

## **An Analysis of ICT Policy in Education Planning In Nigeria**

### **By**

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#### **Abstract**

*Aduwa-Ogiegbean & Iyamu, (2005) noted that many developing countries, especially in Africa, are still low in ICT application and use. Thus, it is believed that in order to emerge beyond the first stage in the last three which are termed the 'functional approaches', a lot of policy implementation and funding is required. Incredibly though, Nigeria is reputed to have an advantage in this 'begging field', as there are many ICT experts of Nigerian parentage in the diasporas, with no knowledge of any concerted effort being made to genuinely attract their potential to accelerate and sustain ICT development in their fatherland. Though government efforts have not gone without much notice toward the implementation of ICT in Nigerian educational institutions, the challenges are there from paucity of funds and lack of access, to unsteady power (not all local ISPs can maintain their boosters for 24-hours without fuel which is costly); and high cost of ownership (with the rapid increase in population and demands across the service sectors, there is the growing realization that in this 21st century, the government of Nigeria alone can no longer fund education and its concerns except by partnering with the private sector). Special interventions have been made to Secondary and Higher Institutions by government, NGOs banks and several private sector groups. The MTN Virtual Library project embarked upon in key universities in Nigeria for instance, has enhanced research opportunities; the NUC facilitation*

*of the setting up of Network cables, connectivity devices in Federal Universities with free consultancy services to universities and inter-university centers on ICT plus the Nigerian Communications Commission (NCC) and Education Trust Fund (ETF) geared towards universities and polytechnics have enhanced learning in several ways. In this present age of globalization, information and communication technology has transformed the Nigerian Educational system positively. This paper therefore discusses the correlate existing between information and communication technology and education and the extent to which it has affected the Nigerian system of education. The setback and obstacles to its full actualization is also examined,*

**Keywords: Information technology, ICT, education system in Nigeria.**

### **Introduction**

The role of Information and Communication Technologies (ICTs) in the 21st century education system has been described as vital to keeping abreast with rapidly changing technologies. The development of information and communication technology into the Nigerian educational system has come to stay its importance has been translated into huge potentials in terms of positive outcomes, although investments in ICTs in Nigerian's education system have not yielded much when compared to similar investments made in communication (Atureta, 2011).

The field of education has certainly been affected by the penetrating influence of ICT worldwide. ICT has made impact on the quality and quantity of teaching, learning and research in the institutions using it (Kwacha, 2007). According to Ololube, Ubogu and Ossai (2007), the introduction of ICT usage, integration and diffusion has initiated a new age in educational methodologies, thus has radically changed traditional method of information delivery and usage patterns in the domain as well as offering contemporary learning experience for both instructors and

learners. ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students in learning helps to relate school experiences to work places, helps to create economic viability for tomorrow's workers, contributes to radical changes in school, strengthens teaching, and provides opportunities for connection between the school and the world (Davis & Tearle, 1999, Lemke & Coughlin, 1998; cited by Yusuf, 2005). Adomi & Kpangban (2010), described Information and communication technology (ICT) as electronic technologies used for information storage and retrieval. According to the Online Oxford Dictionary, Information and communications technology or information and communication technology, usually abbreviated as ICT, is often used as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions.

ICT as described by Scott (2002), encompasses a range of applications communications and technologies which aid information retrieval and research communication and administration. These include online databases, library services and online services and fax machine. It has become a global phenomenon of great importance and concerns in all aspects of human endeavor, spanning across education, governance, business, labour, market shares, productivity, trade, agriculture, commerce and others. The expression was first used in 1997 in a report by Dennis Stevenson to the UK government and promoted by the new National Curriculum documents for the UK in 2000. Nigeria as a nation has recognized the potential of ICT in her educational system. The national policy on computer education emphasized the need for the integration of

ICT into the Nigerian educational system. This dates back to the National Policy on Computer Education (FME, 1988) which emphasized the need for primary school pupils to be introduced to the basic computer skills, the use of the computer to facilitate learning and rudimentary use for text writing, computation and data entry. For secondary school, they have related goals which were to be achieved at higher level.

The tertiary institutions were also required to teach computer science as a discipline and to integrate it in school administration and instruction. However, the implementation was not effective. The National Policy on Education (FRN) as revised in 1988 and 2004, re-emphasized the need for the integration of ICT in the Nigerian educational system. This is an acceptance of the need to go beyond computer to the level of IC also the need for infrastructure. Three major objectives, among others were emphasized in the Nigerian National policy for Information Technology (FRN, 2001). These are to empower youths with ICT skills to prepare them for competitiveness in a global environment, integrate ICT into the mainstream of education and training and establishment of multifaceted ICT institutions as centers of excellence of ICT. To achieve these objectives, nine major strategies were outlined. These include:

- i Making ICT compulsory at all educational institutions
- ii. Developing ICT curricular for all levels of education
- iii. Using ICT in distance education
- iv. ICT companies' investment in education
- v. Giving study grant and scholarship on ICT
- vi. Training the trainers' scheme for youth corps services on ICT
- vii. ICT capacity building at the zonal, state and local government levels
- viii. Establishing private and public dedicated ICT institutions
- ix. Working with international and domestic Initiative to transfer ICT knowledge.

The main purpose of ICT in education means implementing of ICT equipment and tools in teaching and learning process as a media and methodology. The purpose of ICT in education is generally to familiarize

students with the use and workings of computers, and related social and ethical issues. ICT has enabled learning through multiple intelligence as it has introduced learning through simulation games; this enables active learning through all senses. A renowned Professor Ajayi, G. O. of OAU, Ile Ife, Nigeria, shared the multi-purpose application of ICT as he put it "ICT is now regarded as a Utility such as water and electricity and hence has become a major factor in socio-economic development of every nation.

ICT now plays a major role in education, learning and research in general, agriculture, health, commerce and even in poverty alleviation by generating or creating new jobs and investment opportunities..." This declaration and indeed other opinions shared by others point to conclusive evidence that ICT has some real and material applications for countries like Nigeria because countries can leverage ICT to totally transform and modernize their economy.

Tinio (2002), noted that ICTs are powerful enabling tools for educational change and reform. When used appropriately, helps expand access to education, strengthen the relevance of education to the workplace, and raise educational quality by creating an active process connected to real life. In Nigerian educational system, ICT has helped to increase access to and improving the relevance and the quality of education. It greatly facilitates the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution and widen the range of opportunity for business and the poor. This new communication tends to reduce the sense of isolation, and open access to knowledge. This is enhanced because ICT provides access anytime and anywhere by making possible asynchronous learning. Online course materials, for example, can be accessed 24 hours a day, 7 days a week. ICT based educational delivery like educational programming broadcast over radio and television also dispenses with the need for all learners and the instructor to be in one location. In addition, certain types of ICTs such as teleconferencing technologies enable instructions to be received simultaneously by multiple,

geographically dispersed learners (synchronous learning). Furthermore, ICT has enhanced access to remote learning resources. Teachers and learners no longer have to rely solely on physical media housed in libraries (and available in limited quantities) for their educational needs. With the internet and world wide web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day by an unlimited number of people. This is particularly significant for many schools in developing countries and developed countries that have limited outdated library resources. ICTs also facilitate access to resource persons all over the world.

In that capacity, ICTs play a pedagogic role that could in principle compliment the traditional practices of the education sector (Igwe, 2009). Undoubtedly, e-learning powered by ICT use in tertiary institutions could help to expand and widen access to tertiary education and learning, improve the quality of education as well reduce its cost. This means that effective ICT use in tertiary institutions in Nigeria could help to spur positive results in improving the overall learning (and teaching) experiences as well as in up-lifting the quality of the system. Therefore the research seeks to investigate the role of ICT as a change agent for quality education in tertiary institution in Nigeria.

### **Statement of the Problem**

Elele (1983) cited in Yusuf (2012), notes that quantitatively, the Nigerian Education scene is quite impressive but qualitatively deficient. There exist general disenchantment and general distrust in the quality of the education system as well as in the quality of education output. (Arikewuyo, 2004) stated that ICT can play a very prominent role in diffusing knowledge and information which is fundamental aspects of the education process towards quality attainments.

In this capacity, ICT plays a pedagogic role that could in principle complement the traditional practices of the education sector. Therefore, the

problem confronting this research is to appraise the role of ICT as a change agent towards quality education in tertiary institution in Nigeria.

### **Research Questions**

1. What constitute quality in the education of tertiary institution in Nigeria?
2. What is ICT and what constitute the role for quality education in tertiary institution in Nigeria?
3. What constitute the fundamental objective of quality education in tertiary institution in Nigeria?

### **Objective of the Study**

1. To determine the nature of education in tertiary institution in Nigeria
2. To determine what constitute quality in the education of tertiary institution in Nigeria
3. To determine the nature of ICT and the role of ICT as a change agent towards the education of tertiary institution in Nigeria
4. To appraise fundamental objectives of quality education attainment in tertiary institution in Nigeria.

### **Significance of the Study**

1. The study shall provide a framework for determining the quality standard of education in tertiary institution in Nigeria.
2. It shall provide measure of quality standard for the education of tertiary institution in Nigeria
3. The study shall provide detail information in ICT and the role of ICT as a change agent towards quality education in tertiary institution.
4. it shall serve a reference source of information for educationist academic and non-academic persons students etc.

### **Statement of Hypothesis**

Ho The quality standard in tertiary education in Nigeria is low

HI The quality standard in tertiary education in Nigeria is high

Ho The level of ICT in tertiary education is low

HI The level of ICT in tertiary education is high

Ho The impact of ICT in the quality of education of tertiary institution is low

HI The impact of ICT in the quality of education of tertiary institution is high

### **Scope of the Study**

The study focuses on the role of ICT as a change agent for quality education in tertiary institution In Nigeria.

### **Definition of Term**

#### **Definition of Quality Education**

The Federal Ministry of Education (FME, 2009) remarked that quality standard in the education system are goals or targets to which learners, teachers, staff and school administration aspires to attain. Quality assurance in the education system therefore, is a multi-dimensional concepts involving the various functions and activities of the education system. Such functions and activities include teaching research, staffing, students, buildings, facilities and equipment, service to the community and academic environment. It is ensuring that at least the provision of the minimum academic standard are attained and sustained.

### **Review of Related Literature**

In Nigerian educational system, one interesting thing is that ICTs are also a transformational tool that has promoted the shift to a learner - centered environment. It has assisted in improving the quality of education and training by increasing learners' motivation and engagement, facilitating the acquisition of basic skills. The use of ICT tools such as videos, television and multimedia computer software that combine text, sound and colourful moving images is used to provide challenging and authentic content that engages the students to be more involved. More



importantly, networked computers with internet connectivity increases learners motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events.

The transmission of basic skills and concepts that forms the foundation of higher order thinking skills and creativity is enhanced by ICT through drill and practice. Most of the early users of computers were for computer-based learning that focused on mastery of skills and content through reinforcement and repetition. Haddad and Draxier (2002) also indicated that ICT has contributed to effective learning through expanding access, promoting efficiency and improving the quality of learning and improving management systems. According to Obeng (2004), ICT is now regarded as a utility such as water and electricity and hence has become a major role in education, learning and research in general, agriculture, and health and even in poverty alleviation by generating or creating new jobs and investment opportunities.

David (2005) said that students become more aware about how to learn when using ICT because they must interact with computer. ICT has also changed the relationship between students and lecturers and has made it open and intimate. The idea of sharing knowledge and the capability of using new resources for learning are enhanced by using ICTs. It has also helped undergraduates in better communication and access to information. This is due to the fact that there is a national policy supporting ICT in schools. It has also helped students' curiosity and motivation that has in turn forced the lecturers to seek more knowledge.

The benefits derived from ICT use in education are summarized as active learning, collaborative learning, creative learning, integrative learning and eniDHtive learning. By active learning, ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus provides platform for students' enquiry, analysis and construction of new information. ICT-ropparted faming encourages interaction and cooperation among students, teachers and experts

regardless of where they are. Also, ICT - supported learning promotes of existing information and creation of real -world products rather than regurgitation of received information. It has also enhanced integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach. By evaluative learning, ICT-enhanced learning is student - directed and diagnostic. Unlike static, text or print-based educational technologies, ICTs allow learners to explore and discover rather than mere listening and remembering.

In our educational institutions, especially higher institutions, the mode of delivery of knowledge and curriculum are not yet ICT enhanced, though with the development of a National Policy on ICT in Education, Nigeria is predictably a step in the right direction toward improvement for the sector (Atureta, 2011). Factors militating against its foil implementation are insufficient numbers of computers, epileptic power supply, problems of internet network failure, lack of ICT knowledge/skills, difficulty in integrating ICT to instruction, scheduling computer time, insufficient peripheral devices, inadequate software, insufficient teaching time, inadequate access, lack of qualified ICT personnel, cost of equipment, management attitude, there seems to be no clear and definite policy and/or curriculum for all levels of the Nigerian education system and lack of technical assistance among others. Okwudishu (2005) indicated that unavailability of some ICT components in schools hampers teachers' use of it. The various challenges that have been raised have to be addressed for Nigeria to make effective use of ICT to enhance her educational system.

Ogechukwu & Osuagwu (2009) suggest that, "ICT is still in the emerging phase in Nigerian educational system". In their article entitled, 'ICT in Education: Achievements so far in Nigeria', which discusses ICT dimensions, its transforming power; status in Nigerian educational institutions, plus limitations to its infusion, both experts say the country is yet to progress beyond the emerging phase of ICT in education which

according to them, is only one of four approaches, the goals of ICT in education embraces. These approaches are: emerging, applying, infusing, and transforming. Iloanusi & Osuagwu said 90% of Nigeria's educational institutions fall within the emerging phase, 7% in the applying phase and 3% in the infusing and transforming phase, with a few other sectors of the economy having progressed beyond this phase.

In addition, Aduwa-Ogiegbean & Iyamu, (2005) noted that many developing countries, especially in Africa, are still low in ICT application and use. Thus, it is believed that in order to emerge beyond the first stage in the last three which are termed the functional approaches', a lot of policy implementation and funding is required. Incredibly though, Nigeria is reputed to have an advantage in this 'begging field', as there are many ICT experts of Nigerian parentage in the diasporas, with no knowledge of any concerted effort being made to genuinely attract their potential to accelerate and sustain ICT development in their fatherland. Though government efforts have not gone without much notice toward the implementation of ICT in Nigerian educational institutions, the challenges are there from paucity of funds and lack of access, to unsteady power (not all local ISPs can maintain their boosters for 24-hours without fuel which is costly); and high cost of ownership (with the rapid increase in population and demands across the service sectors, there is the growing realization that in this 21st century, the government of Nigeria alone can no longer fund education and its concerns except by partnering with the private sector).

Special interventions have been made to Secondary and Higher Institutions by government, NGOs banks and several private sector groups. The MTN Virtual Library project embarked upon in key universities in Nigeria for instance, has enhanced research opportunities; the NUC facilitation of the setting up of Network cables, connectivity devices in Federal Universities with free consultancy services to universities and inter-university centers on ICT; plus the Nigerian Communications Commission (NCC) and Education Trust Fund (ETF) geared towards universities and polytechnics, have enhanced learning in several ways.

The challenges confronting our educational system in tertiary institution centers on quality attainment of education delivery, almost everything connected with education in tertiary institution is in short supply. Quality teachers are in short supply, quality buildings, quality equipment, quality laboratories, good experimental farms and other resources input that can lead to quality education are inadequately provided. Today, there exist general disenchantment and general distrust in the quality of the education system as well as in the quality of education output. The quality of education is the prime factor that determines the worth and significance of the system to both the recipients and the society at large. Thus, Igwe (2009) notes that, the promises of information and communication technologies (ICTs) have driven e-learning in transforming education delivery and thereby advancing the knowledge economy. The knowledge, economy for example sets a new scene for education and new challenges and prospects for education is a pre-requisite of the knowledge based economy and the production and use of new knowledge both require a more educated population and workforce (Arikewuyo, 2004). ICTs are very powerful tool for diffusing knowledge and information which is fundamental aspects of the education process.

### **Planning and Implementation of ICT policy in education**

The establishment of ICT infrastructure in schools was aimed to promote education equity by bridging the digital divide. The School Advancement Project, which included the establishment of school LANs, Internet-connected multimedia labs, provision of PC and information devices for classrooms, and personnel support, was implemented according to the first Master Plan. Since the mid-1990s national initiatives for supporting ICT integration into the school curriculum have been gathering momentum. The projects ranged from educational content such as supplementary materials and educational software for the development of digital textbooks. Educational content, which almost in full has been

provided and shared in EDUNET, plays an important role in the curriculum integration of ICT.

Since the late 1980s the government of Korea for example has provided teacher training for both ICT literacy and integration purposes. The focus of teacher training, however, has changed over the course of the three master plans from computer literacy to curriculum integration. In addition, the government has built the teacher training framework for ICT in education to meet the specific needs faced by teachers throughout their career. The new teacher roles and adequate ICT competencies should be taken into consideration for the future design of teacher training.

The information service system in education is comprised of three main groups: EDUNET (for teaching and learning), EMIS and NEIS (for administration), and CHLS (for home learning). EDUNET was developed to operate and provide multi media materials, instructional lesson plans and evaluation items according to school level. EMIS focuses mostly on collecting annual statistical data from educational institutions while NEIS manages and integrates personnel, financial, and school affairs within or between institutions, regional offices and the Ministry of Education. CHLS provides individual learning materials and online tutorial support in order to bridge the education divide for after school private tutoring. These services are aimed to provide an effective environment, improve productivity and efficiency, and harness ICT in education nation-wide for teaching and learning and administrative purposes.

As e-Learning technologies become increasingly utilized for educational courses, issues related to standardization for assurance of quality, and prevention of adverse effects become crucial. Therefore, national standards for e-Learning were developed; a prime example is the enactment of the Korea Educational Metadata (KEM). Furthermore, in 2008 it was proposed to the Joint Technical Committee (JTC) 001/SC36 of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) to integrate South Korean national standards for e-Learning in international standards. To enable quality

control of e-Learning, the E-Learning Quality Assurance System (EQAS) was established using such criteria as content, service and platform. To promote and ensure a safe and sound cyberspace in the educational area, MEST set up the Education Cyber Security Center (ECSC) and implemented various e-safety and e-ethics campaigns, as well as additional training programmes.

Monitoring and evaluation systems are vital for the diagnostics of the current status of the initiatives, evaluation of the outcomes and planning of the measures for further improvement. The overall scheme of monitoring and evaluation of ICT policy in education consists of measuring ICT in education for schools, ICT literacy tests for students, as well as an external evaluation of major national ICT projects.

Beyond domestic implementation, the mentioned government has expanded its cooperation with the global community to reduce the digital divide through ICT in education. Representatives of over 50 countries visit the Republic of Korea every year to benchmark best practices in this sphere. The number of requests for consulting projects for ICT in education through ODA grants and EDF loans has increased considerably.

The achievements of Korean e-Learning and ICT in education policy are recognized as a result of a solid legal framework, systematic implementation mechanism, secured budget and support, timely capacity building, successful cooperation between public and private sectors, and an effective monitoring and evaluation system. The important factors that affected the success of implementation policies and initiatives of ICT and e-Learning can be summarized as follows:

***(1) Capacity of implementation organizations***

One factor in the success of e-Learning implementation was securing the implementation of the system through the effective delegation of responsibilities. In the case of Korea, the central administrative organ, the Human Resource Development Bureau of MEST established the basic policy proposal, prepared a budget, and set up guidelines for the implementation of policy by MPOEs. In this process, related organizations

such as KERIS took the lead in drafting policy and supporting MPOE implementation.

***(2) Implementing policy through liaison and cooperation between the main and branch organizations***

The degree of cooperation between main and branch departments of the same organizations greatly influences the success of the education implementation project. In particular, not only such factors as liaison, standardization, and circulation are important in informatization, but what was initially a project affected by specialized branches, making such intra-organizational contact and cooperation is even more important.

***(3) Sustainable Financing of ICT in education***

In the beginning of the adoption of computers to primary and secondary schools, MEST encountered numerous problems relevant to securing budgets, and one of the ideas the government took over was to gather the change from public telephones installed in the Republic of Korea for investing to ICT in education. Upon recognition of such unstable funding MEST tried to secure stable budgets guaranteeing continuous investments for ICT in education in association with MKE, which established the Informatization Promotion Fund to support building up ICT infrastructure. Thanks to the Informatization Promotion Fund, the Republic of Korea was able to become a country equipped with a well-established and world-class ICT infrastructure. Installation of high speed Internet at schools and major ICT initiatives taken by MEST and construction of the Information Super Highway geared by MKE were attributed to the funds.

***(4) Establishing a policy monitoring and evaluation system***

E-Learning policy is not merely the mechanical introduction and establishment of technology and systems in educational institutions. Just as important for the success of e-Learning is the preparation of legal systems and a change in the way of thinking about this policy by teachers and other personnel accompanying technical implementation. Together with this, a monitoring and evaluation system for the implementation process must be established. The Federal Republic of Nigeria has been evaluating

informatization implementation since 1990. Other essential elements required for success are risk management and standardization to deal with appropriate outsourcing, and outside order services.

**(5) *Consumer-centered policy implementation***

The most important external factors in the success of e-Learning policy are the consumers, teachers and students. While informatization utilizes technology, its effects can only be realized through human involvement. That is, only through the active utilization of this system by teachers and students can the policy succeed. No matter how large is the budget of the informatization system, if teachers oppose it or if it is not properly utilized, the system will essentially fail. With this in mind, the e-Learning project in Nigeria was designed and implemented as a consumer-oriented system.

**(6) *Shift in policy to respond to technological and societal change***

Internal and external environments of 'Education informatization affect the success and failure of e-Learning policy. E-Learning policy should incorporate the nature of rapidly changing telecommunication technology. The educational paradigm shift accepted by the society will play a critical role in the success of the e-Learning policy. The emphasis on democracy rather than efficiency in society is reflected by the substantial importance placed on personal privacy and human rights protection in formulating e-Learning policy.

## **Conclusions**

In order to secure sustainable development of e-Learning and innovation in education, it is necessary to continuously pay attention to investment on ICT in education in the following areas. First, existing ICT infrastructure is getting old; its maintenance and renewal is very important. Technical personnel is needed at the individual school level rather than at the MPOE level in order to address this issue properly.

Second, teacher capacity building has always been considered to be an important factor for ICT in education. The new paradigm of education



needs new ways of teaching and learning. However, as new media is created, teachers tend to be overwhelmed by the new technology. Because new media continuously emerges to support the new paradigm of education in the future, teachers need open, flexible, and creative mindsets for new ICT technologies. Accordingly, future directions for teacher training and development should include comprehensive topics not limited to ICT technology to develop innovative ways of teaching with ICT for future students and future education. Finally, teacher training for ICT in education should facilitate teachers' pedagogical mind and performance in innovative ways.

Third, though curriculum integration of ICT is not easy because it requires more than the quantitative use of ICT, it rather ensures quality use of ICT for meaningful education. Large amounts of digital educational content in Korean led many teachers to use ICT for their teaching. Moreover, the recent development of digital textbooks has provided a great opportunity for curriculum integration of ICT because these are textbooks and much more than that. However, if digital textbooks are successfully integrated into regular curriculum and add values to traditional printed textbooks, school curriculum should be well understood by policy makers and developers. Also, promoting strategies and events for school principals and teachers should be considered. Still many teachers are not familiar with digital textbooks.

Fourth, information service initiatives can be provided in three ways. It is important to establish collecting, creating and sharing processes and an organizational structure for quality educational resources for teaching and learning. EDUNET has evolved from an educational portal to the national teaching and learning centre, which coordinates and facilitates the efficient collaboration between the central government and regional government. Services as CHLS were developed to support after school learning opportunities specially focused to bridge the socio-economic divide among student backgrounds. Innovation of the national governance through the initiatives of e-Government can be formulated by participation of various

stakeholders and beneficiaries. In accordance with the implementation of the information service system, it is essential to develop national standards for educational resources and an adequate quality assurance system. Since each country has its own context, the specification of standardization processes and quality assurance categories and guidelines can vary.

Fifth, as the monitoring and evaluation of national projects become increasingly important, the Korean government should continuously enhance the efficient and effective monitoring and evaluation system to diagnose current status, check the outcomes and improve ongoing initiatives.

Lastly, national policy intervention should focus on reducing and diminishing disparities among gender, region, and economic status to improve and achieve sustainable equity in the education sector through mobilization of public resources and establishment of public private partnerships. Though accessibility is one of the key issues in policy, especially for developing countries, the development of the social and cultural environment and soft-skill human resources such as digital literacy should also be considered.

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