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EXPLORING LEVEL OF USE OF ICT IN MEDICAL EDUCATION IN KENYAN PUBLIC UNIVERSITIES
E. R. Rajula, BScN, MBA, MPH, BBA (HCM), Lecturer, Community Health Thematic Unit, University of Nairobi P. O. Box 19676-00202, Nairobi, Kenya

# EXPLORING LEVEL OF USE OF ICT IN MEDICAL EDUCATION IN KENYAN PUBLIC UNIVERSITIES

E. R. Rajula

## ABSTRACT

***Objectives*: To investigate the extent of use of ICT in medical education.**
***Design*: A descriptive study**
***Setting*: College of Health Sciences, University of Nairobi**
***Subjects*: Academic staff.**
***Results*: The data-gathering tool exhibited appropriate reliability (Cronbach'salfpha= 0.91). The response scores were moderate (mean: 72.40),the factor that accounted for the greatest variability to decision making on the use of ICT. Professional qualification, gender or age had no significant relationship with the extent of use of ICT. However, there was evidence that staff and student training on ICT, administrative support and financial availability were the major factors, which need to be looked into to enable ICT use.**
***Conclusion*: Colleges of health sciences in Kenya need to bring fundamental changes in their curricula to incorporate ICT in their medical education and practice as well as offer ICT training for both students and faculty.**

## INTRODUCTION

Educational technology tools offer compelling instructional capabilities and provide faculty and students with new educational possibilities. They are able to portray anatomical and physiological processes with remarkable clarity, tailor instruction to learner needs, allow learners to practice skills in a safe environment, standardise instruction and assessment activities and be offered anywhere and any time (1). Education's technology and E-Learning have resulted in a condition in which many educational goals, such as independent learning, learning regardless of time or place, collaborative learning and providing immediate feedbacks and assessment of learning, appears more achievable (2). Information communication technology has brought several changes in medical education and practice in the last few years. Teaching and learning in the medical field has undergone great changes through use of technologies. Many universities have made heavy investments in adapting to technological revolution. It has been noted that due to rapid development of computer technology and access to personal computers, together with Internet, email and various medical literature retrieval applications, study and practice environments in medicine and medical care have changed (3). ICT is fast changing and is versatile to use. The capabilities are seen in eLearning, Simulation in skills laboratories, Diagnostic equipment, Surgery, Patient education, Research, and information retrieval and exchange as well as in the improved quality of interventions and care provided to patients. Physicians and other medical professionals of the future must be prepared for patients who are increasingly connected to the Internet and informed on their diseases and the latest discoveries in medicine. As such the use of ICT is rapidly increasing in medical education.

Medical schools in developed countries have invested heavily in ICT, not only to deliver education, but also to improve the quality of services provided by health professionals (4). Although the developing countries are slow in the necessary processes in incorporating computer technology into medical education, the integration is becoming so important because of the move towards globalisation and the ever-changing medical knowledge. In order to catch up with the rest of the world, developing countries need to research their options, design the necessary process and implement essential changes in adapting to new computer technologies (5). Medical schools in developing countries are still struggling with designing, implementing and delivering ICT required changes in medical education.

A study conducted at the UCD School of medicine in Aublin Ireland, on attitude to and practice of e-learning(6), showed that the majority of respondents felt that their students benefited from on-line learning. None expressed negative views, though a substantial proportion felt that is was "too early to say", most felt that e-learning helped them as

teachers, though a small number felt that it had not. (7).Research with 29 companies who were e-learning pioneers established some facts about eLearning. They identified six key factors that underpinned eLearning include delivering what the organization needs, putting the learner at the heart of e-learning, providing high quality content and technology, and gaining support at senior level for eLearning.

The actual leaning which involves identification of information, conceptualizing and making meaning to enhance user's knowledge base, understanding and skills, as well as finding time and space is left to the individuals. E-learning is helping learners to understand how to think.

## MATERIALS AND METHODS

This was a Descriptive Survey. In this survey, the Faculty's perception of their computer skills, attitude towards use of ICT in teaching and learning, its usage and access to computer, Internet and training were assessed, using a self-administered questionnaire.Key informant interview was done using ICT department officials. Observation was also used to elicit some of the information on use of IT. Only staffs who were willing to participate were included in the study. Purposive sampling was used to select the study site.

## RESULTS

This chapter reports the study findings based on quantitative and qualitative data obtained from the respondents.

The extent to which the respondents consider the following factors as obstacles for the expanded use of ICT in the college:

Figure 1 below shows 44% of respondents feel that to some extent, insufficient knowledge among lecturers was the obstacle to the expanded use of ICT in the college, 8% felt that it influenced it to a very high extent while23% felt that it influenced it to a high extent.

**Figure 1**
*Insufficient knowledge of ICT among lecturers*

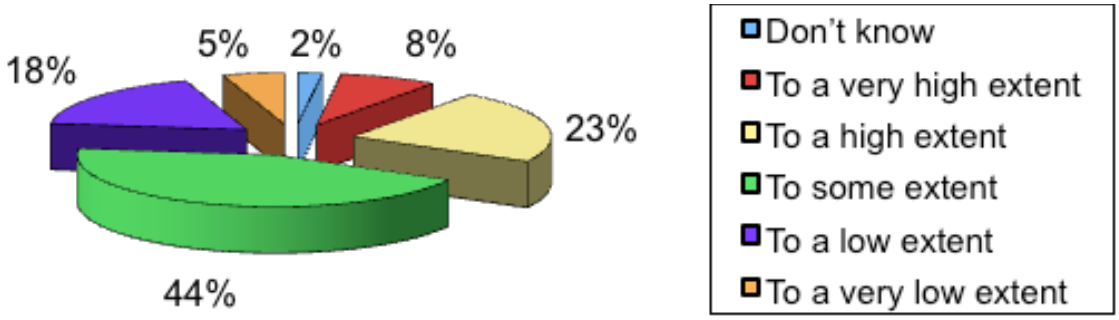


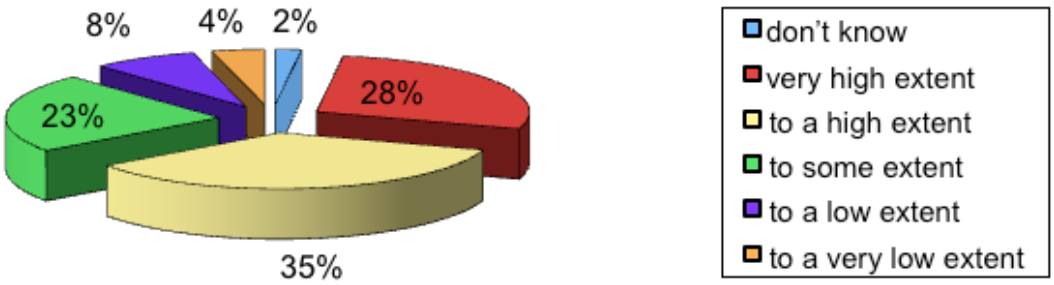

Table 1 below shows that 15% of schools and departments have made it a very high priority to purchase hardware and AV equipment while 35% have to some extent considered the development of technical support and guidance to both staff and students.

**Table 1**
*The various objective priorities*

| | To a very high extent | To a high extent | To some extent | To a very low extent | don't know | total |
|---|---|---|---|---|---|---|
| Purchasing hardware computers, AV equipment | 15% | 30% | 40% | 3% | 3% | 80 |
| Upgrading a technical infrastructure | 24% | 39% | 30% | 1% | 3% | 80 |
| Purchasing software (standard programs, teaching programs) | 13% | 37% | 39% | 1% | 3% | 80 |
| Development of technical support and guidance to both staff and students | 14% | 40% | 35% | 1% | 2% | 80 |
| Modification of building to adapt them to ICT integration | 6% | 22% | 35% | 10% | 3% | 80 |

The extent to which lecturers consider that the following factors as obstacles for the expanded use of ICT in the college:
Many lecturers (35%) felt that a limited financial resource was obstacle for expanded use of ICT in the college.

**Figure 2**
*Lecturer responses on financial resource limitation*




All heads of department who participated in the study indicated that registration online was available.

**Table 2**
*Possibility to register for courses on-line online*

| | No of Departments | Percentage |
|---|---|---|
| Yes, it is possible to register for all courses online | 10 | 100 |
| Yes, it is possible to register for some courses on line | - | - |
| No, but we are in the process of making online registration possible | - | - |
| No, but we are in the process within 1-2 years | - | - |
| No, and we have no plans to make online registration possible | - | - |
| Others | - | - |
| Don't know | - | - |
| Not answered | - | - |
| Total | 10 | 100 |

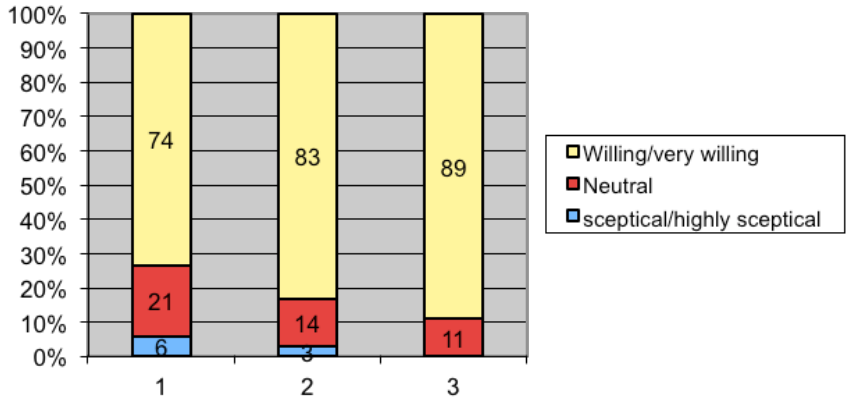
Whether it is possible to register for exams online. All schools were neither administering exams on-line nor are they planning to do so any time soon.

**Table 3**
*The possibility to register for examinations on-line*

| | No of Departments | Percentage |
|---|---|---|
| Yes, it is possible for all courses online | - | - |
| Yes, this is possible for some courses online | - | - |
| No but we are in the process of making it possible | - | - |
| No, but we plan to make it possible within 1-2 years | - | - |
| No, and we have no current plans to make online examination possible | 10 | 100 |
| Others | - | - |
| Don't know | - | - |
| Total | - | - |
| Not answered | - | - |

Attitude towards ICT integration in day-to-day teaching.
Majority (89%) were either willing or very willing, while 21% were neutral.

**Figure 3**
*Attitude towards ICT integration in da-to-day teaching*



## DISCUSSION

One thing noted from the study was that gender was not an important factor affecting the level of use of ICT at the College neither was age. In their forecast on ICT use, schools had varied priorities; some thought of modifying the buildings to accommodate better ICT use, especially for eLearning. A researcher (8) explains that the total learning solution comprises the integration of three elements: Contents, Technology and Services (8). His concept is also underpinned by the assumption that learners will be responsible for the cognitive tasks that will lead to learning. Medical education has technical components, and this is why some staff feel that it might affect quality. However, it can still be used to the extent of simulation in demonstration sessions. The challenges in using technology in practicals is also highlighted by a leading researcher, (9), who cautions that, the way in which teaching is approached should be considered more important than the technology medium.

It has been stressed that technology is limited in medical education (8) explains that the total learning solution comprises the integration of three elements: Contents, Technology and Services. His concept is also underpinned by the assumption that learners will be responsible for the cognitive tasks that will lead to learning. A leading researcher (9), cautions that the way in which teaching is approached should be considered more important than the technology medium.

Technology has been reported to be limited in medical education (10). This tallies with the findings that some schools only see it as a priority to some extent. It was established that the level of ICT use isactively being incorporated in teaching at the college to the level of availability of equipment. However, e-learning is in very early stages in most schools. Some schools did not give it apriority, while other had a priority on developing technical support and guidance for both staff and students. In as much as it emerged that students could apply on-line for many courses, it was established that the college is not about to administer examinations on-line. Some of the reasons given were that the courses all have practical components, which could not be effectively, evaluated on-line. Others explained that even the examiners themselves largely have limited computer literacy, and were therefore not competent to administer even theoretical component online. It was established that ICT use in medical education is different between industrialized and developing countries (11). In a study conducted in Colombo University, the researchers reported that, in spite of high costs due to hardware and software prerequirements, constant internet connectivity and necessity of technical knowhow, ICT in education is here to stay (12). This is a very focused and a very encouraging way of looking at it. Departments were at varied levels of ICT use, and used it for varied needs, such as communication, eLearning, and simulation in skills laboratories, research and training.A study conducted using VSS medical students reported that ICT can be a useful tool to address problems in medical education, but a lack of technology and material resources is still a serious limitation (13). This situation was also observed in this study. Majority of respondents showed positive altitude towards ICT use. They felt that if all necessary logistics were addresses and both staff and students were given the preparation necessary, ICT use would steadily develop, in all areas of curriculum delivery. Some respondents, during the probing questions expressed the need for more collaboration to facilitate the integration of ICT in day-to-day teaching/learning activities.

In conclusion, ICT is a very powerful tool in medical education. Medical institutions are progressively embracing ICT in teaching and Research. Initial and to some extent, maintenance costs may be high. However, with good planning, and partnership, it is doable. It has been established in many studies that ICT improves the efficiency and quality of learning. The respondents were in agreement that they use ICT in teaching to some extent. It would be interesting to do a research to identify how university teaching staff actually uses technology in teaching and other necessities, the equipment and software used and when they find them most convenient.

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