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## GENDER PERCEPTION OF THE USE OF ICT FOR CLASSROOM INSTRUCTION AMONG BIOLOGY TEACHERS IN MINNA METROPOLIS OF NIGER STATE

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### Abstract

*The paper investigated Gender perception of the use of ICT for classroom instruction among Biology Teachers in Minna Metropolis. Research design employed for the purpose of this study was survey research design. The sample size for this study consist of one hundred (100) biology teachers (63 male and 37 female) from all the Secondary Schools in Minna metropolis of Niger State. One research question was raised, The instrument used for data collection was a questionnaire which was designed by the researchers on gender perception of the use of ICT for classroom instruction in biology. The instrument was validated by three experts in biology subject. Pilot study was conducted and reliability coefficient of 0.73 was obtained. The data collected was analyzed using Mean and Standard Deviation. The study reveals that, both male and female biology teachers in Minna metropolis of Niger State have the same perception that, the use of ICT for classroom instruction is an effective instructional strategy. It was recommended among others that Secondary School Teachers should be exposed to various types of Continuous Professional Career Development programs to improve and update their pedagogical skills particularly on the use of ICT for classroom instruction.*

**Key Words:** Biology, Classroom, Computers, Teachers, ICT and Instruction

### Introduction

Our society has been undergoing series of changes for the past decades as a result of the knowledge of science and technology. Peoples' culture and ways of life has been modernized as a result of the advancement in the knowledge of science and technology. Advancement in the knowledge of science and technology has brought about the application of Information and Communication Technology (ICT) in our ways of life directly or indirectly. Therefore, Information and Communication Technology (ICT) has gradually become an indispensable part of the contemporary world. This is because our socio-cultural beliefs have been adjusted to meet the changes brought about by the use of Information and Communication Technology (ICT) in our everyday life. These adjustments manifests most especially in areas of medicine, tourism, travel, business, law, banking, engineering and architecture among others. Our ways of life today is vastly different from our fore parents' ways of life in the past decades.

Information and communication technology has no doubt changed the face of teaching and learning globally but in Nigeria, there seems to have a little impact of ICT utilization and far less change as compared to other areas of human life. Though Nigeria is also making efforts to join the ICT fray, these efforts appear to be ineffective (Tettey, 2008; Solomon, 2008 & Meenakshi, 2013). As result of that; stakeholders are calling the government to provide basic facilities including ICT-driven teaching aids for nation's educational system (Adomi & Ppangban,

2010). However, a lot of researchers and educationalists have attempted to explore the use of Information and Communication Technology (ICT) during teaching and learning.

Researchers reveal that ICT has immensely contributed to the quality and quantity of teaching, learning and research in traditional and distance education institutions (Adeoye, et al., 2013). It is further revealed that information and communication technology can make the school more efficient and productive, by organizing a variety of tools to enhance and facilitate teachers' professional activities. Adomi and Kpangban (2010) opined that ICT provides opportunities for school to communicate with one another through e-mail, mailing list, chat room and other facilities. It provides quicker and easier access to more extensive and current information. ICT can also be used to do complex tasks as it provides researchers with a steady avenue for the dissemination of research reports and findings.

Ajowi and Simatwa (2010) advanced three major reasons for information and communication technology in education. They, however, suggested that it is a tool for addressing challenges in teaching and learning situation; a change agent; and central force in economic competitiveness. As a tool for addressing challenges in teaching and learning, technology has the capabilities for delivery, management and support of effective teaching and learning. As a change agent, it is capable of changing the content, methods and overall quality and quantity of teaching and learning, thereby reducing teachers' workload and ensuring constructivist inquiry-oriented classroom. Moreover, ICT a central force in economic and social shifts that has technology skill critical to future employment of today's students. Ilomaki (2008) pointed out that the role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy. Experts in the fields of education have agreed that, if ICT is properly used, holds great promise to improve teaching and learning in addition to shaping work-force opportunities.

The Pedagogical, practices of teachers using ICT can range from only small enhancements of teaching practice using what are essentially traditional methods, to more fundamental changes in their approach to teaching. According to Kiforo(2013) the most effective uses of ICT are those in which the teacher and software can challenge students understanding and thinking, either through whole-class discussions using an interactive whiteboard or through individual or paired work on a computer. If the teacher has the skills to organize and stimulate the ICT-based activity, then both whole class and individual work can be equally effective. ICT can be used to reinforce existing pedagogical practice as well as to change the way teachers and students interact. The use of ICT as representation tools(through overhead and LCD and projectors, televisions, electronic whiteboards, guided "wedtours" where students simultaneously viewed the same resource on computer screens) is seen to be mixed effectiveness. While it may promote class understanding of and discussion about difficult concepts (especially through the display of stimulations) such uses of ICT can re-force traditional pedagogical practice and divert focus from the content of what is being discussed or displayed to the tool being utilized.

The use of ICT for educational purposes has yielded positive result on the part of students such as increased motivation, active learning, efficient retention ability and better access to information. Information and Communications Technology (ICT)or technologies can be seen as a set of information technological tools that can be chosen as supporting educational environment. ICT have necessitated a change in the ways and means of communicating and

learning. Computer based resources such as internet, Skype, Emails, mobile phone etc. can be used to deliver, equip and assess learning/teaching materials. The need for ICT in the teaching and learning process in Nigeria is as a result of the necessity to adapt to the ongoing communication technological revolution. The tremendous progress in ICT has brought changes to teaching techniques.

It is one thing to provides schools with ICT and yet another to use them effectively in teaching and learning to realize their impact. Teachers require more knowledge and understanding of ICT as well assist potentialities students' better learning.

### **Statement of the Research Problem**

The lack of ICT-trained teachers in computer to teach practical aspects of computer skills militates against proper utilization of ICT in secondary schools. Large numbers of teachers are not computer literates and such teachers that are not computer literate do find it extremely difficult to deliver appropriately, the education and training required by the information age of the 21st century to their students.

Classroom observation has shown that many secondary schools teachers lack ICT knowledge to be able to apply it (ICT) during classroom instruction. This situation has been a major constraint to making Nigerian educational institutions ICT compliance. Researchers reveals that male teachers are more literate in terms of the use of ICT for classroom instructional at secondary school level of Nigerian education system than their female counterparts but, some are of the view that female teachers are more literate than their male counterparts. On the other hand, some others are of the view that the use of ICT for classroom instruction is gender friendly. From the foregoing it now clear that the use of ICT for classroom instruction is perceived differently by male and female teachers in secondary schools in Nigeria. This study is therefore aimed at determining the gender perception of the use of ICT for classroom instruction among biology teachers in Minna metropolis of Niger State.

### **Aim and Objectives of the Study**

The aim of this study was to determine the gender perception on the use of ICT for classroom instruction among biology teachers in Minna metropolis of Niger State. Specifically, this study strived to achieve one objective which is to determine:

- i. The differences in gender perception of the use of ICT for classroom instruction among biology teachers in Minna metropolis of Niger State.

### **Research Questions**

This study raised one research question to guide the study which was answered using mean and standard deviation:

- i. What is the difference in gender perception of the use of ICT for classroom instruction among biology teachers in Minna Metropolis of Niger State?

### **Research Design**

Research design employed for the purpose of this study was survey research design. This research design is appropriate since the data comprised of information sourced through the use of questionnaire. Target population for this study comprised of all the biology teachers from the

all the Secondary Schools in Minna metropolis of Niger State. The sample size for this study consist of one hundred (100)biology teachers (63 male and 37female)from all the Secondary Schools in Minna metropolis of Niger State.

The instrument used for data collection was a questionnaire which was designed by the researchers on gender perception of the use of ICT for classroom instruction among biology teachers in Minna metropolis of Niger State

The questionnaire consists of two sections (A & B).Section A solicited information about the respondents' bio data while section B consist of questions or items to which the respondent(biology teachers) were expected to respond. A 5-scale (Likert type) item was used. The scales are Strongly Agree (SA) Agree (A) Undecided (UD) Disagree (D)and Strongly Disagree (SD). Each is allocated 5,4,3,2, and 1 mark respectively.

The instrument was validated by three biology experts and an expert from test and measurement unit of Niger State Secondary Schools Education Board, Minna. Their comments corrections and observabons were used to produce the final copy of the instrument used for this study. A pilot study was conducted to determine the reliability of the instrument and reliability coefficient of 0.73 was obtained. This indicates that the instrument was highly reliable. The researchers visited the schools used for this study and obtained permission from the school authority to use their schools for research study. The permission was granted and they were introduced to the school biology teachers who were thereafter, given orientation about the research study. On the second visit, the questionnaires were distributed to the biology teachers and after the filling they were all collected back from them without missing any even one. The data collected was later analyzed using mean and standard deviation.

## Results and Discussion

### Research Question

- i. What is the difference in gender perception of the use of ICT for classroom instruction among biology teachers in Minna Metropolis of Niger State?

**Table 1: Mean and Standard Deviation for gender perception on the use of ICT for classroom instruction among biology teachers in Minna Metropolis of Niger State**

| S/N | ITEMS  | MEAN | DECISION |
|-----|--|------|----------|
| 1   |  | 2.35 | Disagree |
|     | As a biology teacher, I see the use of ICT for classroom instruction as a problem responsible for biology students' poor leaning outcomes. | 2.30 | Disagree |

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|   |  |      |          |
|---|--|------|----------|
| 2 | As a biology teacher, I prefer traditional method of teaching instead of using ICT for classroom instruction.                      | 2.21 | Disagree |
|   |  | 2.38 | Disagree |
| 3 |  | 3.70 | Agree    |
|   | The use of ICT for classroom instruction has improved my method of delivering biology lecture in my classroom as a biology teacher | 3.90 | Agree    |
| 4 |  | 3.75 | Agree    |
|   | The use of ICT for classroom instruction has positively influenced my ways of responding to students' questions in when teaching   | 4.03 | Agree    |
| 5 |  | 1.82 | Disagree |
|   | As a biology teacher, I am always afraid of using ICT for classroom instruction during biology teaching.                           | 2.00 | Disagree |
| 6 |  | 4.02 | Agree    |
|   | I always use ICT for classroom instruction during teaching because it make teaching and learning more effective and meaningful.    | 4.32 | Agree    |

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|    |  |      |          |
|----|--|------|----------|
| 7  |  | 2.60 | Disagree |
|    | My reason for not using ICT for classroom instruction while teaching is because I am not computer literate.                        | 3.59 | Agree    |
| 8  |  | 2.60 | Disagree |
|    | The challenge I face while using ICT for classroom instruction is that, I cannot effectively use computer in the classroom.        | 3.97 | Agree    |
| 9  |  | 3.94 | Agree    |
|    | I always use ICT for classroom instruction during all the classes because it saves time as compared to the conventional method.    | 4.49 | Agree    |
| 10 |  | 4.40 | Agree    |
|    | One of the advantages of using ICT for classroom instruction is that, it makes teaching and learning easier with large class size. | 4.05 | Agree    |

**The Grand Means and Standard Deviation; Male = 3.36 and Female = 3.27**

Table 1 shows the mean and standard deviation of gender perception of the use of ICT for classroom instruction among biology teachers in Minna metropolis of Niger State.

**Items1 on the table**

Table 1 reveals the mean score of 2.35 with standard deviation of 0.08 for male and mean score of 2.30 with standard deviation of 0.05 for female. Both means are less than the decision mean of

3.00. This indicates that, both male and female biology teachers in Minna metropolis of Niger State do not see the use of ICT for classroom instruction as a problem.

#### **Items 2 on the table**

On the second item, the table reveals the mean score of 2.21 with standard deviation of 0.04 for male biology teachers and mean of 2.38 with standard deviation of 0.08 for female biology teachers. Both means cores are less than the decision mean of 3.00. This implies that both male and female biology teachers in Minna metropolis prefer the use of ICT for classroom instruction than traditional method of teaching.

#### **Items 3 on the table**

Table 1 reveals the mean score of 3.70 with standard deviation of 0.15 for male and mean score of 3.90 with standard deviation of 0.18 for female. Both means cores are more than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively agreed that the use of ICT for classroom instruction has improved their method of biology teaching.

#### **Items 4 on the table**

Table 1 reveals the mean score of 3.75 with standard deviation of 0.16 for male and mean score of 4.03 with standard deviation of 0.09 for female. Both means cores are more than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively agreed that the use of ICT for classroom instruction has positively influenced their ways of responding to students' questions during biology teaching.

#### **Items 5 on the table**

Table 1 reveals the mean score of 1.82 with standard deviation of 0.03 for male and mean score of 2.00 with standard deviation of 0.03 for female. Both means cores are less than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively disagreed that they are afraid of using ICT for classroom instruction during biology teaching.

#### **Items 6 on the table**

Table 1 reveals the mean score of 4.02 with standard deviation of 0.09 for male and mean score of 4.32 with standard deviation of 1.01 for female. Both means cores are more than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively agreed that they use ICT for classroom instruction because it makes teaching and learning of biology more effective and meaningful.

#### **Items 7 on the table**

Table 1 reveals the mean score of 2.60 with standard deviation of 0.08 for male and mean score of 3.59 with standard deviation of 0.15 for female. The mean core of male biology teachers is less than the decision mean of 3.00 while that of the female biology teachers is more than the decision mean of 3.00. This indicates that male teachers in Minna metropolis disagreed with the fact that they are not computer literate hence, they don't use of ICT for classroom instruction while the female teachers on the other hand, agree that they don't use ICT for classroom because they are not computer literate.



### Items 8 on the table

Table 1 reveals the mean score of 2.60 with standard deviation of 0.08 for male and mean score of 3.97 with standard deviation of 0.19 for female. The mean core of male teachers is more than the decision mean of 3.00 while that of female biology teachers is less than the decision mean of 3.00. This indicates that male teachers in Minna metropolis disagreed that they face some challenges while using ICT for classroom instruction as a result of their inability to use computer effectively while the female teachers on the other hand agreed to that fact.

### Items 9 on the table

Table 1 reveals the mean score of 3.94 with standard deviation of 0.19 for male and mean score of 4.49 with standard deviation of 1.02 for female. Both means cores are more than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively agreed that they always use ICT for classroom instruction because it saves time as compared to the conventional teaching method.

### Items 10 on the table

Table 1 reveals the mean score of 4.40 with standard deviation of 1.01 for male and mean score of 4.05 with standard deviation of 0.09 for female. Both means cores are more than the decision mean of 3.00. This indicates that both male and female biology teachers in Minna metropolis collectively agreed that the use ICT for classroom instruction makes teaching and learning easier with large class size.

### Discussion

- i. The study was conducted to determine the gender perception of the use of ICT for classroom instruction among biology teachers in Minna Metropolis of Niger State. Table 1 reveals the cumulative mean score of 3.36 male biology teachers and 3.27 for female biology teachers respectively. This indicates that both male and female biology teachers in Minna metropolis of Niger State have the same perception that, the use of ICT for classroom instruction is an effective instructional strategy. This finding is in line with the findings of Ajowi and Simatwa (2010) as well as the findings of Adomi and Kpangban (2010) who reported that ICT provides opportunity for easier, faster and effective classroom instruction. This outcome negates the findings of Abimbola (2008), that male teachers are more technologically incline than the female counterpart in term of computer usage and orientation. It is also in disagreement with the view of Olalere (2007), that larger numbers of male teachers are not seriously concerned about the integration of ICT into the instructional process.

### Conclusion

It can be concluded that both male and female biology teachers in Minna metropolis of Niger State have the same perception of ICT as an effective instruction strategy for teaching biology.

### Recommendations

On the basis of the above findings, the following recommendations were made:

- i. Government should provide schools with well-equipped computer laboratories
- ii. Secondary School Teachers should be exposed to various types of Continuous Professional Career Development programs to improve and update their pedagogical skills particularly on the use of ICT for classroom instruction.

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