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The Teaching Methods and Learning Approaches Used in the Training of Radiographers: The Case of Kenya Medical Training College, Nairobi

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Abstract:

Background: The Kenya Medical Training College is the leading and pioneer institution that trains radiographers in Kenya for over the last sixty years. Therefore, there is need for trainers of radiographers to explore on the milieu of teaching and learning strategies that could effectively impart the requisite knowledge, skills, and attitude on the trainees.

Objectives: To find out the different teaching methods used in the training of radiographers at Medical Imaging Sciences (MIS) department; determine the educational climate factors influencing the various teaching methods and learning approaches and to determine the learning approaches used by radiography trainees at the MIS department.

Methods: Mixed methods design based on open and closed Questionnaire over a three-month period involving 50 learners and 10 lecturers at the Medical Imaging Sciences department of Kenya Medical Training College, Nairobi were randomly selected to participate in the study.

Results: The study findings showed that majority of the lecturers, 60% prefer using lecture as a method of teaching. The rest used a combination of discussion, 20%, small group teaching 20%, and demonstrations at 10%. The researchers also found that both teacher centred approach and student centred approach were used in the Imaging Department by 46% of the respondents. However, 28% of the learners felt that teacher centred approach was dominating the student centred approach, while 26% of the interviewees were not sure. Concerning the learning environment, it emerged that there is need to improve on the frequency and quality of student assessment plus encouraging the utility of library services by both trainers and learners. It was impressive to find that most lecturers (70%) had training in medical education and only 30% had not. This is a positive step in improving teaching and learning in the department.

Conclusion: Radiography lecturers need to embrace a wider spectrum of teaching and learning strategies in line with Harden's recommendation (1986) in the training of radiographers at the Kenya Medical Training College while taking cognizance of the fact that individual trainer and learners have different interests (Jarvis and Gibson, 1997). Integration of an effective blend of teaching methods encouraging student centred approach is paramount in nurturing lifelong learners that could produce competent radiography professionals in Kenya.

Keywords: Radiography Training in Kenya, Teaching and Learning Strategies

1. Introduction

The individual unique ways of learning by trainees in any one professional field constitute what is called learning style (Bandaranayake, 1999). Learning approaches encompass individual information processing, memorization, and note taking that show the interaction between the learner and the task to be learnt (Ramsden, 1987). The study environment, communication skills, and reading techniques of a learner play a pivotal role in supporting the individual learner approaches. Tenant (1997) avers that teachers might apply the psychology of adult learning education to their everyday practice in order to control events in the learning environment. Above all, effective teachers ought to employ appropriate teaching methods and promote learning activities that can significantly enable learners to participate in the learning experience (Mutema, Kivanguli and Kangethe, 1992).

2. Background Information of the Study

Jarvis and Gibson, (1997) argue that it is important to recognize that different people have different learning styles. Merrill (2000) asserts that most students are unaware of their learning styles and if left on their own, they are unlikely to start learning in new ways to optimize on their strengths and weaknesses as learners. Effective teaching engages all the senses of students so that the teacher practitioners may prepare handouts for the students who learn more effectively on their own as opposed to learners accustomed to the audio input (Jarvis and Gibson, 1997).

3. Problem Statement

Students perform poorly in the final exams due to inability to acquire skills during their learning period (Bradley and Bligh, 1999). Performance based benchmarking is a key parameter to the product of any training institution as its graduates are expected to deliver service to the community. The existing perennial shortage of radiography lecturers at the Kenya Medical Training College has forced the management to hire external contractual tutors to teach and supervise the trainee radiographers. Despite its small size, the departmental skills laboratory at the Kenya Medical Training College offers the increasing number of radiography trainees an extra opportunity to nurture the theory learnt into practice. In order to optimise these meagre resources, there is need to understand the issues surrounding the preferred teaching and learning strategies at the Kenya Medical Training College radiography department.

3.1. Broad Objectives

To establish the teaching methods and learning approaches used in the training of radiographers at the Medical Imaging Sciences Department, KMTC Nairobi.

3.2. Specific Objectives

Establish the teaching methods employed in the training of radiographers at the Kenya Medical Training College.

Determine the educational climate factors influencing the choice of teaching methods and learning approaches of radiography training at the Kenya Medical Training College.

Determine the learning approaches used by radiography students at the Kenya Medical Training College.

3.3. Methods

Mixed methods design based on open and closed Questionnaire over a three-month period involving randomly selected 50 respondents from among radiography trainees and 10 lecturers at the Medical Imaging Sciences (radiography) department of Kenya Medical Training College, Nairobi. The research ethics committee of KMTC granted permission and authority to conduct the study. The respondents signed an informed consent.

4. Results

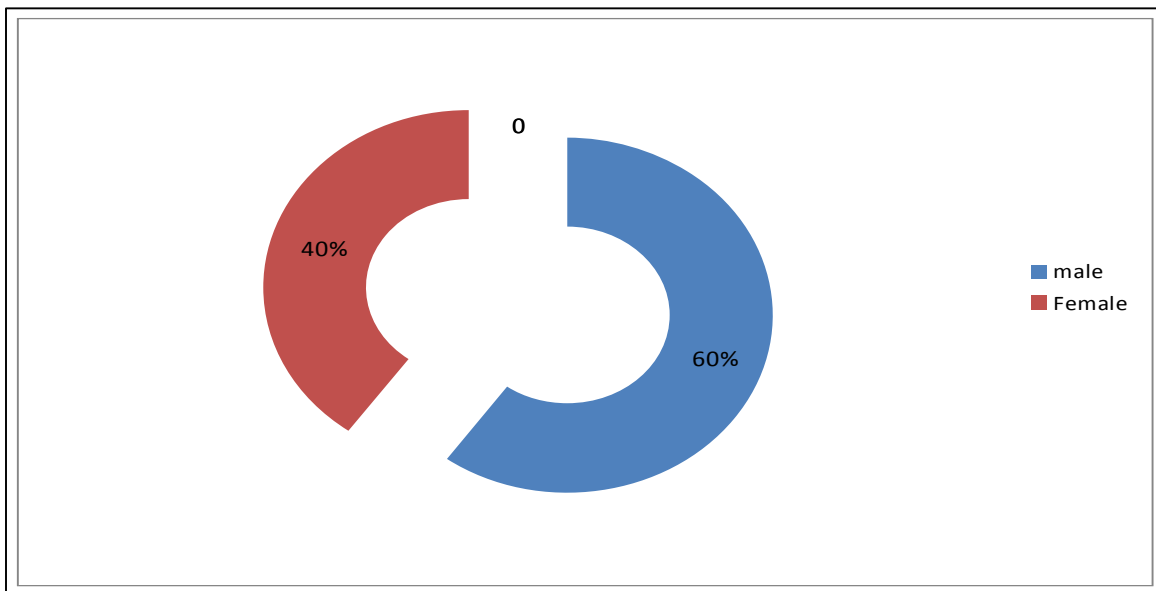


Figure 1: Pie chart showing Gender of the radiography trainee respondents

From the figure above, majority of the respondents were male at 60% while the rest, 40% were females.

Respondents	Frequency	Percent
1 st year	15	30%
2 nd year	30	60%
3 rd year	5	10%

Table 1: Year of study of the radiography trainee respondents

Majority of the respondents were 2nd years, 60%. 1st years were 30% and 3rd years 10%.

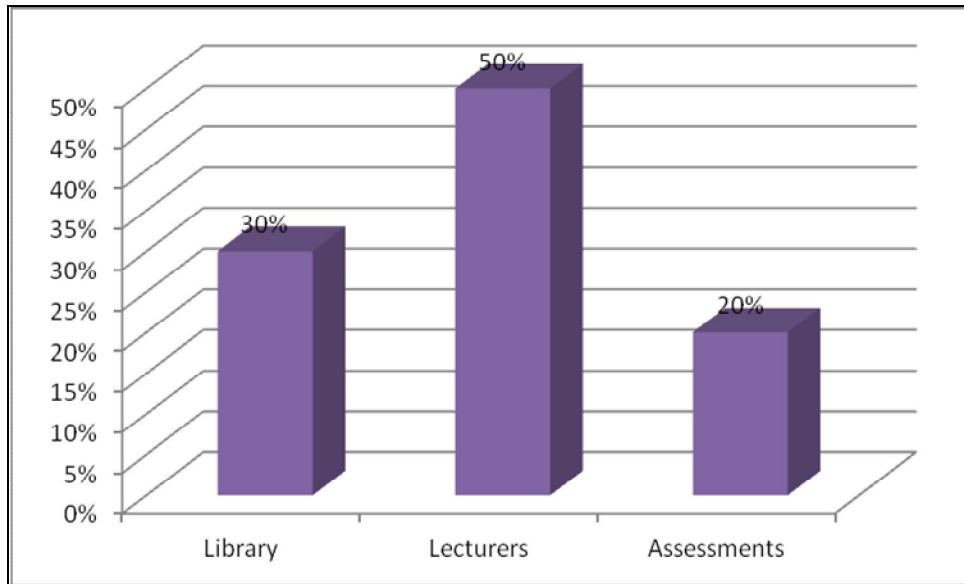


Figure 2: what trainees considered best facilitator of KMTC learning environment

Majority of the trainee radiographers (50% of the respondents) cited that the lecturers' contribution was the best facilitator of conducive learning environment at the KMTC. However, according to the participants, the existing library services at KMTC contributed 30% while assessments contributed to 20% to conducive learning environment.

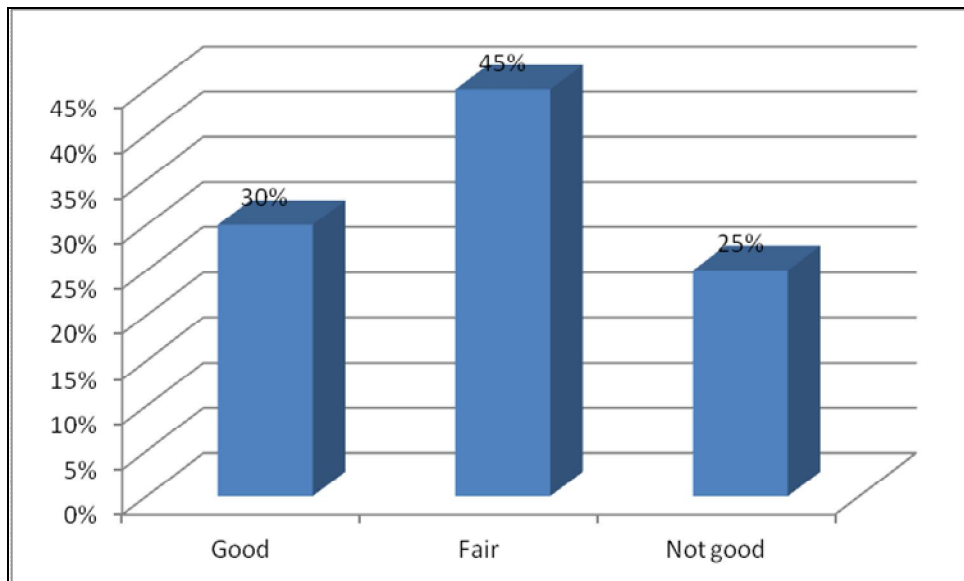


Figure 3: trainee respondents' opinion about modes of Assessment in Imaging Department

Majority of the respondents 45% felt that the mode used in assessing students at the radiography department is fair, 30% felt that assessments are good, while 25% of the respondents felt the modes of assessment for the trainees was poor.

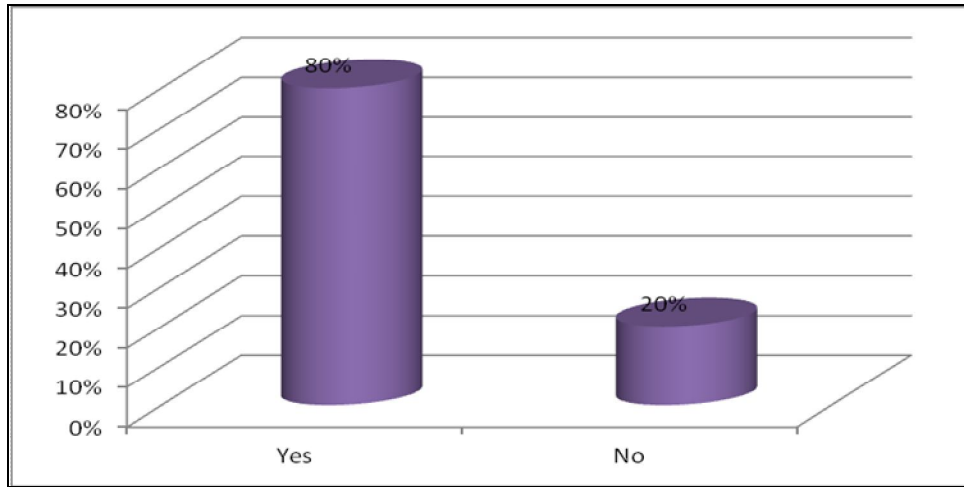


Figure 4: Accessibility to college Computers by the radiography trainee respondents

The majority of the respondents (80%) could access and use the KMTC college computers for their learning activities. Only 20% of the respondents reported that they could not access the college computers partly due to fear and individual low computer literacy levels.

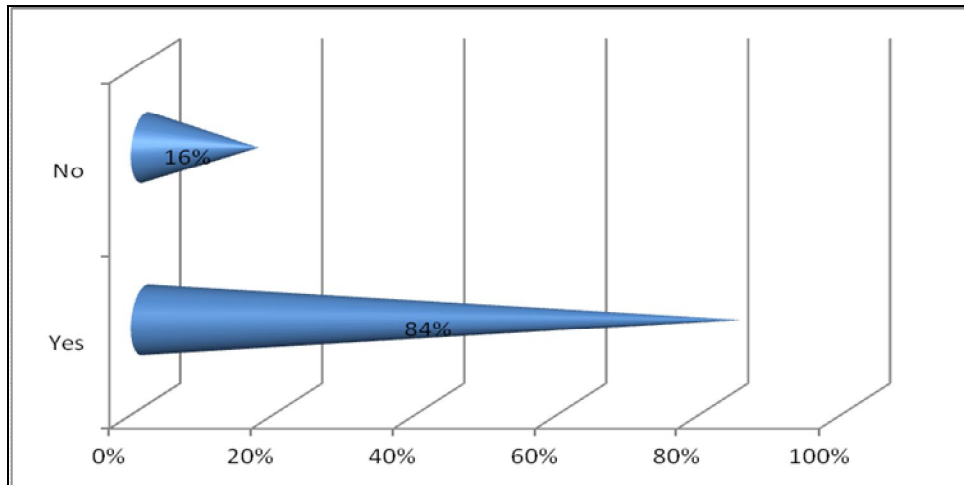


Figure 5: respondents' opinion whether the librarians were supportive

Majority of the radiography trainees (84% of the respondents) also feel that they have supportive librarians while 16% respondents felt that their librarians are not supportive enough.

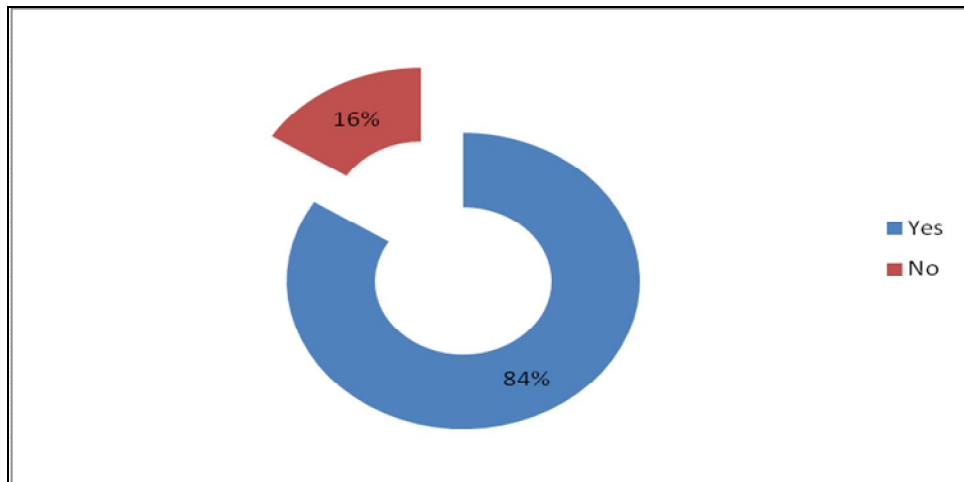


Figure 6: Availability of adequate facilities in the skills lab at the KMTC M.I.S department

The majority of respondents (84%) felt that the skills laboratory resources were adequate while only 16% participants felt that the skills laboratory resources were not adequate.

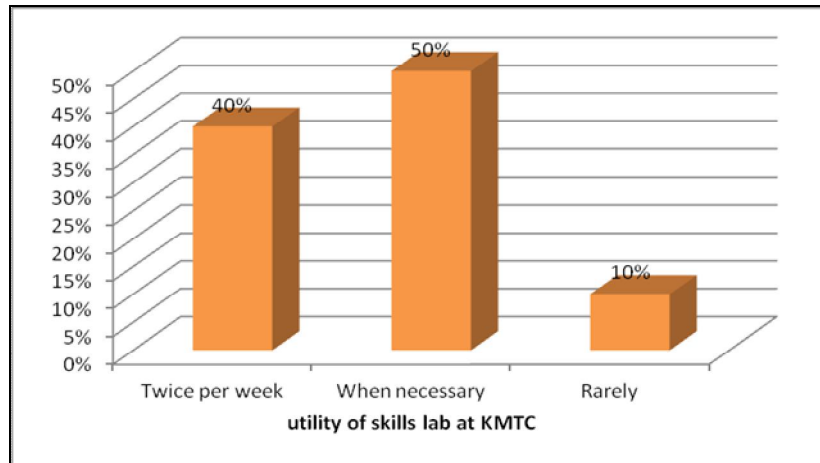


Figure 7: Frequency use of skills lab by the trainee radiographers

From the above findings, only 40% of participants make use of the skills lab frequently, that is, twice per week. The majority, 50% use the skills lab when it is necessary and 10% rarely make use of the skills lab.

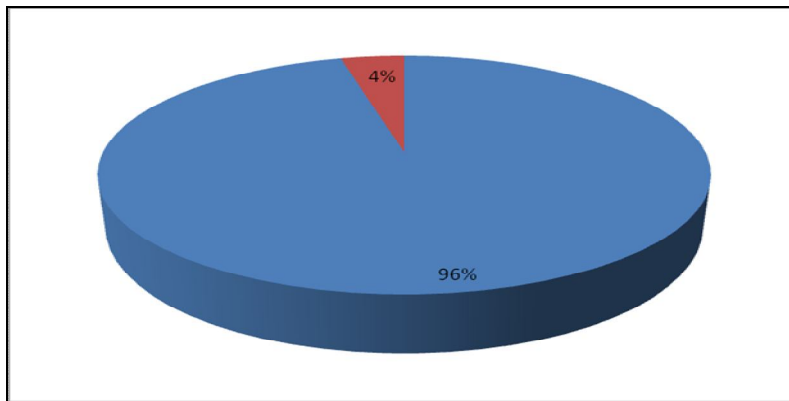


Figure 8: in-depth understanding of teacher centred learning approaches by respondents

The majority of the radiography trainees (96% of respondents) understood what the teacher centred learning approach means while a paltry 4% did not.

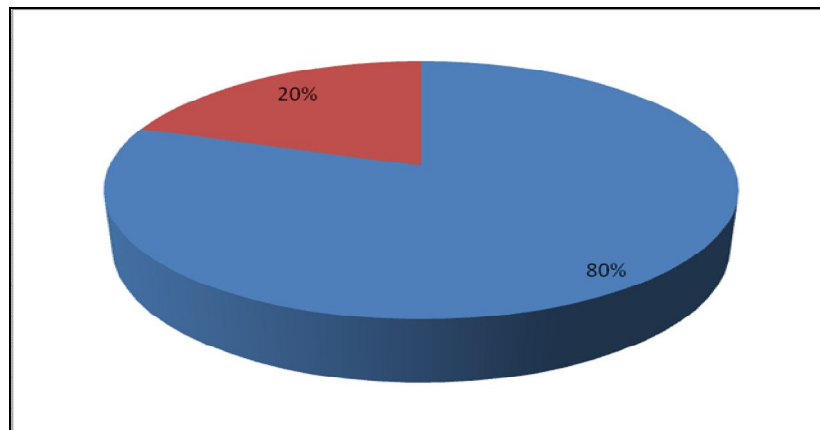


Figure 9: in-depth understanding of student centred learning approaches by respondents

Majority of the respondents (80%) were aware of the student centred learning approaches while 20% were not fully aware of it.

Response	Frequency	Percentage
Teacher centred	14	28%
Student centred	12	22%
Both	28	46%
Not sure	2	4%

Table 2: The most adopted learning approach by trainees in imaging department

Most of the respondents (46%) felt that most lecturers in Medical Imaging Sciences prefer using both the student and teacher centred approach, 28% felt that teacher centred approach was mostly used and 12% supported student centred approach. However, 4% were not sure of the method mostly used.

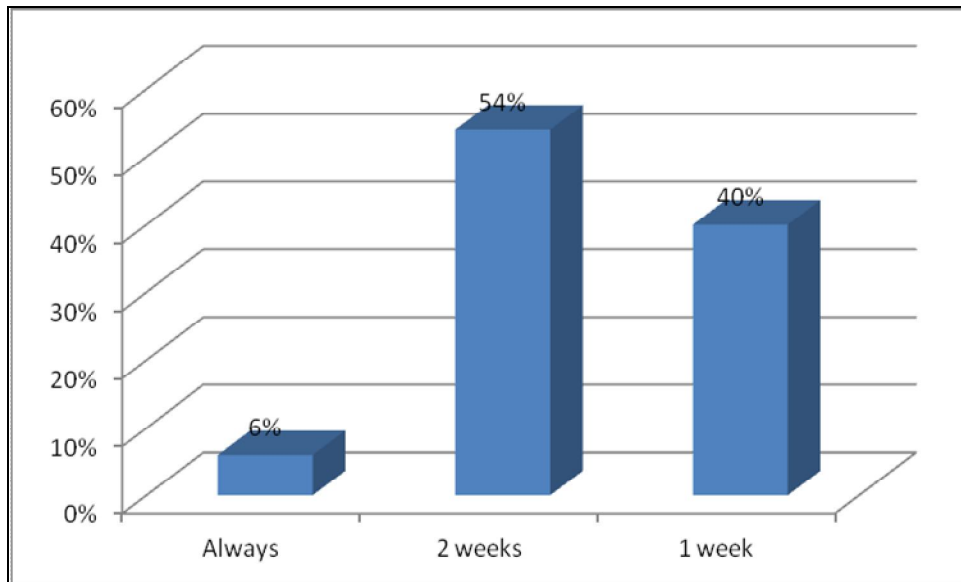


Figure 10: trainee radiographers (respondents') preparedness for examinations

Majority of the respondents (54%) of the respondents need at least two weeks to prepare for their exams, 40% require one week preparing for their exams and 6% are always revising for their exams daily.

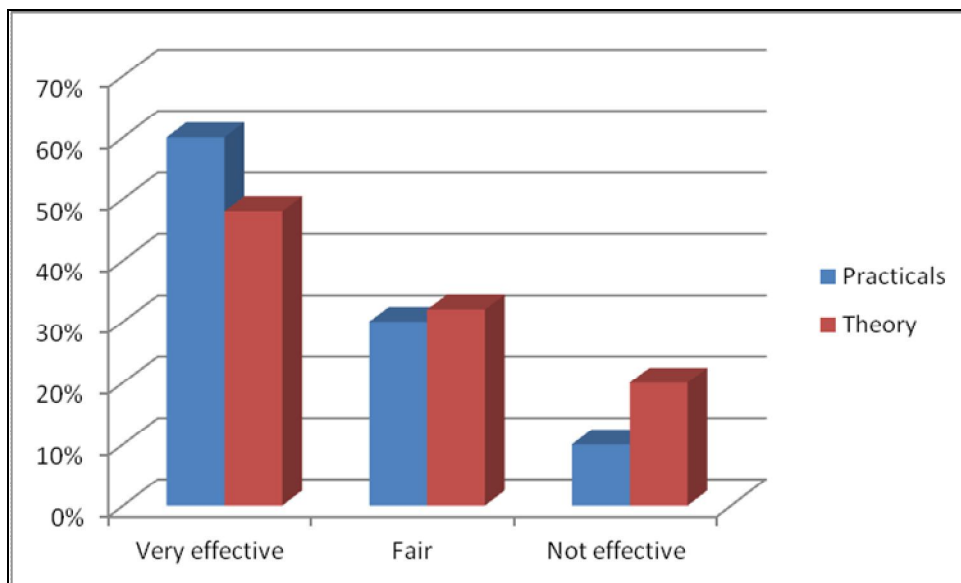


Figure 11: respondents rating of the radiography practical and theoretical exam

Majority of trainee radiographers rated practical examinations highly.

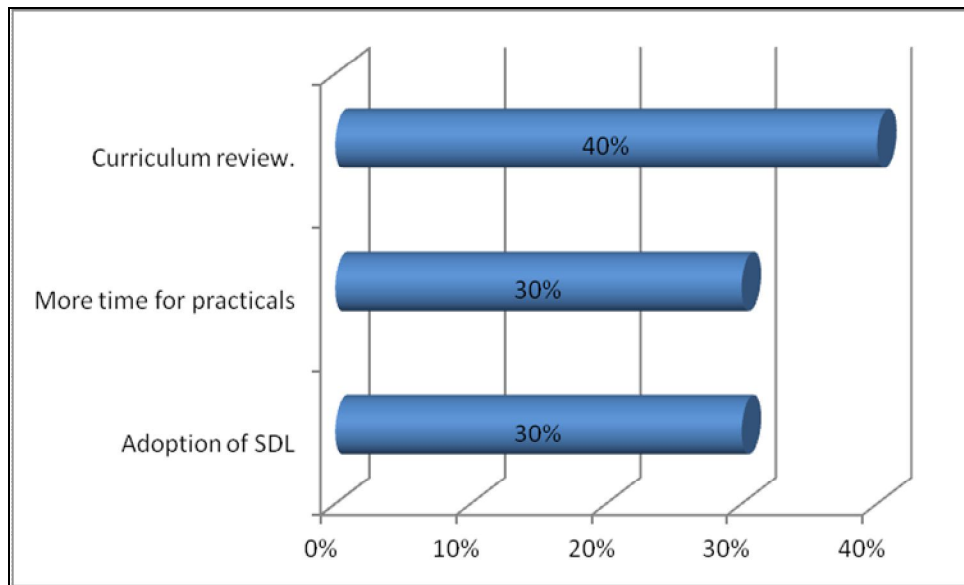


Figure 12: trainee radiographers' suggestions for improving learning outcome.

Majority of the trainee radiographers would like a curriculum review of the training program.

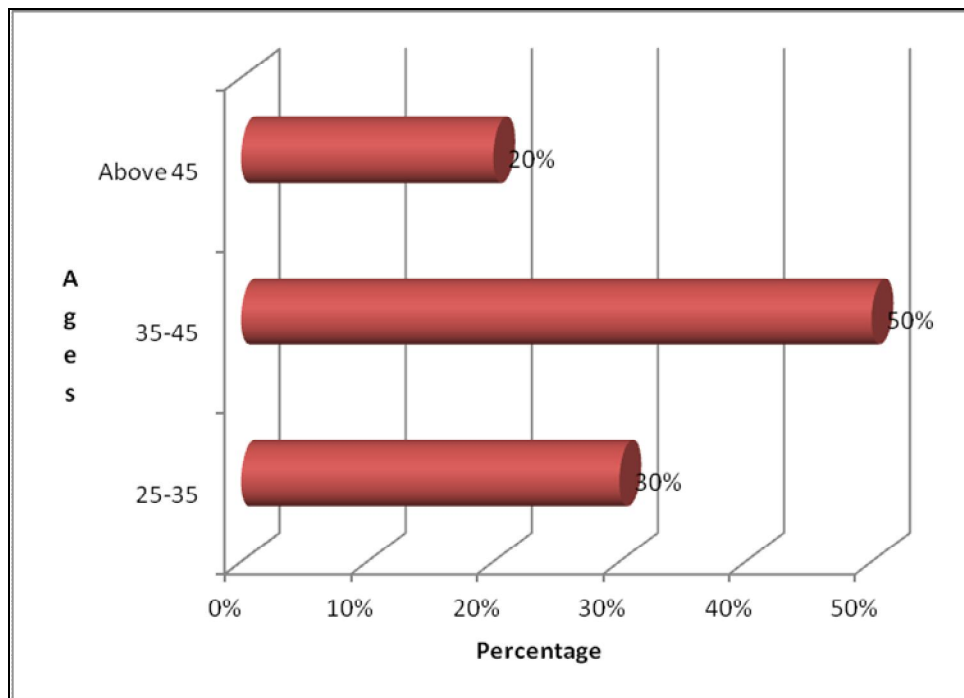


Table 13: Age of the participant lecturers in the KMTC radiography department

Majority of the lecturers at the KMTC radiography department are aged between 35-45 years.

Response	Frequency	Percentage
1-5 years	2	20%
5-10 years	3	30%
10-20 years	5	50%

Table 13: years of service in the teaching profession of the respondent lecturers

Majority of lecturers at the KMTC radiography department have more than 10 years experience.

Response	Frequency	Percentage
Yes	7	70%
No	3	30%

Table 14: whether the respondent lecturers have been trained as medical educators

The majority of the respondents (70%) have been trained as medical educators.

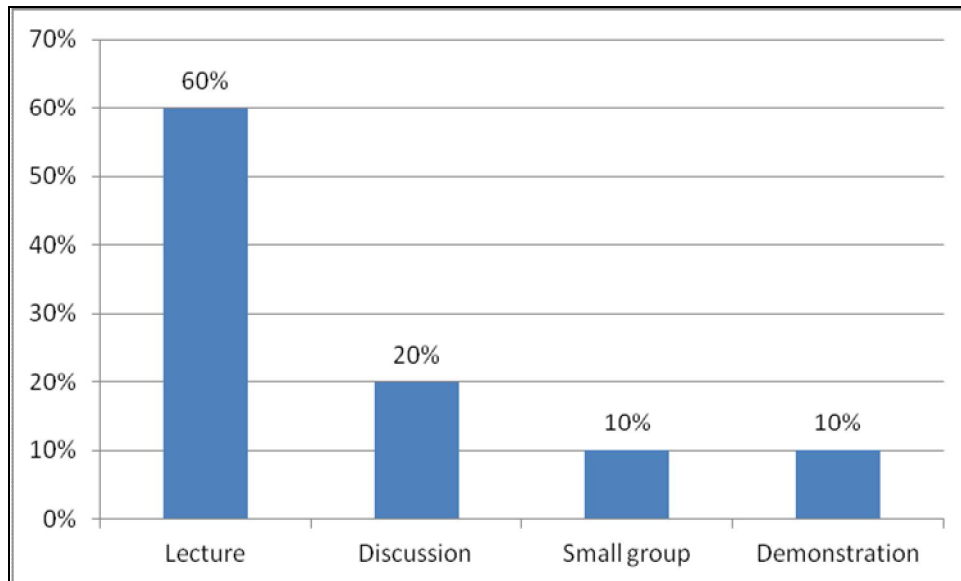


Figure 14: Teaching methods commonly used by radiography lecturers at KMTC

Majority of the lecturers (60%) use the lecture method as a mode of instruction.

Review of Teaching Methods	Frequency	Percentage
Yes	2	20%
No	8	80%

Table 15: whether the respondent lecturers would like to review teaching methods

The majority of the lecturers expressed their unwillingness to change their mode of instruction.

5. Discussion and Interpretations

5.1. Learning Environment

Most of the respondents attributed the conduciveness of the learning environment to lecturers, well-equipped library, and the assessments done. Fifty per cent (50%) of the respondents felt that lecturers play a major role in the students learning environment. The Library provided only 30% importance to the learning environment. This could mean either that the library is not well equipped with many learning resources or that the respondents have not embraced independent learning in a library setting. Assessments were rated at 20%, which could be an indication that the department may need to look into that aspect to ensure the learners are provided assessments that are competency based in terms of expected skills acquisition.

The college management should equip the library with the latest book editions and web based learning resources. Scholars have found that positive school climate perceptions are protective factors for boys and may supply high-risk students with a supportive learning environment yielding healthy development, as well as preventing anti-social behaviour (Haynes, 1998; Kuperminic et al., 1997). Clearly, school climate is multi-dimensional and influences many individuals, including students, parents, school personnel and the community. Additionally, school climate can significantly impact educational environments, as Freiberg, (1998) avers that the school climate can be a positive influence in the health of the learning environments or a significant barrier to learning.

5.2. Assessment in Imaging Department

Forty five per cent of the respondents felt that in medical imaging sciences, assessments done are fair while 20% felt that assessments were not fair. This calls for concerted efforts by the trainers to act in line with Ramsden (1982), who noted that the student's perception of teaching methods and assessment determines the approach the students will adopt. On the other hand, if students perceive teaching as designed to promote thinking ability, and the examination is about problem solving, they will adopt a deeper learning approach.

5.3. Accessibility to Computers for Learning

An overwhelming 80% cited that they access computers during their studies. This is commendable as the majority of the students make use of computers, especially during research and self-study programmes. This concurs with what Harden (2001) said that appropriate use of computers enhances learning outcomes. However, due diligence and care must be taken in the choice of hardware and software to ensure that they fulfil the function required. Only 20% cited that they rarely access computers, possibly due to less computers in college compared to the current population. Today, educators realize that computer literacy is an important part of a student's education and it is commendable that the KMTC has tried to improve computer literacy among learners by ensuring compulsory user applications training. Integrating technology into a course curriculum is proving to be valuable for enhancing and extending the learning experience for faculty and students.

5.4. Supportive Librarians

Majority of the respondents (84%) agreed that they get support from the library attendants. This is especially so, whenever they are searching for library resources. A few (16%) felt that they do not get adequate assistance. The inadequate assistance could be attributed to low number of librarians against the increasingly large number of students at the KMTC. The college should explore on utilizing some of the students as library assistants and grant the said students either a stipend or a cut in their tuition fee or alternatively employ more librarians.

5.5. Availability of Demonstration at the Skills Lab

From the data collected, 84% of the respondents are aware of the skills lab in college. This is commendable as exposure of learners to the skills lab enhances practical training that creates more understanding on the theory given. However, a lot more needs to be done to foster skills lab utility for the 16% that were not aware of the availability of the skills lab.

5.6. Frequency Use of Skills Lab

Majority of the respondents (50%) make use of the demonstration rooms when necessary. Forty per cent use it twice per week and only 10% rarely use it. More effort is to be made for the students who rarely use the demonstration rooms to make use of the same.

5.7. Awareness of the Various Learning Approaches by the Trainee Radiographers

Most of the respondents are aware of both the teacher centred approach (96%) and student centred approach (80%). Only a few participants are not aware at 4% and 20% respectively for the teacher and learner centred approaches.

5.8. Adopted Learning Approach in Medical Imaging Science

From the data collected it revealed that both the student centred approach and the teacher centred approach are adopted, 46%. However, 28% felt that teacher centred approach is frequently used than student centred approach, 12%. Four per cent of the respondents were not sure of the adopted approach. Modern teaching calls for a paradigm shift from the traditional teacher – centred approach in which the emphasis is on the teachers and what they teach, to students-centred approach, in which the emphasis is on students and what they learn (Entwistle and Ramsden, 1983). Student centred approaches have been partly embraced in the medical imaging science department of KMTC and this should be encouraged further.

5.9. Preparation for Exams

Fifty four per cent the students need at least 2 weeks to prepare for exams. This shows that most of the students only read the last few days in order to pass exams and not for knowledge gained. Forty per cent need at least a week to prepare for examinations. This also encourages rote learning because the students read only for exams. However, 6% of the respondents stated that they were ever ready for examinations as they read always even when there are no exams. This group of students read for understanding and internalizing, hence become lifelong learners.

5.10. Comparison between Practical and Theory Assessments

Between the two forms of assessments, practical assessment was rated effective at 60% compared to theory at 48%. Some respondents' stated that practical assessment was fairly done at 30% and theory at 36%. Only a paltry 10% stated that both the practical and theory were not effectively done.

5.11. Trainees Suggestions for Improve Learning Outcome

Most of the respondents suggested that curriculum review should be done regularly to improve learning outcome, 45%. Some of the respondents suggested for the adoption of self-directed learning and to give more time for practical exposure, 30%.

5.12. Experience of Lecturers at KMTC Radiography Department in Terms of Years of Service

Most of the respondents have taught for more than 10 years, 50%. This shows that most lecturers have enough exposure to deliver the required content to students. Thirty per cent have taught for between 5 and 10 years and only 20% have taught for less than 5 years.

5.13. Training of Radiography Lecturers on Medical Education

From the data collected, most lecturers (70%) have undergone medical education training while only 30% have not. This is commendable as it improves the quality of teaching in the department.

5.14. Teaching Methods Commonly Used by Lecturers

More than half of the respondents prefer using lecture method as a method of teaching, 60%.

This concurs with the views held by Harden (2001) who argued that besides imparting factual knowledge, the lecture method stimulates a student's interest and is an enabler of self-directed learning. Used in conjunction with active learning strategies, the traditional lecture can be an effective way to achieve instructional goals.

Discussion as a method of teaching is preferred by 20% followed by small group teaching at 10% and finally demonstrations at 10%. The small percentage on small group teaching could be due to some logistical limitations, which scholars have rightly pointed out like the need for more rooms, more resource material, and more expertise as well as time for the preparation of resource material to support the small groups.

The teaching methods chosen ought to address the characteristic of the target population, topic area to be covered and analysis of the existing skills of the students. The formulation of educational objectives should be well orchestrated so that both the lecturers and the students are clear as to what the latter are expected to achieve (Harden, 1986).

5.15. Reviewing of Teaching Methods

Eighty per cent of the lecturers surprisingly expressed unwillingness to change their teaching methods despite the fact that 70% of them had undertaken instruction in medical education training. However, for the 20% that expressed willingness to change their teaching tactics to suit the characteristics of the learners, this was commendable.

6. Conclusions and Recommendations

From the discussions illustrated above, it is concluded that the most preferred teaching method at the KMTC radiography department is the lecture method as it was advocated for by 60% of the respondent trainees and 80% of the respondent lecturers.

There is need to improve on the modes of assessment at the radiography department to ensure compliance with the competency based curriculum and ensure that learners are not burdened with tones of theoretical material that scares them as to make them need at least 2 weeks to prepare for examinations.

There is an agreement among students and lecturers that the learning approaches used in the KMTC radiography department is the teacher centred approach while the student centred approach takes about 46 %. The radiography department ought to conduct a workshop to explore on the avenues through which a student centred approach platform for learning can be implemented in order to foster life-long learning among the students and lecturer

There is a need to sensitize all the radiography lecturers at the KMTC on the wisdom of integrating an effective milieu of various teaching methods and beneficial learning strategies in line with Harden's recommendation (1986) in the training of radiographers while taking cognizance of the fact that individual trainer and learners have different interests (Jarvis and Gibson, 1997). Integration of an effective blend of teaching methods, encouraging student centred approach is paramount in nurturing lifelong learners that could produce competent radiography professionals in Kenya.

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