

# Medical Teachers and Teaching Qualification.

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## SUMMARY

'Medical Education' is the study, research and application of educational processes employed in the training of physicians for continuous quality and standard in the production of competent physicians for improvement of healthcare delivery. It has evolved into a discipline with its own specializations such as Curriculum Development, Educational Foundations and Theory, Assessment Techniques, and Educational Methodology among others. Worldwide, high quality training and education of physicians is increasingly being recognised as critical to global health and emphasis is being made that the training of these physicians be done by professionally competent medical teachers. Medical school teachers should therefore be trained in educational foundations and theory as well as in modern educational instructional methodologies. Expertise does not automatically translate to effective teaching. In Nigeria, nearly all medical school teachers have no professional or formal training in teaching though they are experts in their fields (i.e. content experts). Evidences from research show improved learning of medical trainees when instructed by teachers trained in pedagogy and other educational processes. Teacher evaluation though alien to the Nigerian medical schools system, is an integral aspect of pedagogy and should be undertaken to ensure that teaching quality and facilitation of learning are enhanced. However such evaluation makes sense only when the teachers have been trained. There is a real necessity that medical school teachers be trained through short term courses, workshops and seminars so that the quality of teaching and imparting knowledge can be improved and sustained. Invariably, this is a call also for the establishment of departments of Medical Education in our Medical Schools across the country.

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## INTRODUCTION

Competence is defined as the simultaneous integration of knowledge, skills, and attitudes required for performance in a designated role and setting.<sup>1</sup> Successful performance in any profession or field of endeavour requires formal or structured training so that the trainees are equipped and enabled with the appropriate and integrated knowledge, skills and attitudes. The teachers themselves will need to be equipped and enabled to

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train the trainees to achieve competence in their fields. From everyday experiences however, teaching can be done instinctively by showing and guiding another to do what one had seen and learnt i.e. 'see one, do one, teach one' principle. Such training however remains unstructured, opportunistic and non-standardised. It will not achieve commendable quality or reliability. Teaching is not an end in itself. It is only a process by which learning is facilitated<sup>2</sup>. Learning is the end point or terminal objective of teaching. Untrained minds envisage teaching as an end point, a simplistic passage of information to an audience, while trained hands are ever conscious to ensure that the end point of learning is achieved. Almost all teachers in the Nigerian Medical School System do not have any professional or formal training on how to impart knowledge, though they are experts in their various fields (i.e. content experts). Nonetheless, the theories and principles of teaching and learning are a well researched field. Expertise in a field does not confer or translate automatically to effective teaching. A brilliant academic does not automatically translate to a brilliant or effective teacher. There are first class brains in our universities some of whom are professors but who are ineffective teachers, a source of constant mental trauma to students. Worldwide, high quality training and education of physicians is increasingly recognised as critical to global health and emphasis is therefore being made that the training of physicians should be done by professionally competent medical teachers.

A review of the need for teacher training among United Kingdom medical teachers shows tremendous advances. Summarising various publications on the issue<sup>3-9</sup>, the British Medical News<sup>10</sup> stated inter alia "All doctors in the UK are required to teach future generations of doctors, yet, unlike the preparation provided for their roles as clinicians and despite their expertise in what they teach, there has traditionally been a deficiency in appropriate teacher education in the medical profession. The role of doctors as teachers is increasingly recognised as a core professional activity that should not be acquired through chance, aptitude or inclination alone. Although subject expertise is important, it is unacceptable to assume that because a doctor knows a lot about their subject, this will enable them to teach it effectively either formally or informally". There are at least eight different customised teacher training programmes for medical teachers in the United Kingdom to acquire teaching qualifications or at least to improve their teaching skills. They range from individual improvement in teaching skills to postgraduate certification to Masters degree in medical education.

This paper seeks to advance and advocate the reason and need for medical school teachers in Nigeria to acquire training in pedagogy and its cognate fields. Specifically, the paper aims to help medical experts understand and imbibe the need for training in pedagogy as an integral part of Medical Education, understand that curriculum development and student evaluation (assessment techniques) are adjunct to pedagogy and are inseparable and seek for earliest opportunities to improve their competence as medical school teachers through in service courses, workshops, seminars, Masters degree programs or short/long term fellowships.

**THE EFFECTIVE TEACHER**

The effective teacher must know his subject (content expert), know his audience (students): their needs, educational attainment, level of maturity and their environment so as to effectively plan course content and delivery process to meet their needs. H/she must understand educational theories and foundations and how to apply them as well as understand the principles of Teaching and Learning. He must adopt the appropriate teaching strategies or methodologies for his subject and audience. H/she should be able to develop a lesson or teaching plan with both objectives and timeline and must always call for and receive feedback from students.

**EDUCATIONAL FOUNDATIONS AND THEORIES**

Pedagogy can be defined as the principles and methods of instruction or the activities of educating, instructing or teaching, or activities that impart knowledge or skill. Effective pedagogy utilises established educational theories and principles.

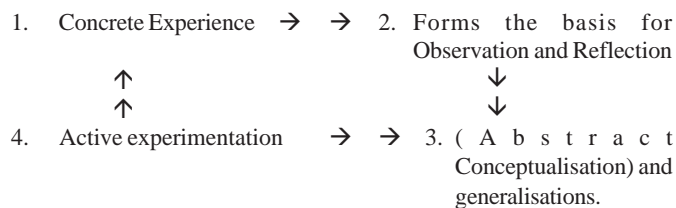
**What is Learning?**

Learning is a process resulting in some modification, relatively permanent, of the way of thinking (cognitive), feeling (affect), doing (psychomotor skill) of the learner. It may also be described as a process that produces a behavioural change in the learner leading to a relatively permanent change that is gradual, adaptable and selective resulting from practice, repetitions and experience<sup>11</sup>. For any effective teaching, the teacher ensures that learning is achieved beyond mere transmission of information.

**How does Learning occur?**

**Kolb's Theory**

There are many theories of learning but KOLB'S 4-STAGE LEARNING CYCLE captures all the essence.



An exposure to any new experience (for example a venepuncture, setting an intravenous line, herniorrhaphy etc) triggers off a reflection of the procedure (reflective observation) in the trainee as he/she tries to play back the experience and procedure. Based

on this reflection, the trainee tries to develop a conceptual framework on how the new experience can be mastered. In the process, based on other experiences, he/she could develop some additional processes or even short cuts to achieving that experience. If he is a conceptual thinker, he uses this new experience as a template for exploring the larger picture or other related concepts not shown in this first experience. On the other hand, if he is a practical thinker, he/she may be satisfied with the process as taught, being only interested in the straightforward acquisition of the experience without further inquiry. With the modifications, the trainee is armed to actively perform this new procedure to achieve another concrete experience. Some more modifications (for example based on new difficulties encountered reflective observation) may be made on the new experience until mastery or competence is achieved. Medical teachers and trainees go through these processes but do not take full advantages of them because they are unaware of the learning cycle.

**Thinking & Learning Styles**

Thinking style is characterised by the learner's orientation to new material being learned. Learning is more successful when the teacher varies his/her style of teaching to meet variety of thinking styles among his/her students. Learning styles are characterised by approaches to learning. Learners do tend to look for their preferred style in each learning situation because they associate that style with learning success. Individuals combine a mix of thinking and learning styles but have predominant or preferred styles.

**Thinking Styles**

Reflective thinkers' view new information subjectively, relate it to past experiences and often ask "why?". 'Creative thinkers' toggle with new information, create their own solutions and shortcuts, make excellent troubleshooters and always ask "why?" 'Practical thinkers' want straight factual information, seek the simplest, most efficient way to do their work and never satisfied until they know how to apply their new skills to their job or other interest. 'Conceptual thinkers' accept new information only after seeing the bigger picture, want to know how things work, not just the final outcome, they learn the concepts that are presented with but also want to know the related concepts that may not have been included.

**ADULT vs. YOUTH LEARNING**

Adults have different learning characteristics than youths and effective pedagogy takes this into account

**APPLICABILITY**

The knowledge of the above discussed issues is crucial to effective teaching and therefore effective learning. These principles are readily applied in overall instructional methodology, in the teaching of large classes, in small group learning, in the facilitation of tutorial classes, in leading discussions, bedside teaching, outpatient teaching, teaching of clinical procedures, application of problem-based learning, online medical education and meeting the needs of the below-

average students among others.

**CURRICULUM DEVELOPMENT**

Curriculum development in medical education is a methodical and scholarly process that integrates a content area with educational theory and methodology and evaluates its impact<sup>12</sup>. Though scholarly, it is a practical process that addresses the needs of trainees, patients, and society. Very simply put, curriculum entails 'what to teach (course content), how it is taught (implementation and delivery processes) and how it is evaluated or assessed (examination). Curriculum development and review are integral parts of pedagogy training for teachers. Popularly, there is the six step approach to Curriculum development (Kern, Thomas, Howard and Bass (1998)<sup>12</sup> which are:

- Step 1: Problem Identification and General Needs Assessment.
- Step 2: Needs assessment of targeted learners.
- Step 3: Goals and objectives.
- Step 4: Educational strategies
- Step 5: Implementation
- Step 6: Evaluation (Assessment) and Feedback
- Curriculum Maintenance and Enhancement: Evaluation may appear as the final step in curriculum planning, however such steps as maintenance and enhancement will be necessary. Questions to consider are: How will minor or major changes be implemented? What methods will be used to maintain the motivation and involvement of faculty and support staff? What related activities will be encouraged or supported that could strengthen the curriculum?

Medical school teachers need such training to be able to review their curricula regularly both on short and long term bases. There are medical schools in the country with curricula as old as 15-20 years and never reviewed. Lack of training of teachers in curriculum development and review is responsible

for this apathy. Beyond the issue of curriculum review/development is that of dynamic and changing landscape in medical education. There is quantum leap in medical sciences knowledge and advances, new and emerging diseases as well as climatic and environmental health challenges. These will all compete for placements in the medical curriculum. Requisite training of the medical teacher in curriculum development will equip him/her to develop the right criteria for inclusion or otherwise in a curriculum, fully cognizant that the period of medical tutelage is time-bound. The dictum of training doctors on 'how to think' rather than on 'what to think' becomes handy, itself a part of pedagogy training. The consequence of this will be the need to educate medical teachers on the strengths and weaknesses embodied in different curricular patterns. This supposes that such medical teachers must be abreast with those patterns such as Discipline based curriculum, Organ based, Integrated (with both horizontal and/or vertical integration), Problem Based Learning (PBL) as well as the SPICES and PRISM models<sup>13</sup>. It is well known that with an integrated curriculum, up to 30-40% of lectures given during medical training can be dispensed with, resulting in shorter course duration without sacrificing quality.

**STUDENT ASSESSMENT**

Assessment of students is an integral part of the curriculum. There are outmoded, unstandardised assessment techniques that are still the bedrock of medical students' examinations in most Nigerian medical schools. As of today, less than 20% of Nigeria's medical schools have adopted OSCE format of clinical examination whereas it is the preferred format having higher psychometric properties than the age-old traditional method. Traditional clinical examination remains the norm in most of Nigeria's medical schools despite their known drawbacks such as low psychometric properties validity and reliability (repeatability/reproducibility) as well as non-assurance of

**Types of Learning Styles**

Learning Style	Characteristics	Teaching Strategies
Visual learners	Process new information best when visually presented.	Use graphics, illustrations, images, demonstrations.
Auditory learners	Process information best when it is spoken.	Lectures, discussions, audio tapes, CDs.
Kinesthetic learners	Process new information best when touched or manipulated.	Written assignments, taking notes, examination of objects, activity participation.
Environmental learners	Process new information best when in certain surroundings: music, room temperature, seating arrangement, quiet/noisy environ , group of people present/ alone etc	Ensure that learning environment is optimal. Distance learners can control own environment better than on-campus students.

Adults	Youths
Problem-centred approach	Subject-centred
Result-oriented	Future-oriented
Self-directed	Depend on adult for direction
Skeptical about new information	Accept new information without proving or seriously questioning it
Seek education relevant to perceived needs	Seek education for the future
Accept responsibility for their learning	Often reluctant to accept responsibility

fairness. They are not standardized because of issues such as 'examiner factor', 'patient factor', complexity of pathology, case specificity, luck elements, subjectivity of grading etc which often introduce distortions in the assessment. OSCE format has largely replaced the traditional examination format. OSCE allows a level-playing field for all candidates. Objective Structured Clinical Examinations (OSCE) was introduced into the milieu of assessment in the mid-1970s by Harden<sup>14,15</sup> and is currently in use in almost all medical schools in Western Europe and North America among others<sup>16</sup>. OSCE is a timed clinical examination in which students move from station to station, each station requiring performance of a specific clinical task in a simulated setting that involves interaction with actual or simulated (standardised) patient. While it is true that no examination format is perfect, it is objectively clear that the OSCE format is a much higher improvement than the traditional clinical examination. Its critics are usually untutored in the system, majority of them having never cared to study it. In the hands of trained teachers, it is one of the most flexible examination systems that can test very high levels of both cognitive and psychomotor skills, in addition to communication and inter personal skills. It is only imperative therefore that medical school teachers should acquire such skills, as part of their training in pedagogy, so that more acceptable standardized examinations are operational.

### Written Assessment

Another important area where training of medical teachers is critical is in the setting of examination questions. Written examinations remain the core instrument for testing cognitive knowledge. Examination questions must be representative of the content domain as enshrined in the curriculum. Over-sampling or under-sampling is bound to negatively affect content validity which ultimately reduces the reliability of the examination for the purposes it is intended for. Quality examination administration demands that instructions over examination questions be clear and unambiguous. Time allotted for a paper must be clearly stated. Marks allotted to different numbers also should be clearly stated if mark allocations vary with the questions. There is nothing to gain by extreme limitation of time allotted to an examination paper since this may hinder the very bright students from distinguishing themselves. In such situations, there may be poor discrimination index which reduces certification competence from the examination exercise. Enough time should be allocated to allow students who know to prove themselves, cognizant of the fact that those who are deficient will never be helped by time elasticity. This may however be modified in competitive tests that limit entrance or acceptability to a program or training. In all, there must be a balance between examination papers and time requirements to allow for reasonable demonstration of knowledge. In multiple choice questions (MCQs) where some examiners are wont to subtract marks for attempted but failed questions, it is mandatory that such decision be stated on the paper. Students modify their risk-taking when answering such papers. It is therefore unacceptable to jettison such decision/instruction later for any reason such as poor performance. Such decision puts a group of students immediately at a disadvantage and is 'morally' wrong exam-wise. The corollary

is also true that marks should not be deducted if the examination paper stated so, which temptation may arise from 'over' performance. It is informative to state that negative marking scheme to penalize guessing in MCQs is outmoded and has no scientific or educational basis or value<sup>17-19</sup>. There must be consistency in examination administration, part of which arises from setting standard unflawed questions.

### Essays

Traditional essay questions are being replaced gradually by short answer questions (SAQs) which test wider knowledge domain at shorter paces of time and are easier and more objective to grade. While it is true that long essays have the ability to test candidate's mastery of language, communication and organizational ability, synthetic and analytic capability, they are also limited by the scope of knowledge they are able to test, are difficult to objectively grade, with wide inter and intra-rater variability and therefore attendant low psychometric properties (low reliability and validity).

### Multiple Choice Questions (MCQs)

Multiple choice questions along with short answer questions are increasingly the method of choice in cognitive written tests in most Medical Schools in Western Europe and North America. A lot of research has gone into the development of MCQs as test instruments and there are varied types of MCQs in use today. Multiple choice questions are more difficult and more time-consuming to set (cf. essays), may not be able to test higher cognitive functions if they are not written by trained or skilled hands but have significant advantages over essays. They are easier to grade and less subjective, tests wider domain of knowledge, are reusable over time when banked with adequate security and have higher psychometric properties than essay questions. With trained expertise, MCQs can be constructed to test higher cognitive functions, have minimal flaws and with appropriate item-difficulty achieve a higher discrimination index than essays<sup>20-23</sup>.

Unfortunately, lack of knowledge of the advantages of MCQs over essays has continued to give more weighting to essays than MCQs in written examinations in most Nigerian Medical Schools. An appropriate weighting of written examinations in Nigerian medical schools should be 50% MCQ, 30% SAQ and 20% long essay<sup>24,25</sup>. Depending on expertise and level of assessment, MCQs can meet any challenge in cognitive testing, a typical example being extended matching questions (EMQs). Fortunately there are well researched publications which provide comprehensive treatment of the development of multiple-choice test items and the study of item responses for the improvement or continued use of these items<sup>20-23</sup>. These issues are part of a total package in 'Teaching Qualification' for medical school teachers, a move that is bound to improve quality of teaching, learning and performance in health care delivery.

### RESEARCH EVIDENCE

There are research evidences in medical education that show that formal training in teaching skills help medical teachers do a better job with their students. One remarkable of such

evidences is from University of California, Irvine (UCI), Medical Centre<sup>26</sup>. Traditionally medical students and interns receive significant mentoring and supervision from resident physicians, who are themselves still undergoing medical training. Residents teach their trainees how to diagnose and treat patients. They model communication skills and many other professional attributes, so they have a huge impact on the training of future doctors. Improving the teaching skills of residents is therefore critical. In this study, researchers recruited 62 second-year residents from UCI Medical Center. Of these residents, 33 were randomly assigned to complete a residents-as-teachers program. Over six months, these residents completed 13 hours of special practice and training designed to improve their teaching and communication skills with students. Before and after the training, all of the residents were given a teaching examination to evaluate their performance. The research hypothesis was that Resident physicians would make better instructors for medical students and interns when they receive formal teaching training. Results from the study showed that when rated on teaching effectiveness, residents who received the training scored 28.5 percent higher than residents who did not receive the training, a statistically significant difference.

#### DEDUCTIONS

An effective teacher will consider his teaching audience (adults or youths), different thinking styles and learning styles in planning his educational programs. He will need to employ varied techniques to capture the various needs of his/her students. An effective teacher does not only teach but ensures that learning takes place. The essence of teaching is to effect or facilitate learning. For an all-round effective teaching, a grounding in educational foundations, knowledge of curriculum development and review, ability to use modern instructional methodologies and application of quality assessment methods are a necessity. As in every discipline, it takes some structured and formalized training to study, internalise, integrate and apply this body of knowledge for effectiveness. Medical teachers will benefit tremendously from teaching certification with attendant improved quality in training and health care services.

#### CONCLUSION

Rebuff for training in any field of endeavour is a sign of narrow intellectualism and exposure. It is also a sign of intellectual immaturity. Natural and innate talents are sharpened by structured training. Talented sportsmen and women need coaches to achieve their maximum potentials. Medical teachers cannot be an exception, though highly informed. If they must do a better job of training medical manpower, then they need to be equipped to meet the challenges and best practices of the 21st century medical education trends. There is a real necessity therefore that medical school teachers be trained through short term courses/fellowships, workshops and seminars so that the quality of teaching and imparting knowledge can be improved and sustained. Invariably, this is a call also for the establishment of departments of Medical Education in Medical Schools across the country.

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