Real-time E-Learning System: A Tool for Students Population Decongestion in Nigeria Public Higher Institutions of Learning (Case Study of Yaba College Of Technology Nigeria)

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Abstract-The focus of this research work was to develop a sustainable real-time e-learning system with the contents to be delivered via the Internet using online real-time processing techniques. We present the framework of the model of real-time e-learning system to reduce congestion in Nigeria higher institutions using Yaba College of Technology as a case study. The system if developed and implemented, it will decongest the population of students in our higher institutions, hence reduce or eliminate the problems associated with students population congestion in our schools.

Index Terms--E-Learning, Higher Institutions, Online Real-Time Processing, and Population Decongestion

I. INTRODUCTION

There are more than 18 million students in Nigerian schools at all levels. That is more than the total student's population of South Africa, Ghana, Kenya, Egypt, Morocco, Tanzania and the school population of France, Britain and Spain. While literacy rate stands at about 50 per cent, one of the highest in Africa, the goal of Nigeria is to eradicate illiteracy in the shortest time possible [9]. E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process [10]. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum. E-learning is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

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E-Learning is convenient and portable [7] is of the view that online learning does not need physical attendance. Learning is self-spaced. One can study at home, work or on the road, one can read materials online or download them for reading later [1]. stated that people no longer necessarily go to the library to obtain information or knowledge because internet are now available to the user at his/her home, office and cyber café centers. Greater Collaboration – Technology tools make collaboration among academicians much easier. [2] maintained that since many researches or projects involve collaborative learning, the online environment is far easier and often much comfortable to work in since learners do not have to be in face-to-face setting. This will widen the intellectual horizon of the adult educator with relative ease. Increased Access – With e-learning, adult educators of highest caliber can share their knowledge across borders allowing students or learners to attend courses across physical, political and economic boundaries. Recognized experts also have the opportunity of making information available internationally to anyone interested at minimum cost. [2].

To eradicate illiteracy, there is needed to make quality education avoidable and accessible to citizenry at little or no cost. Educating people in densely populated classes which is not conducive for learning cannot provide an avenue for eradication of illiteracy in Nigeria within shortest time if care is not taken. Some school leavers in Nigeria today are still illiterate in one way or the other due to condition in which they are been taught. The population of students in Nigeria higher institutions has directly or indirectly contributed to the following problems in our higher institutions of learning: Quality of graduates, Cultism and gangsters, quality of research, ranking, stamped, indecent dressing etc.

The focus of this research work is to develop a real-time e-learning system with the content to be delivered via the Internet. The system if developed and implemented, it will decongest the population of students in our higher institutions, hence reduce or eliminate the problems associated with students population congestion in our schools. We present a literature survey that covered some areas that directly or indirectly related to our paper title in section 2 of this paper. In section 3 of this paper we present methodology and research framework which is focused on data collection, analysis, results and finding. In section 4, we presents, the proposed real-time e-learning system model and we discuses it usage and benefits to Nigeria educational

system and Nigeria at large. In section 5, we present the recommendation and conclusion.

Major research question: To what extent can e-learning be deployed to decongest student's population in Nigeria higher institution?

II. LITERATURE SURVEY

▪ Joint Admissions and Matriculation Board

The Joint Admissions and Matriculations Board (JAMB) is Nigeria's official entrance examination board for tertiary-level institutions. The examinations being administered are available for most students who choose to apply to Nigerian public and private monotechnics, polytechnics, and universities. Most of these candidates must already have concluded their external examinations, administered either by the West African Examinations Council (WAEC) or the Nigerian National Examinations Council (NECO). By 1974, there were seven federal universities in the country. Every one of these existing universities conducted its own concessional examination and admitted its students. However, this system of admission revealed serious limitations and quite often wastes of resources in the process of administering the concessional examination, especially on the part of the candidates.

The general untidiness in the uncoordinated system of admissions into universities and the attendant problems were sufficient cause for concern to the committee of vice chancellors. In the 2009 University Matriculation Exam, the grading system of the normally reputable examination body was subject to serious controversy when the overall performance was one of the poorest on records. Much to JAMB's embarrassment, it was later revealed that the machines which optically graded the papers had erroneous answers and the JAMB changed some student's scores by as much as 15% [6].

▪ Relationship Of The Joint Admissions and Matriculation Board with Tertiary Institutions

The enabling law of the Joint Admissions and Matriculation Board recognizes the importance of the Tertiary Institutions in the discharge of the Board's responsibilities.

Tertiary Institutions at very high level of their Chief Executives are represented on the Governing Board. The law is emphatic on the collaboration of the Board with tertiary institutions in the placement of suitably qualified. Many tertiary institutions staff serves the Board in the areas of syllabi development, item writing, item moderation, coordination and supervision of the matriculation examination [6].

▪ Requirements for Admission

General guidelines for admission into the Nation's tertiary institutions are contained in a brochure which provides detailed information on courses and entry requirements which include:

▪ Five 'O' level credit passes in relevant subjects including English and Mathematics particularly for science and social sciences while mathematics may be required at an ordinary pass level for Arts students.

▪ Four credit 'O' level passes in relevant subjects for Monotechnics, Polytechnics and Colleges of Education.

▪ The candidates must equally score the minimum cut-off marks for the desired course of study.

The cut-off marks for selection vary from one institution to another depending on the competitive nature of the desired course of study (Guidelines for Admissions into Monotechnics, Polytechnics and Colleges of Education, 2010/2011).

▪ Problems in Higher Institutions of Learning in Nigeria That Can Be Eliminate Or Reduce Through Population Decongestion

Cult Activities: The institutions of higher learning which ought to be ideal places for the training of minds have become war zones where cult groups unleash their terror in the community. [3] enumerated some of the menace of the secret cults in our institutions of higher learning thus:

▪ Illegal possession of firearms;
▪ Drug abuse
▪ Violent crimes like armed robbery
▪ Illicit sexual escapades
▪ Killing of innocent students, academic and non-academic staff
▪ Arson, rape, extortion, threats, physical attacks, blackmail and other inhuman practices.

Indecent Appearance: Indecent appearance has come to characterize the dress pattern of many students on the campuses of higher learning in Nigeria. There is hardly any higher institution of learning in this country that is not faced with this nauseating problem. The way students on these campuses of learning particularly, the female ones, dress seductively leaves much to be desired. What the girls call skirts that they wear is just a one inches longer than their pants. When they put on such dresses, they struggle to sit down, find difficulty in climbing machines, cross gutters as well as pick anything from the ground. Apart from the skimpy and tight fitting nature of these dresses, they are again transparent; revealing certain parts of the bodies that under normal dressing patterns ought to be hidden away from the glare of people [4].

III. RESEARCH METHODOLOGY

Case study for this work is Yaba College of Technology. The choice of this case study is based on its Location, demand for admission by admission seekers year by year and status as the first higher institution in the federal republic of Nigeria. Yaba College of technology is a unique center of learning which prepares people for the world of work; it is an environment for teaching and learning as well as research and development; Yaba College of technology has over 15,000 students population, 8 faculties, 34 academic department which cut across ND, HND and post HND levels [8].

The research framework is based on collection of data by inspection of records and visitation to newly completed and ongoing projects within the college. Data obtained were presented in both figure and text. Data obtained were presents as follows:

Data on Students Admission Request: Source from CITM
Yaba College of Technology

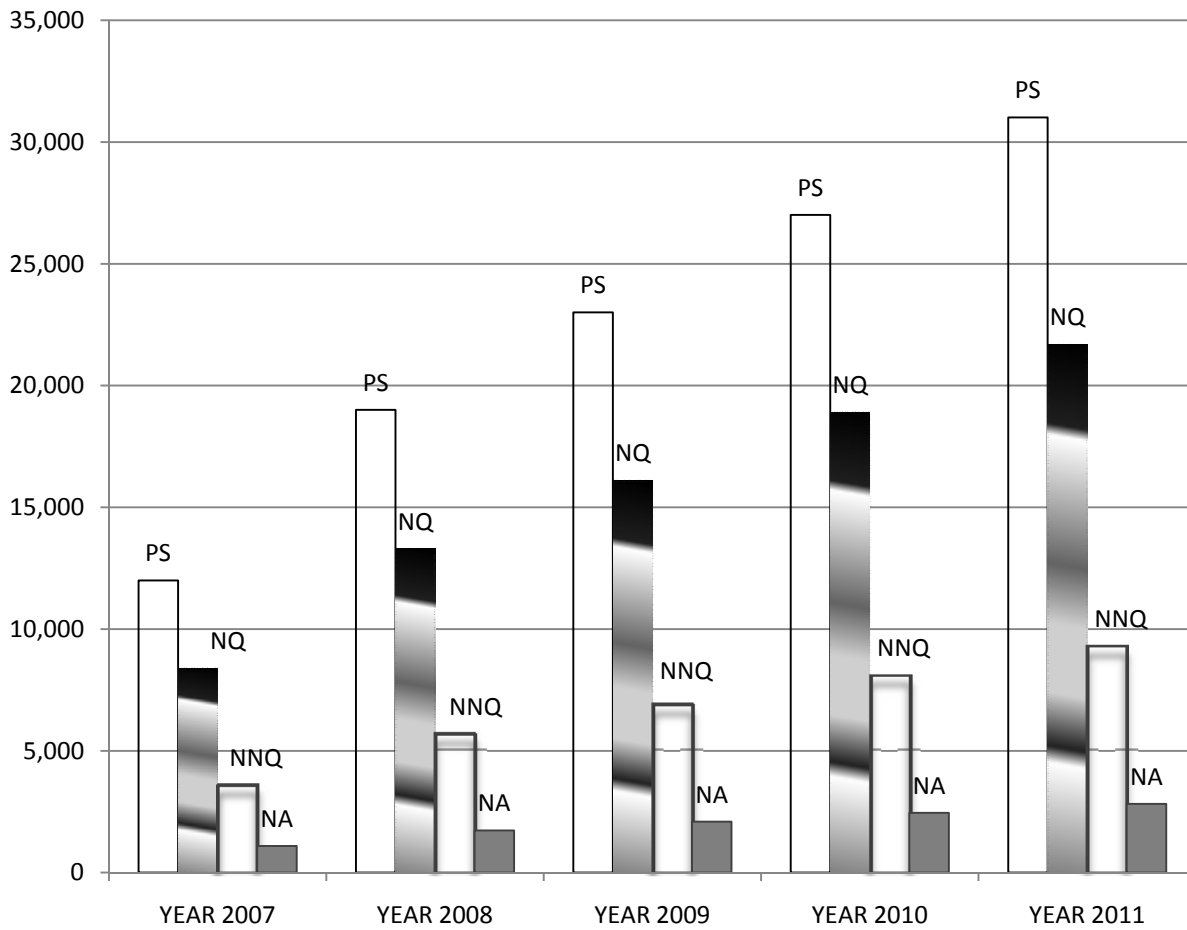| YEAR	PS	NQ	NNQ	NA
YEAR 2007	12,000	8400	3,600	1092
YEAR 2008	19,000	13300	5,700	1729
YEAR 2009	23004	16102.8	6,901	2093
YEAR 2010	27,008	18905.6	8,102	2457
YEAR 2011	31012	21708.4	9,304	2822

Fig. 1. Table 1 Converted to a Chart, where PS = prospective students, NQ = Number qualified, NNQ = Number Not Qualified and NA = Number Admitted

Table I
ACADEMIC STAFF TRAINING & DEVELOPMENT BETWEEN 2008 AND 2011

S/N	Name	Nature Of Training	Institution	Department & School	Cost
1	Adewoye Sunkanmi O	Ph. D Mathematics	University Of Ibadan. Nigeria	Science	1,500,000
2	Olowofoyeku Adeoye	Ph. D Civil Engineering	University Of Ibadan. Nigeria	Engineering	1,500,000
3	Flavian Obasi J.	Ph. D English	University Of Lagos	Liberal Studies	1,050,000
4	Olatunde Aremu	Ph. D Environmental Planning	University Of Ibadan	Environmental Studies	1,500,000
5	Balogun O Emanuel	Ma, Design (Fashion And Design)	Winchester School Of Art Uk	Art And Printing	5,170,462.50
6	Yekinafei Nureni A	Msc Computer	University Of Lagos	Technology	700,000
7	Adiigun J.0	M.Phil/Ph. D	University Of Ibadan	Technology	1,500,000
8	Nzekwe Nwachukwu	Ph. D Ionospheric	University Of Ibadan	Science	1,500,000
9	Owoso J. O.	Ph. D Chemistry	University Of Ibadan	Science	1,500,000
10	Folorunso Olufemi	Ph. D Chemistry	University Of Technology Malaysia	Technology	5,328,019
11	Ogunleye Christopher	Phd Textile Science	Nelson Mandela University	Art And Printing	4,668,500
12	Biotidara O.F.	Resrach/Benchwork Chemistry	Tswane University Of Tech South Africa	Technology	5,000,000
13	Mukaila Olawuyi	Msc Public Health	University Of Malasia	Medical	2,208,020
14	Ashiru Abiodun	Phd Micro Biology	Olabisi Onanbanjo University Ago Iwoye	Science	1,500,000
15	Ojiodu Chukwuba	Ph.D Chemistry	University Of Benin	Science	1,500,000
16	Omolabi Abimbola	Mphil Geography	University Of Ibadan	Environmental	700,000
17	Abiona Olaleye	Mphil Civil Engineering	University Of Ibadan	Engineering	700,000
18	Irokanulo Emanuel	Phd Printing	Armada Bello University Zaria	Art And Printing	1,050,000
19	Ndubuisi C. C.	Phd Creative Art	University Of Lagos	Art And Printing	1,050,000
20	Badmus Ismaila	Mphil Mech Engineering	University Of Ibadan	Engineering	700,000
21	Ogunremi Ayorinde	Mphil Physics	University Of Ibadan	Science	700,000
22	Oladosu Olakunle	Msc Computer	University Of Ibadan	Technology	700,000
23	Akanbi Olusayo O.	Ph.D Built And Natural Environment	University Of Central Lancanshire Uk	Environmental	9,983,750
24	Ibrahim Adedotun	Phd Industrial Innovation Science	Okayama University Japan	Engineering	9,250,380
25	Fakolujo Olaniyi	Phd Advance Material And Manufacture	University Of Ottawa Canada	Engineering	13,550,000
26	Oluwolinge Catering	Msc Printing	University Of Ibadan	Art And Printing	700,000

Data on Infrastructure Resources

Data here are present in figures: It includes the various completed and ongoing project between 2008 and 2012.

Fig. 2. Just completed new school of Science with several classrooms, laboratory and staff offices

Fig. 3. Completed 5 stories building named ETF building with several classrooms, lecture theater and staff offices.

Fig. 4. Completed EDP center, where students acquire knowledge practical knowledge on entrepreneurship development

Fig. 5. Just Completed multimillion Naira Computer Laboratory for Practical computer Training for students and Staff

Fig. 6. Ongoing multipurpose 12 stories building, first of it is type in the history of Nigeria polytechnics and colleges of technology.

Fig. 7. Completed foundry Laboratory, lecture rooms and staff offices; extension of school of engineering.

Fig. 8. Ongoing multipurpose stories building, with several classrooms, lecture theater and staff offices.

Figures 2-8, show the ongoing and completed infrastructure within Yaba college of Technology between year 2008 and 2009. These projects illustrate the holistic approach by the management of YCT to improve and upgrade the infrastructure within the college based on the financial resource available and accessible. The buildings shown in the figure are made up of classrooms, lecture theatre, offices, laboratory and workshops, administrative offices etc. when all the project are completed it will help in all ramification to provide conducive learning environment for both staff and students in the college, increase the carrying capacity for the college i.e. more students shall be admitted, and decongest the students populations in some classes and lecture room.

IV.   RESULTS ANALYSIS AND FINDINGS

From table 1, the analysis of the results shows that the population of the prospective students increases year by year and more qualified prospective students are been deny admission. This is due to non availability of space and some other learning resources, where some of the resources are available the number of students are more compare to the resources, thereby leading to over use of the resources and this can affect teaching and learning negatively.

It was discovered that the current population of students in the college is more compared to the available resources because as at the time of compiling this work, Yaba College of technology has over 15,000 students population, 8 faculties, 34 academic department which cut across ND, HND and post HND levels (M.K. Ladipo 2011). Consequent to that; the available resources is currently been over utilized and this can result to decline of quality of education at large. From table 2, we discovered that management of Yaba College of technology through ETF (educational trust fund) have spent sum of seventy-nine millions, eight hundred sixty eight thousand and eight hundred eight one naira (79,868,881 million naira) for academic staff training and development AS&D between 2008 and 2011.

We discovered that management of Yaba College of technology is also doing everything possible in areas of physical infrastructures. The content of figures 1 – 7 is a good testimony to this assertion. Meanwhile all this efforts been put together are not enough to control the population of the students seeking for admission in our higher institution, as a result there is urgent need for alternative means of teaching and learning to accommodate more students in our schools so that literacy level in Nigeria will rise.

Based on the result and findings by the authors of this paper we then present the model of e-learning system for decongestion of the student's population in our higher institutions of learning. If the proposed system is design an implemented, this will help not only in decongesting the population of students but will also improve the quality of education and made available human resources towards moving Nigeria forward.

Overview of Proposed Real-Time E-Learning System

The model of the proposed system by the authors of this research work is as shown in figure 8. The proposed system work as follows:

The students (registered students) log in to the system with the username and password generated when he/she registered as student through the college portal. If the student is authenticated he/she can then proceed to use the e-learning system by taking any of the following activities;

- View, download or printing of School calendar/time-table
- Access Yaba Tech Digital Library
- Online lectures/classroom
- Online exams for mid semester exams only
- Check his/her results
- Student forum (register club and society)

We proposed to the management of the higher institutions of learning in Nigeria to embrace e-learning system. In this case the students (e-learning students) will operate the same calendar with fully campus based students. These categories of students start their own semester exam in their various departments immediately the full campus-based students finish their own semester exam and vacate the college on semester break. The reason for this is to make sure that the online students are not ghost students, and for them to have interaction with the college at large.

V.   RECOMMENDATIONS

It is highly recommended that: Government should estatablished e-learning policy that will be cost effective and easy to use by the citizens, should divert more fund on ICT infrastructure, intensify effort to improve the state of electricity supply and training of personnel so that e-learning will be more acceptable, convenient and durable in Nigeria, government should harness the use of our satellites in space to improve the speed of computer network to true broadband and citizens should brace up to understand the positive impact of the e-learning policy, so that they can embrace it, for their own good.

VI.   CONCLUSION

An e-learning system is a welcome idea in this modern day life, because the use of ICT and computer based learning has become an established and popular alternative to teaching learning, resources and development. It is then advisable for government at all level to embrace this policy due to the population congestion in our public schools and citizenry eagerness to acquiring degree in one discipline or others. This paper mentioned some problems associated directly and indirectly to students population congestion in our higher institutions of learning such as; Quality of graduates, Cultism and gangsters, quality of research, ranking, stamped, indecent dressing etc. An   e-learning system model was proposed which if implemented, can enhance accessibility of education to all citizenry thereby result to high literacy rate, and students can choose between campus based learning or e-learning system in future; this will improve our educational system and reduce tension on our infrastructure and human resources.
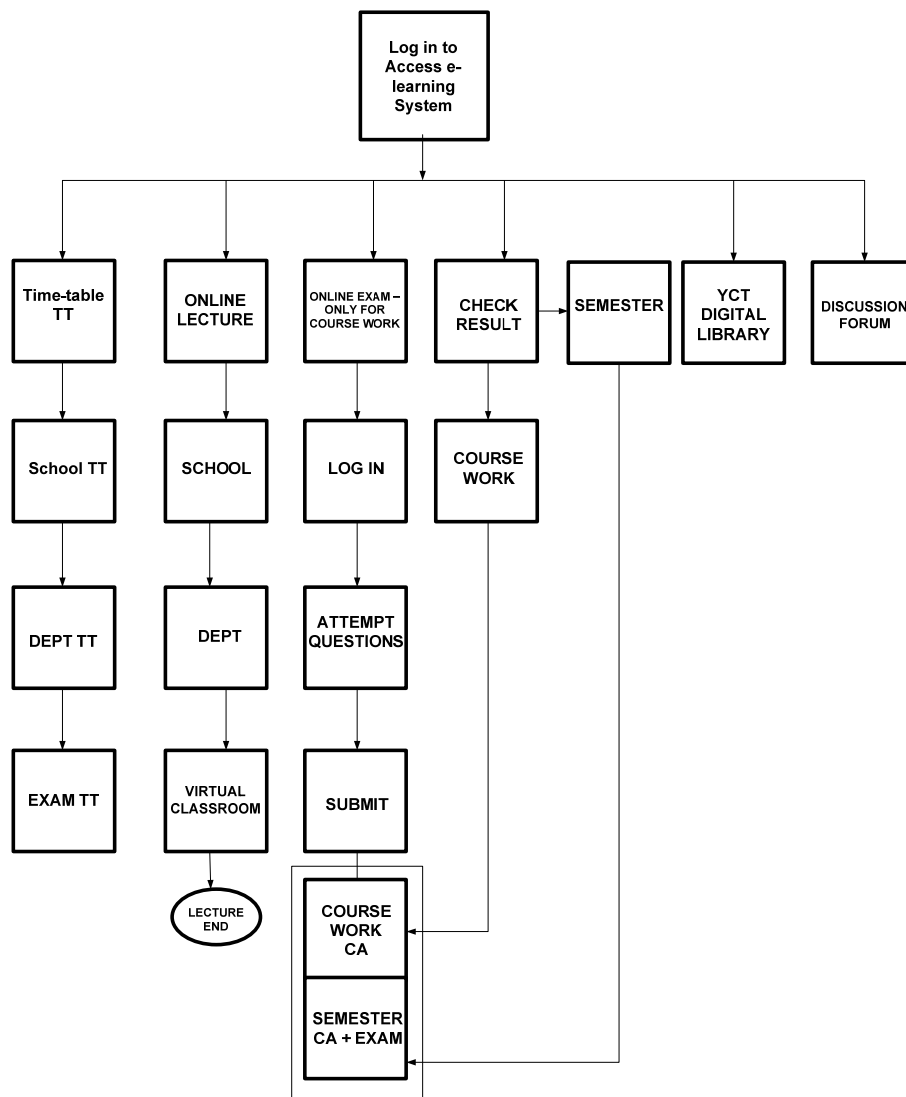
Fig. 8. The model of the proposed system

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