

## ICT and Distance Education Programs in a Sub-Saharan African Country: A Theoretical Perspective

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### Abstract

*Researchers examined the domain of open and distance education programs in Nigeria. The introduction of ICT usage and its integration and diffusion have initiated a new age in educational methodologies and have radically changed traditional methods of teaching and learning patterns in the domain as well as offering contemporary learning experiences to both instructors and students. The discussions were made in terms of (a) the contexts of distance education in Nigeria (b) the challenges facing ICT usage, integration and diffusion and (c) the need to consider policies' outcomes when evaluating distance education programs. The study was carried out using a qualitative research method; the uses of document materials and observation were an essential part of the instruments for data gathering. The study found that the high hopes and enthusiasm for open and distance education are interfered with as the nation is faced with inadequacies in essential services and infrastructures: electricity, postal and telecommunication services and so on. However, there is an ongoing traditional development in distance education resources.*

**Keywords:** Nigeria, educational policies, integration, diffusion, infrastructure.

### Introduction

Promoting the development of a knowledge society through open and distance education is one of the tactics increasingly adopted in recent times by governments around the world who want to encourage economic development at the local, state and national levels. Researchers (Howell, Williams & Lindsay, 2003) have shown that distance education programs in particular are growing in importance as centers for the development of knowledge. This has led several countries, notably those in the west to develop strategies to encourage this effort aimed at providing people who do not have the opportunity to attend conventional institutions of higher learning (Ololube, 2006b; Ifinedo & Ololube, 2007). However, despite advances in information and communication technology (ICT), colleges and universities in Nigeria are posed with complex problems especially in their distance education programs in reaching the goal of promoting the development of a knowledgeable society (See figure 1).

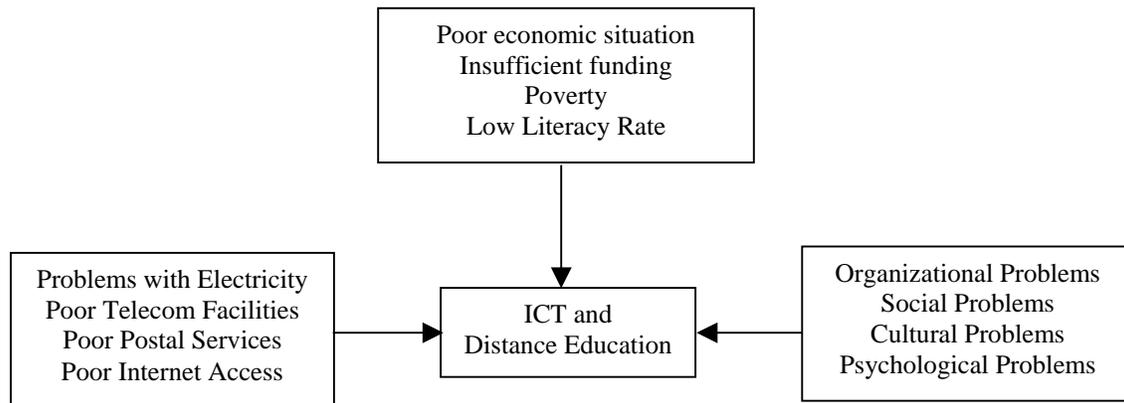


Figure 1. Some factors affecting successful implementation of distance education in Nigeria

Distance education, also called open or distance learning, is a form of education in which there is normally a separation between teachers and learners. Thus, it incorporates the printed and written word, the telephone, computer conferencing or teleconferencing to bridge the physical gap between the instructor and the learner. Distance education provides educational opportunities to those who otherwise would have been denied. Improving the quality of education through the diversification of contents and methods and promoting experimentation, innovation, the diffusion and sharing of information and best practices as well as policy dialogue are UNESCO's strategic objectives in Education (UNESCO, 2002, 2005).

By itself, the information and communication technology (ICT) literacy rate has become a key tool that has revolutionized how we see the world and how we live in it. ICT literacy is the capability (knowledge, skills and aptitude) of a person to identify, search effectively and present specific information in order to build knowledge and develop critical and creative thinking pertinent to a field of study. This phenomenon has given birth to advances in our ways of life. ICT is having a revolutionary impact on educational methodology both at conventional and distance education levels globally. However, this revolution is not widespread and needs to be strengthened to reach a larger percentage of the population. Therefore an interdisciplinary and integrated approach is very necessary to ensure the successful development of Nigeria's economy and society (Mac-Ikemenjima, 2005).

The academic landscape in Nigeria includes the teaching and learning process, along with the educational programs and courses and the pedagogy or methodology of teaching; the research process, including dissemination and publication; libraries and information services; higher education administration and management, and distance education programs (Beebe, 2004). According to the national policy on education, Federal Republic of Nigeria (1989), higher education refers to the post-secondary section of the national education system which is given in Universities, Polytechnics and Colleges of Technologies including such courses given by Colleges of Education, Correspondence Colleges and such institutions as may be allied to them. The terms of references for these institutions of higher education as indicated in the national policy on education are:

- The acquisition, development and inculcation of the proper value-orientation for the survival of the individual and society.
- The development of intellectual capacities of individuals to understand and appreciate their environments
- The acquisition of both physical and intellectual skills which will enable individuals to develop into useful members of the community
- The acquisition of an objective view of the local and external environments.

The Federal Republic of Nigeria (2004) through its national policy on education detailed that the goal of distance education should be to:

- Provide access to excellent education and equity in educational opportunities for those who otherwise would have been denied.
- Meet the special needs of employers by instituting special certificate courses for their employees at their work place.
- Encourage internationalization especially of tertiary education curricula.
- Restructure the effect of internal and external brain drain in tertiary institutions by utilizing Nigerian experts as teachers regardless of their locations or places of work.

Thus, the federal government is convinced that for higher education to make optimum contributions to national development, ICT is an essential ingredient though the integration of Information and Communication Technology (ICT) in distance education programs in Africa has not been encouraging and has been the topic of a good deal of debate globally (Ololube, 2006b). In Nigeria, the relationship between the development of ICT penetration and use in distance education programs and its diffusion into the programs in higher education in general is dependent upon government policies. The ICT Policy resource for Nigeria was provided for planning, research and evaluation purposes. The policy is aimed at addressing innovation, entrepreneurship, development problems/strategies and the digital divide in Nigeria. While ICT has much to offer, it has failed to deliver on that front. A lot of time and effort has been invested in developing the policy, and its implementation has failed (Ololube, Ubogu & Ossai, 2006). The Nigerian government's policy and capitalization of higher education to enhance distance education is nothing to write home about. Instead, it maintains the traditional position of paying lip service or little attention to empowering higher education and distance education. Thus there are no clear ways of effectively funding, monitoring and controlling, and policy implementation as a way of ensuring that standards are met (Ifinedo, 2005; Ololube, 2006a).

### **Purpose of the Study**

Regardless of the fact that there is relatively abundant research on distance teaching and learning especially in the west (e.g, Leidner & Jarvenpaa, 1993; OECD, 2001), Nigeria, like most developing countries, is information-poor. As such published papers in this domain are in acute shortage. In particular, studies on the impact of information and communication technology (ICT) on distance education in Nigeria are sparse (e.g., Bolaniran & Ademola, 2004; Yusuf, 2006). Consequently the authors have had to rely on the limited and readily available materials and on their personal observations and general impression of the distance education programs in Nigeria.

In Nigeria, we acknowledge that more than a few factors (government policies, lack of funding, institutional problems, infrastructural problems, human capital problems) affect the integration and approach to successful improvement of distance education programs. Since this is the case, it was basically impossible to consider all the factors. Therefore, the purpose of this study is not to look into such a variety of factors but to address the impact of ICT in relation to distance education and relate it to sustainable development of education in Nigeria. The key assertion of this paper is that the effective use of ICT for distance education addresses technology based learning, seeking synergistic results that benefit distance education students as they graduate and carry out their duties. Specifically, this study looked at (a) the contexts of distance education in Nigeria (b) the challenges facing ICT usage, integration and diffusion and (c) the need to consider policies' outcomes when evaluating distance education programs.

Thus, two research questions were generated to further and guide this study:

- What challenges face ICT usage, integration and diffusion in Nigerian distance education programs?
- What are the policies' outcomes when evaluating distance education programs in Nigeria?

### **Methodology**

In this study we used a combination of observation and document materials for data gathering, which are valuable sources of data about educational research. On the part of observation, one of the researchers participated in the activities of an open and distance education scheme as a part-time lecturer while the other observed the research sights. In short, the type of observation used in this study did not imply a research strategy of immersion. However, some observations were made of the physical settings of some institutions and the quality of the ICT skills of those working in them based on their qualification and length of experience to be able to describe what was going on in the institutions (Pole & Lampard, 2002, p. 71).

The central materials for this study were textbooks, articles and reports. The categories of documents used in the study include both primary and secondary sources. Documents provided us with good insight into what has been written concerning the topic under study. These theoretical sources were used extensively in the course of our analysis of this study (Anyamele, 2004; Pole & Lampard, 2002; Nworgu, 1991; Arenas et al., 2002; Cohen & Monion, 1994, p. 51).

To be able to make full use of the document materials that we located and accessed, the researchers needed to assess their validity and value (Pole & Lampard, 2002, pp. 156-157). Scott (1990, p. 6) puts four overlapping validity criteria: authenticity, credibility, representativeness and meaning, which served as a framework to us. In all, it must therefore be recognised that we were able to systematically select documents in a fashion, which looks like a randomised sampling procedure, which helped us put more ideas, color and rigor into this work. And our acceptance or otherwise of the retrieved information were dependent on our selection of information from the review and the interpretation put on it. It is hoped nonetheless that the representation pinched here is a relatively balanced and logically precise one. Though, no researcher is independent of his or her own normative evaluation of a research problem, as such,

if any part of this analysis should bear the hallmark of the researchers' stance, it should be overlooked and considered as part of the researchers own over-sight.

## **Theoretical Consideration**

### **The National Open and Distance Education in Nigeria**

The National Open and Distance Education University of Nigeria (NODEUN) first began in 1983 but was suspended in 1985 by the military government. The resuscitation of NODEUN is part of the commitment of the present government towards Universal Basic Education. The justifications for the establishment of the Open University are clear because there are approximately 1.5 million applicants per year who fight for a place to attend university. However, the University system can only accommodate 20% of this number. The course delivery of the Open University will be through a combination of web-based modules, textual materials, audio and video tapes as well as CD ROMs. The university currently has 18 study centers and plans to have at least one study center in each of the 774 local governments of Nigeria. It runs programs in education, arts and humanities, business and human resource management and science and technology (Mac-Ikemenjima, 2005). Prior to the Open University, the National Teachers' Institute (NTI) was the first institution specifically established by the Federal Government to provide distance education courses designed to upgrade under-qualified and unqualified teachers. NTI also introduced the Nigerian Certificate in Education (NCE) by distance learning in 1990 (COL International, 2001).

In the same vein, given that the demand for access to higher education and university education in particular are higher than can be accommodated effectively, the existing institutions are presently operating beyond their capacities. The University of Abuja, which is centrally located in the Federal Capital Territory, was mandated by law to offer distance learning throughout the country. It was originally intended to operate as an Open University. As a first step to this end, the University set up a Center for Distance Learning and Continuing Education (CDLCE). An assessment conducted in August 1999 of the available resources for delivering distance education at the CDLCE indicated that the available facilities are inadequate for both present and future needs (Moja, 2000).

Academic degrees such as Bachelors and Masters Programs are also run by semi-autonomous institutions (called satellite campuses or outreaches) outside the ones run by the parent institutions with its own directors. The students and faculties are recruited separately from the rest of the students and faculties of the supervised and controlled institutions. Also some faculty members of the parent institutions are allowed to lecture in these institutions as a means of giving the programs official recognition. However, the academic structures, recruitments, teaching styles and curriculum are jointly decided by the internal stakeholders of the parent institutions where academic considerations are emphasized to conform to the approved nationally recognized academic degrees. Moreover academic research is governed according to the parent institutions' rules and regulations to enable it conform to the national standards.

However, the strategic position of distance education has changed significantly in the past two to six years. After Nigeria returned to a fragile democracy in 1999 and opened her rather protected economy, which was inherited from several successive brutal military regimes to

international competition. As a result, the mental definition of her home market was equally reorganized. What emerged was not just increased trade, but the internationalization of political, cultural, and the social life styles of its citizens and the quest for higher and distance education to meet these pressing demands became pertinent. Thus the acquisition of national and international degrees became revolutionary. The quality improvements in the academic agendas of these programs is geared towards reaching the global standards and excellence, but are hindered by the slow embracement of ICT aided instructional materials (hardware and software) by the respective institutions as its embracement is largely dependent on government policies. Standard in this context is the degree of excellence required for a particular purpose; it is an accepted or approved example against which phenomenon are judged or measured; while excellence in this paradigm is a generally accepted best way of doing things educationally in search of distinction in teaching and learning situations. It is an essential component of best practice that creates quality teaching strategies that produce improved scholarship (Ololube, 2005, pp. 17-31).

### **ICT and Education**

Information and Communication Technology (ICT) are advances in technologies that provide a rich global resource and collaborative environment for dissemination of ICT literacy materials, interactive discussions, research information, and international exchange of ideas, which are critical for advancing meaningful educational initiatives, training a high skilled labor force, and understanding issues related to economic development. ICT highlight innovative efforts and partnerships and promote ICT literacy, and facilitate interaction between all sectors of a national economy including external spheres (Yusuf, 2006). Higher education institutions across the world have been adopting ICT teaching and learning technologies in an effort to create an environment for both students and their instructors to engage in collaborative learning and gain access to information (Ifinedo, 2006). Access to information through ICT increases the information accessible to individuals to support them in trying new strategies, thinking and creativity that are reflective in practice aimed at engaging them to new innovations through the use of ICTs (Ololube, 2006b). Information and communication technologies (ICT) are indispensable and have been accepted as part of the contemporary world especially in industrialized societies. In fact, cultures and societies are adjusted to meet the challenges of the knowledge age. The pervasiveness of ICT has brought about rapid changes in technology and has caused social, political, and global economic transformation (Nwachukwu, 1994; Yusuf, 2005).

Every nation invests heavily in higher education because it can produce unquantifiable benefits for individuals, organizations and society as a whole. Education is provided through formal and informal means. In formal settings the conventional (face-to-face instruction) and distance education (offered with separation in terms of physical location of instructors and students) have been used to provide educational opportunities to recipients. Open and distance education, though not new in Nigeria, have been given much prominence recently. Some Nigerians benefited through the open education of Rapid Result College and Exam Success Correspondence Colleges that organized distance-learning programs through correspondence. It is also a means of providing access to basic information and tertiary education for Nigerians (Yusuf, 2006, pp. 22-29). Notwithstanding the keenness by the federal and state governments to guarantee open and distance education in Nigeria, the use and penetration of ICT in distance education

teaching and learning have been major obstacles that may have impeded proper implementation of the program by institutions of higher learning. The evidence seems glaring that Nigeria is not yet ready in her preparedness to integrate ICT in all spheres of her national economy (Ololube, 2006a, pp. 101-118).

For example, a recent study conducted by the Global Information Technology (2005) used the Networked Readiness Index (NRI), covering a total of 115 economies in 2005-2006, to measure the degree of preparation of a nation or community to participate in and benefit from ICT developments. Nigeria was ranked 90<sup>th</sup> out of the 115 countries surveyed. United States of America topped the list, followed by Singapore, Denmark, Iceland, Finland, Canada, Taiwan, Sweden, Switzerland and the United Kingdom etc. Likewise, Nigeria was ranked 86<sup>th</sup> out of 104 countries surveyed in 2004 which shows a decline in Nigeria's preparedness to participate in and benefit from ICT developments. Similarly, a study by Nigerian Information Technology Professionals in America in 2002 indicated that given current ICT penetration it may take Nigeria 50 years to catch up with America on the aspect of PC count per household (Iromanto in Yusuf, 2006, pp. 22-29).

The domain of distance education has not been unaffected by the penetrating influence of information and communication technology. Unquestionably, ICTs have impacted the quality and quantity of teaching, learning, and research in distance education. Therefore, ICT provides opportunities for distance education students and academic and non-academic staff to communicate with one another more effectively during formal and informal teaching and learning (Yusuf, 2005). For this reason, distance education programs in Nigeria need to integrate ICTs into their agendas, because the quality of teaching using ICTs to gain access to information is known in virtually all countries to be a key predictor of quality student learning. Therefore, effective manpower training is crucial using ICTs, because ICTs are tools that on the one hand can facilitate human resources development, and on the other hand, help us to take full advantage of the potential of technology to enhance quality student learning via distance education (UNESCO, 2003).

### **Challenges of Distance Education in Nigeria**

Despite the keenness by institutions of higher learning to establish distance education programs, they are confronted with enormous problems that may have impeded its proper implementation. The most significant of these problems is poor ICT penetration and usage among Nigerian distance education practitioners. Almost all African countries' basic ICTs infrastructures are inadequate; this is as a result of lack of electricity to power the ICTs materials, poor telecommunication facilities, and a poor postal system. Above all the lack of access to the needed infrastructures is due to insufficient funds.

According to Yusuf (2006), successful distance education cannot be assured without the use of effective communication and technological tools (e-mail, fax, Internet, television, radio, etc.). Several cities and rural areas in Nigeria are yet to have or have fluctuation in the supply of electricity. Additionally, most Nigerians do not have access to telephone and other telecommunication facilities. Even, telephone lines in the urban centres are not adequate to serve the teeming population. Services for those who have access are in most cases epileptic. These

may make the integration of telecommunication in the delivery of distance education difficult. For example, in a ten African country survey, Botswana has the highest fixed line household penetration at 22.4%, followed closely by South Africa at 22.1%. Zambia is next at 18.6%, with Namibia at 14%. Tanzania has a fixed line penetration of 6.1%, Ethiopia just over 5% and Rwanda 4.4%. Uganda trails far behind the rest, with penetration under 1% (Gillwald & Esselaar, 2005). Basically, African countries tend not to have the same infrastructural facilities and support as the developed West, which are prerequisites for the new order (Ifinedo, 2005). In addition, the poor state of telephone service has led to increases in dial-up cost for most Nigerians. Even with the recent introduction of GSM in August, 2001, access is still limited, services are yet to be perfect, and service charges may make GSM unattractive for distant learners. Poor economic situations and their effects on middle level manpower, stand as the major obstacle towards the implementation of ICTs in distance education. Even an average middle income earner cannot afford basic technological and communication gadgets. Thus, computer related telecommunication facilities might not be useful for most Nigerians, as computers are still a luxury in institutions, offices and homes. This has made the integration of necessary on-line resources (e-mail, newsgroups, world-wide-web, etc.) into distance education in Nigeria most difficult (Ifinedo & Ololube, 2007).

Similarly, according to UNESCO (1998), Igwe (2005) and Nwagwu and Ahanihe (2006), efforts to improve ICT access in Africa have been hampered by a number of factors; these are summarized as follows:

- prospective ICT users that have the expertise, competence and equipment to benefit from access to electronic information networks are minute in number;
- the shortage and high cost of equipment, software and information compared to situations in industrialized nations;
- the lack of reliable and accessible physical telecommunications infrastructure; telecommunications monopoly, associated with overly restrictive regulations and high costs, and
- lack of interregional networking and cooperation amongst national universities and international institutions.

In the same vein, Commonwealth of Learning International (2001) made it clear that essential services and infrastructure like electricity, telecommunications and postal services must be developed to levels that could support the declared scale of open and distance education in order to increase administrative networks and develop a proper link between faculty and students. Another most serious challenge facing distance education at this level in Nigeria is the need for the integration of new ICT literacy knowledge into academic courses and programs. This state of affairs grew mainly from the political isolation that Nigeria experienced during the military eras. Nigeria's professionals were not able to benefit from international assistance, international networking and cooperation or from courses, conferences and seminars abroad. This denial of assistance and interaction has had adverse consequences, both on the psyche of faculty and on the development of the infrastructure necessary for professional development (COL International, 2001).

### Discussion and Concluding Remarks

In this study, we presented some of the challenges facing ICT usage, integration and diffusion and their influence on distance education teaching and learning. We reported the challenging factors encountered. In addition, we discussed what efforts are to be considered to promote policies outcomes when evaluating distance education programs in Nigeria based on the purpose and the research questions of this study. It was obvious that the high hopes and enormous enthusiasm by the federal and state governments in the establishment of open and distance education programs as mentioned above in the review are hampered by the realization that Nigeria is faced with serious challenges. These challenges are in the areas of government policies, lack of funding, institutional problems, infrastructure problems, and human capital problems.

African countries have had to deal with the notion that distance education amounts to quality education that is cheap. That is a misconception. The principle of economies of scale operates from a base of adequate and quality infrastructure, capital provision and machinery; from adequately trained staff, excellent learner support systems and support functions like postal services and telecommunications that are reliable, efficient and affordable. In many African countries none of this can be guaranteed (Pityana, 2004). Included in the challenges faced by distance education providers is the required ICT competency in order for the programs to be effective. ICT Competency involves but is not restricted to the use of an online catalogue to identify and locate resources for a specific information need, keyword search strategies to refine operational situations, browser and search engine to locate and retrieve appropriate information and the effective use of other ICT instructional materials that aid teaching and learning situations (Howell, Williams & Lindsay, 2003). However, distance and e-Learning projects in Sub-Saharan Africa have grown significantly during the past three years, largely with the help of international development organizations (Nwagwu & Ahanihe, 2006, pp. 85-100). Nearly all countries in Africa are rapidly increasing the adoption and utilization rates of computers and the Internet. Senegal, Ghana, Uganda, Cameroon, Kenya, Tanzania, Malawi, Zambia, Botswana, Gabon, and Zimbabwe, among others, all contain populations with growing dependence on the Internet and pose great potential – and even several recent successes (Leary & Berge, 2006). But a lot still must to be done to meet international standards, and international best practices can only be of assistance up to a point.

Almost all literature concerning this domain of study is concerned about the inadequacy (even outright absence) of essential services and infrastructure. Obviously, electricity, internet, computers, telecommunications and postal services must be developed to levels that can support the declared scale of open and distance education (COL International, 2001; Yusuf, 2006, cf.). Possibly, another more serious challenge facing distance education at this level is the need for the integration of new ICT knowledge into academic courses and programs. This state of affairs grew mainly from the political isolation that Nigeria experienced during the military eras. Nigeria's professionals were not able to benefit from international assistance or from courses, conferences and seminars abroad. This denial of assistance and interaction has had adverse consequences, both on the psyche of faculty and on the development of the infrastructure necessary for professional development (cf., COL International, 2001).

It is clear that formal education is playing an increasing role in the competitive market in the global economy (Zajda, 1995). As such, distance education should endeavour to ensure standardization and uniformity in meeting the global trends in the highly competitive demand for excellence in distance education programs aimed at producing highly qualified manpower. Governments in Africa should embark on a comprehensive program of recapitalization of higher education and should move from the traditional position of paying lip service or little attention to empowering higher education and distance education programs to a pro-active stance by funding, monitoring and controlling their implementation as a way of ensuring that standards are met. Accordingly, making sure that adequate and functioning ICT infrastructures are available, like electricity, telecom equipment and an effective postal system, and making these infrastructures accessible to organizers of distance education programs and their citizens at large.

Accordingly, there is the need to better design distance education curriculum and infrastructure as well as organize programs so that management and students can better plan for unanticipated and unintended results that confront them as they operate. ICT plays a key role as enabler to help us better manage the complex information flow and integrate such information towards effective policy formulation and planning in order to achieve the utmost maximization of human capital and potential in society. Thus, it involves the development of effective and integrated tools as well as training modules to enable their application through effective distance education agendas (Mac-Ikemenjima, 2005).

However, there is hope for Nigerian ICT and distance education improvement following China's launch of a communications satellite for Nigeria, a first for an African country and the first time China has provided both the satellite and the launch service. The Nigerian Communication Satellite (NIGCOMSAT-1) is a super hybrid geo-stationary satellite that will provide communications services for Africa, parts of the Middle East and southern Europe. Experts estimate that the satellite will revolutionize telecommunications, broadcasting and broadband multimedia services in Africa. They say it will help create thousand of new jobs and IT professionals and provide Internet access to remote villages. It is also expected to improve e-commerce and government efficiency by promoting the development of the digital economy in Nigeria and the rest of the African continent.

Finally, the findings and nature of this study contain implications for distance education administrators, teachers, and researchers. At a broad management level, this study calls for effective policies to make a balanced investment in distance education programs and provide resources needed to effectively implement the use, integration and diffusion of ICT in distance learning rather than paying lip service. As such, it has relevance for federal and state governments in developing economies. From the research methodology perspective, this study was characterized by a number of limitations. By design, it was an investigation based on a small amount of literature. Therefore, we recommend larger studies based on a more widespread survey of literature, which might also involve quantitative studies. These limitations need to be considered when evaluating the findings in this study. For instance, they raise the possibility that some differences in opinion may be more a function of research design and contextual factors than a result of any differences in distance education studies. As with many qualitative studies then, the findings should not be regarded as definitive but as offering educators, researchers, and administrators a view of the authors' reality.

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