

# Investigation of the Extent of *ICT* Integration in the Teaching and Learning Process in Nasarawa State

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## ABSTRACT

A quantitative study using survey method to investigate the extent of ICT integration in the teaching and learning process in Nasarawa state. The total population comprised 71,471 Senior Secondary School (SSS) students and, 4, 56 SSS teachers from both private and public secondary schools in the State. The stratified random sampling was used to obtain a strata from the population while the simple random sampling technique was used to obtain a sample of 377 teachers and 397 students. The Taro Yamane's formula was used to determine the sample size. The instrument for data collection were two sets of researchers' made questionnaires and observation schedule which were thoroughly validated by experts in Test, Measurement and Evaluation, and ICT respectively. The test-retest approach was used to determine the reliability of the instruments. The validity of the instrument was determined using the Pearson product Moment Correlation Coefficient and, the values obtained were 0.91 (for teacher questionnaire) and 0.95 (for students' questionnaire). The descriptive statistics such as mean, frequency, percentage and Standard deviation were used to analyse the quantitative data using SPSS 23. The findings revealed that, the extent of ICT integration in the teaching and learning process by teachers and students in secondary schools in the State is very low. Moreover, the study found that, majority of the schools lack ICT facilities. Furthermore, the study revealed that, the rate of digital illiteracy among the students is very high and their perception of ICT in education is very shallow. The study recommended among others that, ICT facilities should be provided for the schools to facilitate ICT integration in the teaching and learning process. It also recommended that, secondary school teachers should be regularly trained on the use and application of ICTs in education.

**Key words:** Integration, education, instrument, programs, ICT

## INTRODUCTION

Education is one of the main corner-stones for national and economic development as well as improvement of human welfare. As global economic competition grows stiffer, education becomes an important source of competitive advantage as it is linked to national and economic growth and sure ways for countries to attract investment and provide job opportunities for its populace (Srivatsava, 2012). Education further appears to be one of the major determinants of sustainable life-long earnings. Countries, therefore, frequently raise educational attainment as a way of tackling poverty and deprivation (UNESCO, 2005).

A well -educated and skilled workforce is one of the core pillars of the knowledge-based economies (UNESCO, 2005). This realization makes the reforms in education and development to remain a central pre-occupation for many countries and for international development. In every country at any given level of

economic development, there is a great demand for education reform in order to be able to face the prevailing political, social and cultural changes as well as scientific and technological transformations (UNESCO Educational policy and Reforms, 2008).

Since 1990, many governments in different countries have been promoting the use of Information Communication Technologies (ICT) in education, particularly to expand access to and improve the quality of education. At the same time, globalization and shift to a knowledge-based economy requires that educational institutions develop individuals' ability to apply knowledge in dynamic contexts. ICT have been identified as a means to attain these objectives (School Net Africa, 2003). Although, ICT is now at the center of education reform efforts, not all countries are currently able to benefit from this development and advances that technology can offer. Significant barriers often referred to as digital divide limit the ability of some countries to take advantage of technological development (Kozma & Anderson, 2012). The developing countries are faced with challenges related to access, pedagogy or assessment when using ICTs to improve and reinforce education (Kozma et al, 2022).

It is important to note that, the concept, methods and application of ICTs are constantly evolving; starting from the popularity of the issue of computers in education in the 1980 s, when relatively cheap micro-computers became available for the consumer market, later, near the end of 1980 s the term was replaced by IT (Information Technology), signifying a shift of focus from computing technology to the capacity to store, analyze and retrieve information. This was followed by the introduction of the term ICT (Information Communication Technology) around 1992 when electronic mail (Email) and World Wide Web (Internet) became available to the general public (Pelgrum & Law, 2013).

Though initially educators saw the use of ICTs in the classroom mainly as a way of teaching computer literacy, it has a broader role which involves delivering many kinds of learning at a lower cost and with high quality than the conventional method of teaching allows. In addition, educational institutions increasingly use ICTs as do other large organizations to reduce cost, improve efficiency and administration (Blurton, 2012).

The Nigerian Federal Ministry of Education, recognizing the need to reposition the education sector so as to meet the global standards and competitiveness, developed the National Policy on ICT in Education in collaboration with relevant stakeholders. The policy aims at ensuring qualitative education for the enhancement of sustainable socio-economic development, global competitiveness and the individual's ability to survive in the contemporary environment. The Policy provides the needed guidelines on expectations for the entire process of ICT integration in education to all stakeholders. Its implementation is expected to lead to speedy transformation of teaching, learning and educational administration in Nigeria.

### **Statement of the Problem**

ICT integration in education is very critical in preparation of today's students for the challenges of the 21st century workplace. It empowers them with ICT skills to prepare them for competitiveness in a global environment. ICT in education enhances learner's critical thinking, improves their information handling skills and, increases their level of conceptualization and problem-solving capacity. Despite these, most schools in Nigeria still use the obsolete system and consequently are unable to exploit the educational potentials of the emerging technologies.

Furthermore, studies have it that, the proportion of ICT integration in education remains substantially low in Africa, Nigeria inclusive. This accounts for why the Nigerian Federal Ministry of Education in 2001 made a policy on ICT integration in education. A framework or guidelines for successful integration of ICT in education was developed but after so many years most public and private secondary schools in Nigeria seem not to be in full implementation of the policy. They are below the ladder and can be described as backward as far as ICT integration in Education is concerned. This study comes in that direction to investigate the

extent of ICT integration in the teaching and learning process in secondary schools in Nasarawa State.

### **Objective of the Study**

The study investigated the extent of information communication technology (ICT) integration in the teaching and learning process in secondary schools in Nasarawa State. Specifically, the following objectives were pursued:

1. to determine the digital literacy level of the teachers and students;
2. to determine the extent of ICT integration in the teaching and learning process;
3. to determine the extent of availability of ICT facilities in the schools;
4. to determine the extent of teachers' engagement in ICT trainings;
5. to determine the students' perceptions of ICT integration in education.

### **Research Questions**

The following research questions were answered;

1. what is the digital literacy level of the teachers?
2. to what extent is ICT integrated in the teaching process?
3. to what extent is ICT facilities available for educational use in the schools?
4. are the teachers trained on ICT application in Education?
5. what is the digital literacy level of the students?
6. to what extent is ICT integrated in the learning process?
7. what is the perception of students on ICT integration in education?

## **RESEARCH METHODOLOGY**

This section covers the research design, population of study, sample and sampling techniques, instrument for data collection, validation and reliability of instrument and, method of data collection and analysis.

### **Research Design**

The quantitative research design was adopted using survey method to obtain greater knowledge and understanding of the extent of ICT integration in the teaching and learning process in secondary schools in Nasarawa State. The choice of this design was based on our quest to generate factual and reliable outcome data that could be generalizable to a large population.

### **Population of Study**

The target population comprised 71,471 Senior Secondary School (SSS) students, and 4,560 teachers from private and public secondary schools in Nasarawa State. (Source: State Ministry of Education, 2023).

### **Sample and Sampling Techniques**

The sampling technique used was stratified random sampling. The total population was divided into strata and based on that, the study covered the southern education zone. A Simple random sampling was used to obtain the appropriate sample for the study. The sample size was determined using the Taro Yamane's formula as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where,  $n$  = sample sizes,  $N$  is the population total and  $e$  is the error term at 5% (0.05).

Thus, for the students' population, a sample of 397 was obtained and for the teacher population, a sample of 377 was also obtained.

### Instrument for data Collection

Data was collected using two sets of questionnaires (teacher and students) and an observation checklist which was used to confirm some facts on the questionnaires. The questionnaires were divided into two sections covering demographic information, ICT skill, facilities and ICT integration in the teaching and learning process. The teacher questionnaire was referred to as Teacher ICT in Education Integration Test (TICTEIT) while the students' questionnaire was referred to as the Student ICT in Education Test (SICTET). The observation schedule was called the ICT integration observation checklist (ICTIOCL).

The TICTEIT contains 45 items of closed and open ended questions and a 5 point Likert items of Advanced (AD), Proficient (PR), Intermediate (INT), Beginner (BEGN) and Not at all (NTAL) While the SICTET contains 30 items of open and closed ended questions and, 5 points Likert scale items of SA, A, U, D and SD. The rationale behind using Close ended questions was to restrict the respondents to yes or no responses. Matrix questions, contingency questions and behavioural questions were also included. The open ended questions allowed the respondents to give an in depth response to the subject of study.

### Validation of Instrument

The instruments were appraised by two experts, who are authorities in Test, Measurement and Evaluation and, Information Technology. They ensured that the items included in the instrument are appropriate and relevant to the variables being investigated. The instruments were structured in a simple language to facilitate easy understanding.

### Reliability of Instrument

The test-retest approach was used to determine the reliability of the instruments. The sets of scores obtained were correlated using the Pearson's Products Moments Correlation Coefficient ( $r$ ). The coefficients of the correlation were 0.91 for the teacher questionnaire and 0.95 for student questionnaire. This implies that, the instruments have high level of consistency and are therefore reliable.

## DATA COLLECTION AND ANALYSIS

The quantitative data gathered were coded tallied and analyzed using descriptive statistics such as mean, frequency and percentages and, computed using the Statistical Package for Social Sciences (SPSS).

### Data Presentation

**Questionnaire return rate:** A total of 774 questionnaires were administered to 397 students in SS II and III, and 377 subject teachers respectively. Table 1 summarizes this.

Table 1. Questionnaire return rate

Category	Sample size administered	Actual Response	Percentage
Teachers	377	377	100
Students	397	397	100
Total	774	774	

Table 1 indicates that the average response rate was over 100%. According to Edward, Roberts, Clarke, Diguiseppi, Pratep, Wentz and Kwan (2000), a questionnaire return rate of 80% and above is absolutely satisfactory while 60-80% is quite satisfactory. A rate below 60% is barely acceptable. Therefore, the response rate obtained in this is considered very sufficient to provide reliable response.

### Demographic Information of the Teachers

The following demographic information were obtained from the teachers.

Table 2: Distribution of teachers by gender and age group

Sex		Frequency	Percentage	Cumulative Percent
Valid	Male	252	66.8	66.8
	Female	125	33.2	100.0
	Total	377	100.0	
Age range				
Valid	Below 25 years	10	2.7	2.7
	25-30 years	120	31.8	34.5
	31-40 years	190	50.4	84.9
	41-50 years	37	9.8	94.7
	51-60 years	20	5.3	100.0
	Total	377	100.0	

Analysis: Table 2 indicates that, most of the SSS teachers who participated in the study (66.8%) were male while the rest (33.2%) were female. It also shows that, half of the teachers are within the age range of 31-40 (50.4%) while about 31.8 percent of them are very young and within the age range of 25 to 30 years.

Table 3: Distribution of teachers by qualifications and area of specialization

Qualification		Frequency	Percentage	Cumulative Percent
Valid	NCE	120	31.8	31.8
	HND	68	18.0	49.9
	Bachelor's Degree	187	49.6	99.5
	Master's degree	2	.5	100.0
Specialization				
Valid	Business	25	6.6	6.6
	Computer Science	68	18.0	24.7
	Mathematics	101	26.8	51.5
	English Language	89	23.6	75.1
	Physics	54	14.3	89.4
	Chemistry	35	9.3	98.7
	Others	5	1.3	100.0
	<b>Total</b>	<b>377</b>	<b>100.0</b>	

Table 3 indicates that, 49.6% of the teachers are Bachelor’s degree holders while 31.8 % are NCE holders and only .5% are Master’s degree holders. The table also shows a breakdown of the teachers by specialization. It shows that, 26.8% of them are major in mathematics; 23.6% major in English; 18.0% are computer Science teachers; 14.3% major in physics teachers and so on.

**Research Question 1: What is the digital literacy level of the teachers?**

Table 4: Digital literacy level of the teachers

Items	Advanced	Proficient	Intermediate	Beginner	Not all
Operating with word processing programs	10(2.7%)	25(6.6%)	52(13.8%)	130(34.5%)	160(42.4%)
File management: creating, editing, opening, renaming and saving files in a computer	8(2.1%)	24(6.4%)	71(18.8%)	149(39.5%)	125(33.2%)
Using the internet-searching for information and downloading files	20(5.3%)	38(10.1%)	142(37.7%)	125(33.2%)	52(13.8%)
Email communication: composing, reading, sending and attaching files	19(5.0%)	20(5.3%)	108(28.6%)	130(34.5%)	100(26.5%)
Social networking or communication with colleagues and students using Facebook and whatsapp	52(13.8%)	46(12.2%)	122(32.4%)	130(34.6%)	27(7.2%)
Printing and scanning of documents	10(2.7%)	37(9.8%)	126(33.4%)	100(26.5%)	104(27.6%)
Creating instructional slides in Power point	2(.5%)	10(2.7%)	50(13.3%)	210(55.7%)	105(27.9%)
Use of spreadsheet package (excel)	20(5.3%)	60(15.9%)	104(27.6%)	100(26.5%)	93(24.7%)
Record management using MS access	17(4.5%)	30(8.0%)	70(18.6%)	100(26.5%)	160(42.4%)
Delivery of instructions using multimedia projector	20(5.3%)	38(10.1%)	86(22.8%)	100(26.5%)	133(35.3%)
Use of interactive white board	20(5.3%)	30(8.0%)	61(16.2%)	119(31.6%)	147(39.0%)
Use of open educational resource	2(.5%)	10(2.7%)	10(2.7%)	200(53.1%)	155(41.1%)

Table 4.1: Descriptive Statistics of digital literacy level of the teachers

Items	N	Mean	Std. Deviation	Variance
Operating with word processing programs	377	4.0743	1.03132	1.064
File management: creating, editing, opening, renaming and savings files in a computer	377	3.9523	.98275	.966
Using the internet-searching for information and downloading files	377	3.4005	1.01913	1.039
Email communication: composing, reading. sending and attaching files	377	3.7215	1.06910	1.143



social networking or communication with colleagues and students using Facebook and whatsapp	377	3.0902	1.14033	1.300
Printing and scanning of documents	377	3.6658	1.06428	1.133
Creating instructional slides in power point	377	4.0769	.74870	.561
Use of Spreadsheet package – excel	377	3.4934	1.17627	1.384
Record management using MS access	377	3.9443	1.15527	1.335
Delivery of instructions using multimedia projector	377	3.7639	1.18724	1.410
Use of interactive white board	377	3.9098	1.15884	1.343
Use of open educational resource	377	4.3156	.70227	.493
Valid N (list wise)	377			

Table 4 indicates that, a reasonable number of the teachers can use word processing programs, judging from a mean score of 4.0 while about 42.4% of them cannot. Some of the teachers can manage files judging from a mean score of 3.9 but with a deviation point less than 1.0 indicates that majority of them are only beginners with solely head knowledge. Most of the teachers can use the internet to search for information and this goes with a mean score of 3.4 while many of them cannot and are in beginners’ level (13.2%) or no knowledge of that (13.8%).

Also, the mean score of 3.7 for email communication skill indicates that, a good number of the teachers can communicate via email while few of them cannot (26.5%). A mean score of 3.0 for social networking skills of the teachers indicates that, majority of the teachers are conversant with social media platforms like Facebook and Whatsapp while few of them are social networking illiterate (7.2%).

The table also indicates that most of the teachers can use the printer and photocopier, with a mean score of 3.6 while some of them cannot (27.6%). Moreover, majority of the teachers are at beginner’s level in the use of PowerPoint for instruction (55.7%) and this however goes with a mean score of 4.0 but with a deviation point less than 1.0. which means that, majority of the teachers cannot create instructional slides but have head knowledge of the application.

The table also shows that majority of the teachers have knowledge of and can use the spreadsheet package with a mean score of 3.4 while few of them neither have the knowledge nor ever used the package (24.7%). The table also shows that a good number of the teachers can use MS Access with a mean score of 3.9 while so many of them cannot use the application (42.4%). Also, some of the teachers can project lessons using the multimedia projector, with a mean score of 3.7 while a good number of them cannot (35.3%). Some of the teachers can use the interactive whiteboard, with a mean score of 3.9 while so many of them cannot (39.0%). The table also indicates that, a good number of the teachers does not know about or ever used open educational resource (41.1%). A mean of 4.3 and a deviation point less than 1.0 in that regard indicates that, majority of the teacher are within the beginners ‘level which implies that, they only have head knowledge of the resources and have not really used them.

**Research Question 2: To what extent is ICT integrated in the teaching process**

Table 5: Extent of ICT Integration in curriculum delivery

Items	Yes	No
Lesson planning	120(31.8%)	257(68.2%)
Information gathering	152(40.3%)	225(59.7%)
Lesson note	186(49.3%)	191(50.7%)

Instructional delivery	86(22.8%)	291(77.2%)
Formative learning assessment	56(14.9%)	321(85.1%)
Examination question typesetting	190(50.4%)	187(49.6%)
Marking scheme development	57(15.1%)	320(84.9%)
Class attendance record management	22(5.8%)	355(94.2%)
Assessment record management	105(27.9%)	241(63.9%)
Communication with colleagues and students	136(36.1%)	241(63.9%)

Table 5.1: Descriptive Statistics of the extent ICT Integration in curriculum delivery

Items	N	Mean	Std. Deviation	Variance
lesson planning	377	1.6817	.46644	.218
information gathering for instructional content development	377	1.5968	.49119	.241
lesson note/instructional material development	377	1.5066	.50062	.251
instructional delivery	377	1.7719	.42018	.177
formative learning assessment	377	1.8515	.35611	.127
exams question setting	377	1.4960	.50065	.251
marking scheme development	377	1.8488	.35871	.129
class attendant record management	377	1.9416	.23473	.055
Result processing	377	1.7215	.44886	.201
communication with colleagues	377	1.6393	.48085	.231
Valid N (listwise)	377			

Table 5 indicates that majority of the teachers do not use ICT for lesson planning (68.2%). A mean value of 1.6 in that regard indicates the negativity of the situation as a mean score of less than 2.0 connotes negative outcome. Majority of the teacher barely use ICTs to gather material for instructional purpose (59.7%). The table also indicates that majority of the teacher does not use ICTs for: instructional delivery (77.2%), formative learning assessment (85.1%), marking scheme development (84.9%), class attendance record management (94.2%), assessment record management (63.9%) and, communication with colleagues and students (63.9%). The mean value for all these items are below 2.0 and are therefore interpreted as negative outcomes.

**Research Question 3: To what extent is ICT facilities available for educational use in the schools?**

Table 6: Availability of ICT Facilities in the schools for educational use

Items	Yes	No
Electricity	142(37.7%)	235(62.3%)
Functional Computer laboratory	18(4.8%)	359(95.2%)
Computers (Desktop and laptops)	28(7.4%)	349(92.6%)
Computer Peripherals- printer, scanner, digital camera, photocopier	48(12.7%)	329(92.6%)
Internet connectivity	10(2.7%)	367(97.3%)
Educational software	15(4.0%)	362(96.0%)
Multimedia projector	13(3.4%)	364(96.6%)



Interactive boards in the classroom	11(2.9%)	366(97.1%)
E-library	22(5.8%)	355(94.2%)
Digital learning resources: e-books, e-journals etc	30(8.0%)	347(92.0%)
Qualified ICT teachers	138(36.6%)	239(63.4%)
Roadmap for ICT integration	50(13.3%)	327(86.7%)
School website	5(1.3%)	372(98.7%)
E-learning Platform	4(1.1%)	373(98.9%)

Table 6.1: Descriptive Statistics on availability of ICT Facilities for educational use

Items	N	Mean	Std. Deviation	Variance
Electricity	377	1.6233	.48519	.235
Functional computer laboratory	377	1.9523	.21351	.046
Computer (Desktop and laptops)	377	1.9257	.26256	.069
Computer accessories: photocopier, printer, scanner, digital cameras	377	1.8727	.33378	.111
Internet connectivity	377	1.9735	.16090	.026
Educational software	377	1.9602	.19572	.038
Multimedia projector	377	1.9655	.18271	.033
Interactive whiteboard in the classroom	377	1.9708	.16853	.028
e-library	377	1.9416	.23473	.055
Digital resources materials -e-books, e-journals	377	1.9204	.27099	.073
qualified ICT teachers	377	1.6340	.48236	.233
School policy and future plan on ICT integration	377	1.8674	.33962	.115
School website	377	1.9867	.11455	.013
e-learning platform	377	1.9894	.10259	.011
Valid N (listwise)	377			

Table 6 indicates that majority of schools do not have ICT facilities. The table shows that 62.3 Percent of the schools do not have electricity; 95.2 Percent does not have functional computer laboratory. This negative out-comes cut across all the items investigated. The descriptive analysis shows that the mean values for all the items are less than 2.0 indicating the negativity of the situation. A mean value of less than 2.0 is negative and, above 2.0 is considered as positive reflection.

**Research question 4: Are the teachers trained on ICT application in Education?**

Table 7: Teachers’ ICT Training

Did you ever attend ICT training in-course of your job as a teacher		
	Frequency	Percent
Yes	128	34.0
No	249	66.0
Total	377	100.0
if yes, name the sponsor		
My school	10	7.8
External Body/Others	118	92.2

<b>How many times did you attend ICT training</b>		
2 times	75	58.6
3 times	20	15.6
Many times	33	25.8
<b>Do you think the training added value to you as a teacher</b>		
Yes	126	98.4
No	2	1.6
<b>if yes describe briefly</b>		
I learnt how to present instruction using PowerPoint	67	53.2
I learnt how to store and manage students' record using MS Access	59	46.8

Table 7 shows that majority of the teachers never received ICT training (66.0%), and 92.2 % of those that received ICT training were sponsored by external bodies while only 7.8% were sponsored by their schools. 58.6 % of those that received the training had it only twice, 15.6% had it thrice while 25.8 % had it more than three times. 53.2 % of the training recipients responded that the training improved their skills in the use of PowerPoint for instructional design while 46.8% were of the opinion that the training widened their horizon on the educational use of MS access.

Table 8: Students distribution based on sex, age range and class

<b>Sex</b>		<b>Frequency</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
Valid	Male	248	62.5	62.5
	Female	149	37.5	100.0
	Total	397	100.0	
<b>Age range</b>				
Valid	14-16 years	299	75.3	75.3
	17-20 years	98	24.7	100.0
	Total	397	100.0	
<b>Class</b>				
Valid	SS 1	256	64.5	64.5
	SS 2	141	35.5	100.0
	Total	397	100.0	

Table 8 shows that, majority of the students are male with a percentage rate of 62.5 while the female stood at 37.5%. The 14-16 years age range dominated with a percentage rate of 75.3 while 17-20 years age range stood at 24.7%. Also, most of the students are in SSI with a percentage rate of 64.5 while the SSII students involved in the study stood at 35.5%.

**Research question 5: What is the digital literacy level of the students?**

Table 9: Digital literacy level of the students

<b>Items</b>	<b>Yes</b>	<b>No</b>
I can turn the computer on and off	177(44.6%)	220(55.4%)
I can use the keyboard and mouse to perform basic operations	150(37.8%)	247(62.2%)

I can explore windows and also load applications	120(30.2%)	277(69.8%)
I can create document, save, print and retrieve when needed	34(8.6%)	363(91.4%)
I can copy and transfer file from the computer to peripheral devices	15(3.8%)	382(96.2%)
I can organize and manage file electronically	26(6.5%)	371(93.5%)
I can connect and use computer peripherals like printers, photocopier, camera, Bluetooth etc	30(7.6%)	367(92.4%)
I can connect to and browse the internet	42(10.6%)	355(89.4%)
I can communicate with my teacher and classroom using email	18(4.5%)	379(95.5%)
I can proficiently use MS word, PowerPoint, Excel and MS Access	22(5.5%)	375(94.5%)

Table 9.1 Descriptive Statistics of students’ digital literacy level

Items	N	Mean	Std. Deviation	Variance
I can turn the computer on and off	397	1.4458	.49769	.248
I can use the keyboard and mouse to perform basic operations	397	1.6222	.48546	.236
I can explore windows and also load applications	397	1.6977	.45982	.211
I can create document, save, print and retrieve when needed	397	1.9144	.28019	.079
I can copy and transfer file from the computer to peripheral devices	397	1.9622	.19091	.036
I can organize and manage file electronically	397	1.9345	.24770	.061
I can connect and use computer peripherals like printers, photocopier, camera, Bluetooth etc	397	1.9244	.26464	.070
I can connect to and browse the internet	397	1.9748	.15690	.025
I can communicate with my teacher and classroom using email	397	1.9345	.24770	.061
I can proficiently use MS word, PowerPoint, Excel and MS Access	397	1.9748	.15690	.025
<b>Valid N (list wise)</b>	<b>397</b>			

Table 9 shows that majority of the students cannot turn on the computer (55.4%); use the keyboard and mouse (62.2%); explore windows and load applications (69.8%); create electronic documents (91.4%); copy or transfer files (6.2%); manage files (93.5%); handle peripheral devices (92.4%); surf the internet (89.4%); communicate using email (95.5%) and cannot use the basic application packages (94.5%). The descriptive analysis on table 9.1 shows mean value less than 2.0 for all the items reviewed. This implies that, the students are highly ICT illiterate.

**Research Question 6: To what extent is ICT integrated in the learning process by students?**

Table 10: Use of ICTs for learning

Items	Yes	No
Use of the internet for research and learning of different topics	10(2.5%)	387(97.5%)
Use of online repositories or E-library e.g Encarta	8(2.0%)	389(98.0%)
Use of e-books, e-journals and other digitized learning materials	3(.8%)	394(99.2%)

Communication with class mates via email /text messaging apps	119(30.0%)	278(70.0%)
Use of word processing applications to make assignment and homework	149(36.3%)	253(63.7%)
Playing educational computer games	60(15.1%)	337(84.9%)
Use of subject specific educational software	4(1.0%)	393(99.0%)

Table 10 shows that, majority of the respondents have never used ICTs for learning. It indicates that 97.5% of the students have never used the internet for research and learning of different topics; 98.0% have never used online repositories or E-library such as Encarta; 99.2% of them have never used e-books, e-journals and other digitized learning materials; 70.0% of them cannot Communication using email or other text messaging apps; 63.7% have never used word processing applications to make assignment or homework; 84.9% of them have never played educational computer games and 99.0% of the respondents have never used subject specific educational software.

**Research question 7: What is the perception of students on ICT integration in education?**

Table 11: Students perceptions of ICT integration in Education

Items	SA	A	U	D	SD
ICT makes learning self-paced and interactive	2.3	61.2	6.8	7.6	22.2
ICT generally promotes immorality	–	22.7	–	77.3	–
the internet is as resourceful as text books can be	25.7	55.2	5.0	14.1	–
ICT help in understanding abstract concepts	4.8	12.6	.3	2.5	79.8
boys are better in ICT than girls	50.4	13.1	.3	25.2	11.1
use of ICT in education helps to increase knowledge retention and interest level of the learners	5.0	8.8	75.6	10.6	–
ICTs help to develop critical and rational thinking	5.0	18.0	–	55.0	22.0
ICTs enable students to access pre-recorded lessons on CDs and DVDs	17.6	25.7	.5	52.9	3.3
ICTs provides learning in no limits of time and place	7.8	14.4	10.1	55.9	11.8

Table 11 presents the perceptions of students on ICT integration in education. It shows that, majority of the respondents agreed that ICT makes learning self-paced and interactive (61.2%). Also, 77.3% of the respondents disagreed that ICT promotes immorality generally. Moreover, 55.2% of the respondents agreed that a product of ICT, the internet is as resourceful as text book can be. In the other way round, majority of the respondents strongly disagreed that ICT helps in understanding abstract concepts (79.8%). More than half of the respondents also strongly agreed that boys are better in ICT than girls (50.4%). Furthermore, majority of the respondents could not react to whether the use of ICT in education helps to increase knowledge retention and interest level of the learners (75.6%). Majority of the respondents believes that ICT in education does not help learners to develop critical and rational thinking (55.0%). Majority of the respondents believes that ICT does not provide learners access to pre-recorded lesson on CDs and DVDs (52.9%). Finally, most of the respondents disagreed that ICT provides learning in no limit of time and place (55.9%).

**LIST OF FINDINGS**

The following findings were made:

1. Majority of the teachers lack proficiency and technical know-how in the use and application of ICT in

education

2. The level of ICT integration in the teaching and learning process by the teachers and students is very low.
3. Basic ICT facilities are provided in the schools
4. The rate of digital illiteracy among the students is very high
5. The students have shallow perceptions of ICT integration in education

## RECOMMENDATIONS

Based on findings, the following recommendations are made:

1. there should be regular training and retraining of teachers in the use and application of ICT in education;
2. there should be proper implementation of the Federal Ministry of Education policy on ICT integration in education. This will facilitate ICT integration in the teaching and learning process by the teachers and students in secondary schools;
3. the government should equip schools with the basic ICT facilities necessary for proper implementation of ICT in education policy.

## Future Research Direction

Future studies may consider a comparative analysis between private and public schools to identify any significant difference in ICT integration practices.

To capture the dynamic nature of ICT integration, future studies may consider longitudinal studies that track changes over time, especially concerning the impact of teacher training programs.

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