Research Paper

Smart Classroom: A Panacea for Effective ICT-based Instructional Strategies in Nigerian Medical Colleges

Henry Chukwudi John [1*], Aaron Afan Izang [2], Joshua Owolabi [2]

[1] Greensprings School, Lagos, NIGERIA
[2] Babcock University, Ogun State, NIGERIA

ABSTRACT

Technological advancements of this era have revolutionized every field of life. Teaching is no exception. ICT-based instructional strategies has noticeably paved its way into the profession of pedagogy. The advent of smart classroom has turned classroom learning environment into the high-tech content, which creates an interactive classroom teaching efficiency for teachers and students in learning situations, promote the students' active learning and cooperative learning, and then improve the efficiency and results of the medical curriculum teaching. Best global practices have been emphasized in medicine and other professions. Therefore, Medical colleges are supposed to be driven by these best global practices which are based on research and innovations. One of such innovations is the Smart Classroom for ICT-based instructional strategies which requires a teaching space, a variety of modern equipment, software and hardware technologies, and advanced educational philosophy of teaching. This study describes how ICT-Based instructional strategies in a smart classroom can create an effective teaching- learning process in medical colleges. The study also proposed a smart classroom integration model and the strategic ways to adopt it. To this end, the study went further to proffer some recommendations that will help improve this approach as follows; the university authority should provide constant source of electricity, a conducive environment for learning and make sure that adequate training is given to medical lecturers, clinical instructors, laboratory technologist, and even students in the use of modern teaching and learning aids.

Keywords: Smart Classroom, Medical Curriculum, ICT-based Tools, Instructional strategies

INTRODUCTION

With the existence of Internet of things, cloud computing, and big data as a representative of a new generation of information technology, smart classroom with the characteristics of intelligent technology, intelligent application, and wisdom management has become the new information construction hotspot. The emergence of these new technologies will have a profound impact on our teaching environment, teaching mode, teaching content, evaluation mode and management mode, and so on [1]. One of the key indicators of best global practices in medical colleges is ICT-based instructional strategies which may include software and hardware used during teaching and learning process in a medical college. Therefore, it is a fundamental redesign of the instructional model shifting from lecture to student-centered instruction, thereby increasing all forms of interaction and incorporating formative and summative assessment". Clinical education that uses ICT-Based Instructional strategies may provide flexibility to address clinical placement logistics and may enhance student teaching"[2].

✉ hjohn@greenspringsschool.com **(*Correspondence)** ✉ izanga@babcock.edu.ng ✉ owolabijo@babcock.edu.ng

While in the process of students learning, classroom teaching is the most important part of students to acquire knowledge. Rapid advances in medical and health sciences have expanded the frontiers of knowledge, while issues in medical ethics, professionalism, and health-related Informatics, ICT have become a "must-know" for the physician and health care practitioners of the twenty-first century" [3]. Medical curriculum teaching emphasizes on the situation and cooperation, and emphasized the importance of the students' learning initiative and exploration ability. Past studies have focused on effects of ICT on student's academic performance in medical college, while less study has been done in the designing and development an effective smart classroom within medical colleges, which is still challenging to most educators due to the complex environment that incorporates many pedagogical and technological elements.

Therefore, this study reveals how the comprehensive adoption of smart classroom can create an environment for effective ICT-based instructional strategies in medical colleges.

Theoretical Framework

Diffusion of Innovation Theory which was developed by Rogers (1995) has been used to study user adoption of innovation in many sectors including agriculture, sociology, information systems, and manufacturing, among others. According to [4], diffusion is "the process by which an innovation is communicated through certain channels over the time among the members of a social system"; while an innovation is "an idea, practice, or object that is perceived as new by an individual or another unit of adoption" [5]. Diffusion of Innovation theory considers five constructs that influence technological adoption. The constructs include complexity, observability, compatibility, triability, and relative advantage. The theory shows the process of innovation diffusion which includes five stages: knowledge, persuasion, decision, implementation, and confirmation. The theory categorizes the adopters of a technology into innovators, early adopters, early majority, late majority, and laggards forming a bell shaped curve. The theory further puts forward that prior conditions that may affect innovation adoption include innovativeness, norms of social systems, previous practice, and felt needs.

ICT-Based Instructional Strategies in Medical Colleges

Information Technology and Information Industry is one of the most dynamic areas in the world, which have led to the development of information technologies and their application in medicine and everyday life thereby making it necessary for quality and appropriate training in informatics, especially from the medical universities to be provided. The information boom in medical science and practice poses to the health professionals high demands on their competence in the field of information technology.

The use of information technology in modern health care at all levels of medical help requires knowledge to work with them to meet patients' needs for quality and high qualified service by medical professionals [6].

With the advent of ICT's predictions about reforming medical education from a traditional lecture discussion curriculum to a more student-centred type of education to enhance creativity and lead to changes in the way physicians practice were common. Medical educators were predicted to spend less time delivering information in traditional settings such as lectures and more time on facilitating the learning process and research. In addition, medical students were predicted to take a more active role in their learning and alter the pace of their own education using ICT-based tools [7].

Today, multimedia technology, the World Wide Web, and the omnipresent nature of networked computers have transformed educational technologies. Medical educators now use ICT-based tools for instructional purposes more than ever to deliver learning resources, and this increased use can be seen in the growing number of publications and conference presentations related to educational technology and will continue to evolve and become further integrated into all aspects of the medical industry [8].

One issue regarding ICT in medical education is its availability and use. While developed countries benefit from investing in ICT, developing countries could particularly benefit from ICT mediated education because of the lack of educational institutions and qualified medical educators, poor distribution of facilities, and poor access to the latest educational infrastructure [9]. However, access to the technology is often an issue in developing countries. ICT use was examined at a medical college in Burla, India, and according to [9], ICT could be a useful tool to address problems in medical education, but the lack of technology and resources was a serious limitation. Most users were deprived of access to the vast medical literature available in electronic format, and the medical college had not been able to use the services available at national and international levels [9].

Computer technology is being integrated into medical education as an effective tool for teaching, learning, plus allowing access to a wider variety and greater quantity of ever increasing information and research. However, educational leaders play an essential role in incorporating this new technology into medical education in order to maximize the efficacy of this integration and improve the quality of medical education as well as training informed and efficient physicians for twenty-first century. This leadership, with regards to integration of ICT into medical education, differs in developed countries and developing countries. In order to integrate ICT into medical education in a developing country, the educational leadership needs more fundamental changes, i.e., moving the centralized decision making process to a more decentralized system where the schools are given the authority to implement changes with regards to their needs and possibilities [10].

IT knowledge and computer skills among medical educators are higher in developed countries compared with developing countries, mainly due to facility limitations such as the availability of computers and Internet connections. For instance, in Sri Lanka, IT based components are not included in medical curricula in most medical schools, and experiences with IT-based activities in medical schools are limited. The case is the same for most developing countries, and publications on this topic from those countries are limited [11].

IV. Technology In Medical Classroom Teaching

Interactive Electronic Whiteboard

Interactive electronic whiteboard is induced from the electronic induction board (hardware) integrated with the whiteboard operating system (software). It combines computer technology, sensing technology, positioning technology, microelectronics technology, and electronic communications technology, has become a computer based on an input-output devices and sensors whiteboard , is people (users) to interact with the computer 's intelligence platform. Interactive electronic whiteboard is the product of information science and technology. As a new modern teaching tool, interactive electronic whiteboard advantage is able to effectively integrate various teaching resources, improve the utilization of teaching resources, has great effect to improve the classroom efficiency [12]. On the other hand, interactive electronic whiteboard system is composed of projector, computer and electronic whiteboard, this kind of teaching method has the characteristics of the content is rich and colorful, in the form of a variety of features, by the vast number of teachers and students like it, has been widely used in medical classroom teaching, and have achieved satisfactory results.

Automatic Recording System

Automatic recording system can automatically generate live video classroom when the teachers are teaching at the same time, recording the whole teaching process. At the same time, also in a streaming mode on the Internet to watch live, so that the majority of students in the classroom scene such as face to face the same feeling, after class can also be online on-demand playback. By using full automatic recording system can share the excellent teaching resources of famous teachers on the Internet, is also teacher training, curriculum evaluation, teaching observation, level evaluation, resource sharing mentor, provides a convenient way for more recording work of excellent courses. Automatic recording system uses two modes (software mode and hardware mode) to collect teacher courseware screen display; or through the intelligence director system switches the students and teachers of the picture, in order to reflect the effect of the interaction between teachers and students in classroom teaching; the use of the live server, will broadcast live classroom to other computers on the network [13].

Interactive Response System (IRS)

Interactive Response System is through the electronic remote control, let the whole class of students in the classroom be a real time feedback information to the teacher's teaching applications. IRS' the most important function is to help the students to keep focus on classroom learning activities, and can motivate students' active learning. With the rapid development of information technology, the use of wireless electronic remote control allows IRS real-time feedback system to maximize performance so that the teacher in the classroom teaching activity, at any time statistics student feedback and proportional, immediately grasp the learning situation of the whole class of students, and adjust the teaching steps [14]. [15], has clearly indicated some of the following ICT-based instructional technologies that are used for medical education which is Computer-aided Instruction (CAI). This a form of ICT-based Instructional strategies in which computers play a central role as the means of information delivery and direct interaction with learners (in contrast to applications such as PowerPoint) in a medical college; to some extent human instructors are replaced. These programs may make use of Internet technologies (Web-based learning), and include a wide variety of standalone applications or online materials.

Virtual Patients (VP)

This is a specific type of computer- based program used by medical instructors, which can be used to simulate real-life clinical scenarios; learners emulate the roles of health care providers to obtain a history, conduct a physical examination, and make diagnostic and therapeutic decisions. Although less common, screen-based virtual reality, or "screen-based simulation" is also being used to educate providers. It is also a program, exclusively computer-based, that allows learners to interview, examine, diagnose, and treat patients in realistic clinical scenarios. Examples include virtual patients, virtual environments, or physiologic simulations. Increasingly, more and more medical schools are utilizing virtual patients and indeed embedding them into their curricula [16]. A narrow or limited view focusing on particular VP features may constrain possible holistic learning benefits; an overly visionary and idealistic conceptions considering VPs as "one size fits all" interventions may not be in line with educators' and students' way of using VPs [17].

Social Media

Social media is a platform for quick information communication, knowledge sharing between teachers and students. Its usage has inevitably become a growing global phenomenon; Information has now been made available in varieties of technological applications i.e. Facebook, Instagram, and LinkedIn, Twitter, WhatsApp instant messengers, Imo Chat, etc. which is now bridging the digital divide between the undergraduate students and the desired information at a relatively low cost with easy and equitable access.

An increasing number of authors have been reporting possible usage of social media applications in medical education on the condition that they are used effectively and could help students, clinician teachers, and also patients enhance their learning performance, increase their engagement and improve collaboration. Integration of social media applications into the existing medical educational portals can enhance sharing of documents, multimedia, distribute news, one-to-many communication, collaborative learning, synchronous and asynchronous discussion [18].

Human Patient Simulation (HPS)

The use of mannequins or models to simulate patient care environments for instructional based practices or assessment purposes and the most common type of simulation equipment is the full-scale mannequin, most often a computerized adult. The report defines full-scale mannequins as the "life-sized robot that mimics various functions of the human body, including respiration, cardiac rhythms, and pulsation" [18].

Many forms of simulation have been a part of health care education for many years, including volunteers role-playing patients, practice suture pads, and anatomical replicas. However, improvements in technology have advanced the capabilities of the simulation tools available to students. A 2010 report from EDUCAUSE on the use of simulation technology in higher education observes that simulation technology is most often used to practice low-frequency events that require high acuity (e.g., emergency procedures) and irreversible procedures (e.g., surgery).

Screen-based Virtual Reality

Screen-based virtual reality is a computer interface characterized by high degrees of immersion, believability, and interaction, with the goal of making the user believe, as much as possible, that s/he is actually within the computer generated environment, as opposed to being an external observer looking in [19]. The main strength of this technique is that it allows the users to view that place in three hundred and sixty degrees (360°) and 3 dimensions modelling object (3-D). The viewer is allowed to interact with the image through the hotspots and this is something different from just sharing at the information display in the screen of the computer [20].

While traditional simulation has been widely used in higher education, through activities such as role-playing, technology based simulation has been less widely adopted, with the exception of medical education [21].

However it is prudent to begin developing virtual reality based educational applications today so that we will be prepared for the advances in equipment and software which will become available tomorrow, as the burgeoning popularity of this new technology drives prices down and quality up. Further discussion of low cost virtual reality and its application to chemical engineering can be found in [22].

PowerPoint Slides (Microsoft)

PPTX slides, accompanied with multimedia projectors, have remarkably revolutionized teaching. Texts as well as audiovisual clips can be easily played on PP slides. Text colour, font, and size may be modified with ease, and the visibility made catchy with contrasting slide backgrounds. Quality creation of a slide though lies in the hand of its maker, and heavy slides that basically comprise texts become tedious. Recently the use of electronic presentations has become common and Microsoft PowerPoint (PPT) is now the most popular package used out of all electronic presentations. PPT-based lectures are increasingly being delivered in medical colleges as in other colleges and universities. However, educationists are divided on the superiority of PPT with respect to the traditional chalk and talk method [23].

Few authors further noted that PPT lends clarity to the subject with well-legible text, good visibility in PPT, compared to C&B definitely adds to better understanding of the topic. This might have resulted in equal post lecture examination performance of students in understanding of simple and complex concepts by PPT and C&B [24]. [25], revealed in their study that the traditional method of lecture delivery still remains the dominant method of lecture delivery in the clinical students lecture series of the College of Health Sciences, University of Port Harcourt. The students preferred lecture delivery method was the use of multimedia Microsoft Power Point presentation, and they also welcomed the opportunity to have a more interactive sections during lectures.

Medical videos and animation clips

Animations refer to 3D video clips that can be played on a multimedia projector (MP). They provide a visual simulation that is particularly handy in sustaining interest and understanding complex medical concepts, but an entire lecture cannot solely rely on animations. To incorporate animations into the lecture, the lecturer searches for them on the Internet. As he does not create them on their own, the availability of a needed video clip is dependent upon chance. Multimedia has been shown to be effective for classes with students from different backgrounds. The choice of multimedia by medical students is also not surprising, as multimedia material has been shown to explain complicated topics with the aid of pictures, graphs, animations, and simulations.

Multimedia lectures can present complex concepts in small, chronological steps that aid students' ability to comprehend information in a meaningful way [26].

In a study, video-linked lectures allowed healthcare students across multiple sites, and between university and hospital bases to come together for the purposes of shared teaching. Recording and streaming video-linked lectures allowed the students to view them at a later date and provided an additional resource to support student learning. Also, third year medical students, enrolled in a pediatrics clerkship, who learned in a virtual modality with a digital video case, engaged in more critical thinking [27]. Online medical videos with a variety of medical specialties, topics, speakers, difficulty levels, and lengths can be easily downloaded to the students' laptops or mobile phones for free. Students can view them anywhere, anytime and as many times as they wish. Students can select videos that match their proficiency level and background knowledge and can help them understand abstract, and difficult ideas and information.

RESULTS

V. Proposed ICT-Based Smart Classroom Model

Utilizing the educational technology in today's learning environments is a must due to the vast advancements in these technologies and the Information and Communication Technology (ICT). Here, we introduce a comprehensive model of smart classrooms as a panacea and holistic approach in implementing an efficient Technology that can enhance learning environment. In this new model, the smart classroom systemically integrates the tools of ICT with various teaching learning practices in the medical college. The ICT's significant impact on the contemporary educational systems is evident due to the vast and rapid development in the computer aided instructions, multimedia, the communication, Internet technologies and Human/virtual patient simulators etc. The smart classrooms form a great learning initiative that assists the educators in creating a skilled and creative generation able to utilize the technology, benefit from the abundance of information and knowledge, and to be efficient self-learners in the Teaching-Learning Process. However, designing and development an effective smart classroom within medical colleges is still challenging to most educators due to the complex environment that incorporates many pedagogical and technological elements. Hence, the below proposed model is based on an integrated framework to implement a Smart Classroom that will be a panacea for an effective ICT-based Teaching-Learning in medical colleges;
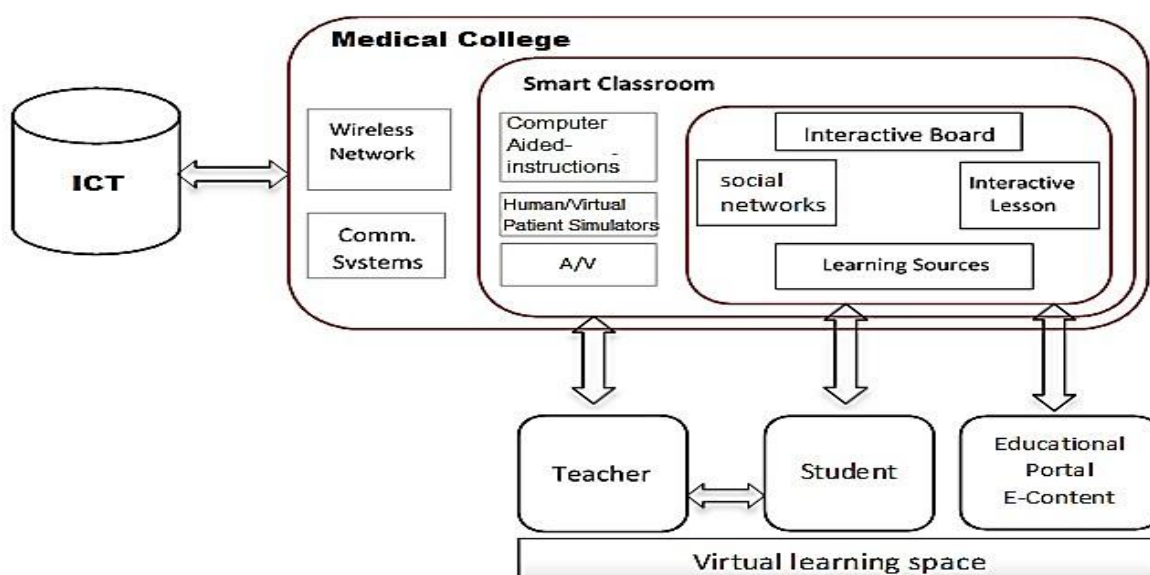

Fig. 1. Smart Classroom Model (Adapted from Salah Al-Sharhan, 2105)

VI. Strategies for Effective Medical Teaching in Smart Classroom

A. THE CHANGE OF THINKING

Teachers should realize that the medical classroom teaching is actually an open and creative process. It should be treated with the whole and accepted viewpoint; Break through the shackles of the traditional education ideas, in the teaching process to guide students to explore the development, pay attention to the development of students' potential; Managers should be deeply sensed the impact of new technologies and new ideas to the classroom, the introduction of supporting policies and measures to encourage teachers, students, management personnel to use the smart classroom teaching in the teaching of new attempts, in the process of medical classroom teaching to achieve technology and discipline reasonable, timely and effective integration, and promote the full development of teaching.

B. BEST PRACTICES ICT-BASED TEACHING RESOURCES

Teaching resources is one of the basic conditions for the development of the classroom, the quality of the resources directly affects the teaching effect, and even plays a decisive role. Modern equipment in the classroom can be used to present many forms and types of medical information resources, such as the use of text, images to present the basic concept and pathogenesis, the use of animation and sound to interpretation of the steps and mechanism changes, the use of video to presentation of teaching, clinical symptoms, the use of 3D model, flash animation to observe the human body, cell sections, etc..

C. THE CHOICE OF TEACHING MODE

The traditional medical classroom teaching is the classroom and blackboard, lesson plans PPT, model chart, information representation way is single, less communication between teachers and students. The emergence of smart classroom for teachers and students to try a variety of teaching mode and teaching methods, such as case group discussion teaching (problem oriented teaching), mixed teaching, and so on. In the teaching process, how to choose appropriate teaching model to present medical information, how to realize the seamless connection between teaching content and teaching video, and how to avoid the bad tendency of "computer replace the human brain", it is all teachers and class leaders should consider problem.

Medical teaching methods from the traditional teaching to the multimedia teaching is a leap, we believe that from the plane of the multimedia teaching to multi-screen display, remote interactive, operating live, immersed in the smart classroom teaching will be another major breakthrough. This breakthrough is not only across a technical limitations, and thorough breakthrough for medical students to understand learning barrier, it is not just a visual sense of change, but also a revolution of learning, will push the innovation and development of medical teaching [28].

CONCLUSION AND RECOMMENDATIONS

ICT's impact on medical education has evolved a great deal as both medical science and computer technology have gone under profound enhancement. While developed countries could harvest their investments in ICT, medical schools in developing countries are still struggling with designing, implementing, and delivering ICT required changes in medical education.

The interface between educational technology and medical sciences is integral and symbiotic. Innovations in the adoption of smart classroom for effective ICT-based instructional strategies in medical sciences toward a revolution in education, allowing adaptive and collaborative learning by the learners and transforming the role of the teacher. Traditionally, education has been based on attending classes day after day, listening to a lecturer providing the necessary course work information, and going through exams to assess knowledge. Education is supposed to be focused on the learner rather than the instructional materials. Hence, Medicine as a complex multidisciplinary field, has been implementing computerized technologies, with ICT-based tools being a central point of the process in many cases.

To improve the overall learning experience of the medical students, this study recommends that the University authorities in developing countries especially should address the factors that might militate against satisfactory learning in the adoption of smart classroom and the use of ICT-based tools. They should provide constant source of electricity, a conducive environment for learning and above all train medical lecturers, clinical instructors, laboratory technologist and even students in the use of modern teaching/learning aids.

REFERENCES

[1] Y.-J. Li and X. Yang, (2013). Research on the application of interactive whiteboard in human anatomy course in medical university, Jilin. *Medicine and Society*, vol. 12, pp. 88-90.

[2] Gray K, Tobin J, (2010). Introducing an online community into a clinical education setting: A pilot study of student and staff engagement and outcomes using blended learning. BMC Med Educ 10:6.

[3] Nigeria Undergraduate Medical and Dental Curriculum Template, (2012). Email info@healthsystems2020.org or visit our website at pg. 5 www.healthsystems2020.org

[4] Rogers, E.M. (1995). *Diffusion of Innovations.*4th Edition. The Free Press. New York.

[5] Oliveira, T. and Martins, M.F. (2011). Literature Review of Information Technology Adoption Models at Firm Level. *The Electronic Journal of Information Systems Evaluation.* 14(1): 110121

[6] Stefan Velikov, Alexandrina Vodenicharova and Nikolay Popov, (2016). New Trends of Training in Information Technology in Medical College of Sofia. Journal of Educational and Instructional Studies in the World; June 2016, Volume: 6 Special Issue 1 Article: 08 ISSN: 2146-7463. pg. 48-49.

[7] Asefeh Badiey Houshyari, Mahnaz Bahadorani, Mina Tootoonchi, John Jacob Zucker Gardiner, Roberto A. Peña, Peyman Adibi, (2012). Information and Communication Technology in Medical Education: An Experience from a Developing Country.A special report on perceptions from 1976-2010.

[8] Aschenbrener MS, (2008). Analysis of creative and effective teaching behaviors of university instructors (Doctoral dissertation).Available from ProQuest Dissertations and Theses database, 2007. (UMI No. 3371039)

[9] Maharana B, Biswal S, Sahu NK, (2009). Use of information and communication technology by medical students: A survey of VSS Medical College, Burla, India. Library Philosophy and Practice (ejournal). (Online) Available from URL: http://digitalcommons.unl.edu/libphilprac/281.

[10] Oliveira, T. and Martins, M.F. (2011). Literature Review of Information Technology Adoption Models at Firm Level. *The Electronic Journal of Information Systems Evaluation.* 14(1): 110121.

[11] Kommalage M, Gunawardena S, (2008). IT-based activity in physiology education: An experience from a developing country. Advances in Physiology Education, 32: 81-5.

[12] J.-G. Ma, (2014). The use of interactive electronic whiteboard activation information technology classroom, *The Road to Success*, vol. 24, p. 93.

[13] H.-Y. Li and L. Zhong, (2013). Characteristics and prospect of automatic recording system, *China Education Info*, vol. 5, pp. 84-86.

[14] T.-L. Feng, L. Chen, H.-C. Chen, and L. Wang, (2009). Design and Realization of multi-channel operation technology of stream media live broadcast teaching platform based on, *Chinese Medicine Digital Magazine*, vol. 4, pp. 66-69.

[15] AAMC Institute for Improving Medical Education, (2007). Effective Use of Educational Technology in Medical Education. *Colloquium on Educational Technology: Recommendations and Guidelines for Medical Educators* March 2007.

[16] Andrzej A. Kononowicz and Inga Hege (2010). Virtual Patients as a Practical Realisation of the E-learning Idea in Medicine, E-learning
Experiences and Future, Safeeullah Soomro (Ed.), ISBN: 978-953-307092-6, InTech, Available from: http://www.intechopen.com/books/elearning-experiences-and-future/virtual-patients-as-apracticalrealisation-of-the-e-learning-idea-in-medicine

[17] Inga Hege1, Andrzej A. Kononowicz, Daniel Tolks, Samuel Edelbring, and Katja Kuehlmeyer, (2016). A qualitative analysis of virtual patient descriptions in healthcare education based on a systematic literature review. BMC Medical Journal, DOI 10.1186/s12909-016-0655-8

[18] Jarmila Potomkova, Vladimir Mihal and Daniel Schwarz (2012). Medical Education for YouTube Generation, ELearning - Engineering,
On-Job Training and Interactive Teaching, Dr. Sergio Kofuji (Ed.),
ISBN: 978-953-51- 0283-0, InTech, Available from: http://www.intechopen.com/books/e-learning-engineering-on-jobtraining-andinteractive-teaching/medical-education-for-youtubegeneration

[19] Morgan Passiment, Heather Sacks, Grace Huang, (2011). Medical Simulation in Medical Education: Results of an AAMC Survey. www.aamc.org

[20] Ahalt, S. & Fecho, K. (2015). Ten Emerging Technologies for Higher Education. RENCI, University of North Carolina at Chapel Hill. Text. http://dx.doi.org/10.7921/G0PN93HQ

[21] Azman Fadzil, (2016). Implementing Virtual Reality Technology As An Effective Web Based Kiosk : Darulaman`S Teacher Training College
Tour (Ipda Vr Tour).
http://www.cms.dmu.ac.uk/~cph/VR/whatisvr.html

[22] John T. Bell, H. Scott Fogler, (2015). The Investigation and Application of Virtual Reality as an Educational Tool;Reprinted from the Proceedings of the American Society for Engineering Education 2015 Annual Conference, Session number 2513, June 2015, Anaheim, CA. pg. 2

[23] Vikas Seth, Prerna Upadhyaya, Mushtaq Ahmad and Vijay Moghe, (2010). PowerPoint or chalk and talk: Perceptions of medical students versus dental students in a medical college in India. Advances in Medical Education and Practice 2010:1 11–16

[24]   Onotai L. O, Tabansi, P. N, Asuquo, E. O. (2012). Medical student's perception of traditional method and power point use for lecture delivery at the University of Port Harcourt, Nigeria. Educational Research (ISSN: 2141-5161) Vol. 3(7) pp. 576-582, July 2012 Available online@
        http://www.interesjournals.org/

[25]   Rokade S A and Bahetee B H, (2013). Shall We Teach Anatomy with Chalk and Board or Power Point Presentations? - An Analysis of Indian Students' Perspectives and Performance. Scholars Journal of Applied Medical Sciences (SJAMS) ISSN 2320-6691. www.saspublisher.com

[26]   Baxi SN, Shah CJ, Parmar RD, Parmar D, Tripathi CB (2011). Students perception towards different teaching aids in a medical college. AJHPE 2009; 1: 15. (Online) (Cited 2016 April 28). Available from URL:
        http://www.ajol.info/index.php/ajhpe/article/view/49723.

[27]   Reima Al-Jarf, (2011). Helping medical students with online videos. International Journal of Language Studies (IJLS), Vol. 5(3), 2011 (pp. 99-110).at: https://www.researchgate.net/publication/280716837

[28]   Yu Tai, Ying Wushuo, and Sha Kun, (2015). Explore the Medical
        Curriculum Teaching Development in the Smart Classroom. International Journal of Information and Education Technology, Vol. 7, No. 2, February 2015.doi: 10.18178/ijiet.2017.7.2.854. Pg. 130-134.

[29]   Salah Al-Sharhan, (2015). Smart Classrooms in the Context of
Technology Enhanced Learning (TEL):Pulse Publish a post. Gulf University for Science and Technology (AACSB, ABET, CEA)bit.ly/alsharhans2 https://www.linkedin.com/pulse/smartclassrooms-context-technology-enhanced-learning-al-sharh

http://www.ejhbe.com