

**QUALITY ASSURANCE IN CLINICAL SKILL TRAINING
LABORATORY: IMPLICATION FOR EDUCATIONAL TECHNOLOGY**

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Abstract

The study investigated the establishment of a clinical skills laboratory targeted towards the elimination of error in medical diagnosis and promotion of quality service delivery in medical training content and practice. It adopted the descriptive survey research. The population of the study was two hundred and fifty five medical doctors from three Departments in the Faculty of Clinical Science, University of Port Harcourt, out of which 120 were randomly sampled but only eighty five (85) participated in the study. The instrument used was Quality Assurance in Clinical Skills Laboratory Questionnaire (QACSLQ) which was used to collect data from the sample size. The reliability of the instruments was established using the Cronbach alpha method of internal consistency. The reliability coefficient of the test items was .57, while its content validity was 69.82% with construct validity ranging from .30 and .73. One research question and one hypothesis guided the study. The Statistical tool employed in analyzing the research question was the simple percentage while chi-square was used to test the hypothesis. The findings established that the use of clinical skills laboratory does not have any significant influence on quality assurance in medical education. It is therefore recommended that Medical training college should make optimal use of the clinical skills laboratory for the attainment of performance based outcome curriculum targeted at achieving quality service delivery in actual practice and competency based learning in skills acquisition.

Key words: *Quality assurance and clinical skills laboratory*

Introduction

The need for quality practice through the acquisition of professional skills and lifelong learning during instruction has necessitated the establishment of clinical skills laboratory in most medical training colleges. Also for the Association of Medical and Dental Council of Nigeria to maintain its mission statement for the promotion of quality learning in clinical education has also given cogent attention to the training of clinical skills in clinical skills laboratory. The question then is what role can the clinical skills laboratory play in the acquisition of clinical for

quality attainment in medical education in this 21st century and how can the field of educational technology help in the realization of this century learning goal?

A clinical skills laboratory is a centre or facility where medical students, doctors and nurses are provided with the opportunity to have hands –on training prior to having direct contact with patients. The major aim of the clinical skills laboratory is to enhance the acquisition of clinical skills and proficiency development. It also allows medical students or trainee doctors to master steps in a non life threatening environment. Therefore, promotes the acquisition of knowledge, skills and attitude in context prior contact with real patients in the ward.

During the training sessions in the skills laboratory students are expected to acquire knowledge, be critical and rational in their skills performance, build their self confidence in their capabilities, as well as transfer same knowledge to the clinical setting (Catherine E. Houghton 2007; Childs and Sepples, 2006). For learners to be able to build self confidence and participate actively there is this great need to align theory with practice making adequate utilization of technological products and processes during instruction. The nature of the 21st century learners has also called for a thorough review of our teaching strategy. The evolutionary influence of the internet and information technology requires more than just didactic teaching. Learners want to be actively involved, explore new knowledge, skills, find out what they are supposed know and how it should be done. They want to create environment from the existing environment.

The today society requires the claimed health professional to confront their clients with degree of competency and skilfulness. Therefore, to acquire this competency in order to function effectively and exhibit some level of professionalism requires more than just didactic approach to instruction.

The clinical skills laboratory allows for repeated practice to attain mastery. As learners have opportunity to practice skills over and over using a using video model of the clinical skills to be acquired, have practice sessions using mannequins and simulators they become more adapted to the do- steps in clinical procedure. This will in turn reduce error in diagnosis and foster the demonstration of appropriate clinical skills in a non-discriminatory manner during ward based practice.

The question now becomes how the field of Educational technology can help to facilitate learning and improve performance so as to achieve the target objective set by Association of Medical and Dental Council of Nigeria (MDCNA). According to AECT for a field to have any claim on public support;

It must be convincing to show some public benefit. It must provide a better way to accomplish achievable goals. For example, for chefs to claim to be culinary professionals they must be able to prepare food in ways that are somehow better than non-specialists—more appealing, safer, more nutritious, prepared more efficiently, or the like. In the case of educational technology, to “improve performance” most often entails a claim of effectiveness: that the processes lead predictably to quality products and effective learning, changes in capabilities that take a rain check into real-world application. (<http://www.aect.org/definition;2004>).

The paragraph above is made visible in the production of video models for the teaching and learning of clinical skills in the Faculty of Clinical Sciences, University of Port Harcourt. Educational technologist is not only involved in the identification of gap in the delivery instruction in medical education but in the design, development and integration of technological processes and products which is influenced by the state of the art technologies for learning, purpose and the environment.

The educational technology is therefore saddled with the great responsibility of ensuring that medical instructors aligns theory with practice , develop the appropriate media resources in a technology enhanced environment that fosters learners centered activities and active participation as well as monitor the impact of the resources in attempt to meet the desired target learning objective.

According to Wikipedia, quality assurance is a way of preventing mistakes in manufactured products and avoiding problem when delivery solutions or services to customers. Here the medical students are the products of medical training colleges, services here represent clinical skills for carrying out physical examinations, history taking, clinical diagnosis or assessment in patients while customer is the patients and inpatients.

What then is the problem; could the establishment of a clinical skills laboratory reduce error in medical diagnosis and promote quality service delivery in medical practice and what role can the educational technologist play to achieve efficiency in course delivery?

The purpose of this study is therefore to establish if training clinical skills in a clinical skills laboratory can promote quality assurance in clinical education. It specifically:

- ❖ Identify the components in an ideal clinical skills laboratory
- ❖ Find out the basic clinical skills taught in clinical skills laboratory
- ❖ To investigate the categories of personnel's in a clinical skills laboratory

- ❖ Determined if training in the clinical skills laboratory (CSL) can assure quality in clinical education

Research Question

1. To what extent can training in clinical skills laboratory assure quality in medical education?

Null Hypothesis

1. Training clinical skills in skills laboratory does not significantly influence quality assurance in medical education.

Methodology:

Research Design: The research adopted is descriptive survey design.

Population: The population of the study consisted of 255 Medical doctors comprising Consultants, Resident doctors and House officers in three respective departments (Paediatrics, Surgery and Obstetrics and Gynaecology; O& G) in the University of Port Harcourt (UPH)/University of Port Harcourt Teaching Hospital (UPTH).

Sample: 120 Medical doctors were randomly sampled from the three departments by the researcher based on some criteria.

Instrumentation: The instrument used for this study was achieved through the development of questionnaire and checklists. The total item used for the collection of data in this study was 8 items. Respondents which responded to the extent to which they agree were done by ticking where applicable.

Method of Data Analysis: The research question was answered using simple percentage while the null hypothesis was tested using Chi-square because data collected was in nominal scale.

Table 1: Show Components in a clinical skills laboratory by identification

S/NO	ITEMS	Identified	Not identified
1	Consulting room	✓	
2	Procedural skills room	✓	
3	Accident and emergency cubicles		✓
4	Intensive care unit		✓
5	Simulators		✓
6	Mannequins		✓
7	Video cameras	✓	
8	Microphones	✓	
9	Playback sessions	✓	
10	Lecture halls	✓	
11	Lecture theatres	✓	

12	Transfer trolleys	✓	
13	Projectors	✓	
14	Interactive whiteboard		✓
15	Computers	✓	
16	CDROMS	✓	
17	Scrubbing sites		✓
18	Icts consumables	✓	
19	Simulated ward base settings		✓

From Table 1, out of the 19 components supposed to be present in a clinical skills laboratory, only 12 components were identified in MacArthur Clinical Skills Laboratory (MCSL). This indicates that the MCSL was adequately furnished for the training of clinical skills.

Table 2: Show Basic Skills taught and learnt in CSL by identification

S/NO	ITEMS	Practice in skills lab	Not practice in skills lab
21.	History taking	✓	
22.	Physical examinations	✓	
23.	Clinical diagnosis/investigational skill	✓	
24.	Communication skills	✓	
25	Team work		✓
26	Information and communication skills	✓	
27	Health & safety skills		✓
28	Self directed learning	✓	
29	Problem based	✓	
30	Practical procedures	✓	

Table 2 reveals that students were exposed and trained on 8 basic clinical skills out of the 10 recommended by Medical education curriculum reviewed.

Table 3: Shows Categories of personnel's in Clinical skills laboratory by identification.

S/NO	Items	Identified	Not identified
31	Subject matter experts	✓	
32	Educational technologist	✓	
33	Technical crew		✓
34	Patient coordinator		✓
35	Administrator	✓	
36	Secretary		✓

Table 3 reveals that the categories of personnel's available for training in MCSL were three (3) categories of personnel's working in the MCSL. The result from the investigation reveals that the MCSL is averagely staff.

Research question 1:

To what extent can training in clinical skills laboratory assure quality in medical education?

Crosstab

			Extent Training Clinical Skills assure Quality in M-Education					Total
			No impact at all	Very low Impact	Low impact	Moderate impact	High impact	
DEPARTM ENT	PAEDIATR ICS	Count	2	0	2	19	10	33
		% of Total	2.4%	.0%	2.4%	22.4%	11.8%	33.0
	O & G	Count	4	0	1	10	5	20
		% of Total	4.7%	.0%	1.2%	11.8%	5.9%	20.0
	SURGERY	Count	7	1	2	15	7	32
		% of Total	8.2%	1.2%	2.4%	17.6%	8.2%	32.0
Total		Count	13	1	5	44	22	85
		% of Total	15.3%	1.2%	5.9%	51.8%	25.9%	85.0

Table 4: Extent of Quality assurance in Medical Education

Table 4, shows the extent to which the training in the clinical skills laboratory assures quality learning in medical practice among the three departments that participated in the study.

Paediatrics 2.4%(2) –no impact, 2.4%(2)- low impact, 22.4%(19) moderate impact, 11.8%(10) –high impact.

O&G 4.7%(4)- no impact,1.2%(1)-low impact,11.8%(10)-moderate impact, 5.9%(5)- high impact

Surgery 8.2%(7)-no impact, 1.2%(1)- very low impact,2.4%(2)-low impact,17.6%(15)- moderate impact and 8.2%(7) – high impact.

Irrespective of their department, 15.3%(13)- no impact, 1.2%(1)- very low impact, 5.9%(5)- low impact, 51.8%(44) –moderate impact and 25.9%(22) – high impact.

Below is a bar chart for further illustration.

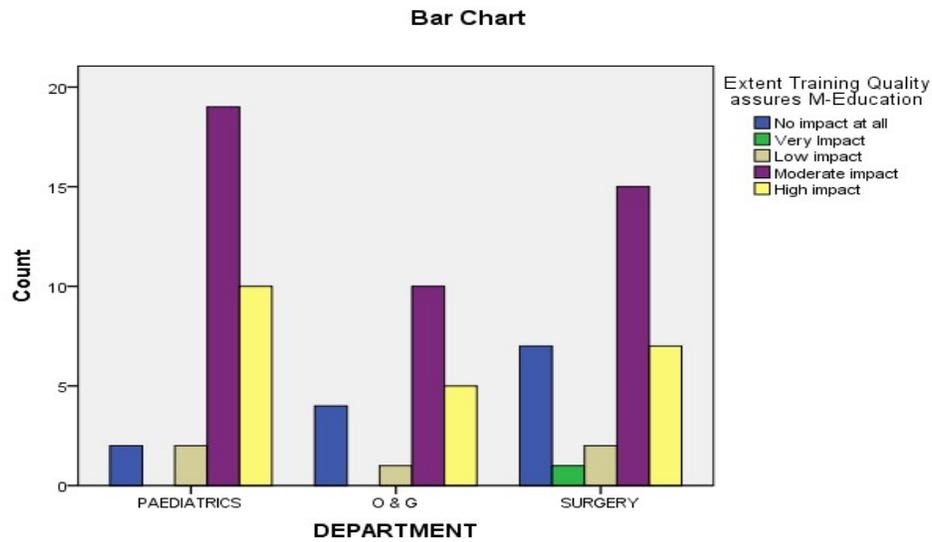


Figure 1: Bar chart showing the extent to which skills training in skills laboratory can assure quality in medical education

Null Hypothesis

1. Training clinical skills in skills laboratory does not significantly influence quality assurance in medical education

Table 5: showing the Influence of clinical skills training in Medical Education Crosstab

			Extent Training Clinical Skills assure Quality in M-Education					Total
			No impact at all	Very low Impact	Low impact	Moderate impact	High impact	
DEPARTMENT	PAEDIATRICS	Count	2	0	2	19	10	33
		Expected Count	5.0	.4	1.9	17.1	8.5	33.0
	O & G	Count	4	0	1	10	5	20
		Expected Count	3.1	.2	1.2	10.4	5.2	20.0
	SURGERY	Count	7	1	2	15	7	32
		Expected Count	4.9	.4	1.9	16.6	8.3	32.0
Total		Count	13	1	5	44	22	85
		Expected Count	13.0	1.0	5.0	44.0	22.0	85.0

Chi -Square tests

	Value	Df	Asymp.sig.(2sided)
Pearson chi square	5.556	8	.697

Table 5 above reveals that the calculated chi-square is greater than the assumed value at 0.05 level of significance therefore the hypothesis is hereby retained.

Discussion of findings:

The findings from study reveals that the necessary components required to obtain an effective and functional skills laboratory was present in University of Port Harcourt Macarthur Clinical Skills Laboratory. Though its availability does not account for its adequacy in obtaining optimal performance in system delivery.

It also reveals that out of the ten basic clinical skills x-rayed in clinical skills training curriculum, students were exposed and trained on eight (8) clinical skills in the MCSL.

Furthermore, the category of personnel's identified for facilitating learning in the clinical skills laboratory was moderately adequate. Though moderately staffed, it requires technical crew, patient coordinators and secretary. This is to allow for specific function and efficiency. Since the skills laboratory is a simulated clinic, it is very important that patient coordinator is present that stands as facilitator between the patient, medical students and consultants which is strongly supported in McKimm Clinical Skills Model (2008). According to McKimm, the relationship and interactions between a clinician (as teacher), learner and patient helps to explain and structure complex clinical teaching and learning activities. It provides a model for analyzing complex interactions between the three 'players' in clinical teaching settings through the metaphor of a continually shifting dialogue. It also assists the clinical teachers with a framework for scaffolding and patient active engagement as shown in the diagram below.

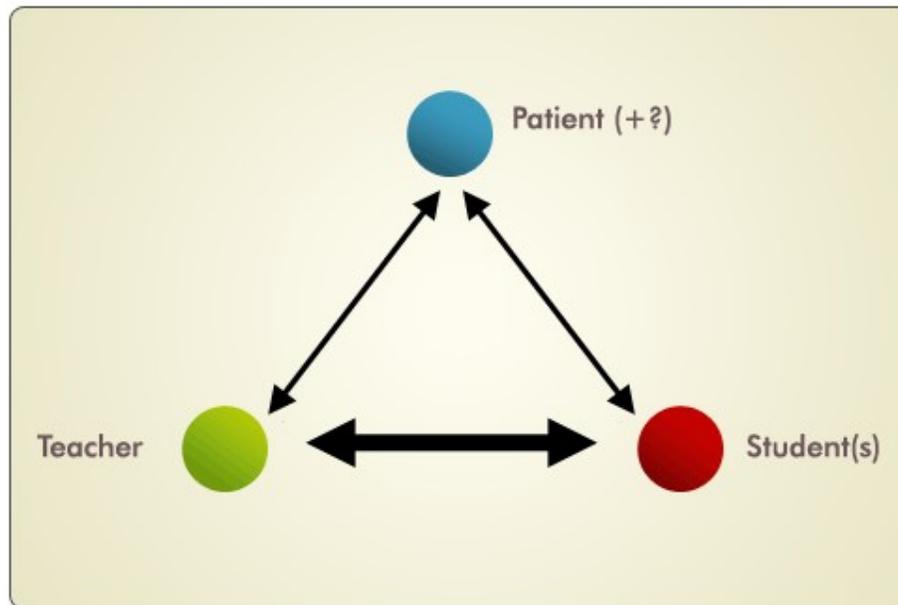


Figure 2: Triologue Clinical Model adopted from www.asme.org.uk/...11_17_mckimm.pdf...

Testing these findings with the null hypothesis using the chi-square, the results showed that training clinical skills in skills laboratory does not have any significant influence in assuring quality in medical practice.

Conclusion

The study clearly showed that training clinical skills in a skills laboratory does not significantly influence quality assurance in medical practice but Literatures reviewed indicated that it thus enhanced quality assurance. According to Battles J. B.(2006), one way to avoid latent health hazards is the separation of learners from the patients during skills development by providing alternative and safer learning spaces such as simulators and skills laboratory. This is because; patient frowns and feels unsafe at Faculty using them as teaching materials for their students. He therefore concluded by saying education and training are important in patient safety.

In as much as the acquisition of skills and professional competency is a continuum in skills learning, the skills laboratory remains one of the feasible means by which qualitative learning and practice can be enhanced and actualized. This is because it provides learners with models and simulators to practice skills prior coming in contact with real patient in the ward, it is a non threatening environment that is technologically enhanced with the state of the art digital facilities with the appropriate personnel's to assist in the production of media resources and facilitating learning hence the need for collaborations between educational

technologist and medical educators for the actualization of performance based outcome curriculum and competency based learning in clinical skills acquisition.

Recommendations

Based on the conclusion drawn from the study, the following recommendations are thus put forward;

1. Medical training college should make optimal use of the clinical skills laboratory for the attainment of performance based outcome curriculum targeted at achieving quality service delivery in actual practice and competency in skills acquisition.
2. The clinical skills laboratory should be adequately staff.
3. There should be synergy among the various departments in the utilization of the clinical skills laboratory.

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