

ICTs in Education Enterprise: Examining the Need for Electronic Learning in Nigerian Higher Institutions.

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Abstract: *The 21st Century has ushered in new methods of doing things in every perceived human endeavour with the advent of newer technologies. The application of technology in teaching-learning has become widespread in most of the advanced worlds, but with less attention in developing countries, especially in Nigeria. (Siddiqui, 2007) observed that higher education has been slow in coming to terms with the emerging global society, and many educators do not yet seem to be concerned that the shape of electronic education may be determined by global forces ..., hence, current bureaucratic institutions must be replaced by flexible networks of scholars linked together worldwide. However, the awareness of this technological breakthrough has started gaining much attention in higher institutions in developing countries due to rising demands in education, particularly in Nigeria where there is uncontrollable admission quandary in higher institutions due to constant and/or massive demand in education by her citizenry. Consequently, there is need to adopt e-learning (electronic learning) in schools to cope with perennial admission problem. Hence, the purpose of this article is to examine from the exiting literature the possible needs for massive adoption of e-learning in Nigerian education system. The aforesaid scholar stated that as with all change, there will be both risk and opportunities. So, the researchers examined the possible merits and the demerits of its adoption. Additionally, the authors made possible recommendations for the authorities for its effective implementation in schools. Nevertheless, a glance into the future use of e-learning at all levels of Nigeria's education system was also examined.*

Key Words: *ICT, E-learning, Admission, Distance education, Education system and Technological innovation*

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I. Introduction

The impact of Information and Communication Technology is gradually gaining grounds, particularly in the advanced worlds. Its use enables access to remote resources, supports new teaching methods, enables teachers and students teamwork/collaboration, and extends educational programmes and information literacy to all corners of the globe. In recent times, Nigerian higher institutions have experienced excessive class sizes. This has been a very serious problem that needs immediate attention. This trend, I foresee, will continue in a higher scale if there is no change. Advances in technological invention have brought here with us a wind of change that is embracing all aspects of human enterprise, and the education sector is not left out of this change. The conventional or the orthodox technique of teaching and learning (i.e., face-to-face) by which teachers and learners sit in the 4-walls of a classroom is gradually taken a new dimension. Teachers' claim of encyclopedic knowledge is also fast fading away, and the new method of multi-learning method that is timeless and borderless is progressively replacing the conventional mode of teaching-learning process.

In the same argument, Fafunwa (1991) recommended that one important guiding principle is that education should be a continuous process, and flexible enough to accommodate any mature person at any stage. In fact, the scholar commented that it is even worst when one has not seen the inside of a formal school. Consequently, Nigeria, as a state must evolve an education system that is embracing and that will conveniently address our educational needs.

Nigerians will always remember the vision 2000 and 2015, when all Nigerians believed that everything would have been near perception, if not excellent, especially in the educational arena. Yet, not much was achieved based on the envisaged objectives of the vision. We are yet into another vision 2030, hoping for miracles to happen again, particularly in the field of education, where our children remain hopeless in the quest for securing admission into higher institutions of higher learning. On the same note, Moore and Kearsley (1996) declared that the demand for basic education and training in all occupations has increased significantly over recent decades and will grow even more dramatically in the future. Also on the increase is the emergence of demand for non-vocational continuing education by "older" students – individuals who decided to pursue

degrees courses after they have retired from work. Hence, the scholar sounded a warning that the classroom instruction will not cope with the sheer size of such demand for continuing education.

However, if the vision 2030 will not be a mirage like other visions, Nigerians need to integrate e-learning (electronic learning) into her education system. The integration of electronic education into Nigeria's higher institutions will be a stepping stone at solving or addressing the more than 10 million out-of-school illiterate Nigerian citizens that need to acquire higher education (Alabi, 2010).

In discussing e-learning, it is worth noting that many terms have been used to describe electronic education in recent times. Some scholars refer to it as – Distance education, Distance learning, Computer-mediated learning, Online learning, Flexible learning, distributed learning, etc. However, in spite of little or no difference among these terms, they will be used interchangeable in this write-up, but preferably, “electronic education.”

It is on record that no meaningful development or achievements will be made in any nation that parades illiterate citizenry. So, for a meaningful progress to be attained in our educational sector, especially to address the admission dilemma confronting our institutions of higher learning, electronic education needs to be entrenched into the education sector. The situation is now ripe for the Nigerian education system to embrace the electronic method of teaching/learning to race with time. In support of the above statement, Zhang, Zhao, Zhou, and Nunamaker (2004) stated that e-learning is arguably one of the most powerful responses to the growing need for education. Hence, the need for the integration of electronic learning technique into the mainstream of Nigerian education system has become a very paramount issue.

Nevertheless, for a better comprehensibility, it is vital to understand what we mean by “E-learning” and “Distance education” and how it will address our persistent educational problems.

Concept of E-learning: The traditional method of education (face-to-face or campus-based institutions) where students live on campus or close to the institution and enjoy campus-based support services for a period of time throughout their studies is gradually being replaced with electronic mode. Several scholars have defined this concept in different ways based on several variations of e-learning that have emerged in recent times, just to address diverse needs or goals. Then, let's examine some of the definitions and/or descriptions attached to it.

Instructional Technology Council defined e-learning as “the process of extending learning or delivering instructional materials to remote sites via the Internet, intranet/extranet, audio, video, satellite, interactive broadcast, interactive TV, and CD-ROM (Holsapple & Lee-Post, 2006). E-learning therefore stands for electronic learning. Zhang, et al (2004) described e-learning, as learning and teaching online through network technologies. Instructional Technological Council defined e-learning as “the process of extending learning or delivering instructional materials to remote sites via the Internet, intranet/extranet, audio, video, satellite broadcast, interactive TV, and CD-ROM.” (Rudestam and Schoenholtz-Read, 2010).

Distance Education: Hmaidan (2001) described distance education as “education in a teaching-learning experience that happens between a teacher and student(s) separated by physical distance by means of technological media. Moore and Kearsley (1996) also defined distance education as “Planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques of course delivery, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangement.” In the same development, U.S Congress for distance Education defined distance education as “Linking of a teacher and students in several geographic locations via technology that allows for interaction” (Daniel & Stevens, 1998).

Societal Enlightenment/Awareness Towards Electronic Education

There is public lack of awareness and understanding of the use of electronic education in Nigeria. This is a fundamental issue that needs to be urgently addressed for a better implementation of effective electronic education in Nigeria. The public needs to be sensitized on the need for electronic education in Nigerian, particularly at this time when Nigerian higher institutions have no carrying capacity; where our children seek endless admissions in schools without any hope.

Need for Computer Education for Teachers

We cannot discuss about the integration of technology into today's “new classroom” (i.e., electronic/virtual education) without first of all tackling the fundamental problem, which is computer illiteracy among teachers (educators) and students alike. Evans, Martin & Poatsy (2010) affirmed the above statement when they said that teachers must have a working knowledge of computers to integrate computer technology effectively into the classroom; Internet, as a research tool could hardly be used by teachers who are not computer literate.

There is no doubt that majority of our teachers cannot boot a computer. It is also a fact that most of our word processing and presentation jobs are contracted to computer operators at the cyber cafés in our institutions campuses or those located within our residential environments. This development, if it persists, cannot lead us to the envisaged goal of adopting electronic education in Nigerian education system. The knowledge of computers is very vital for our teachers who are the backbone of curricula innovation. Evans, et al (2010) stated that being

computer literate means being familiar enough with computers that you understand their capabilities and limitations, and you know how to use them. The scholars emphasized that you need not be a computer guru, or know enough of computer programming, or know enough on how to build a computer yourself to be a computer literate person. Computer literacy is not limited to any individual irrespective of your career choice.

A computer literate person will effectively, wisely and knowledgeably use computers for any career choice and also take advantage of adaptation to future technologies. It will enable you use the e-mail and other Internet resources meaningfully and wisely (Evans, et al (2010).

Consequently, for effective utilization of technological innovation in teaching and learning process, the knowledge of computers is indispensable. Teachers must be trained to respond to the present technological trends.

Need for Teachers Orientation and Training Towards Electronic Education

Online teaching is not the same with face-to-face classroom. Pankowski (2004) asserted that it is very difficult to teach in a medium in which one has never experienced learning. White & Weight (2000) warned that the classroom technique that works for in face-to-face classroom might not work online, and that faculty needs additional support for effective teaching. Digitized education requires individual acquisition of content and skills. Cuban (1987) posits that teachers' are the gateway to change. So, teachers being the backbone of any curriculum set up and curriculum change needs to develop the 21st century skills. With their expert knowledge on their various subject arrears, they need to be trained on to package these experiences to guide their students into online electronic education platform. In the same vein, Rudestam & Schoenholtz-Read (2010) again emphasized that electronic education requires "soft skills" and different pedagogy that must be learnt by educators to accomplish the new method of teaching and learning. The scholars warned that reliance on the prevailing educational paradigm (face-to-face) instructional practices might not be the best and most effective use of the online environment.

Teachers need to be trained and taught the online learning fundamentals in order to encourage positive learning habits that aim to foster self-directed learning styles and genuine collaborative learning with their classmates. They need to be trained on how to plan, create, and structure online instruction assignments that will intellectually stretch their students but will not confuse, deter or overwhelm them (Mishra, 2005). Designing online instructional content requires technical expertise, and the teachers or instructors need to be acquainted with these technicalities. Teachers must not only know the subject matter, they must be taught the facilitative skills required for online teaching.

On this note, Sandholtz, Ringstaff & Dwyer (1997) suggested that teachers who are willing to invest their time and effort for innovative process deserve support. Electronic education requires additional or different skills than the most current classroom teachers' possess or new teachers are taught (Moore and Kearsley, 1996). In the same manner, Aggarwal (2007) posits that no technology education for schools can be planned, prepared and implemented unless the classroom teachers are effectively associated with the techniques.

The most important question now is "How do we train and re-train teachers to conform to electronic education?" "How do we change teachers training programmes to incorporate electronic education techniques for the online environment?"

Computer-mediated learning demands changing the traditional role of the teacher from information transmitter to information guides or facilitators, who arrange meaningful learner-centred experiences, and today's adult learners, sometimes called "Old students" are of the view that teachers will assist them to become self-directed and independent in their studies (Mishra, 2005). They are also of the views that if teachers' feedback and re-enforcement are not given to them that they will not always know whether they possess accurate knowledge of their subject matter.

Research has shown that technology evolve much more rapidly than the willingness of teachers, learners, and educational institutions to exploit those technologies for learning. In view of the fact that there is usually a time lag between the appearance of a new technology and its eventual widespread adoption for educational purposes, there is urgent need to keep teachers and learners abreast of the technological tools (and skills) in order to quickly apply each new refinement to the quality of distributed learning environment for the benefits of distributed learners (Geoghan, 2012).

Again, on the need to train teachers for the new job, Mishra (2005) emphasized that there are varying pressures on the teachers to keep up-to-date- on their area of expertise in addition to the technologies and innovative methods; the technologies and innovative methods also require some learning on the part of the teachers. Teachers are to be trained on how to develop networked accessible courseware and instruction for the electronic education. They must be trained to have the ability to create and upload their content for the learners. They must have the ability to use communication tools, such as chat, online discussion tools, email and conferencing. Siddiqui (2007) in affirmation emphasized that there is need to trained teachers on how to

introduce new technology tools to core curriculum courses. The scholar stated that they need the training that will enable them receive hands-on experience on the development of electronic enhanced courseware. In the same development, Aggarwal (2007) advocated for in-service education for teachers and administrators, and also to organize workshops by stressing on the relevant objectives.

For e-learning to make a meaningful impact in this part of the world, the teachers must be sufficiently prepared technologically to be effective in electronic education setting. This is the time to change the mindset of the public and especially the teachers, who have been heavily dependent on lecturing with textbooks, manuals and guides to embrace a new pedagogy. To borrow the words of Moore and Kearsley (1996), "How do we change the teachers who are reluctant to allow transformation in education that might lead to evolution of systems that are very different from those that they understand?" In attempt to change the curricula to incorporate electronic education activities or methodologies, teachers must be massively trained and retrained to grasp the technology of today and the future. I do know that the aforesaid change will take a long time in view of the fact that few of the faculty at colleges and universities has any expertise or experience with distance education as observed by Moore and Kearsley (1996).

Nigerian policy makers must start somewhere, no matter the time lag; we must keep pace or race with the rest of the world to achieve education for all for our teeming illiterate citizens to make a responsible society.

Poorly qualified technology teachers will not make any headway to the integration of electronic teaching and learning into the education system. The training of teachers for technology-based education is very paramount because there are grossly insufficient qualified technologically trained teachers at present to effectively handle electronic education in Nigeria. There is need to massively establish technology centres to train and re-train teachers in all the Nigerian Universities. Our education curricula must reflect our present social realities if we must move out of our present predicament. If we venture into electronic education without corresponding expertise teachers, as Moore and Kearsley (1996) put it, "it means that many teachers are likely to thrust into distance teaching situation with little preparation and understanding of how to do it well; consequently, we can expect a fairly long period of poor-quality distance education."

Need for Computer Education for Students in electronic Education

Nigerians cannot expect to embark on effective electronic education for the masses when the majority of her citizens, particularly students that are to benefit from the programme are computer illiterate. There is need for massive education of students on the use of computers, particularly at primary and secondary school levels. They need to acquire this literacy before embarking into higher institutions. It is on this note that Moore and Kearsley (1996) advised that it is very reasonable to include an orientation session/lesson in any distance education course where students can find out how the delivery system works and what is expected of them.

Students are the centre of all learning activities. Electronic education requires computer knowledge. In affirmation, Schrage (1990) pointed out that technology can be effective if they are designed to empower students' engagement with the learning process and collaboration. Consequently, knowledge of computers will definitely put them ahead of their envisaged duty. If students are not acquainted with computer education, they will find it very difficult to fit into the online environment. E-learning increases computer sophistication of young adults, by allowing them to locate and take advantage of their own learning resources (Brown, 2008). Mason & Runnie (2010) revealed that blogging, wikis, e-portfolios, and social networks are all excellent tools for allowing learners to clarify concepts, establishing links and relationships, and text their mental models. These cannot be performed without the required technological skills.

Merits of E-Learning

There is an opportunity for universities to restructure themselves through the use of digital technology into vital organizations which will enhance student learning and meet the challenges of the 21st century. More importantly, through the use of technology in higher education will accommodate the educational requirements of an increasingly diverse and expanding global students' population (Siddiqui, 2007). The most single aim of electronic education is "to provide educational opportunities for a group of geographically dispersed adults, mid-career professionals who could not easily give up their work responsibilities to move to campus-based institutions for a lengthy time" (Rudestam & Schoen-holtz-Read (2010).

Electronic education offers a lot of opportunities to teachers, learners and the institutions at large. However, Hrastinski (2008) stated that for e-learning initiatives to succeed, organizations and educational institutions must understand the benefits and limitations of different e-learning techniques and methods. On this note, let us discuss some of the benefits of electronic learning in general.

Zhang, et al (2004) outlined the major goals of e-learning as “improving access for both traditional-age and non-traditional students who are not otherwise able to attend a traditional, campus-based program; improving efficiency and effectiveness by using e-learning media and methods to control cost or provide other efficiencies or to make large-enrollment courses more effective for students; and improving student choice over when, where, and how to engage in the learning process.” Again, the aforementioned scholar pointed out that working adults and advanced learners are key beneficiaries of extending training beyond the walls of the colleges and universities. In electronic distance education, students or learners at any location can interact with teachers/instructors or facilitators, anywhere and at anytime. Students taking a particular subject are not compelled to take directives from a particular teacher or limited to a professor/teacher in a school. In addition, the students’ knowledge is also not limited to teacher/professors that assemble them in a particular place, but can access teachers/professors from different countries of the world.

(Siddiqui, 2007) as cited above affirmed that effective use of electronic education can bring post-secondary education to a new group of students without the time or ability to attend normal campus courses.

Benefits of E-learning to Students

E-learning provides huge opportunities for electronic distance education. As (Siddiqui, 2007) put it, Technology Mediated Learning (TML) brings education closer to learners who were served by inadequate face-to-face educational services. TML uses technologies, such as computer conferencing to communicate with other students to a degree previously not impossible to achieve. Unlike the previous distance education which relied on the slow exchange of printed documents, electronic distance education brings education to the remotest door-steps of every individual that needs to acquire a university education via various technologies.

In the same development, students’ knowledge and use technology to enhance the educational process is very paramount. There is need to propel students to invest in computer technology to maximize its usefulness during their secondary education career. Knowledge of computer literacy at their secondary school level is very essential bearing in mind that this will be useful at the higher education level. Basic computer literacy, especially in the area of networked-based training materials will enable pressure that they have a basic foundation on the use of computer and instructional technology resources (Siddiqui, 2007). The scholar further stated that electronic education enriches learning; for instance, reference materials that were previously inaccessible to learners and teachers can now be viewed by students through Internet connectivity.

Electronic education provides opportunities to involve teachers and learners in entirely new ways of teaching and learning. Electronic education is learner-centred, distributive and collaborative in application. E-learning enriches learning by enhancing better learning in a self-paced environment in ways that fit into lives busy with families, work and other responsibilities; it also offers greater potentials for personalization of teaching and learning (Siddiqui, 2007).

Research revealed that introvert students do particularly well in online classrooms. Technology education enhances students’ capacity to engage in learning that he/she selects, at anytime, in a variety of modes, and with experts both within and beyond the classroom. In addition, instructional resources are delivered via the Internet, and the learner can interact with educators through telephone lines, FAX and the intranet.

Teachers’ Role in Technology Education

Mishra (2005) has outlined several roles of teachers in a technology-reach classroom thus:-

- i. Teachers plan classroom instruction on a large scale
- ii. Teachers think of wide themes they want students to explore, find both print and electronic materials related to the themes, and prepare students by gathering, organizing and sharing their new found knowledge with others
- iii. Teachers now spend time to locate materials on the Internet that will support their thematic activities
- iv. Teachers are becoming better facilitators, helping students stay active in their pursuit of knowledge.
- v. They are motivating students through the use of computers and telecommunications to enable students participate in various literacy projects.
- vi. They are making more authentic assignments and engaging students in topics that have themes of high interest to them
- vii. They also help students design presentations of their research findings to share with their classmates, their parents and people around the world.
- viii. They are helping students learn how to filter (information) from the Internet due to the volume of such materials.

In technology-based classroom, teachers take facilitative roles to guide students in meaningful enquiries (Standholtz, Ringstaff & Dwyer (1997). In this case, the role of educators changes towards facilitating and guiding students instead of transmission of knowledge.

Institutional Benefits of E-learning

There is an axiom that two good heads are better than one. E-learning creates opportunities of institutions to collaborate to share programmes in a given subject or discipline in order to provide quality programmes. Moore & Kearsley (2007) observed that electronic distance education makes it easier for institutions to compete against each other for students since the students are not geographically bound on where to register for courses. It creates avenues for quality complete programmes by institution, as students or learners go for institutions that are known for quality programmes; programmes that are of good value; programmes that meet the needs and aspirations, and the ones that will worth the money spent. In online programmes, institutions that form consortia and cooperate with others to pool their resources together will definitely have a competitive edge over other institutions that do it alone by producing good quality programmes.

To institutions, electronic learning is seen as an added-value as the technologies are observed as components of the existing structures. It is a method of extending the rich of campus-based and paper-based distance education. In an attempt to provide more services, like technology education, University of Ottawa, as cited by Siddiqui (2007) created a data base of biological images and texts, which is referred to as "Biodidac" that provides an excellent online resources for students for biology laboratory session. The reason behind this was in realization that students learning in the laboratory was suffering due to increase in class size and the decrease in funds for the purchase of specimens for the students. With e-learning, there is possibility to expand and extend traditions post-secondary client-based learning outside the conventional geographic boundaries and the catchment areas as the case with Nigeria.

Furthermore, with the help of asynchronous means of learning (communication in which interaction between sender and receiver takes place simultaneously, such as telephone and teleconferencing (Moore & Kearsley, 1996), mature adults, especially those with paid jobs in government and private organizations that restrict their ability to attend classes in the traditional institutional set-ups are afforded the opportunity to enroll in any course of their choice in any of the desired higher institutions. In fact, properly implemented technology-enabled education in Nigeria will definitely address most of the problems facing Nigeria's educational institutions at all levels.

Demerits of E-learning

All that has possibilities also has some risks. Anon-traditional problem requires non-traditional approach. The student-centred electronic education put lots of challenges to carefully use descriptive language in written and verbal comments (Mishra, 2005). The scholar further pointed out that a major challenge to distance education is to create assignments and online discussion that foster critical skills. Electronic education has its own flaws which Siddiqui (2008), Allen & Seaman (2007) and Rudestam & Schoenholtz-Read, (2010) have tried to enumerate as outlined hereunder.

- i. Technology education can be discouraging for some learners and create difficulty for others as those who are good in typing and computer literate will have an advantage.
- ii. Some students that feel that they don't belong to community of learners (feeling like an outsider) affect participants and quality of interaction.
- iii. Flexibility in time may render learners and teachers to work more hours than previously as online courses can encroach on the rest of one's life. That is, increased time and efforts for faculty
- iv. Online learning is not seen as a cost saving approach to education since it requires a large investment in infrastructure and support. This means that there is high cost of online programmes.
- v. Facial and body language is usually removed from online communication. That is to say, in a traditional classroom, body language reveals when and how the teacher should intervene in a given situation, but this different in an online learning whereby the body language is lacking.
- vi. Faculty resistance to online programmes and courses
- vii. Increased needs for students focus and discipline
- viii. Issue with retention
- ix. Employers' negativity.

The Future of Electronic Education in Nigeria

The future use of electronic education in Nigerian education system is not in doubt because of prevalent endemic admission quandary and the overcrowded nature of Nigerian institutions classroom, and the recent awareness being created by scholars in the fields. In emphasizing the future capabilities of technology-based education, Siddiqui (2008) stated thus: "there are prophecies that campus will disappear as learning increasingly become distributed. There are hopes as awareness is beginning to be created among the populace and the students. There is also hope a high hope that government will definitely respond by making policies that will enhance the integration of technology-based education and also foster the training of teachers and provision

of infrastructures and equipment to that effect. This is in agreement with Siddiqui (2007) when scholar pointed out that with better integration of and more reliable services on the Internet, there is a strong tendency to towards utilizing the net as a premium choice for net distributed teaching and as a learning tool. In affirmation, Aggarwal (2007) foresees that in spite of prevalent resource crunch, that here is a possibility of using the new technologies in an appreciable scale in the near future.

II. Conclusion

Effective integration of electronic education depends highly on good orientation and training of teachers and students alike. For us to move forward in electronic education, we need to move away from faculty being in control of teaching to the pedagogical shift inspired by the Internet, that is, a shift from teaching to learning; a shift which is particularly well suited to the adult learning in context (Alonso, Lopez, Manrique & Vines (2005); Rudestam & Schoenholtz-Read (2010). Conclusively, I would like to borrow the words of Aggarwal (2007) which states thus: “If we want the successful introduction of this technology in education, a more comprehensive plan is needed to develop the practical knowledge of basic skills to operate the equipment, understanding of basic principles and awareness of main applications, ability to design and prepare software, etc, to maximum number of teachers”. In the same manner, Rudestam & Schoenholtz-Read (2010) summarized it all when they said, “we believe that if faculty are trained in the pedagogical methods that lend themselves to the online environment and students are effectively oriented on online work, the result can be highly interactive courses that lead to a successful achievement of learning objectives and a sense of satisfaction on the part of faculty and students alike.

III. Recommendations

The Nigerian government has major role to play by providing schools with adequate computers. The government should also be responsible for providing computers to students who cannot afford to purchase one. In order to effectively integrate electronic education into our educational system, especially at this nascent stage, we recommend as follows:-

- i. A hybrid type of electronic learning that will be appropriate to all learning styles and also suit the technology of our present time.
- ii. Seminars, conferences and workshops should be constantly organized to improve teachers’ competences and capabilities in order to effectively integrate them into the mainstream of electronic education.
- iv. Technology training centres should be established in schools and out of schools to train computer-mediated classroom teachers.
- v. Government and school authorities should make policies that will support school efforts to build a technology infrastructure; pay for adequate preparation of teachers to use technology and also make it mandatory to train today’s teachers for today’s electronic education (Mishra, 2005).
- vi. Teachers/educators on their own part should try as much as possible within their financial resource, update themselves technologically in order to remain relevant in contemporary society.
- vii. Institutions should partner with stakeholders, companies, government and non-governmental organizations to assist in the establishment and training of persons for the envisaged electronic education.

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