

Information Communication Technology and Public School Administration in Osun State, Nigeria

By

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Abstract

The study investigated the perception, availability and levels of use of Information and Communication Technology on School Administration in Public Secondary Schools in Osun State, Nigeria. Using a 25-item self designed questionnaire, Available ICT Equipment and Facilities Checklist (AICTEFC), data were collected from a random sample of 100 principals in public secondary schools. The data were analysed using descriptive statistics such as percentiles and pie chart. Findings revealed that school administrators are aware of the importance of ICT in school administration, but the major challenge is the lack of the required skill and knowledge to use these facilities. Also, it was revealed that majority of the schools lacked the required ICT resources hence very few principals could apply the ICT resources for administrative purposes. Furthermore, it was found that majority of the principals relied on print technology for various administrative purposes. The study therefore recommended that needs assessment should be carried out to facilitate the development and deployment of ICT in secondary schools.

Keywords: Administration, Information Technology, Public schools, Print Technology.

1. Introduction

The purpose of teaching is primarily to assist the learner acquire the type of knowledge and skills that will produce desirable changes in him. This can be actualized if the teaching and learning process provide the enabling environment for the learner to think critically and analytically, and consequently, be an agent of change to self, his community and society at large. Generally, the educational system is subdivided into the primary, secondary and tertiary levels. In some cases, the pre-primary education is an integral part of primary level. The secondary level occupies a critical position in the educational system.

According to the National Policy on Education (2010), secondary education is the education children receive after primary education and before the tertiary education. The broad goal of secondary education is to prepare the individual for useful living within the society and higher education. To achieve the stated goals, secondary education is of six years duration, given in two stages - a junior secondary school stage and a senior secondary school stage and each being of three years duration.

The achievement of the above stated goals is dependent on the extent the secondary school principal; who is the chief executive officer in the school is capable of applying the appropriate administrative processes in the school operations. The principal does not work in isolation; he is in constant interaction with the Ministry of Education, School Based Management Committee/Board, teachers, learners and the external environment. The school is an open system that is in constant interaction with the environment. It receives inputs from the external environment in the form of human and material resources, processes them and empties same into the environment. Consequently, the administrative functions of the principal are very complex.

Put succinctly, the administrative functions of the principal are decision making, planning, organizing, communicating, influencing, coordinating and evaluating. These tasks are applied in areas of curriculum

development, instructional supervision, staff and student personnel administration, guidance and counseling, finance, community relations, construction and maintenance of facilities, and special services. These tasks are very complex, nebulous and time consuming. For the principal to function efficiently and effectively in the present computer age, he/she must rise to the challenges of adopting new technological resources and services in the management of the school. According to Moore (2008), technology is the application of knowledge to the achievement of particular goals or to the solution of particular problems. This undoubtedly involves deployment and exploitation of Information Communication Technology (ICT) in facilitating and accelerating administrative processes in secondary schools.

2. Review of Related Literature

Ward (2010) observed that ICT for gathering, storing, processing and disseminating information have been an integral part of each organization's processes but the arrival of technologies, which, are capable of helping carry out those processes, changing them, eliminating the needs for some of them and enabling new process to be developed, have made the management of ICT a subject needing specific attention. Over the years, the administrative work of the principal is print-based. Various documents are kept in the form of records. These records provide information on the past, present and anticipated future activities of the school including relevant information from the external environment, which aid decision-making. The information kept are in the areas of instructional programmes and activities, staff and students personnel services, physical facilities, finance, supervision and interaction with stakeholders outside the school. The principal cannot perform his administrative duties without accurate, timely, sufficient and relevant information. The deficiencies associated with storage, preservation and presentation of large volumes of the information in paper form made managerial processes very cumbersome. Consequently, alternative methods provided by ICT become very imperative.

The ICT is technology-based and knowledge-driven and is indispensable in the present age. Vernon (2001) stated that ICT is a collective term covering all those technologies, hardware and software, dedicated to the capture, storage, and processing, transmission, and presentation of information. The use of ICT in all spheres of human activities has changed the face of the earth. It is used in the health services delivery, engineering, industry, business and agriculture, military, security, law, politics, and governance, all aspects of arts, science and education among others. According to Hawkrigde, Jaworski and McMahan (2011), computers are at the heart of the ICT revolution because they are fast information processing machines, configured to receive input in the form of information, systematically process the input and provide organized information that serves the needs of the user. It has the advantage of improving administrative efficiency and overall quality of the teaching and learning process.

Akinyemi (2004) stated that computer is used in education in the form of Computer Managed Instruction (CMI), Computer Supported Learning Aids (CSLA), Computer Based Education (CBE) and the Computer Assisted Learning (CAL). He further emphasized that in computer managed instruction, the computer is used for data processing which facilitate decision making for effective administration, classroom management and individual student management, markings, and analyzing test, grading, diagnosis and the monitoring of the learner's progress; improves efficiency and productivity level of information, perform intensive tasks, carries out repetitive tasks and stores large volumes of data and information. Similarly, Nwidum (2006) listed ICT in education as motion picture or film, film strip, slide projection, overhead transparency, teletext and video text; the reprographic media are photography, photocopying, scanning and faxing microchips, microfilms and microfiche, voice mail and voice processing. The computer, the internet, multimedia systems are for example computer-based training (CBT), Computer Disc Read Only Memory (CD-ROM), Computer Disc Interactive (CD-I), Digital Video Interactive (DVI), and interactive processing information services.

Ittigson and Zewe (2003) cited that technology is essential in teaching and learning. ICT improves the way mathematics could be taught and enhances students' way of understanding the basic concepts. Many

researchers have carried out studies to evaluate the benefits of using ICT in mathematics. Becta (2003) summarized the key benefits as:

- ICT promotes greater collaboration among students and encourages communication and sharing of knowledge
- ICT gives rapid and accurate feedback to students and contributes towards positive motivation.
- ICT allows students to focus on strategies and interpretation of answers rather than spend time on tedious computational calculations.

Furthermore, ICT supports constructivist pedagogy, wherein students use technology to explore and reach an understanding of mathematical concept. This approach promotes higher order thinking and better problem - solving strategies, which are in line with the recommendations by the National Council of Teachers of Mathematics (NCTM); students would then use technology to concentrate on problem - solving processes rather than on calculations related to the problems (Ittigson and Zewe, 2010). ICT provides learning mobility, where mobile telephone transforms into the internet client (Bluin, 1987). The move towards a global knowledge society requires a fundamental shift in thinking about the methodology of education. ICT has begun to exert a massive transformation of education systems in developed countries where there is electronic learning and distance education.

Nigeria like other developing nations is still at its infancy stage in the application of computers and internet systems. Failure to change would bring about backwardness in Africa's educational system especially Nigeria (Ogechukwu, 2009). Initially, the establishment of ICT equipment in schools, colleges, universities, other tertiary institutions and research institutes in Nigeria was for educational and research purposes. Gradually the management and policy makers realized the potentiality of ICT equipment in the area of educational administration such as admission, examination, accounting, inventory management, library materials management, student record keeping, etc. ICT facilities are well suited for information processing tasks because of their speed, accuracy, and ability to store large data in an accessible form. According to Ogechukwu and Osuagwu (2009), school systems have grown in size and in scope of their activities; computer technology has provided mechanism for administrators to keep abreast of increasing demands for current and documented information.

Grades assigned to students must be recorded in some fashion, and these records must be easily and readily accessible to appropriate individuals. Currently, a number of educational institutions and boards are using ICT equipment to process the examination results. The volume of such operations is often massive involving thousands of students. With the introduction of ICT equipment now these organizations are able to process the examination data and announce the results in quickest possible time. With the advent of internet, a student is able to access the result at his/her home.

Records showing the costs involved in running a school must be kept up to date in a thoroughly accurate manner. ICT equipment can be tremendously helpful in maintaining financial records. The electronic spreadsheet software is very useful for administrators in recording and analyzing the financial data of the educational institutions. It has been found that a computer system compared to a manual system produces more accurate student, personnel, and financial records (Tinio, 2013).

The use of computer in educational administration reduces time expended on clerical or paper work tasks, produce accurate information, ensure generation of reports when needed, and facilitate decision-making process. In educational institutions, ICT equipment can be used in preparation of time-tables of different classes so that the classes can be run without time and room conflicts. It may also be used to keep track of appointments and obligations.

ICT equipment is very useful in the management of a library. It will be herculean task for a librarian to keep the records of periodicals, books, and other library materials manually. The library automation will help in maintaining accurate records, monitoring borrowers' due-dates of books borrowed, and

reservation of books/periodicals that are in great demand. The computer can also generate overdue notices automatically. ICT equipment in library can give students at all levels access to an unlimited range of library materials. Using library databases and networks, students can locate and order materials from libraries in other schools within a town/city, district, state, or across the country.

According to Ezziane, (2007), ICT involvement in general administration has brought increased efficiency and optimal resource utilization. Office automation, the electronic office, and the office of the future have become buzz words in the 1980s. Office automation facilitates the basic functions of an office as an information processing centre.

Similarly, Ololube, Ubogu, and Ossai (2007) stated that introduction of ICT usage and its integration has initiated a new age in educational methodologies. ICT equipment is used widely for preparation and maintenance of payrolls system. It has the potential in terms of time saving, accuracy, legibility, data storage, record check, and amenable for further data analysis, comparative statements, task calculations, and preparation of summary reports. Computer and other ICT facilities can handle effectively storage and retrieval of records irrespective of the volume (Adoni and Kpangban, 2010).

The major applications of ICT equipment which have direct impact on the students are course schedules, attendance, and academic performance, input through computer to monitor the course schedules, attendance reports, and graded/marks reports of each student. The historical data/information obtained through these reports is also used for reviewing the performance of the school.

Schools are required to keep records of all supplies and equipment in an intelligent manner (Kousha, 2004). The physical inventory should be taken by school periodically in agreement of accounts with records. The inventory list should identify each item by date of purchase, cost, location, item control number, and date of last inventory. The inventory system should facilitate adding new equipment and furniture to the master file, removing old or obsolete equipment, and recording the transfer of items.

Clifton (2007) stated that every school has to develop a personnel information system for the following purposes:

- (a) to store personnel details (like name, address, telephone number, date of birth, educational qualifications and experience, salary, health data etc.) of individual employees for reference.
- (b) To provide a basis for decision-making in every area of personnel work like recruitment and selection, termination and redundancy, education and training, pay, administration, health etc.

Personnel records can be maintained manually. However, the advent of micro-ICT equipment has increased the process of computerisation even in personnel records maintenance. Although Nigeria like any other developing nations has embraced ICT technology but the effects and productive reports have not been felt like it should because of some militating factors: ICT policy is not in existence for schools, therefore the schools are not getting the required attention from the Government. Accordingly, Akinyemi (2004) was of the view that lack of required skills and knowledge on the part of the administrators to use the materials, and poor funding system to maintain the gadgets are some of the factors facing ICT usage in schools administration.

Objectives of Study

The objectives of the study are to:

1. find out the available ICT resources in performing core administrative duties
2. investigate the level of interaction with ICT resources in the public secondary schools.
3. investigate the level of usage of Print Technology for administrative purpose.
4. Examine principals' perception of the use of ICT resources in performing administrative tasks.

Research Questions

1. What are the available ICT resources in the public secondary schools for administrative purpose?
2. What is the level of interaction with the ICT resources for administrative purpose?
3. What is the level of use of print technology for administrative purpose by school administrators?
4. What is the perception of school principals of ICT resources in administrative tasks?

3. Methodology

The study adopted descriptive survey design. The population covers the Public Secondary Schools Principals in Ife Central Local Government Area of Osun State. The sample is made up of one hundred School Administrators (100) randomly selected. Male respondents constitute 35% of the total sample while the remaining 65% were female respondents. A 25-item self-developed instrument titled "Information Communication Technology and School Administration Questionnaire (ICTSA-Q)" and ICT Equipment/Facilities Checklist were used. The instruments were designed in line with the set objectives of the study. The data gathered were analyzed using descriptive statistics – percentiles and pie chart.

4. Results and Findings

RQ 1: What are the available ICT resources in the public secondary schools in Osun state? In order to answer this research question, data collected were analyzed using simple percentage statistical method. Here are the results as shown in Table 1.

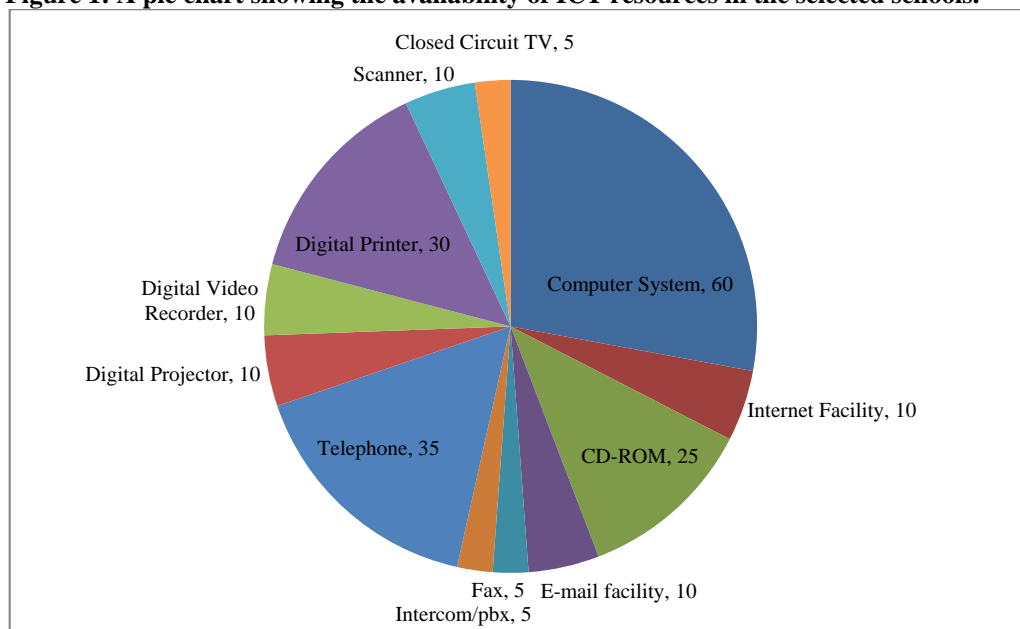
Table 1: Available ICT Resources in Public Secondary Schools

S/N	ICT Resources	Public school Available	Public school Not available
1	Computer System	60 (60%)	40 (40%)
2	Internet Facility	10 (10%)	90 (90%)
3	CD-rom	25 (25%)	75 (75%)
4	E-mail Facility	10 (10%)	90 (90%)
5	Fax	5 (5%)	95 (95%)
6	Intercom / pbx	5 (5%)	95 (95%)
7	Telephone	35 (35%)	65 (65%)
8	Digital Projector	10 (10%)	90 (90%)
9	Digital Video Recorder	10 (10%)	90 (90%)
10	Digital Printer	30 (30%)	70 (70%)
11	Scanner	10 (10%)	90 (90%)
12	Closed Circuit Tel.	5 (5%)	95 (95%)

Source: Field Survey, 2013

Table1 indicates the availability of ICT resources in public secondary schools in Osun State. Out of the 100 respondents, 60 % answered yes, that computer systems are available in their schools while the remaining 40 % (40) answered no, that computer systems are not available in their schools. The table further reveals that internet facility, e-mail facility, digital projector, digital video recorder and scanner have 10% (10) availability each and 90% (90) non-availability each in the selected schools. CD-ROM has 25% (25) availability and 75% (75) non-availability in the selected schools. Fax, intercom/PBX, and Closed circuit television all have 5% (5) availability each and 95% (95) non-availability each in the selected schools. Telephone has 35% (35) availability and 65% (65) non-availability in the selected schools. Digital printer has 30% (30) availability and 70% (70) non-availability in the selected schools. The above results revealed that only few secondary schools have access to ICT resources.

Figure 1: A pie chart showing the availability of ICT resources in the selected schools.



Research Question 2: What is the level of interaction with the ICT resources for administrative purpose? In order to answer this research question, data collected were analyzed using simple percentage statistical method. Here are the results as shown in Table 2.

Table 2: Level of Interaction with ICT Resources

	ICT Resources	Never	Rarely	Sometimes	Always
1	Computer Systems	40(40%)	10(10%)	25(25%)	25(25%)
2	Internet Facility	55(55%)	20(20%)	15(15%)	10(10%)
3	CD-ROM	65(65%)	20(20%)	15(15%)	
4	E-mail	50(50%)	25(25%)	15(15%)	10(10%)
5	Fax	90(90%)	10(10%)		
6	Intercom/PBX	70(70%)	10(10%)	15(15%)	15(5%)
7	Telephone	30(30%)	15(15%)	20(20%)	35(35%)
8	Digital Projector	55(55%)	35(35%)	10(10%)	
9	Video Recorder	65(65%)	20(20%)	15(15%)	
10	Printer	60(60%)	5(5%)	10(10%)	25(25%)
11	Scanner	75(75%)	20(20%)	5(5%)	
12	CCTV	95(95%)			5(5%)

Source: Field Survey, 2013

Table 2 seeks to find out the level of the respondents interaction with the selected ICT resources. Findings revealed that 40% (40) of the principals stated that the computer systems were never used in their schools for administrative purpose, 10% (10) used it rarely, and 25% (25) used it sometimes while 25% (25) of the principals stated that it was always used in their schools. Results also showed that 55% (55) of the principals stated that the internet facility was never used in their schools, 20% (20) stated that it was used rarely, 15% (15) stated that it was sometimes used while 10% (10) of the principals used it always. 65% (65) never used the CD-ROM, 20% (20) used it rarely, 15% (15) used it sometimes, and none of the principals used it always. Findings further revealed that 50% (50) never used E-MAIL for

educational purposes, 25% (25) used it rarely, 15% (15) used it sometimes while 10% (10) stated that they used it always. Additionally, 90% (90) never used the FAX, 10% (10) used it rarely, and none used it sometimes or always. Findings revealed also that 70% (70) of the principals stated that Intercom/PBX was never used in their schools for administrative purposes, 10% (10) used it rarely, 15% (15) used it sometimes, while 5% (5) used it always. Findings indicated that 30% (30) never used Telephone for administrative duties, 15% (15) used rarely, 20% (20) used it sometimes while 35% (35) of the principals indicated that it is used always. Majority (55%, 55) never used the projector, 35% (35) used it rarely, and 10% (10) indicated using sometimes, and none used it always. Most (65%, 65) never used a digital video recorder for administrative duties, 20% (20) used it rarely, 15% (15) used it sometimes while none used it always. Findings also revealed that 60% (60) never used the printer for administrative duties, 5% (5) used it rarely, and 10% (10) used it sometimes while 25% (25) of the principals used it always. An additional 75% (75) never used scanner, 20% (20) used it rarely, 5% (5) used it sometimes while none used it always. Most (95%, 95) indicated that they never used a closed circuit television (CCTV), none used it rarely or sometime while 5% (5) used it always. The implication of the results is that the school administrators have very poor exposure and awareness to ICT resources.

Research question 3: What is the level of use of print technology for administrative purpose by school administrators? In order to answer this research question, data collected were analyzed using simple percentage statistical method. There are four options in this section used to test the research question. Here are the results as shown in Table 3.

Table 3: Print Technology in School Administration

C	Print Media	Never	Rarely	Sometimes	Always
1	Leaflets	60(60%)	15(15%)	20(20%)	5(5%)
2	Posters	30(30%)	10(10%)	45(45%)	15(15%)
3	Calendar of Work	5(5%)	10(10%)	20(20%)	65(65%)
4	Diaries	5(5%)	15(15%)	25(25%)	55(55%)
5	Annual Report	20(20%)	10(10%)	25(25%)	45(45%)
6	Journal	10(10%)	30(30%)	55(55%)	5(5%)
7	Newspaper	5(5%)	20(20%)	70(70%)	5(5%)
8	Magazine	10(10%)	15(15%)	50(50%)	25(25%)

Source: Field Survey, 2013

Table 3 seeks to find out the level of the respondents usage of Print Technology for administrative purposes. Results showed that 60% (60) never used leaflets, 15% (15) used it rarely, 20% (20) used it sometimes while 5% (5) used it always. 30% (30) never used posters, 10% (10) used it rarely, 45% (45) used it sometimes while 15% (15) used it always. Only 5% (5) never used calendar of work, 10% (10) used it rarely, 20% (20) used it sometimes while 65% (65) used it always. Another 5% (5) indicated that they never used diaries, 15% (15) used it rarely, 25% (25) used it sometimes while majority (55%, 55) used it always. Findings also showed that 20% (20) indicated that they never used annual report, 10% (10) used it rarely, 25% (25) used it sometimes while 45% (45) used it always. 10% (10) never used journals, 30% (30) used it rarely, and 55% (55) used it sometimes, while 5% (5) used it always. Only 5% (5) never used newspapers, 20% (20) used it rarely, 70% (70) used it sometimes and 5% (5) used it always. Only 10% (10) never used Magazine, 15% (15) used it rarely, 50% (50) used it sometimes while 25% (25) used it always. Table 3 showed that apart from the use of calendar and diaries, most of the principals never used other forms of print media while others either used them rarely or sometimes.

Research question 4: What are administrators' perceptions of ICT resources for administrative tasks? There are four options in this section used to test the research question but the analysis is done using simple percentile. The results of the findings are presented in Table 4.

Table 4: Administrators' Perceptions of ICT in the Performance of Core Administrative Tasks

Core Administrative Duty	Percentage Rating
Admission	3.97
Registration	4.40
Students attendance	3.77
Personnel data	4.09
Boarding facilities	2.76
Recreation	3.16
Safety practices	2.94
Health services	3.80
Transportation	3.63
Record of work	5.22
Time table	4.07
Exam results	4.73
Teaching load	4.24
Staff Attendance	3.85
Staff development	4.30
Promotion	4.33
Staff Welfare	3.34
Loan	3.42
Annual leave	3.51
Maternity leave	3.13
Study leave	3.24
Casual leave	3.11
Sick leave	3.05
Pension & Gratuity	4.33
Inventory of facilities	3.61
Financial matters	5.46
Total	100

Source: Field Survey, 2013

Table 4 above seeks to find out the respondents perception on Information and Communication Technology's involvement in performing core administrative tasks. Results revealed that 3.97% said ICT can be used for school admission, 4.4% to solve registration issues, 3.77% for students' attendance, 4.09% to solve personnel data, and 2.76% to perform boarding facilities. Moreover, 3.16% of the respondents agreed that ICT can be used to perform recreation, 2.94% for safety practices, 3.80% for health services, 3.63% for transportation, 5.22% for record of work, 4.07% for time tabling, and 4.73% for examination results. While 4.24% of the respondents agreed that ICT can be used for teaching workload, 3.85% agreed that ICT can be used for staff attendance. Also, 4.30% agreed that ICT can be used to perform staff development, 4.33% for promotion issues, 3.34% for staff welfare, 3.42% for loan issues, 3.51% for annual leave issues, 3.13% for maternity leave issues, 3.24% and 3.11% for study leave and casual leave respectively. Similarly, 3.05% agreed ICT can be used for sick leave, 4.33% for performing pension and gratuity, 3.61% for inventory of facilities while 5.46% agreed that ICT can be used for financial matters.

Analysis of data on the use of ICT for core administrative duties revealed that principals perceived the most important need for ICT was for financial matters with a percentage rating of 5.46%; followed by record of work with a percentage rating of 5.22%. Results further showed the use of ICT for inventory (3.61%), personnel data (4.09%) and time tabling (4.07%) were rated low despite their importance. The implication of these results is that the respondents have limited knowledge of application of ICT in those administrative functions.

5. Discussion

The educational system is undergoing changes occasioned by socio-economic, political and technological changes in the external environment. This makes the administrative work of the principals very challenging. The principal plays a very important role in the educational system. Consequently, Information and Communication Technology facilities should be provided for efficient management of school system. Investment in ICT is indispensable considering the relationship between economic development and effective use of ICT. Howell and Lundall (2000) emphasized that the effective use of ICT in a country impacts strongly on the competitiveness of the economy within the global market place as well as the ability of the governments to deliver on their social goals. The educational system is already facing numerous challenges ranging from inadequate infrastructure for effective teaching and learning to poor quality teachers. This raises the issues of the extents the use of ICT in administrative and managerial duties of the principal will receive adequate attention. In 1987, the then Minister of Education inaugurated a national policy on computer education Committee to enable the country to catch up with the rest of the world and to be ready to enter into twenty first century with them (Ajelabi, 1997). More than twenty years after, Nigeria cannot claim to have made meaningful progress in the use of ICT in the educational system especially at secondary level. Policy formulation is not the problem of Nigeria but rather the implementation at the various levels of educational system. Inadequate funding, corrupt practices at high levels, sudden and frequent changes in governments, and a host of other problems are strong forces militating against the success of ICT involvement in our school system.

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