

DEPLOYMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING AND LEARNING OF COMPUTER EDUCATION IN SECONDARY SCHOOLS IN BAUCHI STATE, NIGERIA

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Abstract

This study sought to examine deployment of information and communication technology (ICT) in teaching and learning of computer education in secondary schools in Bauchi State, Nigeria. Three research questions and three hypotheses were generated to guide this study. The sample for this study was 40 principals and 200 teachers selected from public secondary schools in Bauchi State of Nigeria. Questionnaire was used as instrument for data collection. The research questions were answered using mean scores and standard deviation. The null hypotheses were tested at 0.05 level of significance using t-test. The findings of this study showed that ICT tools used in teaching and learning of computer education are internet facilities, computer-aided information (CAI) software, Microsoft software application packages, laptop/desktop computers and projector/electronic smart board. The challenges of using ICT tools in teaching and learning of computer education include: lack of adequate ICT facilities in schools, unstable power supply in the schools, lack of ICT skills among teachers' poor perceptions of using ICT in education among teachers, students and the school administrators. The measures to curb the challenges of using ICT tools in teaching and learning of computer education include: provision of adequate ICT facilities in schools, provision of stable power supply in the schools, enlighten teachers, students and the school administrators on the need and importance of ICT deployment in the school and the school authorities should employ teachers with good ICT skills only. The study recommended that the government and its agencies should ensure that adequate ICT resources are put in place for the teaching and learning of computer education, computer education teachers should be encouraged to vigorously pursue ICT training with seriousness and the cost of ICT tools like laptops, desktops etc should be reduce to affordable prices so that teachers and students can be able to acquire them.

Keywords: deployment, information and communication technology (ICT), computer education.

Introduction

Education is vital for the development of a nation. An educated population leads to a productive workforce. ICT have become an integral part of education the world over. The globalization of the 21st century and its associated revolution in technology has led to a grave interest on how information and communication technology (ICT) can best be harnessed to improve the efficiency and effectiveness of education at secondary school level. Generally, the term

Information and communication technology (ICT) refers to any arrangement that is capable of capturing, storing, retrieving, manipulating, transmitting or receiving of information or data. In a broad sense they include; television sets, bulletin boards, radio, record players, disc players, still camera, video camera projectors, computers, interactive white board, internet and the internet resources etc. Mejiuni & Obilade (2006) defined ICT as the electronic and non-electronic technologies

and infrastructure systems used to create, store, manipulate, retrieve, and communicate or disseminate information. Moursund & Bielefeldt (1999) described Information and communications technologies as computer based tools used by people to work with information and communication processing needs of an organization. Its purview covers computer hardware and software, the network, and other digital devices like video, audio, camera, and so on, which convert information (text, sound, motion, etc.) into digital form. Techterms (2013) defined ICTs as technologies that provide access to information through telecommunications and also aid in instructional delivery in academic institutions. Examples include internet, wireless networks, cellphones and other communication mediums.

Information and Communication Technology (ICT) is defined as electronic media, devices and application used in the classroom to aid effective teaching and learning processes. All such materials, media and devices provided by ICT which appeal to all the senses and feeling and learning constitute teaching and learning materials. The materials help teachers communicate effectively to the students so that learning is facilitated. This is an exciting method of technological developments incorporated into the Nigeria classroom so well implemented as to enable teachers and students to do what has been impossible in the educational system (Osuala, 2004). Information and communication technology (ICT) has been recognized to be a very powerful tool in education reform that every teacher must have understanding of it, how it affects their subject specialisation and how to apply it in teaching and learning since the teacher have a vital role in bringing about this understanding in students.

Teaching and learning are causally tightly bound activities. Teaching is the imparting of knowledge by a teacher or other knowledgeable person. Harry (2015) stated that teaching is the process of attending to pupil's needs, experiences and feelings, and making specific interventions to help them learn particular things. Interventions commonly take the form of questioning, listening, giving information, explaining some phenomenon, demonstrating a skill or process, testing understanding and capacity, and facilitating learning activities (such as note taking, discussion, assignment writing, simulations and practice). Teaching is communication. In a good communication, there are three important aspects. These are: the person giving the information, the message/information that is to be passed and the receiver (Churchill, 2015). The act of teaching and learning are interwoven. But learning is a

cooperative effort, requiring engagement, on the parts of both students and teachers.

Learning is the act of acquiring new or modifying and reinforcing existing, knowledge, behaviors, skills, values, or preferences and may involve synthesizing different types, of information. The ability to learn is possessed by humans, animals, plants and some machines (Scatter, 2012). Progress over time tends to follow, a learning curve. It does not happen all at once, but builds upon and is shaped, by previous knowledge. To that end, learning may be viewed as a process, rather than a collection of factual and procedural knowledge. Learning produces changes in the organism and the changes produced are relatively permanent (Marlon, 2014).

The pedagogical rationale for promoting ICT in schools is concerned with the use of ICT in teaching and learning. It provides teachers with a range of new tools to facilitate traditional pedagogies; it also and perhaps more importantly, presents the teacher with the potential to develop new teaching methods. For teachers in a culture of all-pervasive technology, ICT provides new, and more exciting and relevant, learning opportunities. ICT contributed to teaching and learning in varying ways. Inspectorate (2008) reported that using ICT means that information can be obtained almost instantly. The worldwide web, for example, contains a vast amount of easily accessible information. Such information can provide teachers and learners with different viewpoints and a wider understanding of issues. ICT helps teachers to tailor teaching materials to suit the needs and ability levels of their students. Inspectorate (2008) reported further that ICT acts as an incentive for students to learn. The technology can be effective in engaging them in their schoolwork. ICT helps make learning more interesting. It increases levels of interest, for example through the use of colour, animation, and sound. Nonetheless, ICT can be deployed in the secondary schools for effective teaching and learning of computer education.

Computer education is the effort or the ability to make the generality of the people computer literate. Computer education according to Edhuze (2003), involve teaching and inculcating in the learner the basic skills required to independently manipulate the computer to achieve educational goals. He further stated that, computer education as a subject is aimed at making students acquire skills and competencies required in this digital word of competitiveness. Such basic skills and competencies upon graduation make them conversant with term and practices embedded in the world of computer. Computer education is therefore

a subject organized to enable people understand the function, uses and limitations of the computer and to provide an opportunity for the study of the modern methods of information processing. Barry (2017) stated that computer education means gaining basic knowledge and skills to operate computers in order to perform desired jobs. Computer education not only involves basic knowledge about computer, it extends to various branches of study in various fields and sectors. Computer education is designed to build familiarity with one of the most ubiquitous technologies of the 21st century. The level and depth of computer education vary greatly, from that required by the occasional user to the needs of a deep-dive specialist. The subject matter is broad and encompasses a variety of disciplines.

The world is advancing at a quick rate. Events have moved to the electronic stage with the computer at the center. This change has brought a lot of advancement and change into education/teaching and learning. The world is presently in the time of information development or ICT age, thusly, there is a need to stay avant-garde with time. One of the routines for finishing this is through the presentation of computer guideline in our establishments of learning. Computer education is the effort or the ability to put forth the complete expression of the all inclusive community computer skilled. Edhuze (2003) stated that the major objective of introducing computer education at the secondary school level is to enable students acquire a level of knowledge about computers which would fit them directly into the employment market or enable these students to pursue courses in computer science at higher levels.

The growing need for computer literacy has made it imperative that increased attention be given to the study of computer at all level of education especially in secondary schools. Ibrahim (2016) lamented that computer and instructional materials required for teaching and learning of computer education are not only inadequate but have not been fully utilized in most of the public secondary schools in Bauchi State. Students are not taught computer education regularly like any other subject due to shortage of computer teacher in various secondary schools across the state. Most of the teachers in the state public secondary schools do not have fundamental knowledge of ICT skills. Adomi and Kpangban (2010) disclosed that the low rate of ICT adoption and application in Nigerian secondary schools in which Bauchi state is not an exception, is attributable to several factors. The factors included limited/poor information infrastructure, lack of/inadequate ICT facilities in schools, frequent electricity interruption, non integration into the school

curriculum, poor ICT policy/project implementation strategy, inadequate ICT manpower in the schools, poor management on the parts of school administrators and government and lack of/limited ICT skills among teachers. Nevertheless, Igwe (2016) advised that the Federal Government of Nigeria should wake up from slumber and vigorously pursue the faithful implementation of her policies as it concerns ICT in education. More especially as stated in Section 11 subsection 102 (d) of the National Policy on Education that "Government shall provide facilities and necessary infrastructure for the promotion of Information and Communication Technology at all levels of education" (FRN, 2004:53).

Statement of the Problem

The deployment of ICT in teaching and learning of computer education in the public secondary schools in Bauchi State Nigeria is still under a serious dilemma despite the dramatic increase in the use of ICTs in numerous areas in present days including education. The low rate in the adoption and application of the new technology especially in the public schools in the state is attributed to several factors which include inadequate ICT facilities in the schools, poor ICT policies, limited information infrastructures, poor perceptions of using ICT in education among teachers, students and the school administrators. In spite of the calls and yearnings for change from the teacher-centered learning to student-centered learning which involve the use of ICT resources, chalkboard and text books are still the most continuously dominant class room facilities in virtually all the public secondary schools in Bauchi State.

The compelling usage of ICT in instruction and learning relies on upon the accessibility of these facilities and the teachers' capability in utilizing them. There are limited functional ICT facilities in most public schools in Bauchi State especially those in the rural areas. This in turn hinders the urge to use them by the students for learning computer education. Also lack of computer literate teachers, sporadic power supply and insufficient financial support are another set of deterrent militating against successful usage of ICT facilities and resources in teaching and learning of computer education in government owned secondary schools in Bauchi State Nigeria. It is against this backdrop that the researcher deemed it fit to examine deployment of ICT in teaching and learning of computer education in secondary schools in Bauchi State.

Objective of the Study

The main purpose of this study is to examine deployment of ICT in teaching and learning of computer education in secondary schools in Bauchi State. Specifically, the study seeks to:

1. Determine the ICT tools used in teaching and learning of computer education.
2. Find out the challenges of using ICT tools in teaching and learning of computer education.
3. Identify the measures to curb the challenges of using ICT tools in teaching and learning of computer education.

Research Questions

The following research questions guided the study.

1. What are the ICT tools used in teaching and learning of computer education?
2. What are the challenges of using ICT tools in teaching and learning of computer education?
3. What are the measures to curb the challenges of using ICT tools in teaching and learning of computer education?

Hypotheses

The following null hypotheses formulated guided the study, and were tested at 0.05 level of significance.

Ho₁: There is no significant difference between the mean ratings of principals and teachers on the ICT tools used in teaching and learning of computer education.

Ho₂: There is no significant difference between the mean ratings of principals and teachers on the challenges of using ICT tools in teaching and learning of computer education.

Ho₃: There is no significant difference between the mean ratings of principals and teachers on the measures to curb the challenges of using ICT tools in teaching and learning of computer education.

Research Methodology

The design of the study was a descriptive survey. The target population for this study was 218 principals and 16499 teachers from the 218 public secondary schools

in Bauchi State (Source PPMB Bauchi, 2018). The sample of this study was drawn from principals and teachers in the public secondary schools through a stratified random sampling technique. The state was stratified along the 20 local government areas and two public secondary schools were randomly selected from each local government area, thus, making a total of 40 secondary schools. From the 40 secondary schools, 40 principals and 200 teachers were randomly selected for the study. The instrument for data collection was a questionnaire structured on a 4 – point rating of Strongly Agree (SA) 4 points, Agree (A) 3 points, Disagree (D) 2 points and Strongly Disagree (SD) 1 point.

The instrument was face validated by two experts from the Department of Adult Education and Extra-mural Studies, one expert from Measurement and Evaluation, University of Nigeria, Nsukka. The reliability of the instrument was established using the Cronbach Alpha formula. The reliability coefficient value yielded 0.91 on average which was considered adequate for the study. The instrument was personally administered to the respondents by the researcher and three research assistants. A total of 240 copies of the questionnaires were administered and collected on the spot from the respondents. The data obtained from the three research questions were tested using mean score and standard deviation. In addition, the hypotheses were tested using t-test statistics. Any mean score lower than 2.50 implied disagree whereas equal to or higher than 2.50 implied agree to the items. t-test statistics was used in testing the null hypotheses at 0.05 level of significance. If the t-calculated values are less than critical t-value, null hypotheses will be accepted, but if the t-calculated values are more than critical t-value, null hypotheses will be rejected.

Results

The results of the data analyses were presented in the order of research questions and hypotheses posed for the study.

Research Question One

What are the ICT tools used in teaching and learning of computer education?

Table 1: Mean ratings on the ICT tools used in teaching and learning of computer education

S/N	ITEMS	Principal			Teacher		
		\bar{X}	SD	REM	\bar{X}	SD	REM
1	Internet facilities	3.18	0.40	A	3.43	0.21	A
2	Computer-aided information (CAI) software	3.35	0.32	A	3.18	0.15	A
3	Microsoft software application packages	3.28	0.15	A	3.31	0.06	A
4	Laptop/Desktop computers	3.30	0.22	A	3.21	0.18	A
5	Projector/Electronic Smart Board	3.39	0.33	A	3.24	0.19	A

\bar{X} = Mean, SD = Standard Deviation, rem = Remark

The result in Table 1 shows that the mean ratings of the principals for item numbers 1-5 are 3.18, 3.35, 3.28, 3.30, and 3.39 with the corresponding standard deviation of 0.40, 0.32, 0.15, 0.22, and 0.33 respectively. On the other hand, the mean ratings of the teachers on the above items are 3.43, 3.18, 3.31, 3.21

and 3.24 with the corresponding standard deviation of 0.21, 0.15, 0.06, 0.18 and 0.19 respectively.

Ho₁: There is no significant difference between the mean ratings of principals and teachers on the ICT tools used in teaching and learning of computer education

Table 2: t-test of the two groups on the ICT tools used in teaching and learning of computer education

S/N	Group	No.	Mean	SD	DF	t.cal	t-value	Decision
1	PRINCIPAL	40	3.30	0.28	238	1.75	1.96	Not significant
2	TEACHER	200	3.27	0.44				

In the table above, the t-calculated value of each item was obtained; the degree of freedom of all items was 238, while the critical t-table of 1.96 was obtained at 0.05 level of significance. From the table, it can be seen that the t-calculated values for all items were less than

critical t-value. Therefore, the null hypothesis of no significant difference between the mean ratings of principals and teachers on the ICT tools used in teaching and learning of computer education was accepted.

Research Question Two

What are the challenges of using ICT tools in teaching and learning of computer education?

Table 3: Mean ratings on the challenges of using ICT tools in teaching and learning of computer education

S/N	ITEMS	Principal			Teacher		
		\bar{X}	SD	REM	\bar{X}	SD	REM
1	Lack of adequate ICT facilities in schools	2.99	0.71	A	3.33	0.19	A
2	Unstable power supply in the schools	3.13	0.67	A	3.26	0.14	A
3	Poor perceptions of using ICT in education among teachers, students and the school administrators	3.11	0.15	A	2.84	0.17	A
4	Lack of ICT skills among teachers	3.43	0.17	A	3.23	0.13	A
5	Non integration of ICT into the school curriculum	2.20	0.24	D	2.09	0.48	D

\bar{X} = Mean, SD = Standard Deviation, rem = Remark

The result in Table 3 shows that the mean ratings of the principals for item numbers 6-10 are 2.99, 3.13, 3.11, 3.43 and 2.20 with the corresponding standard deviation of 0.71, 0.67, 0.15, 0.17 and 0.24 respectively. On the other hand, the mean ratings of the teachers on the above items are 3.33, 3.26, 2.84, 3.23 and 2.09 with the

corresponding standard deviation of 0.19, 0.14, 0.17, 0.13 and 0.48 respectively.

Ho₂: There is no significant difference between the mean ratings of principals and teachers on the challenges of using ICT tools in teaching and learning of computer education.

Table 4: t-test of the two groups on the challenges of curriculum implementation in the classroom

S/N	Group	No.	Mean	SD	DF	t.cal	t-value	Decision
1	PRINCIPAL	40	2.97	0.39	238	1.75	1.96	Not significant
2	TEACHER	200	2.95	0.22				

In the table above, the t-calculated value of each item was obtained; the degree of freedom of all items was 238, while the critical t-table of 1.96 was obtained at 0.05 level of significance. From the table, it can be seen that the t-calculated values for all items were less than

critical t-value. Therefore, the null hypothesis of no significant difference between the mean ratings of principals and teachers on the challenges of using ICT tools in teaching and learning of computer education was accepted.

Research Question Three

What are the measures to curb the challenges of using ICT tools in teaching and learning of computer education?

Table 5: Mean ratings on the measures to curb the challenges of using ICT tools in teaching and learning of computer education?

S/N	ITEMS	Principal			Teacher		
		\bar{X}	SD	REM	\bar{X}	SD	REM
1	Provision of adequate ICT facilities in schools	3.13	0.07	A	2.82	1.07	A
2	Provision of stable power supply in the schools	3.07	0.91	A	2.78	1.06	A
3	Integration of ICT into the school curriculum	2.04	1.07	D	1.88	1.44	D
4	Enlighten teachers, students and the school administrators on the need and importance of ICT deployment in the school	2.88	0.14	A	3.12	0.06	A
5	The school authorities should employ teachers with good ICT skills only	3.44	0.22	A	3.01	0.38	A

X = Mean, SD = Standard Deviation, rem = Remark

The result in Table 5 shows that the mean ratings of the principals for item numbers 10-15 are 3.13, 3.07, 2.04, 2.88 and 3.44 with the corresponding standard deviation of 0.07, 0.91, 1.04, 0.14 and 0.22 respectively. On the other hand, the mean ratings of the students on the above items are 2.82, 2.78, 1.88, 3.12

and 3.01 with the corresponding standard deviation of 1.07, 1.06, 1.14, 0.06 and 0.38 respectively.

Ho₃: There is no significant difference between the mean ratings of principals and teachers on the measures to curb the challenges of using ICT tools in teaching and learning of computer education.

Table 6: t-test of the two groups on the measures to curb the challenges of using ICT tools in teaching and learning of computer education

S/N	Group	No.	Mean	SD	DF	t.cal	t-value	Decision
1	PRINCIPAL	200	2.91	0.48	238	1.75	1.96	Not significant
2	TEACHER	400	2.72	0.80				

In the table above, the t-calculated value of each item was obtained; the degree of freedom of all items was 238, while the critical t-table of 1.96 was obtained at 0.05 level of significance. From the table, it can be seen that the t-calculated values for all items were less than critical t-value. Therefore, the null hypothesis of no significant difference between the mean ratings of principals and teachers on the measures to curb the challenges of using ICT tools in

teaching and learning of computer education was accepted.

Discussion of Findings

ICT tools used in teaching and learning of computer education

The result on table one shows that the principals and teachers have similar view on the ICT tools used in teaching and learning of computer

education. They agreed that the ICT tools used in teaching and learning of computer education are: internet facilities, computer-aided information (CAI) software, Microsoft software application packages, laptop/desktop computers and projector/electronic smart board. This finding is in consonance with the statement credited to Techterms (2013) that ICTs is technologies that provide access to information through telecommunications and also aid in instructional delivery in academic institutions. Examples include internet, wireless networks, cellphones and other communication mediums.

Challenges of using ICT tools in teaching and learning of computer education

The result on table three shows that principals and teachers have similar view on the challenges of using ICT tools in teaching and learning of computer education. They agreed that the challenges of using ICT tools in teaching and learning of computer education include: lack of adequate ICT facilities in schools, unstable power supply in the schools, lack of ICT skills among teachers' poor perceptions of using ICT in education among teachers, students and the school administrators. This finding is in line with the disclosure made by Adomi and Kpangban (2010) that the low rate of ICT adoption and application in Nigerian secondary schools in which Bauchi state is not an exception, is attributable to several factors like limited/poor information infrastructure, lack of/inadequate ICT facilities in schools, frequent electricity interruption, poor ICT policy/project implementation strategy, inadequate ICT manpower in the schools among others. The respondents also disagreed that non integration of ICT into the school curriculum is one of the challenges of using ICT tools in teaching and learning of computer education.

Measures to curb the challenges of using ICT tools in teaching and learning of computer education

The result on table five shows that the principals and teachers have similar view on the measures to curb the challenges of using ICT tools in teaching and learning of computer education. They agreed that the measures to curb the challenges of using ICT tools in teaching and learning of computer education include: provision of adequate ICT facilities in schools, provision of stable power supply in the schools, enlighten teachers, students and the school administrators on the need and importance of ICT deployment in the school and the school authorities should employ teachers with good ICT skills only. This

finding is in concord with the advice of Igwe (2016) that the Federal Government of Nigeria should wake up from slumber and vigorously pursue the faithful implementation of her policies as it concerns ICT in education. More especially as stated in Section 11 subsection 102 (d) of the National Policy on Education that "Government shall provide facilities and necessary infrastructure for the promotion of Information and Communication Technology at all levels of education" (FRN, 2004:53). The respondents also disagree that integration of ICT into the school curriculum is a measure to curb the challenges of using ICT tools in teaching and learning of computer education.

Conclusion

Computer and its related technology have completely revolutionized our lives. Now, information technology is important in all works of life. Undoubtedly, computer and information technology have great impact in our education system. Various technologies have been used to improve the teaching and learning process. Information and communication technology (ICT) makes our education system interested and effective. Thus, students can now learn computer education better without getting bored and frustrated. However, computer education is a subject of study in secondary schools. As a school subject which has ICT inclination, it requires a lot of ICT resources for effective teaching and learning. Some of the resources are internet connection, computer, electronic smart board scanner, printer, e-books among other. Nevertheless, the findings of the present study uncovered that deployment of ICT tools in teaching and learning of computer education in Bauchi State is hampered by some challenges. The study also revealed some measures which can be adopted to curb these challenges in a bid to make the teaching and learning of computer education a reality in various public secondary schools in Bauchi State.

Recommendations

The following recommendations were made based on the findings of this study:

1. Federal government should ensure that her policy statement regarding the provision of necessary infrastructure and training for the integration of ICT in the school system is effectively implemented, through making certain percentage of its annual budget for the development of ICT industry in Nigeria.
2. Government should encourage IT companies with appropriate incentives to compel them to

- invest in education and training through certification for tax rebates.
3. Computer education teachers should be encouraged to vigorously pursue ICT training with seriousness. This could be achieved by making computer available, establishing facilities and ensure effective internet connectivity which will provide opportunities to educational leapfrog into the modern era.
 4. The government of Nigeria should embark on a massive computer literacy training programme nation-wide particularly for teachers and learners at all levels. This should be accomplished through in-service training for teachers, workshops, seminar, and conference.
 5. The government and its agencies should ensure that adequate ICT resources are put in place for the teaching and learning of computer education.
 6. Teachers in Nigeria should be motivated and encouraged to develop and use multimedia courseware and software relevant to teaching and learning.
 7. The cost of ICT tools like laptops, desktops etc should be reduce to affordable prices so that teachers and students can be able to acquire them.

References

- Adomiand, E.E. & Kpangban, E. (2010). Application of ICTs in Nigerian secondary schools. *Library Philosophy and Practice* 2010.
- Barry, T.. (2008). Computer literacy: A sustainable tool in the information age. *Journal of Education in the information Age* 5(2), 145-149.
- Edhuze, E.J. (2003). The present status of computer studies in secondary schools in Isoko South LGA of Delta State. *Unpublished Project*.
- Federal Republic of Nigeria (2004). *National policy on education*. Lagos: NERDC Press.
- Harry, P. (2015). *Learning and teaching English*. London: Oxford University Press.
- Ibrahim, G. (2016). Fundamentals of computer education. An Unpublished Monograph, Ahmadu Bello University, Zaria.
- Igwe, D. (2016). Improving teaching competence of primary school teachers for quality assurance in teacher production. *Journal of Education in the Information Age* 1(3), 287-291.
- Inspectorate (2008). *ICT in schools*. Dublin: Education Support and Research Unit Inspectorate.
- Marlon, E. (2014). *Paving way for consummate learning in academic setting*. Munich: Beehran Publication.
- Mejiuni, B.& Obilade, A. (2006). *Principle and practices of information technology in higher education*. London: International Publisher Ltd.
- Moursund, H. & Bielefeld, D, (1999). Barriers hindering implementation, innovation and adoption of ICT in primary schools in Kenya. *International Journal of Innovative Research and Development*, 4(2), 99-105.
- Osuala, E.C. (2004). *Foundations of vocational education*. Onitsha: Cape Publishers.
- Scatter, R. (2012). *A handbook for English language learning*. Alcoy: Marfil Press.
- Techterm, L, (2013) Challenges in the implementation of ICT in public secondary schools in Kenya. *International Journal of Social Science and Education*, 3(2), 214-218.