread in response for the item than the variable. The results also shows that 130(64.1%) of the respondents agreed that the class size in regard to maximum academic interaction with teachers and other learning resources is good, 28(13.8%) of the respondents neither agreed nor disagreed while, 45(22.2%) of the respondents disagreed. The mean score was 2.55 with standard deviation of 1.227, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.825 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.389 indicating a small spread in response for the item than the variable. On whether the class size in regard to maximum academic interaction with teachers and other learning resources is fair, 105(51.2%) of the respondents, 39(19.2%) of the respondents neither agreed nor disagreed while 60(29.6%) disagreed. The mean score was 2.79 with standard deviation of 1.265, this shows that majority of the respondents agreed with the statement that class size in regard to maximum academic interaction with teachers and other learning resources is fair. The item mean was below the composite mean of 2.825 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.389 indicating a small spread in response for the item than the variable. On the other hand, 118(58.1%) of the respondents disagreed that the statement that class size in regard to maximum academic interaction with teachers and other learning resources is poor, 15(7.4%) of the respondents neither agreed nor disagreed while 70(34.5%) of the respondents agreed. The mean score was 3.35 with standard deviation of 1.552, this shows that majority of the respondents disagreed with the statement. The item mean was above the composite mean of 2.825 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.389 indicating a wider spread in response for the item than the variable. The educational environment created by developing technology modifies the educational ecology of language teaching while also effectively supporting it. Language learners must adjust to this educational environment in light of the strong adoption of information technology. The term "situation" generally refers to any data that can be used to characterize the existing morphology and evolution patterns of diverse entities, such as individuals, environments, and computer programs (Pan, 2022).

Table 6
Challenges of Class Size

Remarks	SA	A	UD	D	SD	Mean	Std
Excellent	62(30.5%)	61(30%)	15(7.4%)	25(12.3%)	40(19.7%)	2.61	1.513
Good	32(15.8%)	98(48.3%)	28(13.8%)	20(9.9%)	25(12.3%)	2.55	1.227
Fair	27(13.3%)	77(37.9%)	39(19.2%)	31(15.3%)	29(14.3%)	2.79	1.265
Poor	42(20.7%)	28(13.8%)	15(7.4%)	52(25.6%)	66(32.5%)	3.35	1.552
Composite mean and Std						2.825	1.389

The researcher sought to find out the challenges of learning resources. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results are shown in Table 7. Findings on learner’s opinions on rating personal liking for student centered learning as excellent show that 21(10.3%) of the respondents. Of 12(5.9%) of the respondents neither disagreed nor agreed while 170(83.7%) of the respondents agreed that the rating personal liking for student centered learning as excellent. The mean score was 1.88 with standard deviation of 1.112, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.588 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.165 indicating a small spread in response for the item than the variable. The results shows that 163(80.3%) of the respondents rated that their personal liking for student centered learning was, 20(9.9%) neither agree nor disagree while 20(9.8%) of the respondents disagree. The mean score was 2.14 with standard deviation of 0.98, this shows that majority of the respondents agreed with the statement. The item mean was below the composite mean of 2.588 indicating a negative influence on the composite mean. The standard deviation for the item was below the composite standard deviation of 1.165 indicating a small spread in response for the item than the variable.

On rating personal liking for student centered learning as fair, 59(29%) of the respondents disagreed. 46(22.7%) of the respondents could neither agree nor disagree. 98(48.3%) of the respondents agreed. The mean score was 2.77 with standard deviation of 1.206, this shows that majority of the respondents agreed with the statement. The item mean was above the composite mean of 2.588 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.165 indicating a small wider in response for the item than the variable. It is also worthy to note that 124(61.1%) of the respondents disagreed that the rating of student-centered learning is poor, 21(10.3%) neither agreed nor disagreed while 58(28.6%) agreed with the statement. The mean score

was 3.56 with standard deviation of 1.361, this shows that majority of the respondents disagreed with the statement. The item mean was above the composite mean of 2.588 indicating a positive influence on the composite mean. The standard deviation for the item was above the composite standard deviation of 1.165 indicating a small wider in response for the item than the variable. Similar to how the explicit presumption that online learning is a kind of distant learning has been embedded in scholars' view of the superiority, accessibility, and flexibility of online learning (Pan, 2022)

Table 7
Challenges of Learning Resources

Remarks	SA	A	UD	D	SD	Mean	Std
Excellent	92(45.3%)	78(38.4%)	12(5.9%)	8(3.9%)	13(6.4%)	1.88	1.112
Good	43(21.2%)	120(59.1%)	20(9.9%)	9(4.4%)	11(5.4%)	2.14	0.98
Fair	28(13.8%)	70(34.5%)	46(22.7%)	38(18.7%)	21(10.3%)	2.77	1.206
Poor	19(9.4%)	39(19.2%)	21(10.3%)	58(28.6%)	66(32.5%)	3.56	1.361
Composite mean and Std						2.588	1.165

The researcher sought to find out on academic performance. A five point Likert scale was used to ascertain the answer from the respondents. The mean, the standard deviation (STD) and the composite mean were also computed. The results are shown in Table 8. The findings reveal that overall, medical students reported positive academic performance behaviors as reflected in the composite mean of 1.84, which indicates a general tendency toward agreement. However, variations exist across specific domains. Students showed strong academic discipline, with the highest agreement in timely completion of assignments ($M = 1.43$) and integration of knowledge from different subjects ($M = 1.49$). These results suggest that students possess good study habits and cognitive ability to synthesize information across disciplines, which are essential in medical education. This is consistent with previous studies showing that time management and integrative learning enhance academic success among medical students (Matewere *et al.*, 2022). Despite positive behaviors, weaker outcomes were reported in areas related to assessments and application of knowledge. For instance, reviewing lecture materials before/after class ($M = 2.25$) and class attendance consistency ($M = 2.25$) had the highest means, reflecting a moderate level of commitment. Furthermore, performance in clinical examinations ($M = 1.82$) and application of theoretical knowledge to clinical problems ($M = 1.63$) showed noticeable variation, with a substantial proportion of students disagreeing. This indicates potential gaps in practical training and translation of theory into practice, which has been noted in similar studies on medical education challenges (Forde & OBrien, 2022). While over half of the respondents agreed that they perform well in written examinations ($M = 1.95$), fewer were satisfied with their overall academic grades ($M = 1.70$). This suggests that although students put effort into their studies, grade outcomes may not always reflect their perceived competence. The dissatisfaction could stem from the highly competitive nature of medical training and rigorous assessment systems. The findings highlight a need to strengthen student support mechanisms in areas such as clinical skills development, exam preparation strategies, and continuous feedback on performance. Faculty may also need to encourage more active learning strategies that enhance engagement during and outside class. This is contrary with the study by Sáiz-Manzanares *et al.*, (2022) who insisted on diagnostic tools to pinpoint the cognitive, metacognitive, motivational, and emotional skills that are most lacking.

Table 8
Academic Performance

Variable	SA	A	D	SD	Mean	Std
I regularly complete my assignments and coursework on time	138 (68%)	61 (30%)	2 (2%)	0 (0%)	1.43	0.801
I review lecture materials before and after classes	69 (34%)	100 (49%)	20 (10%)	14 (7%)	2.25	1.139
I attend classes and clinical sessions consistently	51 (25%)	97 (48%)	39 (19%)	16 (8%)	2.25	1.148
I actively participate in class discussions and group work.	72 (36%)	88 (44%)	13 (6%)	30 (14%)	2.07	1.163
I perform well in written examinations	13 (6%)	108 (53%)	62 (31%)	19 (10%)	1.95	0.86
I am satisfied with my overall academic grades.	18 (9%)	89 (44%)	91 (45%)	5 (2%)	1.70	0.752
I perform well in practical/clinical examinations	76 (37%)	18 (8%)	104 (53%)	5 (2%)	1.82	0.879
I can apply theoretical knowledge to solve clinical problems.	6 (4%)	100 (49%)	92 (45%)	5 (2%)	1.63	0.807
I can integrate knowledge from different subjects in medical school.	8 (5%)	127 (62%)	64 (32%)	4 (1%)	1.49	0.786
Composite Mean and Std					1.84	0.926

To determine the challenges of utilization of student-centered learning. Linear regression test was employed to determine this. The study utilized the following null hypothesis which was tested at 0.05 level of significance.



H_{01} : There was no statistically significant on challenges of utilization of student-centered learning. The results are shown in Table 9

Table 9
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.296 ^a	.088	.083	2.554	.088	19.357	1	201	.000
ANOVA									
Model		Sum of Squares		df	Mean Square		F	Sig.	
1	Regression	126.244		1	126.244		19.357	.000 ^b	
	Residual	1310.928		201	6.522				
	Total	1437.172		202					
Regression coefficients									
Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.		
		B	Std. Error	Beta					
1	(Constant)	6.152	.619			9.939	.000		
	Challenges of student-centered learning	.134	.031	.296		4.400	.000		

a. Dependent Variable: Academic performance

Table 8 shows that the R-squared value is 0.088. The results of this study indicate challenges of student-centered learning was responsible for 8.8% of the variability in Academic performance in clinical medicine at KMTC in Bondo and Siaya. The remaining 91.2% can be attributed to other factors that were not explicitly addressed in the study, which focused on examining the relationship between Challenges of student-centered learning and Academic performance. The findings also indicate that challenges of student-centered learning has substantial predictive effect on academic performance observed in clinical medicine at KMTC in Bondo and Siaya. This conclusion is drawn from the analysis of variance (ANOVA) test conducted at a significance level of 0.05 ($p=0.001 > 0.05$). The significance value of 0.001 is below the preset significance limit of 0.05, providing support for this assertion. Furthermore, the results also shows that challenges of student-centered learning had substantial impact on academic performance (t -statistic = 1.965, p -value = $0.001 < 0.05$). Hence, the null hypothesis was rejected at a 5% level of significance, suggesting that there was significant relationship between challenges of student-centered learning and academic performance. Therefore, an increase of one unit in challenges of student-centered learning was associated with a 0.134 increase on academic performance.

This results are in line with the study by Moghaddam *et al.* (2020) who reported that experiencing inappropriate social norms (such as inadequate cohesion among nurses, mutual disrespect, megalomania, abuse, mutual mistrust, and false patterning.) in the clinical environment, lack of nurses and inadequate time of nurses to meet the educational needs of nursing students will lead to deterioration of the student-nurse relationship, and ultimately deterioration of clinical education. Furthermore in the study by Drateru (2019) in Uganda, it was stated that the challenges experienced by nursing students in skills acquisition were related to issues in the learning opportunities and clinical environment. Among the issues they stated that the lack of educators and clinical staff, little support supervision, shortage of materials, problems with student distribution, the deficiency of role models, shortage of time for experiencing the clinical environment, problems with interpersonal relationships, and the gaps between theoretical education and practice. In addition, in the literature, lack of collaboration and/or poor communication between the students, educators, and clinical staff, issues with the instruction they receive, the number of students, and organizational quality were identified as some of the main factors that negatively affect the students' learning Panda *et al.*, (2021).

Thus the model equation is

$$Y = 6.152 + 0.134X$$

Where

Y- Academic performance

X- Challenges of student-centered learning

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Student-centered learning in clinical medicine is a transformative approach that aligns educational practice with the evolving demands of healthcare. The available evidence indicates that when effectively implemented, SCL strategies significantly enhance students' academic performance and clinical preparedness. However, its full potential can only be realized by addressing systemic barriers such as limited faculty training, time constraints, and institutional readiness. The evidence clearly supports the need for broader adoption and institutional support for SCL. Student-centered learning in clinical medicine is designed to produce autonomous, reflective, and capable clinicians. Its goals span cognitive, affective, and professional domains, ultimately aiming to enhance patient care through well-prepared graduates. Empirical evidence supports that SCL significantly improves clinical competence, motivation, professional development, and interprofessional collaboration. The integration of these principles into clinical teaching strategies is not only beneficial for student outcomes but also essential for meeting the complex demands of modern healthcare systems.

5.2 Recommendations

Based on the results and objectives of the study, the following recommendations can be made, medical schools should invest in continuous training and mentorship for faculty to equip them with the necessary skills to implement SCL strategies. The Institutions should also ensure that assessment strategies are aligned with the learning outcomes of SCL, incorporating tools like OSCEs, reflective journals, and peer assessments.

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