

Enriching the Delivery System in the Classroom

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Preamble

- It is a delight to be part of the 4th in the series of workshops initiated by the Chancellor and Founder of Afe Babalola University, Ado-Ekiti (ABUAD), Aare Afe Babalola to address the pressing need for improving the delivery of university education in Nigeria. The concept of these workshops is one of several offspring from the fountain of creativity which God has generously endowed Aare Afe Babalola. In a text message to him about the two weeks ago, I shared the thoughts in the public domain that he is one of Africa's leading lover of higher education who has progressed beyond jawjawning about higher education and has installed a model of how a good university should be setup and run. ABUAD provides this model.

- It is the hope of many that Afe Babalola University will not be localised as a lone star in Ado-Ekiti but will dot the African landscape, illuminating and bringing a freshness of vision to university education in the continent. In my mind's eye, I can see Afe Babalola University in Ibadan (ABUIB), Afe Babalola University, Legon, Ghana (ABULG) and Afe Babalola University, Maiduguri (ABUMA). Perhaps through the instrumentation of ABUMA, the *boko haram* menace will be chased out of Nigeria! We can only continue to pray for whom Professor Oye Ibidapo-Obe and I fondly call "*Baba Afe*", for long life and good health in the service of Nigeria, Africa and humanity.

- Baba Afe, the Chancellor and Founder is easily the most well-dressed "senior" Senior Advocate (yes, he is a senior SAN) and who as Chairman of Pro-Chancellors, contributed more than any other in living memory to the development of the Nigerian university system. Last Saturday, he was deservedly honoured by the University of Jos. Several more honours and awards will keep tumbling down on him like rain in the coming years.
- The success of the series of workshops cannot be in doubt with His Excellency, Professor Michael Omolewa in charge. Professor Omolewa brings to the assignment, tremendous experience as a global leader and scholar, and Africa's best. If a Nobel Prize exists for Education, he will be a laureate.

- Before taking a quick dive into the paper, let me also congratulate the esteemed Vice-Chancellor, Professor Sidi Osho as well as Professor Isaac Olatunji Orubuloye and all others who are part of this effort. The presence at this year's workshop of Professor Is-haq Oloyede- a model university administrator for Africa who is billed for very great heights; Professor Aize Obayan- for many years, the most-outstanding female Vice-Chancellor in Africa, now a leading light in higher education in the continent; Professor Yemi Idowu and all other distinguished resource persons, is indicative of its potential for success. Although I will not be able to join you as I am giving a keynote address at a science congress in Puerto Rico today, the amiable and goal-getting Vice-Chancellor of Crawford University, Professor Samson Denola Ayanlaja has agreed to make this presentation on my behalf.

- In view of the constraint of time and being the last paper for the day, he will present only the highlights of the paper in 30 minutes (I am one not to overshoot assigned time!) with the hope that you will find time to read the paper at your leisure. I look forward to visiting ABUAD next week on my return. Now to the paper (after spending 5 minutes preambing!).

Introduction

- The twin goals of this paper are to sketch the state of curriculum delivery in the typical classroom in the Nigerian university system and to propose how the delivery can be enriched to foster more meaningful learning. In the pursuit of the second goal, we shall place some accent on how to teach large classes and improve reading culture among students. Although Professor Emmanuel Ademola's paper will be addressing the use of technology tomorrow morning, we shall take a bite at the technology issue.

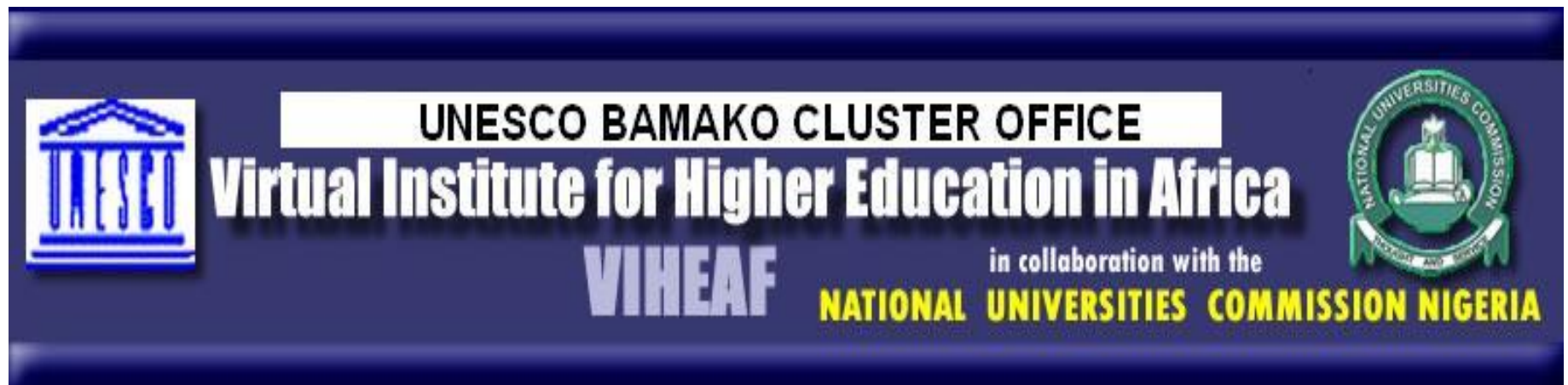
As the Chancellor and Founder of ABUAD aptly noted, university teachers except those in education, are hardly required by policy to hold a teaching qualification. Yet, knowledge and skills acquired through such qualifications are important in the effective delivery of the curriculum.

It was this motive that stimulated the National Universities Commission to establish the Virtual Institute for Higher Education Pedagogy (VIHEP) in 2002 while I was Executive Secretary. VIHEP which provided a platform for training all Nigerian university teachers regardless of discipline had the following as objectives:

- To provide academic staff in Nigerian universities with Internet-based training on modern methods of teaching and learning in higher education.

- To share experiences among academic staff in Nigerian universities on best practices in university teaching and how to deal with academic vices such as examination malpractice and plagiarism.
- To enhance the knowledge and skills of academic staff on such issues as (a) teaching of large classes; (b) effective utilisation of (meagre) resources; (c) modern methods of assessment and evaluation of students' performance; (d) basic guidance and counselling techniques; (e) basic skills of curriculum development: and (f) techniques for writing grant-winning proposals.

- VIHEP was scaled up to the Virtual Institute for Higher Education in Africa in 2005, expanding its reach all over Africa, with partnerships with the UNESCO Harare and UNESCO Bamako Cluster Offices. Over 10,000 university teachers were trained. Plans have been concluded to reformat the scheme using emerging technologies and delivery system. The new scheme is expected to roll out in 2014.



- *Figure 1: Website mast of UNESCO-NUC VIHEAF*

Current Classroom Practices in the Nigerian University System

- A peep into a typical classroom in a Nigerian university especially at the 100 and 200 level, will show students cramped into a space meant for about half the number. It is a struggle to get writing space on the dusty surface of the lecture room furniture. The room is hot, ceiling fans are of little help as these are largely out of service and when in service, power is unavailable to turn them on. Add lack of technology use by the teacher and inadequacies in the public address system and you have an ideal recipe for a dull lecture. If run in the afternoon beyond an hour, a good number of the students are half asleep. Does the foregoing sound conjectural? I invite you to read the 2012 FGN report on the state of the universities for empirical confirmation and more shocking findings.

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- Let us shift focus to the teacher and then to the students. The teacher is armed with his/her lecture notes, hardly updated in the last several years, walks into the class and after a few minutes of pleasantries, begins dictating. Less than ten percent use any form of technology to support lesson delivery. On the part of the students, lecture notes are written in small, weather-beaten sheets to be tucked into the back pocket of their jeans after lectures. The notes are hardly glanced at again until when the next lecture beckons and more ardently, when examinations approach.

- Beyond the typical scenario sketched above, there are pockets of good practices which you find in some universities. Covenant, Crawford, Ibadan, ABUAD, Ife, DELSU, LASU and Minna provide examples. My quick scan of the system leads me to conclude that less than 10% of universities in Nigeria provide at least 20% of classroom ambience and functioning technology to support meaningful teaching and learning. Even when resources are bountiful as we have in many federal universities, many of the teachers lack the skills of using technologies to support their teaching or are too lazy to do so.
- Let us further envision a scenario where technology exists, the teacher is skilled, the environment is ambient and class size is tolerable. Students are technology-savvy but have poor reading culture. The result is shallow learning and the elevation of the tendency to cheat during examinations as a result of lack of preparedness.

- What we have described in this section are scenarios involving large classes, poor teaching methodology and poor reading culture among staff and students. In the next section, we shall recommend how to tackle these impediments to the delivery of quality education in our university classrooms.

Effective Teaching and Learning in Large Classes

- As referenced earlier, between 2002 and 2008, I served as Co-Director of the UNESCO-NUC Virtual Institute for Higher Education in Africa (VIHEAF), during which we implemented a training module on teaching large classes. The presentation in this section benefits from my chapter contribution and the experiences that were shared with us by the over 8,000 university teachers who enrolled for the module.
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- The expansion in enrolment in higher institutions in Africa in the midst of limited resources translated from the 1980s to date into more numbers in classes. The phenomenon of large classes is fast becoming one to be contended with in most higher institutions in the region. The outlook for the future? Many more large classes. But of course, large classes are found in institutions the world over. Since we cannot wish large classes away, we have to devise techniques for delivering good quality education in such settings.

- We provide suggestions here to assist those teachers who have responsibility for teaching large classes to do so with a smile!
- We often think that learning occurs in proportion to class size: the smaller the class, the more students learn. However, while research shows that small classes provide more opportunities for feedback and discussion than large classes, as well as greater student satisfaction, it does not suggest that class size is necessarily a correlate of student learning. What counts is not the size of the class, but the quality of the teaching. Research suggests that the key to effective instruction and student learning, regardless of class size, is engaging students in active learning.

- Putting first things first, the question to be addressed as we begin our discussion on this subject in this ABUAD workshop is “what is a large class?” I put this question to some senior academics attending a UNESCO Regional Workshop on Teaching and Learning in Higher Education at Moi University, Eldoret, Kenya. Here are excerpts of views expressed.
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- *“There is nothing like a large class. The large class is only in the mind of the orthodox teacher”*
- *“A large class is one with more students than available facilities can support”*
- *“Large classes have more than 100 students enrolled”*
- *“There is no fixed number. The large class depends on the discipline- smaller number for engineering, science and medicine and larger number for the arts, humanities, and social sciences”*
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- What are other views on large classes? There is no agreed definition of a large class in the literature, nor should there be. One person's large class is what some others consider as 'regular', 'small' or 'normal'.
- Some teachers simply define "large" as "too many students to learn names by the end of the semester." Whether something feels like a large class is partly a matter of the resources put into teaching it and of the skill employed by the teacher. For example, a social science lecturer who works alone with a class of 40-50 and who grades students on coursework essays and essay-type examinations finds this to be a large class. However, a language lecturer may not think 50 students makes for a large class. So, let us say that a large class is one that feels large and that a sign of this will often be that you feel that the size of the class stops you from working in your preferred way.

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For our purpose, we suggest that *a large class is one that feels large*. Signs that the class is 'large' can be:

- The class is significantly larger than you are used to.
- The resources can no longer cope with the number of students if you desire individual attention for the students.

One thing is sure. Whether we have a working definition or not, the phenomenon exists. Since we have identified some of the characteristics, we should now proceed with how to cope with it. First, let us quickly look at whether class size makes a difference.

How Does Class Size Make a Difference?

- Studies on the effects of class size have been conducted since the 1920's. Results have often been mixed, with some methods of instruction favouring small classes and other methods being as or more effective in large classes. Large classes are as effective as small classes when the goals involve learning factual information and comprehending that information. When traditional achievement tests are used to measure learning, large classes compare well with smaller classes.

- Smaller classes have been found more effective when instructional goals involve higher-level cognitive skills including application, analysis, and synthesis.
- Smaller classes provide for greater contact between students and lecturer, which appears to be most needed for students with low motivation, those with little knowledge of the subject matter, or those who have difficulty grasping conceptual material.
- Smaller classes are also more effective than large ones in affecting student attitudes. In sum, the optimal size of a class depends on the instructional goals being pursued. The main advantage smaller classes have over larger ones is that they provide students with greater opportunities for interaction with subject matter, with the professor and with one another.

- Now to the down side of large classes. Teaching large classes has been found to adversely affect morale, motivation and self-esteem of teachers. Although many teachers could manage a class of almost any size successfully, this could often be at the expense of the teacher's own well being and the range of learning experiences offered to students. Many teachers of large classes feel they spend too much time on organising and managing class activities and not enough on meeting the needs of individual children. Large classes and overcrowded classrooms have negative effects on students' behaviour and learning.

Some other problems with large classes are:

- Students become faces instead of people
- It is harder to give individual advice and guidance to students
- Organisational problems are compounded, making it difficult to schedule tutorials, laboratory sessions, and fieldwork.
- There can be technical problems working with large classes e.g. difficulties in projecting slides that are clearly visible to all students.
- Monitoring of attendance can be difficult, thus encouraging students to cut classes.
- Coping with large numbers of assignments and examination scripts is a source of difficulty.
- The quality of feedback to students can be much reduced in large classes.

Organising Practical Work in Large Classes

- If there is one issue that keeps teachers in Nigerian universities nervous when confronted with large classes, it is how to run practical sessions with the same fervour as they do for small classes. It is sad to note that many give up and do either of two things. One, skip the practicals entirely. The second option is to run what is commonly called “theory of practicals” sessions. In these sessions, students go through ‘dry labs’ and learn only the theoretically underpinnings of the scheduled practical work.
- These two approaches kill the inquiry spirit of science and fail to guarantee the development of a crop of high-quality scientists. In one breath, we want to advance rapidly in science and technology, in another breath, we ask our university teachers to teach science to large numbers of students in laboratories that cannot accommodate large numbers. How do we maintain a balance in this context? I offer a few strategies.

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Cooperative Group Work

- In a large class, assigning a set of materials to individual students for practical work is hardly feasible especially at the 100 and 200 level. Grouping students in the laboratory or workshop becomes an attractive option. Setting up groups is not as easy as some think. It is not enough to randomly assign students to groups without some defined criteria. Studies e.g. Okebukola, 1986a; 1986b; 1986c; 1986d; 1990; 1991a; 1991b; 1991c; Okebukola and Jegede, 1991a; 1991b have shown that cooperative-learning groups perform better in science practical skills than individualistic and competitive groups.
- In setting up cooperative-learning groups, researchers have suggested mixing on the basis of ability level, gender and other discriminating variables. How do you achieve this? The following steps could serve as a guide.

- From the class list, group the students into high, average and low ability in terms of performance in your subject. The ability levels can be determined using previous test scores and labelling those students who are in the upper third as high ability, those in the bottom third as low ability and the middle two-thirds as average ability. Indicate H, A, and L to representing high, average and low, in front of the names of the students on the class list.
- Indicate M and F in front of every name on the class list.
- Compose the groups to include (as much as possible) at least one high ability, two average ability and one low ability student. Also have at least one female student in the group.
- Give students the guidelines for group work. These should include asking every member of the group to contribute his or her idea to experimental work and to decision making in the group. Inform them that it is a 'sink or swim together' situation and that group reward is for all and not for individual members. A score of 5 for the group will be the score for each and every member.

Use of the stations approach

- This technique assumes that materials and equipment are available only for a small fraction of the students and that all experiments for the semester should be carried out by every student. After checking out the functioning equipment for each experiment, the teacher proceeds to set these up as “work stations”. Thus, every station is dedicated to a specific experiment. If there are seven experiments listed for the semester in say, a physics course, there will be seven stations, clearly labelled in the physics laboratory. What next? The next thing is to prepare a practical time-table for the use of the laboratory. If each station is to be used by three students, only 21 students are then scheduled for practical work at a time. Two of such sessions can be held in a day. Thus, 42 students will have practical experience in a day. Yet, we have 75 students. This means we have to run the sessions on two days.

- The third thing to do is to assign students to stations and to sessions and to paste the roster. The station's approach is ready to run! Will the sessions run automatically? Definitely not. The teacher and the technicians need to set up every station before the start of every practical session. They also need to monitor progress of the students during the practical sessions. And of course, grade lab notes of the students after each practical session.

The Rotary Approach

- This is similar to the station's approach except that the same set of experiment is carried out every practical session. The rotating aspect is the student group. In the engineering workshop with equipment for 10 student groups, but with 30 student groups to contend with, students will do the same experiment in three groups. Time-table schedule will need to be developed by the teacher indicating student allotment to groups and when which group will undertake their practicals in the workshop. It is often useful to keep a set of equipment as backup in an event of breakage or damage. The number of students in each group should be small (between 2 and 4) to enhance greater student contact with experimental materials.

- The advantage of the rotary approach over the stations' approach is the greater ease of set-up and monitoring. In the rotary approach, the lecturer and technical assistants deal with a uniform set of equipment at a time and are able to follow progress of students in the groups using the same set of criteria. Independent work is fostered in the stations approach. This gives it an edge over the rotary approach.

Use of Projects

- Practical work for a large number of students can be turned into a good avenue for enquiry and for developing scientific skills. Rather than run all the practicals designed for a course in a straight-jacket, cookbook-like way, we can denote some of the experiments as projects. In this case, students have to proceed in an open-ended way using problem-solving approaches. They design and implement their own plans for addressing the research questions and take ownership of their procedures and results. Students have to look for their materials and may acquire improvisation skills in the process. Thus, while some of the experiments for the course can be designed by the teacher and implemented using the co-operative-learning group, station and rotary approaches, some others can be in the form of projects assigned to students.

Demonstration

- With acute shortage of equipment and materials in the face of large numbers of students, demonstration is an option for practical work, maybe not the best. There could be four types of demonstration- teacher demonstration, student demonstration, teacher-student demonstration, student-student demonstration and guest demonstration. In teacher demonstration, it is the teacher that presents the experiment to the class while a student who had practised the experiment conducts the student demonstration. You may wish to consider asking a woman in the class to lead the demonstration. Or a disabled student who has agreed to lead. In the teacher-student model, two people are on stage - the teacher and a student; while two students (male and female preferably) conduct the student-student demonstration. A guest teacher can also be requested to present the demonstration of the experiment to the class.

Other Tips for Teaching Large Classes

- A teacher with responsibility for teaching a large class, will find the following tips useful.
- ***Be organised***

Large classes require more advance preparation and structure than small classes. Lapses in the flow of the class, while collecting thoughts or locating instructional materials, can result in loss of student attention. Before the course begins, prepare or identify a variety of instructional aids, demonstrations, and activities to support each meeting of the class. Prepare a syllabus that includes outlines for each class meeting, all project and activity descriptions, and handouts for the entire course. Provide structure to the content, and use the structure to organise each lesson. Inform the students of that structure. Taking roll or distributing materials during class is not recommended for large class situations. Student materials or instructions needed for a specific class should be made available prior to class or located so that students may obtain them with as little disruption as possible.

Connect with your students

- It is important to appear approachable in large classes. Build rapport with your students, and recognise the individuality of each student. Move among them when talking. Increase student access to you by getting to class early to listen to their questions, comments, or complaints. Begin by inviting students to call out something they know or recall about a topic. Display the responses as an introduction to the day's activities. Address some of the anonymity students feel in large classes. Try to learn some names, and call on those you know by name. Learn something about as many students as possible. Ask for a few volunteers each day to help with demonstrations and activities and throughout this process learn some student names.

- ***Provide a variety of experiences***

It is appropriate to vary the type of instruction in large classes to encourage discussion, interaction, and involvement. Do not attempt to lecture the entire period. Actively involve students during at least a small part of every class meeting. Form groups of three or four to discuss a problem or work on a task for a few minutes. Have a question and answer period at the beginning or end of each class.

- ***Encourage participation***

Be aware that students are often reluctant to ask or respond to questions in large classes, and it is often very difficult to hear their comments in large lecture halls. Try to be accepting of all questions and responses from students, and paraphrase or repeat every question or response. Increase the wait time after you ask a question. Encourage students to indicate in some way when the pace of the class is too fast or too slow.

- ***Obtain and use feedback***

Students in large classes are often reluctant to communicate difficulties they are having with a course or the teaching strategies. Employ informal assessment techniques frequently to obtain student perceptions and suggestions. Use this information as a basis for making small changes in your teaching behaviour before the course is completed. Inform your students if you make a change as a result of their suggestions. Provide a suggestion box, or have an envelope attached to your office door where students may leave comments about you or the course.

- **Create a Small-Class Atmosphere in a Large-Class Setting**

One of the challenges of large classes is overcoming the anonymity and distance that can exist between teacher and students. If students are to be actively involved in and feel personal accountability for the learning process, they must be more than anonymous spectators and passive recipients of information. In order to facilitate discussion, feedback, and active learning, the teachers of large classes can work to create the kind of group identity and individual rapport that make smaller classes so effective and enjoyable. The following techniques can foster a more comfortable and productive learning environment in large classes.

- **Learn students' names.** You may not be able to learn all the names, but even learning some will help.

- **Use a microphone.** Not being able to hear clearly will exclude students from the lecture.
- **Move around the classroom or lecture hall.** Standing behind a podium emphasises the distance between you and the class. On the other hand, moving into the aisles and around the room makes the class seem smaller and encourages student involvement.
- **Elicit student feedback about the course.** Have students meet in groups to provide feedback about the course. Other options include using a mid-semester student feedback activity or informal discussions with students to learn their reactions to and suggestions for the class.

- **Personalise:** Learn and use the names of your students, even in a large class. As difficult as this is, it goes a long way towards personalising the class.
- **Include Active Learning Strategies:** This can be done by using 2-minute dyad discussion groups, asking students to share personal experiences related to course content, formalising study groups, giving group assignments, using peer feedback groups, and asking students to write answers to discussion questions before class begins.

Using the Lecture Method Effectively in Large Classes

Many teachers settle for the lecture method when faced with a large class. To them, it is the line of least resistance! While some present the lecture in a rather dull manner, some make their lectures exciting. Here are a few things teachers who succeed with lecturing large classes do.

- Plan the lecture so that you do not talk for the whole time: twenty-minute spells are quite long enough. Intersperse your presentation with active learning techniques; questions for the students to talk about with their neighbours. Use a variety of media: e.g. PowerPoint slides and video clips. All of these help to break up the monotony that accompanies even the best presenter who talks too long.

Students like lecturers who explain things clearly. So:

- Don't rush.
- Do repeat yourself, preferably varying the words.
- If possible use examples, similes and metaphors.
- Make connections with 'real life', if possible.
- Unless the projection of your PowerPoint or other presentation software is so poor, assume students can read. You do not have to read out all the words on your slide.
- Keep the number of PowerPoint slides small rather than large, and try to limit the number of points on each slide- a rule of six slides, each with no more than six points, has been suggested.
- Leave the last five minutes for student questions; try taking several questions at once and responding to them with a mini-lecture.

Using Multiple-Choice Assessment in Large Classes

- Since multiple-choice questions are amenable to speedy marking or grading, they are well-suited for use in large classes. Taking to the extreme, this is why Abia State University settled for examining all their courses using the multiple-choice format, to the chagrin of NUC!
- For routine class assessment, students can exchange their scripts in a random manner and made to mark. This ensures early feedback to the students on how well or how badly they have done. Also to the teacher on the level of success or failure of the class on the topics covered by the test.

Teacher Attributes that can Enrich Delivery

- *Personal attributes*
- *Dressing*
- Apparel oft proclaims the man. A shabbily dressed lecturer is apt to deliver shabby lectures. During my NUC days, I have had to pick subtle quarrel with poorly-dressed university teachers. In one instance, the teacher who was dressed like a tout, erroneously claiming academic freedom, threatened to report me to ASUU as if our great union condones shabby dressing.
- Good dressing, I should assert elevates the profile of the lecturer in the hearts of the students and portrays seriousness of the business at hand which is teaching and learning. Good dressing here means wearing clean and well-fitting clothes and shoes.

- It does not mean wearing suits to class everyday like "Sarumi" of Ebenezer Obey fame (although I do this as a matter of habit). It means not wearing bathroom slippers to class, shirts not properly tucked in or if a woman, wearing skimpy female dresses.
- I am sure if Baba Afe were to be Honourable Minister of Education, he will work with our university authorities and staff unions to ensure that all university staff abide by some tolerable standards in dressing. He is himself, forever impeccably dressed and I am sure no ABUAD lecturer will have the guts to be shabbily dressed to class.

- *Ability to render a relaxing joke*

As an undergraduate, I abhorred lecturers who come to class tight-faced and "morose looking" as Chief Zebrudaiah will say. Such lecturers raise students' anxiety level which in turn depresses learning. While university teaching is serious business, a sprinkle of laughter and humour is a catalyst for learning. We often swarmed to class when courses are run by lecturers who crack one or two clean jokes with us; not so for those who have no jokes to relax us.

The jokes are not necessarily offered at every lecture. In some instances, it could be just one for every five lectures. We need to stress that the jokes should be brief, clean and better still, relevant to be topic to be taught. If the lecturer has no flair for jokes, he/she could do with occasional broad and infectious smile. If he/she cannot crack jokes or smile, double jeopardy results!

Voice, language and facial expression

- As Bajah (2007) noted, the technique adopted in the delivery can make all the difference between a good and a bad lecture. Whatever the size of the lecture room, your voice must be clearly heard. You are the best judge of how to pitch your voice. If the room is too large for you to be heard, then you must use a microphone. You should adopt a conversational style of delivery and not keep your eyes glued to your lecture notes. Make eye contact with individual students, and scan the class as a whole. In a situation where students have few textbooks, lecture notes mean a lot to them. Therefore when you have to write on the chalkboard, you must make sure that your writing is legible. Sometimes you may use an LCD projector. In that case, you should make sure that the lettering is focussed sharply.

- Allow sufficient time for the students to take their notes before moving to the next slide. As a lecturer, you must strive to take your students forward by advancing their knowledge from a known starting point.
- In pedagogical terms, that starting point is referred to as the academic entry point. Therefore, before you start lecturing, you should establish the academic entry point of your students.

- ***Need for learners to assess their teachers***

The University system is used to teachers assessing learners through cognitive tests. Instances where learners have been given the opportunity to assess the teaching of their lecturers are now increasing. Information shared from the latter is known to promote teaching and learning.

- ***Teaching students how to learn***

Textbooks and lecture notes alone will not be adequate in sourcing information. As we prepare our learners for the 21st century, we must also teach them how to access information and use such information effectively.

Five Steps to Improving Content Knowledge

Content knowledge is the knowledge of the subject matter that a university teacher is paid to teach. For instance a law lecturer should have rich content knowledge of law. Sadly, many university teachers make feeble efforts at updating their content knowledge, depending in large part on what they learned in their university days and a few top-up from interactions with more up-to-date friends and students (Okebukola, 2008; 2011; Okebukola, Shabani and Sambo, 2007). I offer five suggestions to participants at this workshop on ways for ensuring currency and up-to-dateness of content knowledge.

- Extensive use of internet resources: Google and other search engines and visits to digital libraries to extract the latest in the content of a topic to be taught at least a week before lecture time.

- Attendance at conferences in your specialised area to get current thinking and recent developments to be included in your lecture notes.
- Active correspondence with global giants in the field to receive information on the latest developments in the discipline.
- Self-conducted studies in the area which will yield findings that are included in your lecture notes.

Improving Reading Culture

Many of our students are poor readers. While they shun reading, students are however hooked to social networking, videos and music. Our recent study shows that less than 2% of university students in two south-western universities read at least one newspaper a day, about 8% read textbooks relating to their course and over 90% read only their sketchy lecture notes (Okebukola, 2012).

The Presidential Initiative to Promote Reading Culture is one of the national responses to this problem. Since poor reading culture impacts negatively on learning, it deserves mention in this presentation. A few suggestions are offered for bolstering reading culture, based on my personal experience.

- ***Read and summarise chapter in a course textbook a week:***

All students, as part of continuous assessment read and turn in every two weeks, 2-page summary of an article or chapter in a course textbook on a topic that will be taught or has been taught. All submissions are emailed and graded by the lecturer in time for the next assignment. I did this in 2010 and 2011 for some of my undergraduate classes at the Lagos State University enrolling over 300 students and I "nearly died". It was strenuous for me as well as for the students. Last year, I received commendation emails from many of the students that the exercise gave their tendency to read a boost. My reading culture also jumped several percentage points!

- ***Dyads, Triads and Other Multiple Groups:***

A lecturer of mine at the University of Ibadan used the dyadic method to immense advantage in boosting our reading culture. This method involves randomly assigning students into 2-member groups. Each group read an article related to the topics in the course. At least three articles should be read by each group. One group member in rotation presents the summary in class. Although often suitable for small postgraduate classes, I used the method for some of my undergraduate classes to good effect. Group membership[of more than two is advised for large classes- perhaps 3- or 5-member groups. The strain on the teacher is less since groups are involved rather than individual students.

- ***Class Debate:*** Students are busy battling with courses which make up the 120 units needed for graduation. Inserting class debates into the already crowded schedule appears unreasonably. Yet it is reasonable enough if our goal is to get them to show more seriousness in reading. Organising a debate for just 15 minutes every three or four lectures will not harm. This involves announcing a topic to be researched by members of the class. Debate topics should be related to the content of the course. No assignment of who speaks for or against is made until few minutes to the start of the debate. This way, all students will have to read, preparing to be called to speak. Over time, the students will gradually improve their habit of reading.

- ***Award for "Most-Voracious Reader":***

The Department can institute an award for the student who reads the most for each level (100 to 500) and overall regardless of level. A university-based award is a good addition. A departmental committee can be set up to work out the modalities for the award which will include evidence of having read the books listed as having been read by the student. For want of a title, I have labelled this the "Most-Voracious Reader" award! It is of course better called the "Best Reader Award".

- We should not move to the third and last component of this presentation which is to take a quick bite at the use of technologies.

Using Emerging Technologies to Deliver the Curriculum in Nigerian Universities

- This workshop will be doing participants little service if the presentations on new technologies for teaching and learning in universities are rendered in an abstract, theoretical manner. Such presentations are better as hands-on so that participants can pick up a skill or two that can be applied to their teaching on returning to base. Although only N15,000 was paid for registration, it should still be possible to get participants to learn such simple things as how to use mobile phones and other hand-held devices that virtually all students have, to teach our lessons. It should also be possible to teach participants how to set up video lessons on YouTube, and even how to better use the LCD projector and presentation software such as Microsoft PowerPoint and Prezi. We can move to some more advanced techniques as the setting up of a e-learning site for our class.

- I do these routinely with our science and technology education research group in LASU. I am offering to run a 3-hour workshop on these tools and techniques at a separate session whenever ABUAD deems convenient.

For the purpose of this "theory of practicals" paper, I will draw attention to the use of these everyday and specialised technologies in this section.

- ***Everyday technologies***

- ***Use of mobile phones and hand-held devices:*** Almost all students have mobile phones and other hand-held devices that can be put to use for delivering the curriculum. Class alerts, assignments, emails, class videos can be transmitted and shared on such devices. I am using these tools to great effect in Lagos State University.

- ***Use of YouTube:***

The teacher can setup free YouTube video lessons on difficult topics that students can download and go through at their leisure. I have used my camera phone to record and upload lessons on difficult topics in statistics that my students and others all over the world have found exceedingly useful. I have made 35 of such video lessons. If you have time, you may wish to see some of the videos on YouTube by just Googling "Okebukola LASU STERG".

- ***Use of social media:*** My research group in LASU is working actively on the use of social media for teaching and learning. Rather than spend hours on non-academically productive chit-chats on *Facebook* and *Twitter*, we have devised techniques for using social media to academically engage students.

- ***Use of LCD projector, Smart Board and Presentation Software:*** A common gadget in our universities is the LCD projector, commonly called "PowerPoint projector". As an aside, the gadget does not only project PowerPoint slides but slides from other presentation software. It is a device that many of our colleagues do not have the skill to use. It is, therefore, important to avail all university teachers the opportunity to learn how to use the projector.

In my case, I do not depend on the university for the projector. I have two personal units- one for class presentation and the other a pocket-sized one that draws power straight from my laptop. We should also teach all lecturers how to use the smart board and to be fluent in the use of Microsoft PowerPoint. For staff who desire varieties like me, you can venture into other very exciting presentation software such as Prezi.

- ***More specialised technologies***
- In 2007, I went on a mission to the MIT Media Lab where technologies of the future are developed with Professor Oye Ibidapo-Obe, former Vice-Chancellor of the University of Lagos and now Vice-Chancellor of Federal University, Ndufu Alike, Ikwo, Ebonyi State. We confirmed that the technologies we know now for teaching and learning will keep changing at an incredible pace in the coming years. As an alumnus of MIT, I have made a habit of visiting the Media Lab every other year. Last year, the technology gadgets and processes on display that were expected to drive education delivery in the coming years were amazing. I have also made a habit of watching the BBC-TV programme- "Click" every Saturday morning. The programme takes you to the frontline of development of technology for teaching, learning, everyday use and business and takes a peep into the future of such technologies

These two settings have provided me a humbling insight into what we should expect as intervention of new technologies in higher education that participants at this workshop should take notice of.

We need to recall that in 1965 Gordon Moore, founder of Intel, predicted the exponential growth of technology. Moore's law postulates that the processing power and speed of any electronic calculating device will double every 18 months. At the same time, the price for that technology will decline approximately 35% a year relative to the power. If this continues to be true, we will continue to have an abundance of exciting new tools to use in education. Those tools will not only be more powerful than we have now, they will cost less, making them affordable teaching, learning and research.

In his piece entitled "*Five future technology that will shape our classrooms*", Grantham (2012) believe that biometrics, augmented reality glasses and multi-touch surfaces, will completely change the learning space and revolutionise the technologies we use within it. Let us see how Grantham (2012) described them. Biometrics is the technology used to recognise humans based on specific physical or behavioural traits. In the future, this technology will help intelligent software completely understand the physical and emotional state of students learning in the classroom, home or workplace. Course material presented to students can be altered on the fly and will be perfectly tailored to individual needs based on biometric signals from students. Physical traits such as facial expression, heart rate, skin moisture and even odour can be used to create detailed reports of student understanding and performance.

Behavioural signs such as typing rhythm, gait and voice can let teachers know when students are in need of additional assistance as well as help them understand what teaching techniques work best for individual students.

Augmented Reality (AR) glasses(1) by Google is essentially the layering of further data on top of the reality we already see. We talk about rich media being available in digital textbooks, but imagine having an Obafemi Awolowo sitting at your desk explaining how he successfully implemented free education in the old Western Region. The immersive experience that students will enjoy both in and outside the classroom will be amazing. Companies such as Microsoft(3) have been working on multi-touch surfaces for many years. Although they have done amazing things, it has only been since the massive success of Apple's iPhone that the concept of multi-touch has been embraced by mainstream consumers.

As touch surfaces become cheaper and more advanced, we are seeing early concepts of multi-touch products that will one day change the classroom (Grantham, 2012). Imagine a workspace where students are collaborating live with peers around the world, manipulating virtual objects right in front of them. Streamed video, virtual tools and millions of online resources available with a single swipe of the desk.

The Case of Some Recent Technology-induced Developments

It is now time to describe recent developments that are ‘powered by’ emerging technologies that are worth noting at this ABUAD teaching and learning workshop. We shall ‘shine our eyes’ on Open Education Resources (OERs), Massive Open Online Courses (MOOCs) and Open Badges. These were selected based on their currency and relevance to teaching and learning in contemporary times.

- ***Open Education Resources***

Open Education Resources (OER), are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others (William and Flora Hewlett Foundation, 2013).

These are materials such as lecture notes, reference/textbooks, videos of lectures, virtual laboratories, guides for teachers and student handbooks that are needed for teaching and learning. In a typical university in Nigeria, some of these materials notably lecture notes are outdated and restrictly available to the lecturer. Cost of textual materials throws them out of the reach of many students. A good textbook in medicine costs about N15,000.

The student is expected to buy about ten of these. On account of funds limitations, the student will buy one and elect to photocopy some chapters in others. If the student misses class for genuine reasons, the experience of hearing and seeing the teacher teach that lesson is gone since a repeat class for the few that were absent can hardly be arranged.

Even those who were present and may find need to play back the lesson are not availed such opportunity since the lecture was not recorded for the purpose of distribution to other students. What is obvious is that most lecturers may not be too excited about their lessons being recorded for playback since about 90% of the lecture time is spent dictating old notes! A newscaster from FRCN can be asked to do a better job of reading such notes!

Textbooks, videos of lectures and virtual laboratories and workshops to supplement the actual facilities are scant. In the world of open education resources (OER), these materials are readily available for free, enabling the student to swim freely in the world of choice of such materials that are relevant to individual needs. Let us explore the historical development and current status of OER.

The OER movement originated from developments within the culture of free-sharing and non-hoarding of information and other knowledge-based resources. It is set within the open knowledge, open source, free sharing and peer collaboration paradigm which emerged in the late 20th century. The term "open educational resources" was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries which I had the benefit of attending and hence was part of the making of OER history! Participants at the Paris meeting expressed their “wish to develop together a universal education resource available for the whole of humanity, to be referred to as Open Educational Resources (Daniel, 2012) Since then, and as chronicled by Mulder (2008), a couple of global OER initiatives and study groups have been initiated, some in close collaboration with UNESCO and the OECD.

Three types of OER have been described (Mulder, 2008): content-centred, a learner-centred and a creation-centred models. A good example of a content-centred initiative is MIT's Open Courseware site. Open CourseWare is not equivalent to an MIT education, but intended to be a source of inspiration for teachers and self-learners around the world. A characteristic of this model is that the information-flow is one-directional, as there is no direct feedback of users built into the system.

Other content-centred examples of OER are for instance libraries, encyclopaedias, scientific journals, research communities and so on, that bring their books and articles online for free. Learner-centred OERs are aimed at the experiences of their users. Good examples of this are for instance Open Learn of the UK Open University, OpenER of the Open Universiteit Nederland (OUNL) and MORIL (Multilingual Open Resources for Independent Learning) of the European Association of Distance Teaching Universities.

These, by the OUNL proclaimed 'New Wave'- initiatives focus on the offering of high-quality learning materials in a distance learning context, primarily meant for independent self-study. The target audience consists primarily of life-long learners. The learning experience of learned-centred models could be enhanced by artificial and real teachers interacting online with students, thus creating a more multi-directional type of OER. The third model is the creation-centred OER. It is the most multi-directional type of OER, and some would say most non-directional.

A good example is the Connexions project initiated by Rice University. The Connexions project not only provides a fast growing collection of free scholarly material, but also free software tools to help authors publish and collaborate; instructors build rapidly and share custom courses; and learners to explore links among concepts, courses and disciplines.

- The key idea of the Connexions project is to build an infrastructure which enables teachers and learners to remix and compose new objects from old ones. However, a problem of such a creation- centred model is, that it can lead to information overkill and problems of quality assurance. In response to this, connexions designed a way of evaluating material and to direct users to materials deemed of high quality by offering a filtering, recommending and reputation - system, characterised by so called 'lenses' provided by third parties.
- Let me now take you to 2004 when a team of Vice-Chancellors and I had the opportunity of visiting the Massachusetts Institute of Technology (MIT). Three years before, MIT had established its OpenCourseWare scheme which made freely available to the general public, lecture materials including lesson notes, test papers, videos and other learning resources.

It also had its globally-famous ilabs which facilitated the use of expensive and sensitive scientific equipment owned and based at MIT by scholars in remote locations.

The goal of the visiting team from the Nigerian university system was to obtain mirror copies of all the MIT Open CourseWare and subscribe to the use of the ilabs. The mission was a success and some of the universities took advantage of the two gestures of facilities offered by MIT. Since MIT Open Courseware came on stream, several other universities have logged on to the philosophy undergirding the scheme and an evolutionary march towards an unknown future in terms of degree of openness of education had begun.

As I noted in the foregoing section, one of the first OER-networks was developed under the leadership of the MIT and the Hewlett Foundation. The OCWconsortium-site offers an overview of links to over 50 'OpenCourseWare' projects that have been launched in predominantly developed countries all over the world. Also, UNESCO's International Institute for Educational Planning (IIEP) has created a forum with over 500 members from 90 countries discussing issues related to the promotion, development and use of OER and a wiki-like website to stimulate further discussions (Mulder, 2008). This community consists of 16% of members from Sub-Saharan Africa. In addition, the International Council for Open and Distance Education (ICDE) has set up in close collaboration with UNESCO an ICDE OER Task Force. The European Association of Distance Teaching Universities (EADTU) has also initiated a task force on OER.

- In 2005 OECD's Centre for Educational Research and Innovation (CERI) launched a 20-month study to analyse and map the scale and scope of initiatives regarding "open educational resources" in terms of their purpose, content, and funding. The report "Giving Knowledge for Free: The Emergence of Open Educational Resources", published in May 2007, is the main output of the project, which involved a number of expert meetings in 2006. In September 2007, the Open Society Institute and the Shuttleworth Foundation convened a meeting in Cape Town to which thirty leading proponents of open education were invited to collaborate on the text of a manifesto. The Cape Town Open Education Declaration was released on 22 January 2008, urging governments and publishers to make publicly-funded educational materials available at no charge via the internet.

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- What about OER in Africa? A perspective was given by Catherine Ngugi, Executive Director, OER Africa at the 2013 conference of the CHEA International Quality Group held about three months ago in Washington, DC to which I had an opportunity of attending. OER Africa is an initiative of South African Institute for Distance Education (SAIDE), headquartered in Nairobi, Kenya. It was established to play a leading role in driving the development and use of OER in Africa and funded by the William & Flora Hewlett Foundation, the Bill & Melinda Gates Foundation, and a variety of projects and partnerships across Africa. The stimuli for establishing OER Africa derive from a number of findings. There are too few learning resources available for learners and lecturers in African universities, many of those available are too expensive to be purchased by universities or students.

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There is also limited (but ever-improving) ICT infrastructure to gain access to up-to-date information available on the Internet and participate in inter-institutional, geographically dispersed collaborative activities. Hence OER Africa is aimed at making educational resources freely available for use by educators and learners, without an accompanying need to pay royalties or licence fees. It is not synonymous with online learning or e-learning. Within an African context, it is anticipated that many resources produced – while shareable in a digital format (both online and via offline formats such as CD-ROM) – will be printable.

The opportunities for OER Africa have been widening. For instance, telecommunications capacity is growing rapidly. There is also the growth in range of devices at reduced cost; lower power use and growth in solar power; and there is an explosion of freely available, high quality content online to which educators and students can link.

- Feedback is showing that OER is enhancing teaching and learning in higher education in Africa. Use of teaching and learning resources can be more effective than some forms of contact, e.g. rote transfer of content via lectures. Judicious mix of teaching strategies may serve to free up time of academics from delivery of content, to instead, invest time in curriculum and resource development, more problem-based interaction and more varied assessment strategies that do not focus on rote recall of content. Let us now take on the second emerging development in university education that is propelled by technology- the Massive Open Online Courses (MOOCs).

Massive Open Online Courses (MOOCs)

- Over the past five months, I have been asking my friends in the universities around us if they know what “MOOCs” is. None, absolutely none, had the faintest clue even when I provided the expansion of the acronym as Massive Open Online Courses. Some thought it is the sound made by a cat. This is not unexpected as the concept is relatively new, about a year old.
- The discomfort I felt should however be expressed because the inability to see even one senior academic get the meaning of MOOCs right is indicative of our limited reading beyond our narrow disciplinary specialty. Putting that behind us, let us in this workshop get to know a thing or two about MOOCs and how it will affect curriculum delivery in Nigerian universities of the future.

- MOOCs is where a course is made available online to anyone, usually free of charge, but only the paying students get feedback on assessment and certification. Course activities can be scheduled or asynchronous, and a fluid structure is valuable because students can choose their level of participation and many will do so in an à la carte manner.
- A MOOC throws open the doors of a course and invites anyone to enter, resulting in a new learning dynamic. Although this dynamic will make some students uneasy and will force lecturers to rethink at least some of the elements of their courses, MOOC can potentially alter the relationship between learner and teacher and between academe and the wider community. As MOOCs evolve, expectations and methods of presentation will likely crystallise, becoming more consistent and more predictable. Those enrolling in a MOOC are likely to discover learning at its most open on a platform that invites the world not only to see and hear but also to participate and collaborate.

- MOOCs originated from within the open educational resources movement and connectivist roots. More recently, a number of MOOC-type projects have emerged such as Coursera, Udacity, edX and Udemy.
- Others, like Canvas Network and CourseSites by Blackboard have evolved from learning management systems. Coursera is a for-profit company founded by two computer-science professors from Stanford. The company's model is to sign contracts with colleges that agree to use the platform to offer free courses and to get a percentage of any revenue. More than a dozen high-profile institutions, including Princeton and the U. of Virginia, have joined. Udacity is another for-profit company founded by a Stanford computer-science professor. The company, which works with individual professors rather than institutions, has attracted a range of well-known scholars. Unlike other providers of MOOC's, it has said it will focus all of its courses on computer science and related fields.

- edX is a nonprofit effort run jointly by MIT, Harvard, and Berkeley. Leaders of the group say they intend to slowly add other university partners over time. edX plans to freely give away the software platform it is building to offer the free courses, so that anyone can use it to run MOOC's.
- Udemy is a for-profit platform that lets anyone set up a course. The company encourages its instructors to charge a small fee, with the revenue split between instructor and company. Authors themselves, more than a few of them with no academic affiliation, teach many of the courses.
- Today, there appears to be two distinct types of MOOCs: those that emphasise the connectivist philosophy, and those that are like more traditional and well-financed courses, such as those offered by Coursera and edX. To distinguish between the two, Stephen Downes proposed the terms "cMOOC" and "xMOOC".

- I take the liberty of drawing from the exciting work of Sir John Daniel in sharing some recent developments with you on MOOCs.
- In a recent email to me, Sir John Daniel wrote:
- Dear Peter:

If rumours of MOOCs have reached Nigeria you might be interested in this paper I've written while being a fellow for the last month at the Korea National Open University. It's called: *Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility*

Best wishes

John

- Daniel (2012) notes that “media frenzy surrounds MOOCs and commercial interests have moved in. Sober analysis is overwhelmed by apocalyptic predictions that ignore the history of earlier educational technology fads.
- While the hype about MOOCs presaging a revolution in higher education has focussed on their scale, the real revolution is that universities with scarcity at the heart of their business models are embracing openness.
- The competition inherent in the gadarene rush to offer MOOCs will create a sea of change by obliging participating institutions to revisit their missions and focus on teaching quality and students as never before. It could also create a welcome deflationary trend in the costs of higher education”.

- The key questions that confront university managers in the conversation about MOOCs really involve certification and credit: How do/should we assess “prior learning” for students who come to us with a certificate of completion from a MOOC provider such as Coursera, edX, or Udacity?
- Assuming we can assess prior learning, should we give course credit to students who have completed a MOOC? And if so, for what courses and from which MOOCs?

Open Badges

Open Badges is a project of Mozilla with support from the MacArthur Foundation. What are badges? This is the question that arises impulsively in the minds of many. Badges are visual representations of achievements, learning, skills, interests and competencies. They are digital indicators of skills learned outside of the classroom (usually informally). The undergirding philosophy is that learning occurs everywhere. Outside the brick-and mortar school, there are several places where learners acquire knowledge and skills that need to be recognised. The web and other new learning spaces provide avenues to gain such knowledge, skills and experiences. Badges provide a way for learners to get recognition for these skills, and display them to potential employers, schools and colleagues.

- The Mozilla Open Badges Infrastructure (OBI) 'gamifies' real-world achievements and allows one to display skills which may help with future career and education opportunities. It is currently in public beta, allowing badge issuers and developers to build badges, and allow online learners to choose from a number of different pathways for development.



- *Figure 1: Open badges are like scout badges*

- According to the White Paper on Open Badges issued by Mozilla in 2012 from which I quote generously in this section, a “**digital badge**” is an online record of achievements, tracking the recipient’s communities of interaction that issued the badge and the work completed to get it. Digital badges can support connected learning environments by motivating learning and signaling achievement both within particular communities as well as across communities and institutions. In today's world learning can look very different than traditionally imagined. Learning is not just ‘seat time’ within schools, but extends across multiple contexts, experiences and interactions. It is no longer just an isolated or individual concept, but is inclusive, social, informal, participatory, creative and lifelong. It is not sufficient to think of learning simply as consumption, but instead learners are active participants and producers in an interest-driven, lifelong learning process.

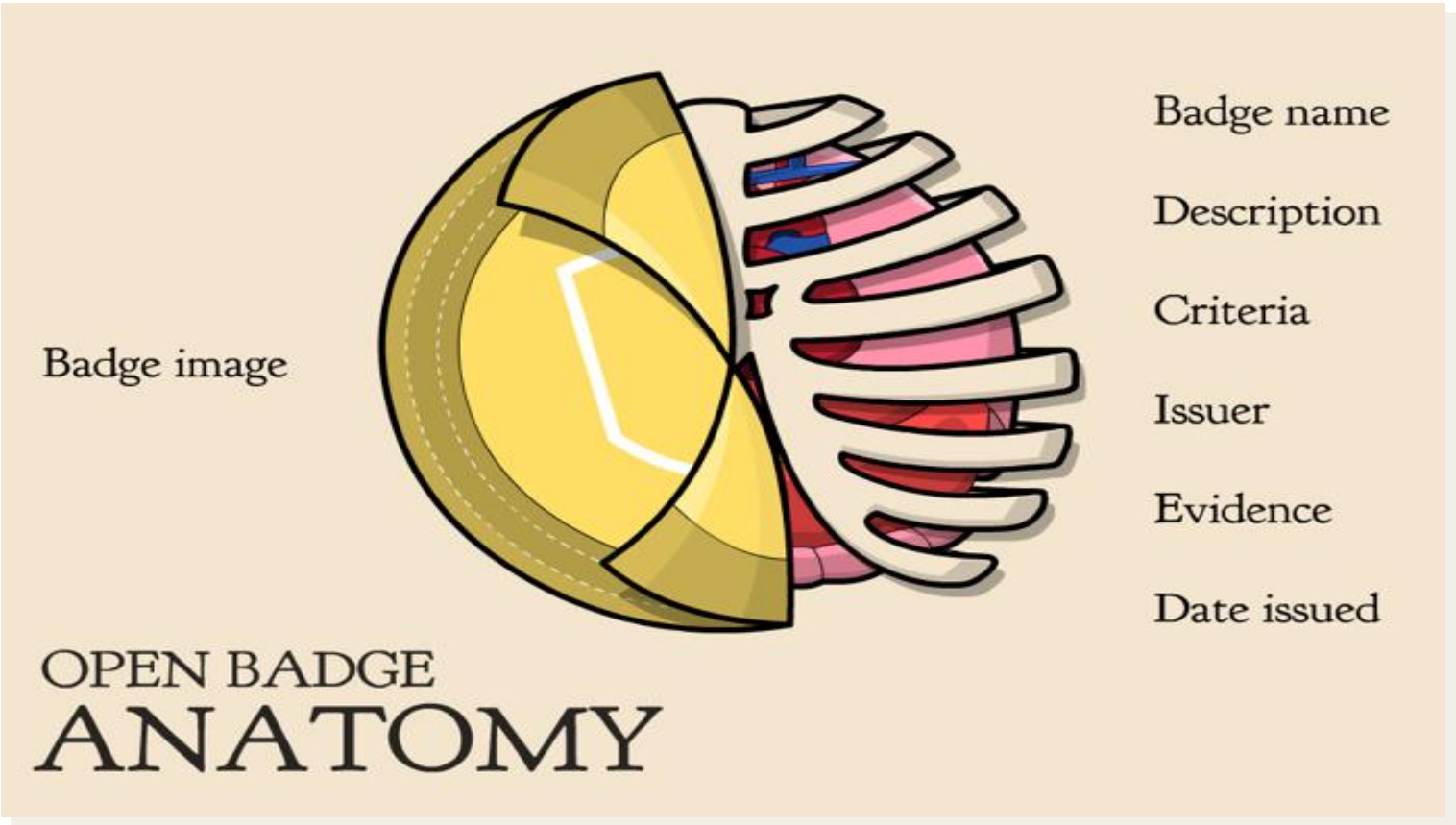
- The concept of a 'learning environment' no longer means just a single classroom or online space, but instead encompasses many spaces in broader, networked, distributed and extensible environments that span time and space. And across these learning environments, learners are offered multiple pathways to gain competencies and refine skills through open, remixable and transparent tools, resources and processes. In this *connected learning* ecology, the boundaries are broken and the walls are down — now we just need to help it reach its full potential.
- Much of this shift is due to the fact that our world is very different than the one when the current education system was developed and standardised (Mozilla Foundation, 2012). With the Web and its core principles of openness, universality and transparency, the ways that knowledge is made, shared and valued have been transformed and the opportunities for deeper and relevant learning have been vastly expanded.

- The open Web has enabled increasing access to information and each other, as well as provided the platform for many new ways to learn and new skills to achieve. We no longer must rely on the expert authority or professionally-produced artefact to provide us with the information or experience we seek, instead we can find it from peers or make it ourselves online.

In addition to differences in the way learning happens today, there are also new skills and literacies that are important in modern society.

- It used to be that the basic requirements to be a literate citizen were reading and writing skills, but literacy now extends well beyond into digital and media literacies that include skills needed to use various technologies effectively (e.g. using a computer, basic Web skills), to navigate and seek out information online (e.g. using wikipedia), to produce and author content (e.g., creating a profile or using digital media for self- expression), and to be a good citizen in a digital community (e.g., managing copyright, protective privacy, contributing constructively to a conversation).
- Many of these skills are critical not only for jobs and career advancement, but also for individuals to fulfil basic needs, get equal access to opportunities and become active participants in modern society.

- Jenkins[3] goes further to state that these new literacies - including appropriation of information, judgment of information quality, multitasking and networking - are relevant for almost any career path and are critical to success in today's information culture.
- Despite the importance and relevance, these skills are not typically taught or captured in traditional schools. Instead, they are often being developed and built upon through open, social or informal experiences across the Web and across different environments.



- *Figure 2: Anatomy of the Open Badge*

- In the current formal education and accreditation systems, much of this learning is ignored or missed entirely. Institutions still decide what types of learning 'count', with little room for innovation, as well as who gets to have access to that learning. Their end products, the grade or degree, are the only way that learning is currently communicated and recognised within the system, as well as the larger society.
- Without a way to capture, promote and transfer all of the learning that can occur within a broader connected learning ecology, we are limiting that ecology by discouraging engaged learning, making critical skills unattractive or inaccessible, isolating or ignoring quality efforts and interactions and ultimately, holding learners back from reaching their potential.

- Thus, badges can play a crucial role in the connected learning ecology by acting as a bridge between contexts and making these alternative learning channels, skills and types of learning more viable, portable and impactful.
- Badges can be awarded for a potentially limitless set of individual skills regardless of where each skill is developed, and the collection of badges can serve as a virtual resume of competencies and qualities for key stakeholders such as peers, schools or potential employers. Specifically, badges support:
- ***Capturing of the Learning Path*** – With degrees or cumulative grades, much of the learning path is abstracted and lost. Badges could capture and explicitly represent a more specified set of skills and qualities as they occur along the learning path, and could also track a broader, and perhaps more granular, set of skills.

- So when you encounter a good web developer or writer, you can look at their set of badges (and issue dates!) to determine the skills an aspiring web developer or writer should learn, and even perhaps in what order s/he should learn them.
- ***Achievement Signaling*** – Badges can represent skills or achievements and thus signal peers or outside stakeholders, such as potential employers or institutions. For example, recruiters could look for people with badges that align with certain job requirements or needs. In this way, badges start to function somewhat like degrees or certifications, but with room for much more granular or diverse skill representation.

- **Encouraging and motivating participation and learning outcomes:**
- ● ***Motivation*** – Badges can provide intrinsic feedback or serve as milestones or rewards throughout a course or learning experience to encourage continued engagement and retention. Badges could make learners aware of skills or topics and encourage them to go down new paths or to spend more time trying to develop those skills. Further, badges could serve as entry points to become aware of and attain new levels of privileges.
- ● ***Supporting Innovation and Flexibility*** – Badges can be used to capture a wide range of skills, including those that are often missed or ignored by formal channels, or newer skills like digital literacies that evolve with the ever-changing society. Badges can give us the flexibility to award innovation and recognize new skills as they emerge and gain relevance.

- **Formalising and enhancing existing social contexts for learning**
- ● ***Identity/Reputation Building*** – Badges can serve as mechanisms to encourage and promote identity within the learning community, as well as reputation among peers. Much of this identity and reputation development may be already occurring within each community and badges can help make them more explicit and portable, as well as aggregate identities from across communities.
- ***Community Building/Kinship*** – Badges can signal community or sub-community membership and can help people find peers with similar interests or mentors to help teach them skills they lack. Further, badges can serve as a means of social capital, and community-oriented or -defined badges could formalise camaraderie, team synthesis or communities of practice.

- The technology supports a range of badge types, developed in conjunction with the badge issuer. Badges may point to "hard skills" such as hardware engineering, as well as "soft skills" like inter-personal relations.
- They can be issued by traditional educational institutions such as University of Lagos, professional bodies such as MDCN, COREN and Council for Legal Education or online OpenCourseWare initiatives. The state of adoption of Open Badges as reported by... show more than 450 independent issuers by January 2013 and the issue of about 50,000 badges.
- Higher education institutions with badges include Purdue University, Quinnipiac University, Indiana University, Brigham Young University, Seton Hall University, University of Michigan, and University of California, Davis.

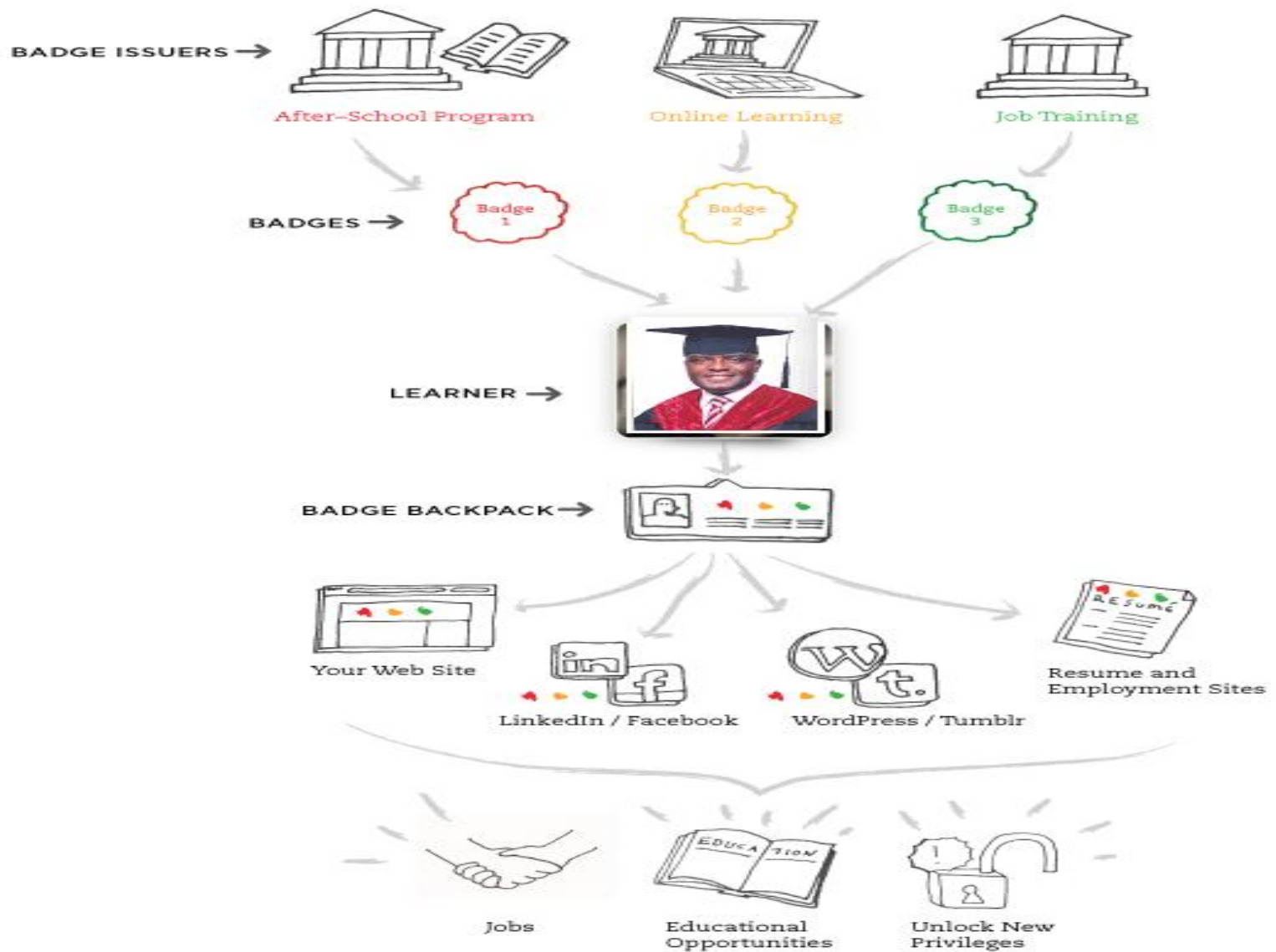


Figure 3: How Open Badges Work

- Using Mozilla's Open Badges infrastructure, any organization or community can issue badges backed by their own seal of approval. Learners can then collect badges from different sources and display them across the web or other platforms.
- They can be displayed just about anywhere by the recipient including their resume, website and social networking profiles. By displaying skills and achievements that traditional degrees and transcripts often leave out, badges can lead to jobs, community recognition, and new learning opportunities.
- The badge system design does not equate badges to assessment and there is no right way of deciding on which badge to issue. Such decisions are at the prerogative of the issuer.

Concluding Remarks

- In this session, we sketched the state of curriculum delivery in the typical classroom in the Nigerian university system and proposed how the delivery can be enriched to foster more meaningful learning. In the pursuit of the second goal, we placed some accent on how to teach large classes and improve reading culture among students. We also took a bite at the technology issue.
- It is my earnest hope that this series of workshops will be sustained and expanded in the years ahead. I further hope that participants at this workshop will return to base and share the experience gleaned from the workshop with others in their university. Sadly, this is often not the case as, on return, participants typically dump their conference bag in one corner of their office or bedroom to pick up dust.

- I wish to thank the amiable Vice-Chancellor of Crawford University, Professor Denola Ayanlaja for making this presentation on my behalf in less than 30 minutes while hoping that you will find time to read the paper in greater detail after the session.
- It now remains for me to wish you a most-fruitful time during the rest of the workshop.

References

- Bajah, S.T. (2007). Techniques for making science lectures attractive. Presentation at the 2007 Annual STAN Conference, August.
- Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. *Essay submitted to Korea National Open University, 25 September.*
- Grantham, N. (2012). Five technologies that will shape our classrooms. Fractus Learning. <http://www.edutopia.org/blog/five-future-education-technologies-nick-grantham>. Retrieved 05-04-2013.
- Mozilla Foundation (2012). Open badges for lifelong learning: A white paper. https://wiki.mozilla.org/images/5/59/OpenBadges-Working-Paper_012312.pdf. Retrieved 06-04-2013.

- Mulder, J. (2008). *Knowledge Dissemination in Sub-Saharan Africa: What Role for Open Educational Resources (OER)?*. Amsterdam: University of Amsterdam.
- Okebukola, P.A.O. (1986a). Impact of extended cooperative and competitive relationships on students' performance in science. *Human Relations*, 29, 7, 673-682.
- Okebukola, P.A.O. (1986b). The problem of large classes in science: An experiment in cooperative learning. *European Journal of Science Education*, 8, 1, 73-77.
- Okebukola, P.A.O. (1986c). Cooperative learning and students' attitude to laboratory work. *School Science and Mathematics*, 86, 582-591.
- Okebukola, P.A.O. (1986d). Influence of preferred learning styles on cooperative learning in science. *Science Education*, 69, 509 -517.

- Okebukola, P.A.O. (1990). Attaining meaningful learning of ecology and genetics: A test of the efficacy of the concept-mapping strategy. *Journal of Research in Science Teaching*, 27,5, 493-504.
- Okebukola, P.A.O.(1991a). Concept mapping in biology with a cooperative learning flavor. *American Biology Teacher*. 23(2), 12-19. Okebukola, P.A.O. (1991b). Can good concept mappers be good problem solvers in science? *Research in Science and Technological Education*, 10(2), 13-26.
- Okebukola, P.A.O.(1991c) The concept of schools village and the incidence of stress among science teachers. *Human Relations*, 45, 89-102.
- Okebukola, P.A.O. (2008) Clipping the wings of degree mills in Nigeria. *International Higher Education*, 43, 12-15.

- Okebukola, P.A.O. (2009). Education reform imperatives for attaining Vision 20-2020. Paper presented at the National Summit on Higher Education, Abuja, December.
- Okebukola, P.A.O. (2011). Entrepreneurship in University Education: Beyond Talk. *27th Convocation Lecture, University of Port Harcourt, June 16*
- Okebukola, P.A.O. (2012). Survey of reading habits of undergraduates in two south-western universities in Nigeria. Lagos: Okebukola Science Foundation.
- Okebukola, P.A.O. (2013). Open education and the march to 2020: Can Nigerian make it? Second Convocation Lecture, National Open University of Nigeria, January 18.
- Okebukola, P.A.O, & Jegede, O.J. (1991a). The concept mapping heuristic as viewed by some Australian and Indonesian science teachers. *Research in Science Education*, 21, 231-243.

- Okebukola, P.A.O. & Jegede, O.J. (1991b). Survey of factors that stress science teachers and an examination of coping strategies. *Science Education*, 74, 234-242.
- Okebukola, P.A.O. Shabani, J. Sambo, A, and Ramon-Yusuf, S. (2007). Quality assurance in higher education: Perspectives from Sub-Saharan Africa. In GUNI (Ed.) *State of the World report on Quality Assurance in Higher Education*, pp 46-59, Barcelona.
- William and Flora Hewlett Foundation (2013) OER defined. <http://www.hewlett.org/programs/education-program/open-educational-resources>. retrieved 06-04-2013.