

OPEN EDUCATION AND THE MARCH TO 2020: CAN NIGERIA MAKE IT?

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Preamble

In 2001, with the blowing off of the dust on the 1983 enabling law of the National Open University by the Obasanjo Administration, there were high hopes that the resuscitated university will emerge as a leader in the production of high-level human resources in Nigeria using open and distance learning delivery system. In August of that year, as Executive Secretary of the National Universities Commission (NUC) I had announced closure of all satellite campuses owing to severely comprised quality of education parent universities were offering through such campuses. The Commission palliated the outraged public that the National Open University was about to open its doors to soak up all students who had their courses truncated as a result of the ban. Coincidentally, two years after its establishment as the National Open University of Nigeria (NOUN), President Olusegun Obasanjo conceived of Vision 20:2020 with specific roles for Nigerian universities. In response to government's prompting, NUC, invited all Vice-Chancellors to a session to agree on a niche for the Nigerian university system in the realisation of the Vision. The report to the Presidency envisioned respectable role for NOUN and open education. We anticipated two

roles for NOUN. These were to serve as the lead agency for capacity building using open and distance learning and for bridging human resource and skills gaps in disciplines where the conventional universities lacked strength. It is therefore a delight to be here nine years later to review with you the role of NOUN, how far it has gone in meeting these expectations and how open education can be part of the success story of Vision 20:2020.

I bring a bundle of tribute to all those who have being part of the early history and current development of NOUN. The first Vice-Chancellor of the National Open University, Professor Afolabi Ojo deserves honourable mention for planting the seed which, though was inhibited from germinating, but which nevertheless, provided the nutrient for the birth of the National Open University of Nigeria (NOUN) whose Vice-Chancellor, Professor Olugbemiro Jegede, my brother and friend, laid the solid foundation for further development. Professor Jegede brought national and international limelight to shine brightly on NOUN and braced tremendous odds to chalk several achievements for the institution. With the baton of leadership in the deft hands of Professor Vincent Tenebe, we are currently witnessing a freshness of vision in the delivery system and relationships. Discussions in high and low places point to a Tenebe administration that is poised to accelerate the realisation of the NOUN dream. We urge that you continue to do your best in the face of intimidating challenges facing NOUN and let history judge you well. My prayer for you and your team is for God's divine guidance and protection to see you through a successful tenure as Vice-Chancellor of NOUN. Before diving into the lecture, let me end my tribute by appreciating Council, Senate, staff and students for their contributions in many more ways than one to the growth and development of the university and to congratulate you all on the occasion of the second convocation ceremony. I appreciate the honour of your asking me to give the pre-convocation lecture on "Open Education and the March to 2020: Can Nigeria Make It?"

Introduction

Nigeria is on the march to being one of the largest economies by 2020. The march began 99 years ago. As we celebrate the centenary anniversary next year of the amalgamation of the southern and northern British protectorates in 1914 with Nigeria as product, the story will be told of the success and failure stories of national development plans. One of such plans whose story we intend to reflect on in this lecture is Vision 20:2020, a conception of the Obasanjo Administration in 2004-2005 which was formally launched in 2007 by President Umaru Musa Yar'Adua. Two of the key goals of governance are ensuring economic growth and welfare of the citizenry. The impetus for the development plans established by governments in Nigeria especially since independence in 1960 is to stimulate economic growth and as a collateral effect, assure that Nigerians have good quality of life.

In recent times, especially since 1998, comparing countries by their level of economic development has emerged and Nigeria has been part of such schemes. Like university ranking, Vice-Chancellors desire their universities to be better ranked and hence take steps to improve on their performance on the ranking indicators. By crafting Vision 20:2020, Nigeria aims to take steps to improve on performance on the indicators for ranking economic growth. What is economic growth and how is it measured?

Economic growth is the increase in the amount of the goods and services produced by an economy over time (Ayers & Wahr, 2010; Galor, 2005). There are a number of measures which have been used to estimate such growth. These include increase in real GDP; increase in real per capita income; rise in overall wellbeing of the people; basic needs approach and Human Development index (Case & Fair, 2006). An emerging preference in the ranking of economies

is the percent increase in *real gross domestic product*, or *real GDP*. Growth is usually calculated in *real* terms, i.e. inflation-adjusted terms, in order to obviate the distorting effect of inflation on the price of the goods produced. In economics, "economic growth" or "economic growth theory" typically refers to growth of potential output, i.e., production at "full employment" (Jared, 2006). For 2011, the ranking provided by the World Bank for the top largest economies of the world is given in Figure 1.

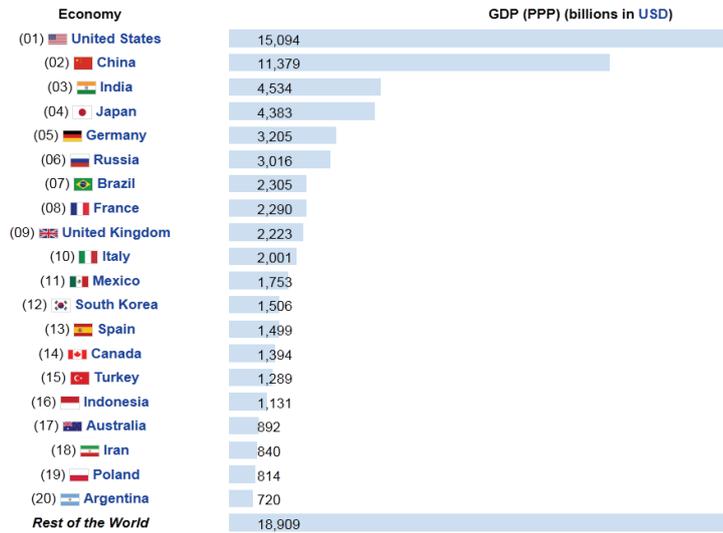


Figure 1: Twenty largest economies in 2011

Source: World Bank

By 2020, Nigeria is not projected by any of the ranking agencies to be among the largest 20 economies. By 2050, the league table does not include Nigeria among the top 20 (Table 1) but ranked in the 47th position.

Table 1: List of top economies by 2050 (change in rank from 2010)

Rank	Country
1.	China (+2)
2.	U.S. (-1)
3.	India (+5)
4.	Japan (-2)
5.	Germany (-1)
6.	UK (-1)
7.	Brazil (+2)
8.	Mexico (+5)
9.	France (-3)
10.	Canada (same)
11.	Italy (-4)
12.	Turkey (+6)
13.	Korea (-2)
14.	Spain (-2)
15.	Russia (+2)
16.	Philippines (+27)
17.	Indonesia (+4)
18.	Australia (-2)
19.	Argentina (2)
20.	Egypt (+15)

Source: HSBC

Given this background, I will answer two questions in the course of this lecture. Can Nigeria be one of the top 20 economies in the world by 2020? Can open education play a catalytic role in the attainment of this vision? To both questions my answer is a qualified "Yes". The kernel of the lecture, in my view, is the

identification of those conditions that should be met to ensure that my “Yes” answer holds true. Let us begin with the first question.

Is Vision 20:2020 attainable?

The preface to answering the question of whether or not Nigeria can attain Vision 20:2020 is a summary of what Vision 20:2020 is.

Trigger for the process

In December 2005, four years after its report on the emerging "BRIC" economies (**B**razil, **R**ussia, **I**ndia, and **C**hina), Goldman Sachs named its "Next Eleven" list of countries, using macroeconomic stability, political maturity, openness of trade and investment policies and quality of education as criteria. These 11 countries were Bangladesh, Egypt, Indonesia, Iran, South Korea, Mexico, Nigeria, Pakistan, the Philippines, Turkey and Vietnam. Goldman Sachs is a leading global investment banking, securities and investment management firm that provides a wide range of services worldwide to a substantial and diversified client base that includes corporations, financial institutions, governments and high-net-worth individuals. Economic projections of GS are valued by global economic bodies as they are found to be high in predictive validity.



Fig. 2: The Next Eleven Countries for the World's Top 20 Economies

President Obasanjo's awareness of this prediction excited him to foresee that the goal of being among the elite league of the world's top 20 economies can be attained in 2020. In an interview he granted me as I was finalising this lecture he narrated the *raison d'être* for settling for 2020 rather than 2035 that the GS team that visited him proposed. He was anxious to move the development agenda of Nigeria at a quick pace. Aiming for 2020 rather than 2035 as target date would keep all actors on their toes and even if the 2020 target year was missed, any year before 2035 would be the point of realisation (my inference). He triggered off the planning process and the National Universities Commission was called to duty to join other units of government to reflect on the pathway for achieving a Vision 20:2020 . The Commission, in turn, invited all Vice-Chancellors to prepare the input of the Nigerian university system to the planning process.

Key Tenets

Vision 20:2020 (NV20:2020), is Nigeria's long-term development aspiration to be in the league of the top 20 largest economies of the world by 2020. The two broad objectives being to make efficient use of human and natural resources to achieve rapid economic growth; and translate the economic growth into equitable social development for all citizens. It is anticipated to be "a rallying point for all Nigerians behind a common cause of placing the country on a sustainable development path and transformation into a modern society better able to play a greater role in the comity of nations, regardless of ethnicity, political leaning, economic status, or religion" (NPC, 2010).

The Vision is anticipated to be pursued through a series of three, four-year plans which will further articulate the strategies, policies, projects and programmes of implementation. Four

dimensions have been delineated. These are (a) *social*- building a peaceful, equitable, harmonious and just society; (b) *economic* - developing a globally competitive economy; (c) *institutional* - having a stable and functional democracy; and (d) *environmental* – achieving a sustainable management of the nation’s natural resources. The Vision document also telescopes into a future where Nigeria will see minimal presence of poor and decaying infrastructure; epileptic power supply; weak fiscal and monetary policy co-ordination; fiscal dominance and its implications for inflation and private sector financing; pervasive rent-seeking behaviour by private and public agents, including corruption; weak institutions and regulatory deficit; policy reversals and lack of follow-through; inordinate dependence on the oil sector for government revenue/expenditure; disconnect between the financial sector and the real sector; high population growth which places undue stress on basic life- sustaining resources and eventually results in diminished well-being and quality of life; insecurity of lives and property; threats of climate change, especially in relation to food production; and vulnerabilities in the global economic environment, in particular, the global economic crisis and disturbances in the international oil market. The strategic framework is depicted in Figure 2:

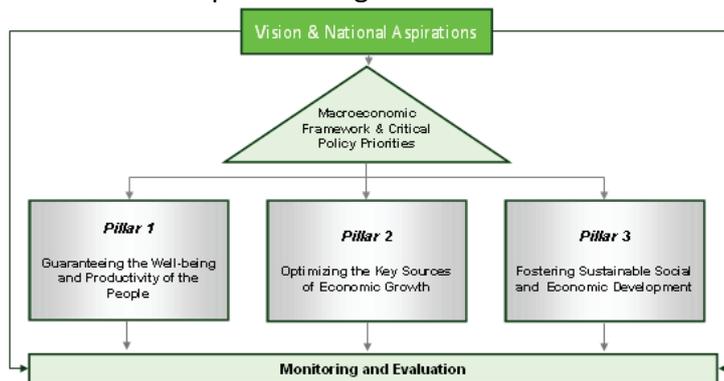


Figure 3: Strategic Framework of Vision 20:2020

Source: National Planning Commission (2010)

Anticipated Economy in 2020

The National Planning Commission anticipates through the NV20:2020 document that manufacturing and services will dominate the structure of national output, while gross national investment is expected to increase, and the infrastructure base of production improved considerably. Income per capita should have risen to \$US4, 000 in 2020. Table 2 provides a summary of the projection.

Table 2: Desired Structure of National Output by 2020

Sector	Existing Share of output	% Projected share of output by 2020
Agriculture	42.1	3-15
Industry	23.8	30 – 50
Manufacturing	4.0	15 – 30
Services	34.1	45 – 75

Note: Projected figures represent the best and worst case scenarios
Source: National Planning Commission (2010).

The current structure of production is expected to reverse as the relative contribution of agriculture to national output declines to a maximum of 15 per cent over the long-term. The overall macro strategies include:

- Achieving double-digit economic growth rates, single-digit inflation, stable exchange rate and investment friendly interest rates;
- achieving significant progress in economic diversification;

- stimulating the manufacturing sector and strengthening its linkage to sectors such as agriculture and oil and gas;
- raising the relative competitiveness of the real sector;
- deepening the financial sector and sustaining its stability to finance growth;
- encouraging massive investments in infrastructure and human capital and creating an enabling environment for domestic and foreign private investment; and
- implementing appropriate fiscal, monetary, trade and debt management policies.

Policy priorities of the vision are correcting the weaknesses of the revenue allocation system which relies heavily on revenue from crude oil. To reverse this, the Vision will encourage greater internal revenue generation efforts at the state and local government levels. There is also the thrust towards increased investment in critical infrastructure. In this wise, government will focus on increasing the quantity and quality of infrastructure spending; development of a framework for joint financing of infrastructure projects between the tiers of government; encouragement of private investments in infrastructure; deepening reforms at all levels of government; promoting private sector-led non-oil growth to build the foundation for economic diversification; investment in human capital development to enhance national competitiveness; entrenchment of merit as a fundamental principle and core value; intensifying the war against corruption; and upgrading the capability of the internal security apparatus of government, and enhancing the efficiency of their operations.

The NV20:2020 positions the minerals and metals sector as an important component of a diversified economy as part of the transformation of the economy. In this regard, the Vision will ensure that mineral production activity is linked to the real sector of the economy in a manner that encourages higher output and

productivity and lowers input costs. Since this policy requires immediate revival of Nigeria's primary steel industry and greater use of locally-produced industrial minerals, the NV20:2020 proposes a total approach to attracting investment in the exploration and production of minerals. Minerals with high local utilisation potential will receive priority. Primary steel production was expected to be revived through the completion and commencement of operations of Ajaokuta Steel Company Ltd and the Nigerian Iron Ore Mining Company. Further expansion will be encouraged at existing steel plants. An additional five million tonnes will be required from a potentially new plant (to take off by 2019) to achieve the desired annual local production target of 12.2 million tonnes.

On agriculture, the NV20:2020 aims to transform the sector to a sustainable profitable enterprise with focus on increasing the yield/productivity of agricultural produce, production of the required raw materials and export of processed agricultural products. In this connection, the Land Use Act of 1978 was expected to be amended in a way that addresses its current limitations. Also, the goal is to attract large-scale investments for mechanised production/processing of agricultural produce in which Nigeria has comparative advantage (e.g. tubers, cereals, oil palm and cocoa) as well as agricultural produce that serve as inputs to processing plants (e.g. citrus fruits and pineapple).

On oil and gas, the NV20:2020 emphasises the continued development of the oil and gas sector due to the nation's huge reserves. The Vision aims to increase crude oil production and refining capacity to stimulate local value-addition and to put the country in a position to meet its domestic demand for refined products and even export refined products. We aim at developing the gas sector to meet domestic and industrial demand and to take advantage of global markets. To this end, the local content

initiative in the sector will be revived. As a starting point in pursuit of the NV20:2020, the local content Bill and the Petroleum Industry Bill are expected to be passed into law.

A shift in the structure of production towards processing/manufacturing activities is envisaged under the NV20:2020. Emphasis will be on the export of processed and manufactured products that will help Nigeria diversify its economy, expand employment opportunities, and achieve the required growth rates for accomplishing the Vision. NV20:2020 also proposes an industrial development policy that aims to make Nigeria a global hub in selected specialised products in which Nigeria has both competitive and absolute advantages.

NV20:2020 prioritised ten manufacturing industrial sub-sectors to be developed in the short to medium-term, with potential to provide raw materials to downstream industries in the longer term. The criteria are based on availability of market/potential market size; availability of local raw materials; availability and simplicity of technology; profitability of the sub-sector; and availability of skilled human resources.

Table 3: Priorities for 2015 to 2020

High priority up to 2015	Medium priority up to 2020	Low priority post 2020
<ul style="list-style-type: none"> • Chemicals and Pharmaceuticals • Non-metallic mineral products sector • Basic Metal, Iron and Steel and • Fabricated Metals • Food, Beverages and Tobacco • Textiles, wearing apparel, carpet, • leather/leather footwear 	<ul style="list-style-type: none"> • Domestic/Industrial • Plastic and Rubber • Pulp, paper products, printing, publishing sector • Wood and woodproducts (including furniture) sector 	<ul style="list-style-type: none"> • Electricals and Electronics • Motor vehicle & miscellaneous assembly

Source: National Planning Commission, 2010

Critical Success Factors

According to Goldman Sachs, research points to a wide range of conditions that are critical to ensuring solid growth performance and increasingly recognises that getting the right institutions as well as the right policies is important. The main ingredients are:

Sound macroeconomic policies and a stable macroeconomic background: Low inflation, supportive government policy, sound public finances and a well-managed exchange rate can all help to promote growth. Each of the BRICs has been through periods of macroeconomic instability in the last few decades and some face significant macroeconomic challenges still. Brazil for instance has suffered greatly from the precariousness of the public finances and the foreign borrowing that it brought about.

Strong and stable political institutions: Political uncertainty and instability discourages investment and damages growth. Each of the BRICs is likely to face considerable (and different) challenges in political development over the next few decades. For some (Russia most obviously), the task of institution-building has been a major issue in recent growth performance.

Openness: Openness to trade and foreign direct investment has generally been an important part of successful development. The openness of the BRICs varies, but India is still relatively closed on many measures.

High levels of education: Higher levels of education are generally helpful in contributing to more rapid growth and catch-up.

Thematic Areas

Twenty-nine thematic areas have been identified as nodes for action in the pursuit of Vision 20:2020. These are:

1. Agriculture and Food Security
2. Business Environment and Competitiveness
3. Corporate Governance
4. Culture, Tourism and National Re-orientation
5. Education
6. Employment
7. Energy
8. Environment and Sustainable Development
9. Financial Sector
10. Foreign Policy
11. Governance
12. Health
13. Housing
14. Human Development
15. Information and Communication Technology
16. Judiciary & Rule of Law
17. Manufacturing
18. Media & Communications
19. Minerals & Metals
20. Niger Delta & Regional Development
21. Political System
22. Science, Technology & Innovation
23. Security
24. Small and Medium Enterprises
25. Sports Development
26. Trade and Commerce
27. Transport
28. Urban & Regional Development
29. Water & Sanitation

After the foregoing narrative of the essence and tenets of Vision 20:2020, we should now take a look at open education which we expect should be a catalyst for human capacity development as we march to realising the Vision. Before we narrow down to open education, it is useful to pan out to discuss how education, in its broad sense, impacts on development and hence on the attainment of Vision 20:2020.

Education as a lever for development

Down through the ages, it is known that education is the antidote to poverty and ignorance and the key for unlocking natural resources. No nation striving for accelerated development does so without huge investment in education (Okebukola, 2009; 2010). There is a compelling body of research concluding that education is the main plank for economic development (World Bank, 2012). A strand of evidence is presented by the story of more than half of the members of the league of the world's top 15 economies which in spite of the thin dose of natural resources boosted their economic power through harnessing the power of education. Japan and Korea present examples. In this section, we shall examine the contributory role of education to bolstering the economy of a nation. For the purpose of this lecture, the following major roles will be described (see Figure 4):

Development of skills and knowledge for growing the economy and spawning new industries: The curriculum through which education is provided is delivered to tool learners with knowledge, skills, attitudes and values. Knowledge and skills to be a good farmer or engineer; attitudes and values such as honesty, objectivity, perseverance and being a good team player which are necessary for the work place are taught in schools. On exiting school at the basic or higher education level or as an open education student, the

learner is better prepared to contribute meaningfully to the economy. As everyday experiences have shown, the better barber, farmer, restaurant operator or the driver is one that is educated. Armed with the knowledge, skills, attitudes and values developed through education, the individual that joins the nation's workforce is able to foster economic growth. Also, new industries are spawned through entrepreneurial skills acquired through education.

Education promotes creativity. Education stimulates creativity. In turn, creative individuals are able to generate and apply creative solutions to the nation's economic problems. Creativity is an innate attribute which flowers in settings provided through quality education.

Education engenders research for new inventions: Inventions which are pillars of the productive sector of the economy are products of research. Research skills are honed through education and the educated inventor is one with groundbreaking product. Machines used in industries and the engines for producing revenue-generating goods, were designed by educated inventors through research. These research efforts translate to new inventions, processes and products which are boosters for the economy. Microsoft, Toyota and Boeing are some of the institutions that have exploited the power of education to leverage economy through research.

Poverty reduction through education: A productive pathway to reducing poverty is to increase adult literacy rates. The literate adult is able to develop and use skills which will free him or her from the shackles of poverty. Improved skills for farming, trading and small-scale manufacturing go with literacy.

Others: Education is necessary for:

- promoting health, because knowledge about diseases, nutrition and hygiene is the best preventive medicine – and knowledge is the prerequisite for inventing new cures;
- applying new technologies and the advancement of new knowledge, because it provides the training essential for scientists and other professionals;
- for protecting the environment and ensuring sustainable development, since it gives us knowledge about the web of life and how to preserve it;
- for advancing gender equality, because educating girls and women is the most important factor for empowerment, accelerating development and improving welfare of children;
- for extending democracy and good governance, because education enables citizens to know their rights and how to make their voices heard;
- a major antidote to religious and political conflicts and social unrest;
- production of human resources for exploration, exploitation and marketing of the nation's petroleum resources; and
- enlightenment of oil communities leading to dowsing of recurring tension in oil exploration areas.

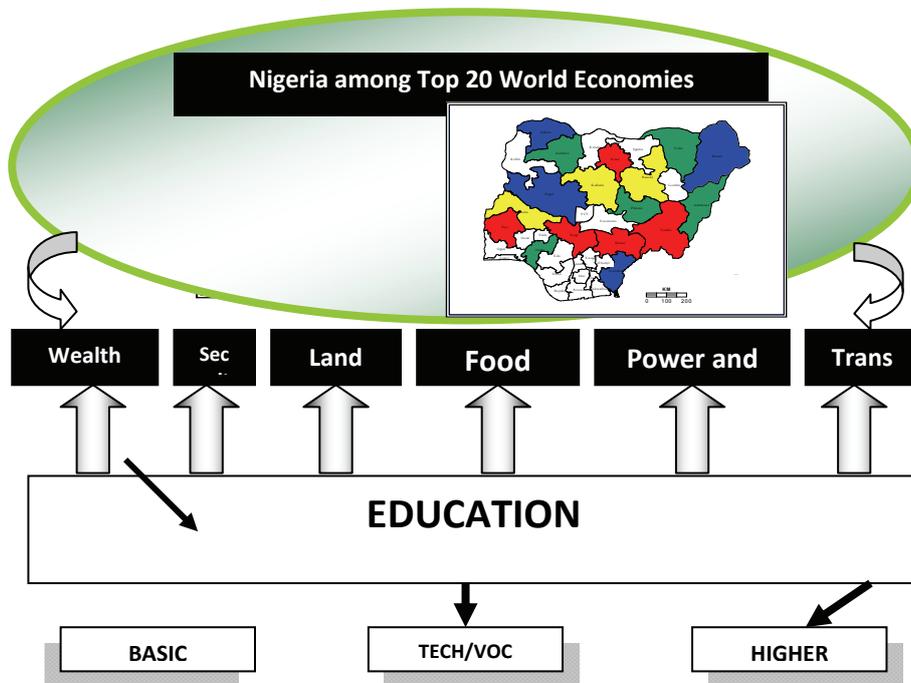


Figure 4: Education as Bedrock of for Success of Vision 20:2020

Having taken the broad look on education using the low-power lens of our microscope, let us begin to narrow to open education. In the next section of the paper, we shall look at the high-powered lens on definitional and practice issues on the slide of open education on our microscope.

What is Open Education?

If we say there is “open education”, then there must be “closed education”. Beyond this trite statement is the serious definitional issue of the concept of open education. Perhaps we can add open (and) distance education for completeness. Open learning and

distance education refer to approaches to learning that focus on freeing learners from constraints of time and place while offering flexible learning opportunities (COL, 2000; Daniel, 2012; Open Society, 2007; Shabani & Okebukola, 2002). For many students, open and distance learning (ODL) is a way of combining work and family responsibilities with educational opportunities. Distance education (sometimes referred to as 'distributed learning' or 'distance learning') is any educational process in which all or most of the teaching is conducted by someone geographically removed from the learner, with all or most of the communication between teachers and learners being conducted through electronic or print media. The 'open' nature of distance learning might be formally institutionalised in such policies as open admissions, and freedom of selection of what, when and where to learn. The openness of distance learning is also seen in relatively flexible organisational structures, delivery and communication patterns as well as the use of various technologies to support learning. Open (and) distance learning is aimed at bridging the time, geographical, economic, social, educational and communication distance between student and institution, student and academics, student and courseware and student and peers. Open distance learning focuses on removing barriers to access learning, flexibility of learning provision, student-centeredness, supporting students and constructing learning programmes with the expectation that students can succeed.

The emerging literature on open education provides a definition that it is "an approach to teaching and learning emphasising the student's right to make decisions and which views the teacher as facilitator of learning rather than as transmitter of knowledge. It may include such characteristics as vertical grouping, cross-age teaching, independent study, individualised rates of progression, open plan schools, and unstructured time and curriculum (Smith, 2011).

Since the first teacher walked into a classroom in the distant past, he/she was armed with at least three things and had at least three expectations. The curriculum or syllabus or topics to be covered was in hand. The venue where the instruction will be delivered such as a classroom, under a tree in a church or mosque was in place. Materials to aid instruction including a board, a writing device such as chalk or pencil was in hand. The three expectations were learners presenting themselves at the venue for instruction at the appropriate time; the topics in the curriculum or syllabus are covered in the listed sequence; and learners as whole class submitting assignments and taking tests in the rhythm prescribed by the curriculum and at the time specified in the time-table. If you were in Badagry in 1842 when the first primary school opened its doors, you would have found this scenario to pervade. Fast forward 171 years, if you were in any of our basic and higher education institutions this week, your scope would not capture anything markedly different. It is a regime of teachers and students coming to class as time-tabled; all students in a class regardless of learning styles, motivation and emotional and psychological readiness subjected to the same instructional session and made to take tests as willed by the teacher and the school system. For the purpose of this lecture, we will affix a label of “closed” to this format of education.

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) in the US. 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

OpenCourseWare 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 OpenCourseware 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. We had a strand of the evolutionary process take us through the open and distance education pathway where NOUN is currently located, with technology increasingly factored in, to the open education stage of development.

Open education is a label for a panoply of systems which include open and distance education, e-learning, flexible learning, distributed learning and a host of other brands (Figure 5). What brings all the bedfellows together under the open education umbrella are three characteristics- flexibility, technology-mediation and learner control. They are open to the extent that the learner is the master, the teacher the servant-leader. The learner determines when to learn, what to learn, how to learn and who to collaborate with in learning. Open education enables students to choose the mode of learning that works best for them. Today, open education is considered by its practitioners as the most viable means for broadening educational access while improving the quality of education, advocating peer-to-peer collaboration and giving the learners a greater sense of autonomy and responsibility for learning.

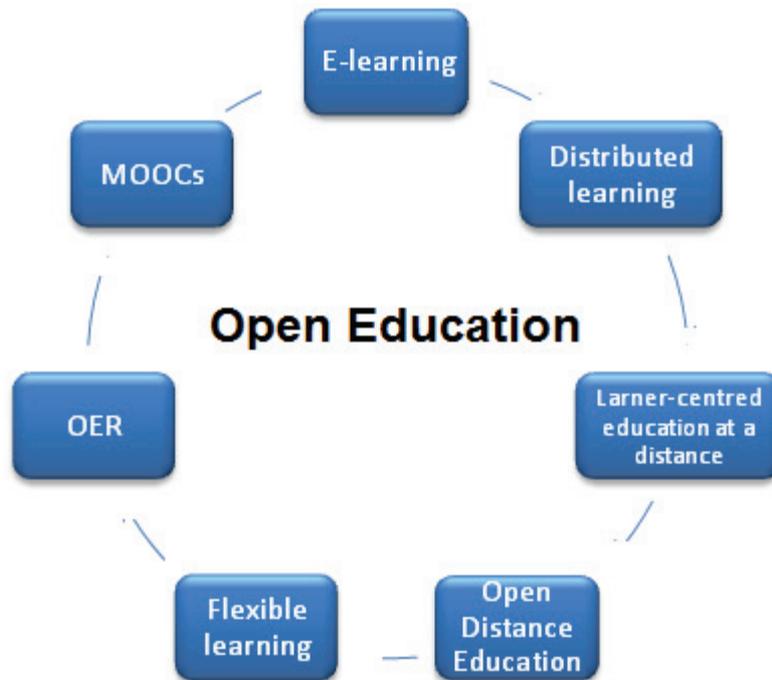


Figure 5: Some members of the Open Education Family

Open education is underpinned by the philosophy that knowledge should be free and open to use and re-use; that collaboration should be easier, not harder; that people should receive credit for contributing to education and research; and that concepts and ideas are linked in unusual and surprising ways and not the simple linear forms that textbooks present. The open-education movement takes the inspiration of the open-source software movement, Linux, for example (Baraniuk, 2012). It mixes the powerful communication abilities of the Internet and applies the result to teaching and learning materials like course notes and textbooks. Open educational materials include text, images, audio, video, interactive

simulations, and games that are free to be used and also re-used in new ways by anyone around the world.

As Baraniuk (2012) summarised, open education aims to (a) bring *people* back into the educational equation – particularly those who have been “shut out” of the traditional world, like talented teachers, scientists and engineers out in industry, and people who do not read and write English; (b) reduce the *high cost of teaching materials*; (c) reduce the *time lag* between producing course materials and textbooks and getting them into the hands of students. By the time many books are printed, they’re out of date. This is particularly problematic in fast-moving areas of science, technology, and medicine; and (d) enable re-use and re-contextualisation such as *translation* and *localisation* of course materials into myriad different languages and cultures. This is critical if we are to reach the entire world’s population, where clearly “one size does not fit all.”

In September 2012, in a question and answer session, Vijay Kumar, the director of MIT's Office of Educational Innovation and Technology (OEIT) presented interesting angles to the development of open education. According to his narrative, in 2001, MIT launched OpenCourseWare (OCW), which catalysed the movement. OCW courses are snapshots of real courses and they present good models that can be emulated. The following year, in 2002, UNESCO coined the term Open Education Resources (OER). OER means more than open content. It includes open applications, tools and architecture, as well as legal enablers like Creative Commons that allow the spirit and practice of open education to be exercised. Over the past decade, the Open Education movement has expanded dramatically. Openness has become part of the discourse about educational change, whether it is at the level of a university or a country. For example, there are over 250 institutions in the OpenCourseWare Consortium. National and international

organisations like the Commonwealth of Learning have adopted open education as a central strategy for providing quality education on a large scale (Daniel, 2012).

Vijay Kumar distinguished between online learning and open education. In his view, openness brings a lot of added dimensionality to online delivery. Educators often refer to the four R's — reuse, redistribute, revise, remix — as the critical attributes of openness. So it is not only about enabling unfettered access to resources but also making it possible for them to be used and adapted based on the goals of the learners. Communities of self-learners can remix open materials and help each other learn. It is an era of connectivity combined with collectivity. People from around the world can participate, and millions have.

In the view of Kumar (2012) “video lectures have become increasingly common, but how do you search them? The Spoken Lecture Browser, a technology developed by Jim Glass's group in CSAIL, addresses this issue. Built on voice recognition technology and artificial intelligence, it lets you automatically transcribe the audio portions of a video lecture and then search those videos using natural language. For example, I can do a search on "angular momentum" if I missed a few classes in introductory physics. The tool lets me find the relevant segments through a search, rather than wading through 20 hours of lectures (Kumar, 2012). As this intersection of technology and openness becomes broadly available, it is easy to imagine the reuse of precise segments from these lectures by another instructor or by students for self-learning. Searches on a concept could lead to related materials, either confined to the course or across the Internet, paving the way for deeper learning experiences or alternate pathways for learners with different motivations.

UNU-MERIT (2012) observed a further type of openness within the educational domain, an openness where formally enrolled students engage with their peers using Web 2.0 and social media, resulting in an ever-blurring border between the formal and the informal and providing the potential of taking further advantage of the opportunities the participatory Web 2.0 provides. Those Open Courses seem to experiment with a range of different educational approaches, tend to promote different levels of openness, incorporate different sets of free and open tools and learning resources, and – to a varying degree – mix the formal with the informal; bringing together the different stakeholders to be found at the web. What all of them seem to have in common however is to experiment in a more unconventional way and with less traditional educational restrictions with the opportunities the participatory Web 2.0 provides. Those Open Courses seem to apply, intentionally or on purpose, a number of principles that are inherent to the Web 2.0. All these developments could result in a changed perception away from 'Education as a finished Product to be Sold and Consumed' towards an economy based on 'Open Educational Services'.

What about Massive Open Online Courses (MOOCs)?

Let me take a few minutes to reflect with you on a recent development in the open education movement- Massive Open Online Courses (MOOCs). 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. 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 and edX. Others, like Canvas Network and CourseSites by Blackboard have evolved from learning management systems. 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". He concludes (see full paper in the

Appendix) that “MOOCs, both cMOOCs and xMOOCs are a fascinating development. This essay has taken a critical stance because the discourse about MOOCs is overloaded with hype and myth while the reality is shot through with paradoxes and contradictions. However, an important process is underway that will chart new paths for the universities involved and for higher education generally”.

The immediate future of open education

Development along the open education pathway will proceed at a dizzying pace in the coming years. A key driver is technology which by the day, is presenting new vistas of opportunities, tools and techniques. For instance, there are many exciting developments in the world of open education resources. One of note is the Open Textbook movement that is gaining legs and helping address a significant obstacle for educational access — the cost of textbooks. Openness is being employed as a driver for addressing large problems of educational access and quality. One example of this is the Kaleidoscope Project. Funded through a Next Generation Learning Challenges grant, it involves seven community colleges collaborating to create courses using existing OERs, with each course being developed by at least two partner institutions. The project so far has demonstrated a substantial reduction — around 90 percent — in the cost per course per student, a one-term savings of about \$60,000. The focus, however, is not only on cost-effectiveness but on improving the course design and learning results based on analysis of embedded assessments.

There is a movement to use learning analytics to improve the quality of online education. Learning analytics refers to the analysis of a wide range of data produced by and gathered on behalf of learners to assess academic progress, predict future performance and spot potential issues. Through analytics, you reconstruct your

interventions with your learners based on how they are accessing the materials, how they are performing, how they are understanding different concepts. Courses are open, but they have to be constructed in a way that you can use analytics to understand what's working and what's not. The Open Learning Initiative (OLI) at Carnegie Mellon has a good model for this. What is really ahead is the opportunity to learn a lot about learning — about the use of social networks for learning, about making labs widely available online, about the approaching wave of new applications.

Open Education in Action, in Full Bloom

The power of open education that we anticipate should be called to duty in our pursuit of Vision 20:2020 needs to be described. We are looking at the following scenarios when open education is in full bloom in Nigeria:

- All universities, polytechnics and colleges of education have the open course ware scheme in place where all lecture notes, lesson videos and other instructional materials are made available for free to interested persons or groups in Nigeria and elsewhere in the world.
- NOUN fully deploys MOOCs and able to offer instructional services to millions of Nigerian youths.
- NOUN and a proposed National Open Polytechnic provide opportunities for those who so desire, to take degree and diploma courses for free but without doing examinations for certification.
- Secondary and higher education students as well as interested members of the public are able to take lessons in different school subjects and higher education courses on free TV channels run on a 24-hour basis. It is noteworthy that the march to this goal has been triggered by DAAR Educational Services.

- Free broadcast of information/lessons in local languages on radio, especially on FM stations.
- Use of mobile phones to teach/inform through free broadcast of SMS especially to rural farmers and students in remote and urban locations. While avoiding the on-going controversy on cost of the cellphone for farmers project by the Federal Ministry of Agriculture, we unequivocally underscore the brilliance of the thoughts which have gone into the project.

Open Education and Economic Development

While education in its broad sense contributes to economic development, the special place of open education is worthy of address. One major contribution is human capital development. Table 4 provides estimates of beneficiaries, current and projected from regular schooling and open education from now till 2020 whose capacities can be built using both pathways. The potential of open education, when implemented in a full-bloom mode can be seen in the huge multiplier effect in capacity building.

Table 4: Trends in human capital development in Nigeria through regular schooling and open education

Note:

Year	Number of beneficiaries	
	Regular schooling	Open Education
2012	29,231,146	98,234
2013	29,823,110	102,445
2014	30,116,318	1,943,015
2015	30,855,319	2,668,231
2016	31,567,221	4,116,045
2017	32,889,553	6,109,345
2018	33,611,206	8,223,197
2019	34,655,312	9,011,287
2020	35,886,115	10,220,987

Projections from 2014 for open education is based on the assumption of “full bloom”

Human capital which open education leverages, is at the heart of a nation’s economic development. As Maddison (2001) shows in *The World Economy—A Millennial Perspective*, owing to a quickening pace of human capital development, GDP per capita in industrial nations exploded from around 1,000 US\$ in 1820 to over 21,000 US\$ by the late 1990s. Maddison (2007) also provides a detailed global breakdown for the period 1950 to 2003. The evidence is overwhelming. Where human capital triumphs so does GDP growth. In Western Europe GDP per capita jumped from just over 4,500 US\$ to almost 20,000 US\$. In Japan the leap was even greater, from around 2,000 US\$ in 1950 to over 20,000 US\$ in 2003.

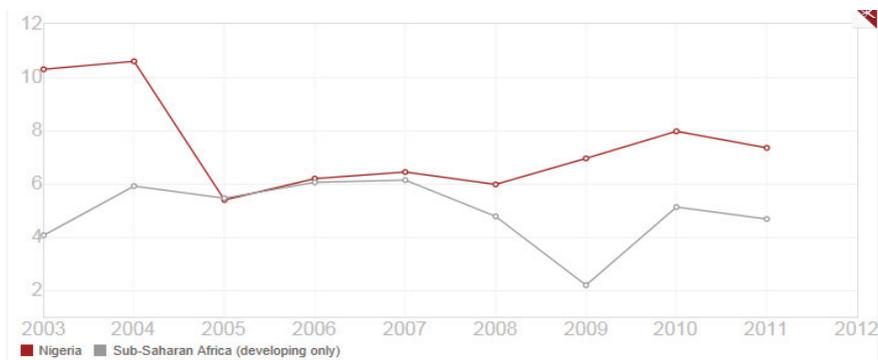


Figure 6: Percentage GDP Growth in Nigeria, 2003-2011

Source: World Bank, Nigeria

Open education enhances the provision of literacy, numeracy, technical and vocation skills in a flexible, largely-free and learner friendly manner. It is not difficult, therefore, to imagine that the more workers that have basic skills obtained through open education, the easier it will be for them to make use of new

technologies to foster economic growth. Some workers need a high level of skills so they can adapt the new technologies to their countries' particular situation. In countries on the technological frontier, substantial numbers of scientists, engineers, and other innovators are obviously needed. But so is a labour force that has the basic skills needed to survive in a technologically-driven economy.

The relationship between human capital development and economic success remains evident. The micro-economic literature which examines the relationship between different ways of measuring a person's educational achievement and what they earn show consistent results for what can be called the private or personal pay-off from education. For every additional year of schooling (including training received through open education) earnings increase by about 10%. At the macro-economic scale, measuring the aggregate level of educational attainment for a country as a whole and, in most cases, the standard measure of economic growth in terms of GDP reports evidence of higher GDP growth in countries where the population has, on average, completed more years of schooling (Fadel & Miller, 2011).

Studies that compare different countries over a period of time, such as the study by Baumol (2002), that looks at 100 countries from 1960 to 1995, show that "years of school attainment at the secondary and higher levels for males age 25 and over has a positive and significant effect on the subsequent rate of economic growth" (Baumol, 2002). This can be interpreted to mean that if the average number of years of upper-level schooling for this particular group increases by one year then the rate of economic growth increases by 0.44 percent per year. These are powerful results since an

increase in economic growth of almost half a percent will have a large impact on the total GDP of a country over time. This is one of the reasons that education, including open education, has been treated as such a positive investment for governments. We should now end charity at home by discussing open education in Nigeria.

Brief history and current status of open education in Nigeria

The history of open education in Nigeria, strictly defined by the open education movement, is infantile. However, the history of open and distance learning dates back to the early 19th century and is well documented (see for example Ajadi (2010), Akinrinoye & Ojokheta, 2004; Jegede (2004), Omolewa (2000), and Ramon-Yusuf (2011). A long historical narrative is beyond the scope of this lecture. This history takes us from the 1880s with correspondence colleges, transits between 1964 and 1990, through the establishment of distance learning programmes in a few tertiary institutions notably University of Abuja and University of Lagos, establishment of the Open University of Nigeria in 1983 and revalidation as the National Open University of Nigeria (NOUN) in 2002. Today, open and distance learning is accelerating in its spread and impact on the Nigerian education system. It is arguably one of the most expansive in Africa.

Nigeria has one single-mode open university- the National Open University of Nigeria as well as six dual-mode universities [conventional universities with distance learning centres] recognised by the National Universities Commission. These are i.e. the Universities of Ibadan, Lagos, Abuja, Maiduguri, Obafemi Awolowo University, Ile-Ife and Federal University of Technology, Yola. Total enrolment in the distance learning programmes of NOUN and the six dual –mode universities is about 100,000 with great potential to offer more opportunities for qualitative university

education, to the teeming masses of Nigerians, if well resourced, coordinated and properly regulated (Ramon-Yusuf, 2011).

Table 1: Student Enrolment in Open and Distance Learning Programmes in Nigerian Universities as at June, 2011.

S/No	UNIVERSITY	TOTAL ENROLMENT
1.	Ibadan	14,500
2.	Lagos	12,000
3.	Abuja	18,300
4.	Maiduguri	3,624
5.	FUT, Yola	1,204
6.	OAU Ile-Ife	5,000
7.	NOUN	42,898
	GRAND TOTAL	97,526

Source: Ramon-Yusuf, 2011

There have been three dominant forces in the growth of open and distance learning in Nigeria. The thirst for education by Nigerians has been a key driver. Between 1950 and 1964, enrolment in Wosley Hall and Rapid Results correspondence colleges was the highest in Nigeria within the British colonial territories. Between 2000 and 2012, the number of applicants for secondary and tertiary education places observed the highest growth in Africa. An exemplification is the 1.4 million applicants to the 124 universities in 2012, more than the combined enrolments in South Africa, Ghana, Kenya and Tanzania. The second driver is technology. Mobile technologies and the Internet have hiked access to open and distance education resources. NOUN students that I interviewed last week confirmed that the university has increasingly deployed online resources and that many students are now able to access electronic textual materials and download same at remote locations. The third force pushing up the profile of open and

distance education is cross-border higher education. There are several online courses being offered by a motley assortment of institutions from all nooks and crannies of the world (Okebukola, 2008). Enrolment into these programmes by Nigerians in spite of most being of doubtful quality, has continued to take an upwards swing.

Our work in Lagos State University

In our toddler-like small steps along the open education highway, the Lagos State University Science and Technology Education Research Group (STERG) is supporting two projects, one aimed at using free social media such as *Facebook* to foster learning of difficult topics in English and the sciences. The other is aimed at boosting the research knowledge and skill base of scholars in the Nigerian university system. Our group is offering free online training to scholars, old and budding, in modern methods of conducting and reporting research. Our video lessons have attracted positive reviewers by learners from Africa, Europe and North America.

We are intending to modularise topics traditionally taught in the classroom and offer them online, so as to have more opportunities for discussions and active learning when students come to class. This is what is known as the flipped classroom model. A lot of the lecture and topic-related materials are posted online, and students can review these on their own time. Then, during class, the focus is on hands-on exercises. The Management of Lagos State University, in another broader effort, is putting together, a robust open and distance learning scheme that will be launched soon.

Open Education as Catalyst for Attaining Vision 2020

If open education is in its full bloom in Nigeria, it will catalyse the attainment of Vision 20:2020 through human capital development.

Full bloom denotes offering education to all Nigerians in an open, unrestricted and flexible manner and in the language they understand, for the development of technical and vocational skills and knowledge. Full bloom means providing a broad range of rich learning resources to citizens in rural and urban areas, formal and informal sectors, through media that is accessible to local communities for the development of skills that will be deployed to boosting the economy. It means identifying skill gaps in such areas as manufacturing, agriculture, oil and gas and other critical sectors and using open education to close such gaps. What specific roles can open education play in the implementation of the 29 thematic areas of Vision 20:2020? We provide an overview of such roles in the next section.

Corporate Governance

Corporate governance is a system of laws and sound practices by which corporations are directed and controlled with the intention of monitoring the actions of management and directors and thereby mitigating risks stemming from the devious deeds of the corporate officers. Weak corporate governance will steer Vision 20:2020 on a rocky course. The practice needs to be aligned to international standards and best practices and here, open education has several roles to play.

Through massive open delivery via such media as radio, mobile phones and TV, the message of good corporate governance can be transmitted in many local languages to inculcate the spirit of “Nigeria First” in all spheres of our national life especially in corporate governance and corporate social responsibilities. The provisions relating to accounting and auditing in the Nigerian Code of corporate governance can be taught through similar open education channels. Through open education of relevant stakeholders, all registered companies in Nigeria should be

encouraged to imbibe the highest standards of corporate culture and ethics; promote diversified ownership and democratisation of corporate entities to ensure sustainability and the adoption of corporate governance principles; combat corruption which is the biggest threat to good corporate in our quest for economic development in Nigeria; conduct regular research on corporate governance and corporate social responsibility issues on the needs of host communities; and improve the mechanism for asserting workers' rights through court system as well as alternative dispute resolution.

Culture and Tourism

The culture and tourism industries are important in boosting economic growth on account of their revenue-generation potentials. While recent efforts by the National Tourism and Development Corporation have been promising, such potentials are not fully harnessed in Nigeria owing to a combination of dearth of management expertise, reduced global awareness of Nigerian tourist sites, security and infrastructural challenges. We need more of well-trained tourist guides and hospitality industry managers. Open education can provide such training in a cost-effective way, thus ensuring that the human resources needed to run such culture and tourism industries at their optimal, are produced in the right quantity and quality. Through open education delivery systems, at least 60,000 of such persons in different categories working in hotels, restaurants and tourist sites can be trained.

With specific reference to culture, open education can play invaluable role through capturing and packaging of Nigerian dances; Nigerian music of varied forms; boosting of Nigerian film and video industry through re-training to contribute to rebranding Nigeria; arts and craft of Nigeria will be developed significantly into international quality standards museums,

monuments and historical sites will be developed to international standards to contribute to rebranding Nigeria, enhance re-orientation, provide jobs and generate income through within-bound and in-bound appreciation and tourism; foods and cuisine; the culinary arts of Nigeria will be developed significantly into international quality standards; the diverse dress patterns of Nigeria will be developed significantly and packaged into international quality; Nigerian festivals and ceremonies will be developed to international standards to contribute to rebranding Nigeria, enhance re-orientation, provide jobs and generate income through capturing and packaging of Nigeria' diverse festivals and ceremonies for within-bound and in-bound appreciation and tourism.

Education

Open education is on home turf in the education thematic area. Let us take the matter of limitation of access to quality education which has emerged as a major impediment to achieving Vision 20:2020. One of the strong points of open education is enhancement of access, hence applying open education principles and practices will assure speedy attainment of Vision 20:2020 as well as other global development goals such as the Millennium Development Goals that Nigeria has signed on to.

One of the roadblocks to harnessing the power of education in the pursuit of Vision 20:2020 is the quality and quantity of teachers. The entire system is understaffed with quality teachers which in turn is depressing quality of products at all levels. With human resources of compromised quality, the goal of attaining Vision 20:2020 becomes impaired. Open education kicks in to the rescue. Here we mean open education with quality delivery systems and not one set in the mould of existing open and distance learning formats offered by certain teachers' institutes and universities. There is also the problem of curriculum relevance and functionality. With open education permitting learners to sieve knowledge relevant to their needs, the challenge of curriculum relevance fails to become an issue. With regard to quantity, open education will squarely address low enrolments in the public school system especially at the basic education level and the low national literacy rate.

Employment

As NPC (2010) found, the declining quality of education, training and skill acquisition is an impediment to the employability of the labour force in Nigeria. Of the 6 million Nigerians graduating annually from the educational system only about 10% are often

employed thereby leaving about 4.5 million to enter into the labour market annually and when this is cumulated over eight years, about 38 million Nigerians are facing different types of employment crises (a combination of unemployment, under-employment, low-wage employment and social exclusion).

The V20:2020 Working Group on Employment echoed the commonly held view that employers of labour in both the public and private sectors have limited confidence in the quality of our school graduates. This is reflected in the proliferation of aptitude testing, and remedial education programmes for school graduates. The deficit in educational quality has grossly undermined the competitiveness of the Nigerian labour force in national and global labour markets. The inability of many of our youths to gain access to global centres of learning excellence for the furtherance of their education has further compounded unemployment at home. Skill mismatch and inadequate skills have constrained economic growth. The nation finds itself coping with the paradox of simultaneous existence of surplus labour and scarcity of skills hence employers are compelled to deal with the problem of trying to fit the proverbial square pegs into round holes.

Open education has huge capabilities to deliver entrepreneurial education at formal and non-formal settings for boosting employment. Quality open education to support conventional delivery will guarantee better preparation of our graduates for employment, rendering unnecessary, the need for remedial training at the point of employment. There is also the need to review curricula of the open education system to make them employment – sensitive.

Employment

Youth unemployment is a major developmental issue in Nigeria which Vision 20:2020 justifiably accord due priority. When employment rate rises, the economy is bolstered, leading to the growth of GDP. Consequently, a desire to boost the economy should reflect in efforts to open up employment channels, especially for the youth.

Providing the youth with entrepreneurial skills will put them in good stead for employment. Since most unemployed youth can ill afford the cost of training, open education comes to the rescue by way of free training delivered through miscellaneous media. Success stories in using open education for entrepreneurial training have been recorded in Pakistan (Sheriff, 2011), India (Rajesh, 2010), South Africa (Naidoo, 2010) and the United Kingdom (Smith 2011). It is a delight that a good number of our universities are running courses in entrepreneurial studies. If open education is bundled with the delivery, a phenomenal increase in the quantity and quality of graduates who are self-employed is assured. It is envisaged that open education can guarantee entrepreneurial training for at least 100,000 youths of all categories annually.

Energy

A vexed issue in daily discussions in Nigeria is epileptic power supply. Promises made by successive governments have failed to address the problem. The toll on the quality of life, industrial output and the overall economy has been deleterious. The logic has been stressed that without dependable power supply, economic development is hampered and Vision 20:2020 will remain a mirage.

Impediments to steady power supply are numerous. Inadequacy in generation and distribution is one. The other is corruption. On the

corruption angle, the observation in the public domain is that persons or groups who are benefitting from importation of generators are committed to stalling reforms in the energy sector. The third impediment is capacity deficit in specialised technical skills demanding dependence on expatriate engineers and technicians. It is this impediment that open education can tackle.

The production of technical and managerial personnel in the energy sector can be accelerated through open education. Nigerian universities with respectable ranking in electrical engineering programmes can be strengthened to fill the skills gaps using open education delivery system. Obafemi Awolowo University, Ife; Federal University of Technology, Minna; Federal University of Owerri; Federal University of Technology Akure; University of Lagos; and Covenant University, Ota are some of the universities with respectable electrical engineering programmes that can be formatted based on open education principles to offer such training. A projection of 3,000 persons can benefit from such training from these universities annually.

Open education can also play some role in fighting corruption in the energy sector by way of public enlightenment through the free courses that are delivered. Anti-corruption courses are offered through open education in India (Rajesh, 2010) and claims have been made that these courses have contributed to lowering the incidence of corruption (Rajesh, 2010).

Environment and sustainable development

The group of world's largest economies to which Nigeria is angling to belong is infamous for torturing the environment through pollution and contribution to climate change. The US, China and most industrialised countries are on the black list of polluters. While Nigeria desires membership of the elite group, it should evade the

black list. Open education's role here will be essentially in promoting environmental education within members of the schooling and non-schooling communities in Nigeria. NOUN and universities with programmes in environmental education such as University of Calabar and Lagos State University will need to partner IT providers to deliver well-articulated environmental education courses to be made freely available to the general public in English and local languages.

Financial Sector

Since Vision 20:2020 is about the economy, the financial sector can be likened to one of its propeller blades. To achieve the Vision, we need a financial sector development plan that will (a) lead to a transformation of the structural architecture, regulatory framework and reform financial institutions; (b) re-engineer financial intermediation process and access to credit; (c) deepen and diversify financial products; and (d) enhance integration with external financial markets (NPC, 2010).

Key recommendations made by the National Technical Working Group on the Financial Sector include (a) ensure effective regulation and supervision and adopt a globally-recognised code of conduct and corporate governance for the operators and regulators; (b) deepen and broaden the financial markets; (c) maintain macro-economic stability; (d) strengthen and build confidence in the non-bank financial institutions; (e) diversify Nigeria's foreign exchange supply base and formally adopt capital account liberalisation; and (f) develop the human capacity required to drive the financial sector. In sum, the sector needs to address its structural and human capital constraints in order to enhance its capacity to grow the real sector of the economy and to realise the vision of becoming the safest and fastest growing financial system amongst emerging market countries. So, where does open

education come in?

Open education comes in to address human resource needs of the sector. There is a mushrooming of banking and finance programmes in the Nigerian education system that open education can sanitise. With better developed and better delivered curriculum materials in banking and finance, better quality finance experts for the public and private sector will be assured in the right quantity and quality to run a viable financial system.

Foreign policy

A country's foreign policy consists of self-interest strategies chosen by the state to safeguard its national interests and to achieve its goals within a milieu of relations with other nations. The foreign policy of every country has an underlining orientation or ideology. For Nigeria, this is liberalism (NPC, 2010). Liberalism represents freedom of choice; freedom of association; freedom of expression; freedom of worship; respect for fundamental human rights and rule of law; and market-driven economy.

The vision for Nigeria's foreign policy under Vision 20:2020, as provided by the National Technical Working Group on Foreign Policy is: *"A dynamic, proactive and resilient foreign policy, leveraging Nigeria's relatively large economy and population to harness the opportunities in the global environment for sustainable socio-economic development of the country."* To achieve this vision, key recommendations made are:(a) articulate a better image for Nigeria and improve the country's relationship with the outside world; (b) pursue the acquisition and transfer of technology, the promotion of trade, investment and cultural relations to boost ailing industries; (c) ensure that Nigeria's leading role in Africa and the ECOWAS sub-region is sustained and safeguarded;

and (d) use diplomacy to persuade Nigerians in the Diaspora to be part of nation building efforts currently pursued and to repatriate some of their savings towards the noble and laudable goals of Vision 20:2020.

Training of foreign affairs officers and capacity building for Nigerian image makers will be roles for open education. Working with the Federal Ministry of Foreign Affairs, NOUN and universities with programmes in international relations and diplomacy should partner centres of excellence in diplomatic studies in renowned universities all over the world to develop and implement online courses for Nigeria's foreign affairs officers. Nigerians in the diaspora with skills in open education delivery system should be encouraged to be part of the efforts of developing and implementing such online courses. This will be one of the pathways for addressing recommendation (d) above.

Governance

Good governance is at the heart of development. Scanty political will is the cyanide pill that will kill the realisation of Vision 20:2020. Regardless of the thick atmosphere of public support for the Vision and with personnel of the National Planning Commission and all the experts running about like beetles on a hot stove to ensure success of the plan, limitations in political will engendered by good governance will make it all sounding like "a tale told by an idiot, full of sound and fury, signifying nothing".

The National Technical Working Group on Governance identified a number of issues and challenges to good governance in Nigeria that should be addressed as we undertake the journey towards Vision 20:2020. These challenges which open education can address through human resource development include constitutional change; evolution of a more functional political culture;

restructuring of the public service, comprehensive management and consequent restructuring of the public service; re-establishment of Due Process; restoration of transparency and accountability; and sensitisation and empowerment of civil society for full participation and partnership in development. The recommendations emerging from the report of the group are (a) an electoral system that delivers free and fair elections and responsible and responsive representative; (b) effective public-private partnership; (c) fuller citizen participation in governance; (d) utilising fruitful international linkage and cooperation; and (e) capacity building at all levels.

Health

Health of the citizenry is a key factor in the attainment of Vision 20:2020 . A healthy workforce is one that can deliver on the economic targets of the plan hence the goal is “to promote, provide sustainable quality health systems and services for all the inhabitants of Nigeria by the year 2020”. The objectives of the health sector in the plan which, along with other strategies, open education can address through training are:

- Provision of equitable, efficient, high quality but affordable health services based on the primary health care approach, appropriately updated to improve the knowledge, attitude, practice and the adoption of healthy lifestyles by the people.
- Reduction in maternal morbidity and mortality; and the burden of childhood and other priority endemic diseases (malnutrition, malaria, diarrhoeal diseases, tuberculosis, HIV/AIDS).
- Reduction in the prevalence of diseases associated with poor sanitation and water supply by improvement of basic sanitation and water supply.

- Increase Nigeria's capacity to manufacture essential drugs, human vaccines and consumables.
- Expansion and strengthening of secondary and tertiary health care coverage to enable them support primary health care, and render adequate and competent tertiary health care comparable to international standards.
- Improvement of the health data base and promotion of research at all levels of health care.
- Enhance and strengthen availability and management of health resources (financial, human and infrastructural).

Housing

Housing, as underscored by the National Technical Working Committee on Housing for Vision 20:2020, is the most important psychogenic need of individuals next to food and clothing. It is also among the most important contributors to the economy as it accounts for a sizeable portion of the production activity of a country, through its backward linkages to land markets, building materials, tools, furniture, and labour markets, and its forward linkages with financial markets. Housing markets are routinely mentioned as important leading indicators of overall macroeconomic activity, and home ownership is a measure of household wealth and GDP distribution. The housing finance sector has a tremendous developmental impact both in terms of providing social stability and in promoting economic development.

The vision is *"to make the housing sector one of the top three contributors to the nation's economy by adding 10 million decent and affordable homes to the national housing stock by the year 2020"*. In the pursuit of this vision, the following objectives have been set:

- Develop an effective land administration system to make

land ownership available, accessible and easily transferable at affordable rate.

- Provide adequate and affordable housing finance to all Nigerians by developing an efficient primary mortgage market.
- Establish an effective legal and regulatory framework to enforce the control and monitoring of housing delivery.
- Develop professional and skilled manpower, and build adequate capacity through training and skill acquisition to support the housing sector.
- Reduce the cost of production of houses by developing and promoting appropriate designs and production technologies for the housing sector.
- Add 10 million new homes to the national housing stock.

From the foregoing, open education can be seen to have huge potential for being part of efforts at providing professional and skilled human resources in the housing sector through training and skill acquisition. Reformatting and strengthening programmes in universities and polytechnics in building technology and architecture for delivery using open education principles can assure annual production of a minimum of 2,000 relevant professionals in the sector.

Information and Communication Technology

The vision for the ICT sector within the framework of Vision 20:2020 is to “attain an information and knowledge-based economy that is efficient and technology-enabled through a globally competitive ICT industry”. The objectives are to (a) make ICT an enabler to transform the socio-economic sectors of Nigeria; (b) deploy ICT in government for transparency and accountability as well as to enhance efficiency, effectiveness and increase government capacity to deliver citizen centred services to attain national competitiveness; (c) attain globally competitive local capacity with

regards to human capital in all aspects of ICT including software, hardware, networks, card technologies, security/biometrics and web and digital content development; (d) attain competitive local capacity in ICT Infrastructure such as backbone, hosting, data centres, and internet exchange/gateway; and (e) develop the ICT industry for the production of software and hardware to global standards.

As overviewed by the ICT National Working Technical Group, in order for the ICT sector to propel Nigeria into top 20 countries, its economy should have globally competitive industrial and service sectors that are driven by cutting-edge ICT tools; an advanced and reliable national ICT infrastructure; a rich pool of highly skilled human resources with relevant ICT skills; a modern ICT-driven educational system for the effective delivery of educational services at all levels; wide-spread deployment and exploitation of ICTs within the government to support good governance and the delivery of services; and a high proportion of the population with access to and use of ICT products and services in productive and consumptive activities. ICT programmes at the certificate and degree levels in NOUN, other universities and in polytechnics can be structured to address the human resource needs of the ICT sector through open education.

Judiciary and Rule of Law

Development in a modern democratic society cannot be assured without a strong judiciary. To the extent that the judiciary provides checks and balance for the executive and legislative arms of government to that same extent will Vision 20:2020 be realisable based on sound governance principles. The outlook for the judiciary within the Vision framework is *'A constitutionally guaranteed independent and efficient judicial system that ensures respect for the rule of law and promotes a just, democratic,*

prosperous and stable society'. The objectives are (a) to have a judiciary whose independence is constitutionally guaranteed; (b) complete adherence to and observance of the rule of law; (c) speedy dispensation of justice that will serve as a catalyst and facilitator for economic prosperity, augur for democratic governance and stability; (d) improvement on integrity of the judicial process and its personnel; (e) an ICT- driven judicial process; (f) a reformed and harmonised civil and criminal procedure rules that will facilitate dispute resolution in courts and augur for greater accessibility; and (g) adoption of formal and informal Alternative Dispute Resolution (ADR) mechanisms.

Supporting legal training in our universities and the law school with free online courses delivered through a consortium of universities with well-ranked faculties of law such as Lagos and in collaboration with NOUN, will be a major contribution of open education to achieving the objectives listed above. In-service training using open education can also be offered to support personnel in the justice system. Training to ensure full computerisation of the judiciary (to keep records, filing of court processes and payment of court fees online, e-service of process), police and other law enforcement agencies with necessary linkages for to facilitate information gathering/retrieval; creating a data bank for all criminal cases across the federation centrally managed can also be offered through open education.

Manufacturing

The manufacturing sector provides the greatest opportunity for the transformation of the Nigerian economy from a mono-cultural economy to a diversified one globally-competitive economy. It is an antidote for unemployment, a creator of wealth and the threshold for sustainable development. As an engine of growth, a boost in manufacturing production offers prospects of increased

availability of locally manufactured products, which would conserve and increase foreign exchange earnings (NPC, 2010). Global trends e.g. e-commerce require new thrusts to grow shareholder value, whilst providing service and innovative marketing strategies to nurture growth and retain customers. Yet, according to the Manufacturing National Technical Working Group of Vision 20-2010, the absence of fundamentals required for robust industrial growth and development means the nation has remained a net importer of manufactured goods and the Nigerian manufacturing sector in comparison to other countries it intends to surpass on its path to 2020 has remained largely uncompetitive. In this regard, the vision for the manufacturing sector is *'a technologically driven and globally competitive manufacturing sector, with a high level of local content and contributing a high proportion of the National GDP'*.

The objectives and goals, that are an outcome of this vision, are as follows:

Objective 1 - To increase efficiency and profitability of manufacturing establishments

- Goal 1. Upgrade skills and productivity of at least 60% manufacturing workforce by 2013 and 100% by 2015.
- Goal 2. Increase access of 60% of manufacturers to short-term and long-term credit by 2012 and 100% of manufacturers by 2015
- Goal 3. To attain 25% reduction in cost of production between 2010 and 2012; 15% between 2012 and 2015 and 10% between 2015 and 2020.
- Goal 4. Increase capacity utilisation from 39% in 2008 to 65% by 2012; 78% by 2015; and 85% by 2020.

Objective 2 - Achieve Global Competitiveness for Nigerian Manufactured goods

- Goal 1. Attain 60% compliance with Global ISO Quality Standards within the next three years, 80% compliance by 2015 and 95% by 2020
- Goal 2. Double productivity level within the next 5 years by maximising resources
- Goal 3. Promote the growth of core industries to be the backbone for material inputs by 100% by 2015 and 300% by 2020

Objective 3 - Significantly increase manufacturing local content and linkages with other sectors of the economy

- Goal 1. Grow local content in manufacturing by 5 % annually, to enable us reach 60% by the year 2015 and 80% by 2020
- Goal 2. Increase indigenous innovation and R&D by 2013
- Goal 3. Increase employment share of manufacturing sector by 15% annually up to 2020
- Goal 4. Increase access to local raw materials by 2013
- Goal 5. Different tiers of government should encourage the yearly establishment of Industrial Clusters based on requirement.

Objective 4 - Achieve a greater share of the domestic market

- Goal 1. Effect at least 15% growth in local demand annually from 2009-2020
- Goal 2. To ensure a reduction of percentage of manufactured goods in imports from 70.6% in 2009 to 20% by year 2020
- Goal 3. Achieve same day delivery of goods to most state capitals by 2015
- Goal 4. Government patronage of locally manufactured goods to

- double between now and 2015
- Goal 5. Attain cost parity with imported manufactured products within the next 5 years

Objective 5 - Make Nigeria's manufactured products, major foreign exchange earners

- Goal 1. Ensure that locally manufactured goods meet global standards within the next 5 years
- Goal 2. Increase international awareness of made in Nigeria products by 100% by 2015
- Goal 3. Ensure compliance with existing environmental laws by 2012
- Goal 4. To increase the share of manufactured goods in exports from 2.5% in 2005 to 35% in 2020

Objective 6 - Innovative manufacturing driven by R&D and technology

- Goal 1. Government and Private Sector to increase total R&D spend by 45% on a yearly basis up to 2013 and 30% yearly up to 2015 and 20% yearly up to 2020
- Goal 2. Achieve full conversion from analogue to digital processing equipment by year 2015
- Goal 3. Increase the percentage of medium to high-tech production in MVA from 35.9 percent in 2005 to 60% by 2015 and 80 percent by 2020.
- Goal 4. Become a major biotechnology manufacturing country by year 2020

Objective 7 - Achieve rapid and sustained growth of the Nigerian Economy and broaden the nation's productive base

- Goal 1. Increase annual growth in manufacturing sector from 8% in 2005 to a minimum of 35.9% on the average annually
- Goal 2. To increase manufacturing value added per capita from 19.1% in 2005 to at least 40% by 2020 by diversifying the nation's industrial base and through development and growth of 5 high-priority manufacturing sub-sectors

A platform for speedy achievement of the vision, objectives and goals for the manufacturing sector was the formulation of specific strategies and initiatives for priority or high-potential sub-sectors. Hence, all ten industry sub-sectors have been prioritised based on availability of market/market size; availability of local raw materials; availability and simplicity of technology; profitability of the sub-sector; and availability of skilled manpower.

Media and Communications

Central to the attainment of Vision of 20:2020, is the application of communication in mobilising and empowering the people to participate in development projects. This accounts for the setting of the vision statement as “a professionalised industry in a pluralistic environment, with deep commitment to promoting democracy, accountability and guided by solid sense of ethics and social responsibility, while enhancing national development”. The objectives which open education can contribute to attaining are to (a) be a key instrument in transforming Nigeria into a critical player in the global political economy, using information as a powerful tool for development; (b) remove all legal, financial and administrative hurdles that hinder a free and pluralistic media and communication environment; (c) ensure a fully structured industry that is

reflective of the ethos and development drive of the nation; (d) generate wealth that would add to the nation’s GDP, through development media and communication practices that project Nigeria’s cultural values, tourism potentials and the empowerment of the people; (e) ensure quality, professionalism and ethical standards in media and communication; and (f) ensure a rich pool of manpower, research and well equipped training institutions and infrastructure

Minerals and Metals Development

Nigeria’s minerals and metals sector is a key to the successful execution of Government’s economic diversification strategy, and the attainment of the growth, wealth creation and poverty reduction goals of Vision 20:2020 . The overarching strategy for realising this vision is anchored upon five strategic thrusts (“pillars of growth”) and two growth enablers (see Figure 7).

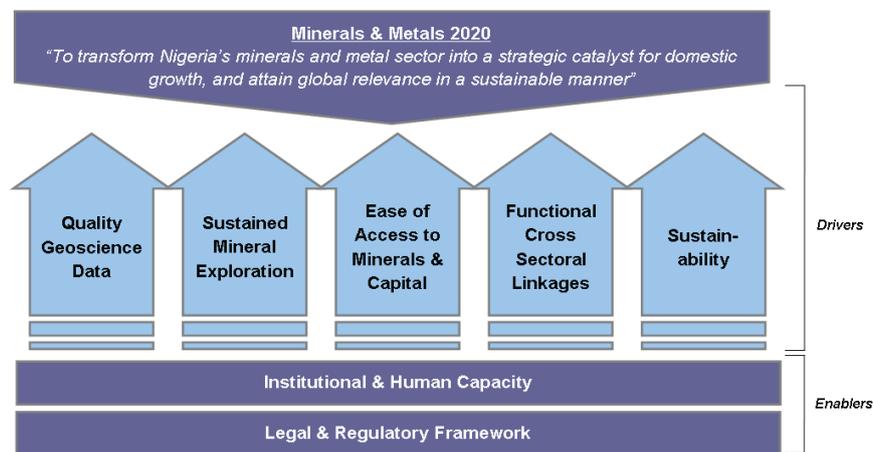


Figure 7: Pillars of Growth of Minerals and Metals Sector for Vision 20:2020

Source: National Planning Commission, NV-20:2020

Science, Technology and Innovation

Since the industrial revolution, human development has significantly benefitted from advances in science and technology. Economic growth of nations is now inextricably linked with science, technology and innovation. To this extent does Nigeria aims “to build a science, technology and innovation system that will drive a competitive knowledge economy towards being one of the largest economies by 2020”. The objectives of this vision which open education can contribute to attaining are to (a) engender a culture of science, technology and innovation in the society; (b) build competitive workforce that is science-based; (c) forge a national innovation system that encompasses all existing and new science, technology and innovation; (d) enhance the level of investment and participation in R&D and innovation activities by the public and private sectors; (e) build capacity in new technologies such as biotechnology, nanotechnology, new and advanced materials; (f) attain capabilities in space technology as an essential tool for socio-economic development; and (g) develop a science based traditional medicine and indigenous knowledge. Targets identified by the National Technical Working Group on Science are:

- Carry out a technology foresight programme by the end of the first year of inception of NV2020.
- Invest a percentage of GDP on R&D comparable to the percentage invested by 20 leading developed economies of the World.
- Establish three Technology Information Centres (TICs) and three R&D laboratories for SMEs by the end of third year of NV2020 (MTSS).
- Double the production of scientists, engineers and technicians within the timeframe of NV2020 and ensure their retention.
- Progressively attain 30% local raw materials and process

technology content within the first three years, 50% three years after and 75% at the end of the 10th year for Oil and Gas as well as manufacturing industries.

- Develop technological capability for producing 30% of Process Equipment used in Small and Medium Scale Industries by the year 2015 and 70% by the year 2020.
- Develop technology for converting at least 25% of crude oil and gas produced in Nigeria to knowledge-intensive new and advanced materials
- Establish a National Foundation for Science, Innovation and Competitiveness (NFSIC) within the first two years of NV2020.
- Establish framework to support programmes of the Professional S&T bodies (such as Nigerian Academy of Science, Nigerian Academy of Engineers, COREN, NSE, Science Teachers Association) that have the objective of building STI capacity.

Transport

Movement of persons, goods and services is important for economic development. Hauling manufactured goods from Lagos to Kano mainly by road will achieve lower economic gains than transportation by rail. Farmers with perishable goods who cannot move their products from the farm to market sites owing to bad roads and poor transportation system end up with loss of income. Poor transportation also results in reduced productivity of workers when they are unable to get to work in time and the toll on health by the stress associated with the ordeal. The scenario in Abuja which is widely reported this week is worth citing, involving ban on commercial buses and the agony of commuters and workers.

An efficient transport system is a key factor in the socio-economic development of a nation and improving Nigeria's

transport infrastructure will be a necessary pre-condition for achieving the Government's 20:20:20 Vision. It is government's social responsibility to ensure that there is an efficient and effective transport system serving its citizenry. An efficient transport network will allow manufacturers or producers to obtain raw materials or supply national or international markets at minimum cost and with minimum delay, and allow them to access the widest possible number of suppliers or workers. To be most effective it will allocate the economic costs of providing and maintaining the underlying infrastructure between users and the taxpayer so that appropriate pricing signals are sent to manage demand without disadvantaging those who for reasons of income or geography would otherwise pay more than they can afford to access the same markets or suppliers. In planning an all encompassing transport system, government should also anticipate economic and social development of the country to ensure that future demands are considered (NPC, 2010).

Nigeria has fallen well behind international benchmarks in the transport sector. The condition of much of its infrastructure has suffered from many years of under-investment and lack of maintenance. This has resulted in the growth of Nigeria's economy falling well below its potential, and disadvantaged its manufacturing and agricultural sectors. Further investment will be required to reverse this decline to catch up with other developing economies. To meet the challenge of Vision 2020 Nigeria will not only have to increase total funding for the transport sector but also address some of the institutional failings that have led to the relative decline in its infrastructure in the past 30 years.

Within the framework of Vision 20:2020, the vision for the transport sector is "to evolve an integrated and sustainable transport system that is safe, intermodal and in line with global best

practices by year 2020". The objectives which open education can contribute to attaining are to (a) provide adequate transport infrastructure and services for even socio-economic development of the country; (b) ensure the provision of safe efficient and cost effective, transport services for the country; and (c) develop the capacity to sustain and continuously improve the quality of transport infrastructure and service delivery in the country.

In the foregoing section, we described the role of open education in implementing the objectives set for each of the 29 thematic areas in the Vision 20:2020 agenda. How will such open education delivery system be funded and how do we ensure quality? These are some of the questions to be answered next.

Funding and Quality Assurance of Open Education in Full Bloom in Nigeria

Who picks the bill for all the free resources and their delivery anticipated under an open education system in full bloom in Nigeria? While government and private-sector funding is advocated, it is clear to many Nigerians that if one aggregates money from leakages through the fuel subsidy and pension scams, it will go a long way paying for the delivery of quality open education. Stretched further, if the cost-efficient model of running government as espoused two weeks ago by Governor Adams Oshiomole of Edo State is applied to governance at all levels in Nigeria, funding of an efficient open education system which I put at N65 billion annually for the next ten years, may not be beyond government to undertake. It is clear however that a public-private partnership arrangement is best with funding augmentation from development partners and NGOs such as the Gates Foundation. On Monday this week, a group- GEM offered to support the Federal Ministry of Education in delivering online courses. Note is also made of the

partnership being offered by DAAR Educational Services to state government to provide 24-hour educational TV for Nigerian students at all levels of the educational system.

On quality assurance, the National Universities Commission should continue to take steps through its Directorate of Open and Distance Education to lay down minimum standards for open education and enforce such standards. The rapid changes and advances in open education dictate that such minimum standards should enjoy periodic review. Institutions running open education courses should install quality assurance units/directorates that will do the job of maintaining internal quality without waiting for NUC's periodic intervention.

Recommendations and Agenda for NOUN

There are a number of recommendations emerging from the foregoing discussions if Nigeria is to take full advantage of open education to catalyse the attainment of Vision 20: 2020. These are:

- Over a five-year period, universities, polytechnics and colleges of education should have the open course ware scheme in place where all lecture notes, videos of lectures and other instructional materials are made available to students to supplement class work. Interested members of the public can benefit from the scheme which will lead to the production of quality human resources in the right quantity to drive Vision 20:2020. The cost of capacity building and resources for implementing the scheme estimated at N85 billion to be borne by Government through TETFund and the private sector.
- Within the next five years, NOUN should fully deploy MOOCs and able to offer instructional services to millions of Nigerian youths.

- NOUN and a proposed National Open Polytechnic should provide opportunities for those who so desire, to take degree and diploma courses for a token fee in the spirit of true open learning, but without doing examinations for certification. The intent is to endow persons in areas where there is shortage of personnel for driving Vision 20:2020, with practical knowledge and skills rather than with certificates which lead them to brandish “empty” paper qualifications.
- Secondary and higher education students as well as interested members of the public should be able to take lessons in different school subjects and higher education courses on free TV channels run on a 24-hour basis. It is noteworthy that the march to this goal has been triggered by DAAR Educational Services.
- A project that will guarantee free broadcast of information/lessons in local languages on radio, especially on FM stations should be established so as to address some of the human resource needs of Vision 20:2020.
- Council and Senate of NOUN may wish to accelerate catch up with the open education movement by considering the following steps:

Year	Activity
2013	<ul style="list-style-type: none"> • Set up a Senate Committee to develop an open education master plan (not an open and distance education strategic plan) • Seek funds for implementing a pilot run
2014	<ul style="list-style-type: none"> • Pilot run the scheme in two subjects e.g. agriculture and entrepreneurial studies • Partner with IT outfits and GSM providers
2015	<ul style="list-style-type: none"> • Correct plan based on pilot study experience. Plan a second pilot run

2016	<ul style="list-style-type: none"> • Conduct a second pilot factoring in emerging technologies. Train resource persons, technical personnel and managerial staff
2017-	<ul style="list-style-type: none"> • Scale up to other subjects

Concluding remarks

In this lecture, we reviewed the origin, key drivers and the tenets of Vision 20:2020. We highlighted the role of open education in the prosecution of the objectives of the 29 thematic areas. I emphasised that open education can be play a catalytic role in the attainment of Vision 202:2020 through its contribution to human capacity building.

Now back to the question of whether or not Nigeria can make 2020 as one of the 20 largest economies in the world. Over the last several weeks since the Vice-Chancellor requested that I give this lecture, I did an oral survey of 53 persons I came in contact with polling them on the question. About 94% expressed the view that Nigeria cannot attain Vision 20:2020. Only 2% were optimistic with some caveats while 4% would not want to be bothered. One of the pessimists encountered me two days ago and sneered at me justifying his initial position with the recent report that Nigeria is the worst place on earth to bring up a child in 2013.

A scan of opinions expressed in newspapers followed similar trend. A few excerpts are provided below.

The Leadership: January 15, 2013: NESG Says Nigeria Cannot Attain Vision 20:2020 Goal By 2020

“The Nigerian Economic Summit Group (NESG) says Nigeria cannot realise its goal of becoming one of the largest 20 economies in the world by the year 2020. Mr Frank Nweke Jnr, the Director General of NESG,

said on Monday in Abuja that that achievement would go to Saudi Arabia.

Nweke made the observation while presenting the 2012 Nigerian Economic Scorecard at the three-day 18th NESG, with the theme, "Deregulation, Cost of Governance and Nigeria's Economic Prospects."

The Vision 20:2020 is aimed at making Nigeria one of the top 20 economies by year 2020. "Based on our projections using the IMF World Economic Outlook database, our findings are that: "Saudi Arabia will be the 20th largest economy in the world by 2020, with a Gross Domestic Product (GDP) of 1.2 trillion dollars in Purchasing Power Parity (PPP)," he said." "Nigeria on the other hand would be the 27th largest economy in the world by 2020, with a GDP of US\$864 billion in PPP; falling short of being the 20th largest economy by a GDP of US\$316 billion," NESG boss said. He said that Nigeria needed 730 billion dollars to close the gap in order to become the 20th largest economy by 2020. According to him, this is calculated as the difference between the GDP of the 20th largest economy in 2020 – which is Saudi Arabia and Nigeria's current GDP in 2012 estimated by the IMF as 450 billion dollars in PPP. "Otherwise, Nigeria could become the 20th largest economy by 2035, *ceteris paribus*," Nweke added. He said that only an accelerated pace of economic growth and reforms could shorten the time frame for the country.

Punch: January 7, 2013: Vision 2020 not realisable- Gov Obi

A member of the National Economic Team and Anambra State Governor, Mr. Peter Obi, has said it is doubtful if the country can achieve its aim of becoming one of the world's biggest economies by

the year 2020 as encapsulated in the Vision 2020 development plan.

My in-depth analysis of the variables involved in our quest to achieve Vision 20:2020 leads me to conclude on a fairly optimistic note. Two key variables hold the key- political will and human capacity development. With open education in full bloom complementing existing delivery systems, the human capacity development angle can be well covered. The consternation of other variables which can be aggregated under political will is stochastic and can hardly be predicted. Political will to stamp out corruption, political will to provide basic services notably electricity, good roads, water, healthcare, tackle security challenges, provide quality education and better quality of life all of which will directly or indirectly grow the economy need to be in generous supply for Vision 2020 to be a reality. I have no doubt that the transformation agenda of President Goodluck Jonathan will swing to a new tempo in the coming years to ensure our being on track to become one of the largest economies in the world between 2020 and 2035. To breast the tape in 2020 looks like a greasy pole to climb but hopes I high that the goal will be attained shortly after.

As I close, I wish the students who will be graduating tomorrow all the very best for now and the future. Congratulations to all, once again and may God continue to bless your efforts.

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EXCERPTS FROM THE PAPER ON MOOCs BY SIR JOHN DANIEL

Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility

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Explanatory Note

During my time as a Fellow at the Korea National Open University (KNOU) in September 2012 media and web coverage of Massive Open Online Courses (MOOCs) was intense. Since one of the requirements of the fellowship was a research paper, exploring the phenomenon of MOOCs seemed an appropriate topic. This essay had to be submitted to KNOU on 25 September 2012 but the MOOCs story is still evolving rapidly. I shall continue to follow it.

‘What is new is not true, and what is true is not new’. Hans Eysenck on Freudianism

Introduction

MOOCs (Massive Open Online Courses) are the educational buzzword of 2012. New trends in higher education are poorly reported in the international press until elite institutions in the United States adopt them, so there has been frenzied reporting on MOOCs in 2012. We begin by tracing the five-year development of MOOCs before taking a longer historical perspective on the introduction of new educational technologies.

MOOCs have already bifurcated into two types of course, which are known as cMOOCs and xMOOCs. They are so distinct in pedagogy that it is confusing to designate them by the same term (Hill, 2012). Here we focus particularly on the more recent xMOOCs that dominated the news in 2012 and we note the diverging approaches already apparent within this group (Armstrong, 2012). After reviewing completion rates in early xMOOC courses we look at the business model in play and point up some of its ambiguities. Although xMOOCs dominate the news, we also look at smaller-scale eLearning partnerships involving more modest

institutions that are at least making money and getting students to degrees. We end the descriptive section with a short commentary on MOOCs platforms.

In the final part of the paper we bring together, under the headings of quality and completion rates, certification, pedagogy and purpose, some of the myths about xMOOCs and the paradoxes that must be resolved. Finally we look at the hopeful possibilities that xMOOCs will open up as the current contradictions are addressed.

Methodological note

Studying MOOCs is a challenge for four reasons. The first course carrying the name MOOC was offered in 2008, so this is new phenomenon. Second, the pedagogical style of the early courses, which we shall call cMOOCs, was based on a philosophy of connectivism and networking. This is quite distinct from the xMOOCs now being developed by elite US institutions that follow a more behaviourist approach. Third, the few academic studies of MOOCs are about the earlier offerings because there has been no time for systematic research on the crop of 2012 xMOOCs. Analysis of the latter has to be based on a large volume of press articles and blogs. Fourth, commentary on MOOCs includes thinly disguised promotional material by commercial interests (e.g. Koller, 2012) and articles by practitioners whose perspective is their own MOOC courses.

What is a MOOC?

Even during the week that this paper was being written the Wikipedia definition of MOOCs evolved. On 2012-09-16 Wikipedia defined a MOOC as 'a course where the participants are distributed and course materials are also dispersed across the web', adding that 'this is possible only if the course is open, and works significantly better if the course is large. The course is not a gathering, but rather a way of connecting distributed instructors and learners across a common topic or field of discourse' (Wikipedia, 2012a).

By 2012-09-20 the definition had become: 'a MOOC is a type of online course aimed at large- scale participation and open access via the web. MOOCs are a recent development in the area of distance education, and a progression of the kind of open education ideals suggested by open educational resources. Though the design of and participation in a MOOC may be similar to college or university courses, MOOCs typically do not offer credits awarded to paying students at schools. However, assessment of learning may be done for certification' (Wikipedia, 2012b).

Because of emerging nature of the concept and the different interests at work, both Wikipedia entries carried the disclaimer that: *'this article appears to be written like an advertisement. Please help improve it by rewriting promotional content from a neutral point of view and removing any inappropriate external links'*

(Wikipedia, 2012a,b). We shall describe the short history of MOOCs since the term emerged in 2007, although many courses around the world exhibited some of these characteristics much earlier.

The term MOOC originated in Canada. Dave Cormier and Bryan Alexander coined the acronym to describe an open online course at the University of Manitoba designed by George Siemens and Stephen Downes. The course, *Connectivism and Connective Knowledge*, was presented to 25 fee-paying students on campus and 2,300 other students from the general public who took the online class free of charge (Wikipedia, 2012a).

The title itself evokes the aim of the course, which was to follow Ivan Illich's injunction that an educational system should 'provide all who want to learn with access to available resources at any time in their lives; empower all who want to share what they know to find those who want to learn it from them; and, finally furnish all who want to present an issue to the public with the opportunity to make their challenge known' (Illich, 1971). In this spirit 'all the course content was available through RSS feeds, and learners could participate with their choice of tools: threaded discussions in Moodle, blog posts, Second Life and synchronous online meetings' (Wikipedia, 2012a).

We quote Illich to emphasise that the xMOOCs attracting media attention today, which are 'at the intersection of Wall Street and Silicon Valley' (Caulfield, 2012), appear to have scant relation to those pioneering approaches. The earlier tradition of what Siemens (2012) calls cMOOCs continues (see Cormier, 2010) but the focus of attention has moved to xMOOCs that are far from Illich's ideals. Surprisingly perhaps, those who coined the term MOOCs and continue to lead much Web discussion about them draw little attention to this change. Downes (2012) comments wistfully: 'I was not surprised at all that once (the MOOC format) proved successful it would be adopted by the Ivy League (who would receive credit for its 'discovery') because this follows a well-established pattern in our field'. Perhaps the originators of cMOOCs believe that with time the movement will be drawn back to some of their methods and philosophy and indeed, the Massachusetts Institute of Technology (MIT) is beginning, timidly, to enrich its xMOOCs in this way.

No doubt the delayed reaction of the first movers is partly because the new wave of xMOOCs is so recent. Early in 2012 Stanford University offered a free, chunked course on *Artificial Intelligence* online and 58,000 people signed up. One of the faculty members involved, Sebastian Thrun, went on to found Udacity, a commercial start-up that helps other universities to offer xMOOCs (Meyer, 2012). MIT (2011) announced MITx at the end of 2011 for a launch in spring 2012. MITx has now morphed into edX with the addition of Harvard and UC Berkeley (edX, 2012). Since then similar initiatives from other well known US universities have come thick and fast. There seems to be a herd instinct at work as

universities observe their peers joining the xMOOCs bandwagon and jump on for fear of being left behind. At this writing Coursera, another for-profit xMOOC start-up, already claims nearly 1.4m registrations and will offer 200 courses in late 2012 with 33 partner institutions, of which the large majority are in the US (Lewin, 2012a; DeSantis, 2012).

Armstrong (2012) has made a useful comparison of the MITx programme and the courses that Coursera has offered with 13 'top-tier' universities in the US and abroad. After interviewing some of the players and enrolling in a Coursera course himself, he considers that these two approaches to the expansion of online learning are significantly different in purpose. MIT's venture is rooted in a strategy, going back 15 years, of using online learning to improve and change its teaching on campus. The launch of MIT Open Courseware in 2001 was part of this policy and it is significant that L. Rafael Reif, who as provost oversaw the creation of MITx, has recently been appointed president of MIT.

Referring to the work of Christensen (1997) on innovation, Armstrong suggests that MIT considers online learning to be a disruptive technology and is using MITx as a 'skunkworks' to master it in order to learn how to educate more effectively its on-campus students. Stanford University is using a similarly considered approach. Although Stanford's president talks breathlessly about a 'digital tsunami threatening to sweep aside conventional university education' (Boxall, 2012), John Mitchell, the vice-provost responsible for online learning, rather echoes the MIT approach: 'I think everyone agrees there's something very exciting going on here. So how do we as a university participate in that? What can we learn about teaching and learning through experimenting with different forms of technology? So I think we're going to treat this as an intellectual question and an academic investigation in some sense' (Weissmann, 2012). Elsewhere he observed: 'we really want to see what works. We've started out in one direction with Coursera – which is a great company and it's great working with them – but it's not clear that the current mode of producing courses is where we're going to end up in five years' (Lewin, 2012a).

Armstrong observes that some Coursera institutions are marching to a different drummer from MIT. For them, MOOCs are a sideline rather than core business. Provosts at two of the institutions said that they were not providing any pedagogical help for faculty in the preparation of the courses. 'In fact', comments Armstrong, 'they looked confused at the question'. His conclusion that 'Coursera clearly was a low priority venture for both' was backed by his experience of taking one of the courses. He reported that 'the pedagogy, however, did not live up to the Coursera pledge of sound pedagogical foundations... The course is basically a typical college lecture, chunked into roughly 15-minute segments... There is one weekly problem set designed to measure algorithmic rather than conceptual learning. Answers to the set are either multiple choice or a single number which is typed in... the students learn little when they get their assignments back except the

grade'. In summary, says Armstrong, 'it seems pretty obvious that no one who had any working knowledge of research in pedagogy was deeply involved in the creation of the course'.

Coursera leaves the design of the courses up to the individual institutions within broad guidelines. Clearly they will improve over time although, according to Young (2012), their motivation for improvement is fear of loss of revenue rather than serving students better. He notes, 'college officials, for their part, seem more motivated by fear than by the promise of riches. "Most of us are thinking that this could be a loss of revenue source if we don't learn how to do it well," says Mr Rodriguez, of the University of Virginia. "These are high-quality potential substitutes for some of what universities do"'. The president of the University of Virginia almost lost her job because the trustees did not think she was moving into online provision rapidly enough (DeSantis, 2012).

Non-starts, dropouts, completers and cheats: early results

At the time of writing institutions offering the new wave of xMOOCs are reacting to the results of the first offerings. Both MIT and Coursera have had to defend the tremendous attrition rates in their courses. In MIT's course 6.002x, *Circuits and Electronics*, there were 155,000 registrations. They came from 160 countries, with the US, India and the UK accounting for the majority of the traffic and Columbia, Spain, Pakistan, Canada, Brazil, Greece and Mexico rounding out the top ten. Of these 155,000 learners, 23,000 tried the first problem set, 9,000 passed the mid-term and 7,157 passed the course as a whole. 340 students, including a 15-year-old Mongolian, got a perfect score on the final exam, qualified by Anant Agrawal, who heads what has now become the edX initiative, as 'very hard'. Commenting in *MIT news* (Hardesty, 2012), Agrawal noted that while the rate of attrition may seem high, 'if you look at the number in absolute terms, it's as many students as might take the course in 40 years at MIT'.

Consistent with its strategy of using its online ventures to improve teaching generally, MIT is following up on this prototype in several ways. In response to student demand MIT left the 6.002x website up at the end of the course. A group of 6.002x students have created their own version of the follow-up course, 6.003, *Signals and Systems*, using material from MIT's OpenCourseware site. Students also wrote their own programmes (e.g. an online text viewer for mobile devices) to augment the MITx platform and MIT made these available through the course wiki. MIT is also making easier for students to 'customise the course content' by extending homework and exam deadlines. An interesting footnote was research on the course which showed that students much preferred 'shaky hand drawings that took shape as the professor lectured' to polished PowerPoint slides.

The press has given Coursera a rougher ride than MIT. Wukman (2012) reports that 'some classes were so rife with instances of alleged plagiarism that professors have

been forced to plead with their students to stop plagiarizing'. Part of the problem, according to one student (Gibbs, 2012), is the peer grading process that Coursera deploys in an attempt to handle scale. The figures that are available indicate similar patterns of dropout in the Coursera and MIT courses. Patterson reports that only 7% of the 50,000 students who took his Coursera-UC Berkeley course in *Software Engineering* passed (Meyer, 2012).

Can xMOOCs make money?

Is the fad for xMOOCs sustainable? Under a Freedom of Information Act request the *Chronicle of Higher Education* obtained a copy of one of the agreements between Coursera and a partner institution. Young (2012) notes that Coursera 'isn't yet sure how it will bring in revenue. In this respect it is following a common approach of Silicon Valley start-ups: build fast and worry about money later'. The build-up is indeed very fast. It is remarkable that university administrations, normally in thrall to cautious lawyers, are signing up with the xMOOC companies so quickly.

Part of the reason is that the contract (e.g. with Coursera) is simple and flexible. Coursera claims no intellectual property rights to the courses, believing that the institutions should control the content completely. The universities are not bound to work exclusively with Coursera, although Coursera's founders are not concerned that their partners will decide to go into business on their own or jump to another proprietary provider. Where will the money come from? At the end of the Coursera partnership agreement a section on *Possible Company Monetization Strategies* lists eight potential business models. They are:

- Certification (students pay for a badge or certificate)
- Secure assessments (students pay to have their examinations invigilated (proctored))
- Employee recruitment (companies pay for access to student performance records)
- Applicant screening (employers/universities pay for access to records to screen applicants)
- Human tutoring or assignment marking (for which students pay)
- Selling the MOOC platform to enterprises to use in their own training courses
- Sponsorships (3rd party sponsors of courses)
- Tuition fees.

Of these options, certification and employee recruitment are under the most active consideration according to Young. But the striking feature about this list is that the organisation least likely to make money is the partner university. Already, for example, xMOOC institutions stung by the prevalence of plagiarism are signing up with Pearson VUE, a subsidiary of the Pearson conglomerate, to use its worldwide

network of testing centres (Kolowich, 2012a). The two options over which the universities have most control, certification and tuition fees, both present problems. In the case of certification, one of the many paradoxes of xMOOCs is that most participating institutions have a self-denying ordinance not to award credit for these courses – although the decision of Colorado State University's Global Campus and some European institutions to award credit may well break this taboo (Lewin, 2012b).

As regards tuition fees there are huge challenges of principle and practice. Is a MOOC still 'open' if you have to pay for it? Quite apart from the logistical nightmare of collecting fees in the 160+ countries where learners are registering for xMOOCs, it seems certain that even a nominal fee would reduce interest dramatically. If and when money does come in, the company will get the vast majority of the cash flow with the institutions getting 6-15% of the revenue and 20% of gross profits. An official from a partner institution joked: 'I suspect the margins that they are asking for is a result of throwing darts over at Coursera!' (Young, 2012).

In a blog post recalling the way that the monetization of YouTube and Facebook has worsened user experience with those platforms, Justin (2012) suggests that while xMOOCs 'monetization models may look different from YouTube or Facebook... one common theme is that monetization always impacts the user experience'. Although the revenue streams for universities are unclear, publishers believe that MOOCs can help them make money by reaching new readers and selling more books (Howard, 2012). Paradoxically, this would appear to be particularly true of 'open' presses where books can be downloaded for free. Athabasca University Press (2012), a publisher of prize-winning academic books, has established the curious fact that 'putting a scholar's book on the web to be read for free increases both sales and citation impact'. However, most university presses are not open presses so they may forgo this potential source of revenue as well.

Modest MOOCs that work

Against this background we note another framework for public-private partnerships in online learning that has developed with little fanfare but already yields revenue for the partners and degrees for the students. This is the Academic Partnerships (AP) programme launched in 2008 by Best Associates, a merchant bank based in Dallas, Texas (Academic Partnerships, 2012a). So far, although it has global ambitions, AP works with some 20 public universities in the US (e.g. University of Arkansas at Jonesboro, University of Texas at Arlington, Lamar University). These institutions may be less prestigious than those flocking to the Coursera and Udacity platforms, but at least they have found a way of making money and achieving good degree graduation rates.

AP partners with these universities to convert their traditional degree programmes into an online format, recruit qualified students and support enrolled students through graduation (Academic Partnerships, 2012b). According to the AP website: 'Several AP partner universities have already been able to freeze tuition and give faculty raises due to the success of their online programmes... AP attributes this success in programme growth to close collaboration with faculty and administrative leadership and effective recruiting techniques that are designed to take public universities' degrees to scale. Additionally, AP's retention strategies have resulted in graduation rates that consistently meet or exceed the performance of the same programmes on campus. Similarly, students have passed licensure examinations in both education and health science programmes at rates comparable to or better than on-campus students... The online students recruited by AP comprise as much as 30 per cent of partner universities' total enrolment' (Academic Partnerships, 2012a).

In this arrangement the institutions set the tuition fees, of which the commercial partner takes about 70% for providing the services of course conversion, student recruitment and support, and technology platforms (Learning Management System, Customer Relationship Management System and Enrolment System.) Student numbers in AP programmes are in the thousands rather than the tens of thousands (e.g. around 4,000 at UT Arlington and Lamar respectively). However, as noted, most of these students obtain degrees and professional recognition at rates at least as good as their on-campus counterparts.

Platforms

At the heart of MOOCs are the platforms that enable the various operations involved in offering a MOOC to be done effectively. Siemens (2011) has described the race to create effective platforms in various fields. He notes (Siemens, 2012) that 'MOOCs are really a platform' and that the platforms for the two types of MOOC that we described at the beginning of the paper are substantially different because they serve different purposes. In Siemens' words: 'our cMOOC model emphasises creation, creativity, autonomy and social networking learning. The Coursera model emphasises a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas xMOOCs focus on knowledge duplication'. He notes that in time the xMOOCs 'may well address the "drill and grill" instructional methods that are receiving some criticism' (Siemens, 2012).

Partly because they are so different, and partly because they exist behind proprietary walls, we shall make only general comments about MOOC platforms. A fundamental question is whether proprietary MOOC platforms will gradually give way to open source solutions. This seems to be happening in the closely related domain of Learning Management Systems (Virtual Learning Environments) where

the open source Moodle (moodle.org) platform is becoming the industry standard rather than earlier proprietary systems such as Blackboard (Blackboard, 2012).

Developing a MOOC platform, at least for xMOOCs, would appear to be a much simpler task than creating systems such as those required by the large open universities. When the UK Open University (250,000 students) became the largest user of Moodle in 2007 it made a major investment in order to incorporate the many sub-systems required for the effective operation of this large global institution (Sclater, 2008). An xMOOC platform requires fewer sub-systems but must, of course, be designed to handle very high volumes and inputs from all over the world. However, whereas universities own and operate multiple Moodle installations, the administrative components of MOOCs (especially if they begin to make extensive use of Learning Analytics (Siemens, 2010)) are too complex for a teaching unit in a university to operate without huge resources. For this reason most universities might eventually opt for cloud-hosted MOOC services with control over data releases through contracts with for-profit service providers.

As it is wont to do when a new trend appears, Google has now jumped into this space. In September 2012 it released Course Builder, open-source xMOOCs software as 'an experimental first step' (the codes are available for modification without restriction although they will run in the Google App eco-system exclusively). It had been tested earlier in Google's own xMOOC, *Power Searching*, which attracted 155,000 learners, of which 20,000 completed. Google is in touch with some of the universities involved in xMOOCs, although the institutions are more close-mouthed about this collaboration. Google research director Peter Norvig commented: 'it's a confusing or an exciting time! think schools are experimenting and they don't quite yet know what they want to do' (Azevedo, 2012).

It will be interesting to watch the use of xMOOC platforms evolve. For the moment most participating institutions are happy to let a commercial partner bear the costs of building the platform and keeping it running. However, were universities to make xMOOCs such an important component of their work that the effective offering of xMOOCs became mission critical; they might be tempted to bring the platform 'in-house' in an open source cloud format. edX has announced its intention to make its platform open source.

MOOCs in perspective

To dwell on the earlier fads and disappointments that technology has generated in education would be pedantic. Innovators like to believe that theirs is the real revolution. But technology has been about to transform education for a long time. In 1841 the 'inventor of the blackboard was ranked among the best contributors to learning and science, if not among the greatest benefactors to mankind'. A century later, in 1940, the motion picture was hailed the most revolutionary instrument

introduced into education since the printing press. Television was the educational revolution in 1957. In 1962 it was programmed learning and in 1967 computers. Each was labelled the most important development since Gutenberg's printing press.

Since 2000 there have been countless claims that Internet and communications technologies (ICT) could revolutionise the format and delivery of education, not least because they absorb all those previous innovations. We noted earlier, for instance, that xMOOC learners preferred teachers to scrawl formulae on the modern equivalent of a blackboard rather than presenting them on slides.

In my addresses as a KNOU Fellow (Daniel & Uvalić-Trumbić, 2012a; Daniel, 2012a,b,c) I have argued that modern ICT, what my former Open University colleague Marc Eisenstadt named the 'knowledge media', are qualitatively different from previous technological aids to education. That is because they lend themselves naturally to the manipulation of symbols (words, numbers, formulae, images) that are the heart of education, as well as providing, through the Internet, a wonderful vehicle for the distribution and sharing of educational material at low cost. But while the potential of ICT to improve and extend education while cutting its cost is not in doubt, the results so far have generally been disappointing (Daniel, 2012b, Toyama, 2011). We should bear the reasons for these disappointments in mind in trying to ensure that MOOCs contribute to these goals for improving education and are not just another flash in educational technology's pan.

We would not expect the current extensive commentary on xMOOCs in the US to consider events before the dotcom frenzy of 1999-2000, still less earlier developments outside North America such as the many open universities around the world. It is surprising, however, that little reference is made to the unhappy experience of some elite US schools with online learning in the mid-2000s.

The Internet burst into the public consciousness in the dotcom frenzy at the turn of the millennium. The dotcom frenzy alerted universities to new opportunities for opening up to the world, but some got carried away into ill-fated ventures. These have been well documented in Taylor Walsh's recent book *Unlocking the Gates* (Walsh, 2011), in which she records how universities such as Columbia, Chicago, the London School of Economics, Oxford, Yale and Stanford thought they could make useful additional income by offering non-credit courses online. In the event they and their partners lost money before ventures like Fathom and AllLearn were ignominiously shuttered. The AllLearn website, which is still up, explains that the platform and course catalogue were undergoing revision for a re-launch in 2006. It states: 'AllLearn offers over fifty online courses from Oxford, Stanford, and Yale Universities. Courses are available to anyone — anywhere and at any time. Expert online instructors help you to explore fully the readings and lectures and share in lively discussions with your classmates'. There is also an analysis of what went wrong (University Business,

2008). The Fathom website has been taken down. The site simply refers inquiries to the Centre for

Digital Research and Scholarship at Columbia University.

At that time some other universities were already taking a different route. From the late 1990s MIT had experimented with putting materials associated with its credit courses on the web for free. This was announced as the MIT OpenCourseware project in 2002. Later the same year, at a UNESCO Forum on the Impact of Open Courseware for Higher Education in Developing Countries, the term Open Educational Resources was coined as a generic term for such developments (Daniel, 2012d).

As a description of developments in the mid-2000s the subtitle to Walsh's book, *How and why leading universities are opening up access to their courses*, is somewhat misleading. The Fathom and Allearn ventures only offered non-credit courses (which was a main reason for their failure) and MIT was simply letting people look at materials supporting its courses. Millions did and still do, but MIT explicitly did not offer interaction with its faculty, still less the possibility of obtaining an MIT credential. There was plenty of criticism of MIT from distance learning providers for this somewhat patronising approach. No doubt this criticism, coupled with MIT's long-term strategic planning for online learning mentioned earlier, led to the current xMOOC developments through MITx and edX.

Before leaving Walsh's book it is worth recalling a quote in its final pages, from former Princeton President Harold Shapiro, that is somewhat ironic now that Princeton is signing up with Coursera. Shapiro expressed scepticism at the traditional university's capacity to expand seamlessly into other areas. He pointed out that in deciding where to focus institutional resources, a university must consider what will support its public mission.

'But you also have to ask yourself, where do we have the talent? You can't just turn around tomorrow and say 'maybe we should start doing something different' – you have to accumulate the talent first' (Walsh p. 257).

Myths and paradoxes

In his book *Harmonizing Global Education: from Genghis Khan to Facebook*, Baggaley (2011) argues that the quality and pedagogy of much current online education is poor because its practitioners have not taken the trouble to learn the lessons from research on earlier educational technologies. He suggests that Asian countries may now do online education better than the West because in many Asian countries online and earlier technologies co-exist, allowing transfer of knowhow from one to the other.

Baggaley has summarised some key results of that earlier research and we shall

not attempt to repeat them here. Instead we shall try to build on the commentaries of others, notably Bates (2012) and Touve (2012) by highlighting some of the myths and paradoxes that surround xMOOCs. This will lead us to end on a positive note by exploring the interesting possibilities that emerge once xMOOCs providers come down to earth and resolve the contradictions that currently bedevil them.

Quality and completion rates

Several of the myths and paradoxes in the xMOOC universe relate to quality and pedagogy. A first myth is that university brand is a surrogate for teaching quality. It isn't. The so-called elite universities that are rushing into xMOOCs gained their reputations in research. Nothing suggests that they are particularly talented in teaching, especially teaching online. A related paradox is that these same institutions once opposed the accreditation of the University of Phoenix, claiming that online teaching was inherently of low quality. Although Phoenix has engaged in dodgy business practices, it is likely that because it operates as a teaching-learning system the quality of its instruction is objectively better than the new wave of online xMOOCs. Certainly Phoenix's completion rates, while nothing to boast about, are much higher: at between 30-35% for associate and bachelor's degrees and 60% for master's degrees (University of Phoenix, 2012).

Most countries around the world have quality assurance agencies for higher education. One of the criteria quality auditors and assessors take seriously is the rate of course and degree completion, partly to ensure value for the investment of public funds and partly to protect students from poor practice. Improving retention and completion has been a special concern for distance learning institutions and open universities. They take the view that students seek not merely access, but access to success, which the institution should do everything to facilitate while maintaining standards.

Against this background the current xMOOC completion rates of 10% or less would be considered disastrous anywhere else. In the xMOOCs' defence, however, it must be said that these first offerings probably attracted a high proportion of the merely curious and tourists from other institutions checking what the fuss was about. As the number of xMOOCs multiplies they will likely draw a more purposeful clientele. It remains, however, that because xMOOCs universities measure their institutional standing by the numbers who fail to gain admission to their campuses, they will be cavalier about high wastage and failure rates. This has been called the Passchendaele approach, after the World War I battle in which tens of thousands of soldiers were thrown at the front and died fighting for a few metres of land.

Attitudes to completion rates create a sharp distinction between the xMOOCs providers and other distance learning institutions, both public and for profit. For

reasons that are a combination of ideals of student service, consumer legislation and supervision by regulatory bodies, these other institutions invest heavily in retention strategies. International guidelines about distance education and much national legislation were stimulated by Jessica Mitford's classic piece in the *Atlantic Monthly* in 1970: *Let us now appraise famous writers* – an entertaining and instructive read for anyone new to the field.

Certification

This brings us to the central paradox in xMOOCs that Touve (2012) explores. The fundamental contradiction is that currently, for most xMOOC institutions, success in the course exam (called 'very hard' by MIT's Agrawal (Hardesty, 2012)), does not lead to credit, but to a certificate. The consequence, as Touve stresses, is that what decides whether or not a student can obtain a degree is determined not by their mastery of the courses, but by the admissions process to the university. This is an untenable nonsense. To give but one example, the UK Open University, which has no academic admission requirements, has awarded over a million highly regarded degrees to its students. Entry to the Open University is easy; exit with a degree is difficult.

Elite institutions, of course, usually define their quality by the numbers of applicants that they exclude, not by the teaching that happens on campus after admission. My late Athabasca University colleague Dan Coldeway called this the principle of 'good little piggies in, make good bacon out'. It is a venerable academic tradition but hardly seems fit for the 21st century, not least for institutions that have suddenly discovered a mission to open up to the world. The best long-term hope for ending this dire contradiction is learning analytics, which are stealing up on higher education in an inexorable way. Learning analytics are 'the use of data and models to predict student progress and performance, and the ability to act on that information' (Siemens, 2010). They hold out the promise that individuals will eventually be able to have a complete record of what they have learned and mastered at the level of concepts and skills. Some MOOC institutions claim to be using learning analytics. Perhaps they should be careful what they wish for, because the widespread use of learning analytics would make it intellectually reprehensible to make recognition of mastery conditional on unrelated processes.

In reality it may not matter if the xMOOC providers' taboo on awarding credit stays in place, because holders of MOOCs certificates can trade them for credit elsewhere. Unfortunately in the US this is an expensive process. Kolowich (2012b), using the example of the University of Maryland, has shown that 'students can expect to spend a minimum of \$1,300 to convert the learning picked up in an xMOOC into three college credits. That is, of course, in addition to the hours and effort they sink into actually taking the xMOOC'. However, outside the US, where many xMOOC students are, there are more attractive possibilities. For over 30 years Athabasca University has offered a Bachelor's degree with no residency

requirement (i.e. students do not have to take any courses from Athabasca, the award can be made entirely on the basis of credit accumulation). Athabasca is also contemplating putting together a 'Best First Year Online' constructed entirely from open courseware (Pannekoek, 2012).

In the wider world the new OERu, which is a consortium of 18 established and accredited universities from five continents, has been created precisely to serve learners who are acquiring skills and knowledge by alternative routes (Hill, 2012; OERu, 2012; WikiEducator, 2011; Taylor, 2011). Even if the xMOOC universities lift the taboo on credit it will be years, if ever, before they can offer a whole degree online, so xMOOC students seeking degrees would do well to seek other paths such as those mentioned. Finally, dare we point out that xMOOCs certificates offer juicy opportunities to degree and accreditation mill racketeers? *Caveat emptor* should be the motto for anyone dealing with xMOOC certificates. They may want to dust off the excellent booklet that CHEA (2009) produced on this topic.

Pedagogy

Earlier we quoted Armstrong's (2012) conclusion that the Coursera course he took was innocent of any pedagogical input. Indeed, outside their schools of education, pedagogy is not a familiar word on the xMOOC campuses. It is a myth that professors distinguished by their research output are competent to create online courses without help. Bates has long argued that expecting individual faculty to develop online courses alongside their classroom offerings, which he calls the 'Lone Ranger' approach, is unlikely to produce courses of quality (Bates and Sangra, 2011). Good distance teaching calls for teams that support the academics with a range of skills.

With such support MOOCs provide a great opportunity to develop new pedagogy. In a world of abundant content, courses can draw from a pool of open educational resources (OER) and provide their students with better and more varied teaching than individual instructors could develop by themselves. The University of Michigan (2012) (which made history by using OER from Africa in its medical school) uses OER extensively in its Coursera course *Internet History, Technology and Security*. UC Berkeley (2012) draws extensively on OER in its course on *Quantum Computing*.

Knox et al. (2012), a team from the University of Edinburgh, which is one of Coursera's few non-US partners, gives an interesting account of getting to grips with the Coursera platform. Their course sounds to be more cMOOC in approach, although they consider cMOOCs remain on the radical fringe of higher education. They qualify the Coursera platform as 'conservative in terms of online pedagogical practice' but, like MIT, they see xMOOCs as an experimental venture and want to 'participate in an emerging pedagogical mode that is significantly under-theorised'. They conclude that xMOOCs are not simply 'ed-tech *du jour*' but worth

serious engagement.

This is, however, a work in progress. Bates (2012) addresses the myth that xMOOCs are a new pedagogy. In fact, he notes, so far the teaching methods 'are based on a very old and out-dated behaviourist pedagogy, relying primarily on information transmission, computer-marked assignments and peer assessment'. He goes on to remind the xMOOCs movement that it did not invent online learning and that the useful techniques that it is discovering – and likes to claim it has invented – are already well known in distance learning and in some cases go back 40 years.

Another myth is that computers personalise learning. Bates (2012) again: 'No, they don't. They allow students alternative routes through material and they allow automated feedback but they do not provide a sense of being treated as an individual. This can be done in online learning, but it needs online intervention and presence in the form of discussion, encouragement, and an understanding of an individual student's needs'. It is here that we find the greatest difference between the xMOOCs and the earlier cMOOCs, which have a strong focus on online discussion.

In completing his debunking of xMOOCs myths, Bates (2012) points out that the primitive use of 'big data' referred to by Koller (2012) is not learning analytics but simply a way of catching errors that should never have found their way into the course in the first place.

MOOCs: for what purpose?

The final group of myths and paradoxes are related to the reasons for offering xMOOCs. The basic paradox is between the laudable desire, in the spirit of the open educational resources (OER) movement (UNESCO, 2012) to make knowledge the common property of humankind, and to find a business model that generates money for doing it. The business case for OER is developing nicely and OER will transform the availability of school textbooks (Butcher & Hoosen, 2012). However, the search is still on for reliable ways of making money out of xMOOCs, especially for the universities involved. It is unfortunate that Koller (2012) justifies xMOOCs in a particularly inept way by claiming that they are the answer to increasing access to higher education in developing countries.

Already, at the 2009 UNESCO World Conference on Higher Education, the president of the 300,000-student University of South Africa (UNISA) labelled OER a form of intellectual neo-colonialism (Daniel & Uvalić-Trumbić, 2012b) – although UNISA has now become an important player in the OER movement and the OERu. However, as Bates (2012) comments acerbically: 'these elite universities continue to treat xMOOCs as a philanthropic form of continuing education, and until these institutions are willing to award credit and degrees for this type of programme, we

have to believe that they think this is a second class form of education suitable only for the unwashed masses'. It is a myth to think that providing not-for-credit open online learning from the USA will address the challenges of expanding higher education in the developing world. Bates adds: 'please, is it too much to ask for a little humility? (Probably, from so-called elite institutions)'

Possibilities

MOOCs, both cMOOCs and xMOOCs are a fascinating development. This essay has taken a critical stance because the discourse about MOOCs is overloaded with hype and myth while the reality is shot through with paradoxes and contradictions. However, an important process is underway that will chart new paths for the universities involved and for higher education generally.

This development may fall apart. We noted some earlier Internet ventures of elite universities that started with fanfare but were wound up shamefacedly only six years ago. This time, however, the scale of the involvement is such that something will survive, even if some who can well afford it lose money on the way. We envisage that MOOCs will have an important impact in two ways: improving teaching and encouraging institutions to develop distinctive missions.

But first, we agree with Bates (2012) that what MOOCs will not do is address the challenge of expanding higher education in the developing world. It may encourage universities there, both public and private, to develop online learning more deliberately, and OER from MOOC courses may find their way, alongside OER from other sources, into the teaching of local institutions. We have long argued that higher education must find ways to address the needs of those at the bottom of the pyramid (Prahalad, 2004) but institutions in those countries will eventually do that using technology and it is unlikely that they will make fortunes.

We also agree with Bates that current xMOOCs pedagogy is pretty old hat but this will now change fast. Even if Coursera gave its partner universities great freedom in course formats in order to sugar the pill of signing the contract, this will quickly produce a great diversity of approaches and much healthy experimentation. By the end of 2012 various actors from the media through student groups to educational research units will be publishing assessments of xMOOC courses. These will quickly be consolidated into league tables that rank the courses – and the participating universities – by the quality of their offerings as perceived by both learners and educational professionals (Uvalić-Trumbić & Daniel, 2011).

This will not please the participating universities. Elite universities in the UK thoroughly disliked the state-approved teaching quality assessment system that operated there between the 1995 and 2004 (Laughton, 2003). Eventually their presidents successfully petitioned the authorities to close it down. My own conclusion was that behind the fog of methodological arguments about the

difficulty of assessing teaching quality, the real problem was that some elite universities did poorly and some lesser-known institutions did well. By the time results of teaching quality assessments by discipline had accumulated over ten years a small former teachers' college ranked in the top ten (out of ~100) and the Open University was in 5th place, one above Oxford.

The difference with the xMOOCs assessments and rankings is that no one will be able to abolish them by appealing to authority. Institutions that rate poorly will either have to quit playing xMOOCs or raise their game.

This, in turn, will put a focus on teaching and pedagogy to which these institutions are unaccustomed, which will be healthy. At the same time academics all around the world will make judgements about the intellectual quality and rigour of the institutions that have exposed themselves in this way. Other combinations of institutions and commercial partners will join the fray and a new pecking order will emerge.

In contrast to the copycat rush to jump on the xMOOCs bandwagon, this may encourage more institutional leaders to share Harold Shapiro's scepticism about the ability of traditional universities to expand seamlessly into new areas. With luck the dream of the great American educator Ernie Boyer (1990) may even come true. In 1990, in *Scholarship Reconsidered: Priorities of the Professoriate*, he wrote: 'We need a climate in which colleges and universities are less imitative, taking pride in their uniqueness. It's time to end the suffocating practice in which colleges and universities measure themselves far too frequently by external status rather than by values determined by their own distinctive mission'.

The broader purpose of Boyer's book was to encourage the emergence of a scholarship of teaching alongside the scholarships of discovery (research), integration (multidisciplinary) and application (development). Placing their xMOOCs in the public domain for a worldwide audience will oblige institutions to do more than pay lip service to importance of teaching and put it at the core their missions. This is the real revolution of MOOCs. MOOCs may also have the long-term effect of helping to cut the outsize costs of higher education, which in the US have increased by 360% above inflation since 1986 (Archibald & Feldman, 2010). But that is another story!

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