ASSESSMENT OF MATHEMATICS TEACHER FACTORS TOWARDS THE USE OF WEB-BASED RESOURCES FOR TEACHING IN SECONDARY SCHOOLS IN NIGER STATE

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Abstract
The study investigated the assessment of Mathematics teacher's factors, towards the use of web – based resources for teaching in secondary schools in Niger State. The research design adopted for this study was descriptive survey research design. The target population of study was all Mathematics teachers in senior secondary schools in Niger State. Random sampling technique was used to select 285 teachers across the three senatorial districts in Niger State. The instrument for the data collection were: PWBR and AWBR, the instruments were validated by experts in the field of Psychology. A pilot test was conducted to determine the reliability of the instruments. Data collected was analyzed using crombach alpha formula and coefficient index of 0.72 and 0.74 was obtained. Findings from the data analysis of the experimental groups (male /female on perception), are $\bar{X}$ *=33.56, SD = 9.57 and* $\bar{X}$ *= 36.88, SD = 7.35 respectively at F(1,283) =2.92, where P=0.03 showed a significant difference between rural and urban secondary school teachers towards the use of web-based resources since 0.01□0.05. But for the (male/female on attitude), are* $\bar{X}$ *=32.65, SD = 8.75 and* $\bar{X}$ *= 34.43, SD = 8.01 respectively at F(1,283) =1.65, where P=0.35 showed no significant difference between rural and urban secondary school teachers' attitude towards the use of web-based resources since 0.45□0.0. It therefore means that, both male and female secondary school, Mathematics teachers have positive perceptions and not attitude towards the use of web based resources. Based on the findings it was recommended among others that Stakeholders in secondary schools should provide necessary ICT devices that can accommodate web based resources for the teaching and learning of Mathematics in the secondary schools and there is a need for periodic seminar and orientation on the use of web based resources for the teaching and learning of Mathematics in the secondary schools so as to change the attitude of these teachers.*

Introduction
The Litmus test for identifying any rapidly developing or changing society is the explosion in the sphere of technology advancement. The increasing acquisition of accessible technologies and the chief among which is computer has served as a major avenue for advancements in developing nations, in homes, schools and workplace. According to Aubert (2007), Computers, provide learners with a veritable means to transmit, access and interpret enormous and increasing body of information and Communication Technology (ICT) not divide. The global acceptance of the use of Information Communication Technology (ICT) in industrialized communities associated with amount of information about technology calls for greater responsibility on schools to assist learners to be more efficient at accessing, transmitting and using large amount of information daily endeavors (Robin, 2011). The use of computers and the internet have become integral part of today's classroom. Moreover, the internet has

facilitated the development of web-based learning for students' learning and assessment across various disciplines. .
Many scholars have advocated for the increasing utilization of new technologies in the schools based on the fact that the students need to be technologically literate to survive and live effectively in the twenty –first century, (Che-Hung, Pai-Lu, Wen-Hsuing, Chun-Yu, Hsiao-Moi & Yu-Li, 2010). This literacy is best achieved in classroom environment where technology becomes the central part of the classroom and where they are used as tool for learning and solving problems (Michael & John, 2008). Quite a number of scholars and educators have lent support to increasing technology usage in schools. This is clearly based on the assertion that for any nation to obtain the status of self-reliance, science and technology must be a core component of the knowledge to be impacted to all the citizens of the nation irrespective of race, creed or sex especially on web based learning (Nsofor, 2001 & 2010). E-Learning provide integrated environment of various technologies to support diverse educators and learners' needs via the internet. The goal of these tools is to enhance face-to-face instruction and to deliver distance-learning courses. Each of these tools offers similar component, such as course not posting, assignment submissions, quizzes and communication features especially in web base learning.

Web – based learning could be defined as "interactive web – based tools that support learning of a specific concept by amplifying or guiding the cognitive processes of learner", (Akinpar & Bal, 2006). Web-based learning materials emerged as elements on personal Web sites with the proliferation and adoption of the internet in the early to mid-90s. Beyond personal publishing, Web-based teaching materials were often published online as samples and supplement materials by commercial entities experimenting with the World-Wide-Web.

Base on world-wide-based several students today have graduated into ubiquitous access to technology and internet thus referring them as the "Net generation" (Montgomery, 2009). Outside the four corners of the classroom, these learners utilize the web to carry out several activities, meaningful tasks including education, visualizing learning, searching and entertaining themselves (Tapscott, 2008). The classroom environment, technology usage is done spontaneously and overall effect on learning shows that it is very negligible (Roberson, 2003).

Web–based Resources (WBR) also referred to as learning objects, provides quite a numerous number of characteristics that explains possible barriers and support learners learning especially in the subject area of science such as Mathematics (Kay, 2011). Web – based resources provides a lot of adaptive solutions to the challenges that everyday tutors are confronted with viz – de viz the utilization of technology. The platforms are easy to be utilized. Similarly, teachers who are even deficient in adequate knowledge of computer based skills do not have to waste much time toward understanding how to utilize this web – based tools (Kay & Knaack, 2007). A web – based tools have well stated objectives and vivid, narrow focus making it simple to develop adequate lesson notes and integrating methods (Kay *et al.,* 2007). Web – based tools can be accessed via internet. However, over 90% of all the public schools in North America and Europe now have access to internet with high – speed broadband connectivity, but in Nigeria very few public schools (10%) have access to these web – based tools (Barkley, 2010). Research on the use of web – based tools have not been conclusive, under the sphere of secondary schools these researchers includes; (Kay & Knnack, 2007; 2008a; 2008b; 2009a, Love Schibeci, Cummings, Phillips and Lake, (2010) all these have been published within the last five years. Most of the researchers have focused on the attitudes and teachers perception.

Research studies on perception of teachers in web – based learning showed that there were significant gains, sometimes as high as 40% (Akinpar & Bal, 2006, Liv & Bara, 2005, Kay &

Knaack 2009a). However, it is not obvious from their studies what types of knowledge has been gained. It is not known whether the learners were acquiring basic or higher level skills as a result of using WBL by the teachers (Nurni & Jaakola, 2006).

Several research studies have also been conducted on web-based practice such as; Deim and Herald (2005) who found that web-based group performed significantly better than the paper and pencil group on both fraction and decimal operation at the end of the study. Web-based practice can create different learning and assessment contexts, and produce flexible approaches to instruction and evaluation. Several studies have shown that student who used web-based learning and practice find Mathematics more enjoyable, achieved, interesting and motivating. The web-based practice can offer a distinctive opportunity to enhance students' achievement and interest when learning and practices are embedded into a cohesive curriculum.

According to (Simon, 2015), by leveraging the instructional potential: of web-based resource, you can increase student's engagement, expose them to authentic content, and engage them in collaborative activities that trigger critical thinking and creativity. Web-based resources have the potential to support a learning environment in which students explore knowledge and enhance their learning (Combes, & Valli, 2007). In addition, the web makes possible interactive resources encouraging student involvement (Sheard, J Sterna, & Markham, 2000). Therefore, with the use of these web-based resources, students can explore their curiosity independently and improve students' mathematics learning, achievement and learning motivation. The web has a wealth of educational information across different topics, which can potentially be used to improve teaching (Chakraborty, Kanthamani, & Subramanian, 2012). They can provide teachers and learners with a wide range of new and exciting experiences that are not possible in a traditional classroom (Hadjerrouit, 2010).

The perception of the teachers is one of the key factors to this study, therefore, it is imperative to understand that the perception of teachers can shape their actions towards the method of delivering their teaching through the use of Web based blended learning. Perception refers to the extent of believe of people that the utilization of a particular material or object will enhance teaching of a given or a particular concept (Ertmer, Gopalakrishnan & Ross, 2001). The belief is that the use of Web based blended learning will improve the teaching pedagogy of teachers and it will also help to broaden the knowledge of teachers as well as that of students about the concept. The perception of people, especially teachers towards the utilization of any material will affect their level of interaction and acceptance of the material (Folarin, 2016). This implies that having a positive perception about the utilization of Web based blended learning among secondary teachers can add values to their method of teaching and consequently, their adoption, which will also be of benefits to the learners in line with teachers' attitude.

Teachers attitude is a key factor for a proper implementation of web based blended learning and one of the main reason to differentiate weather web based learning is efficient or not (Hadjerrouit, 2010). Since its only teacher who adopts a positive attitude can be promoted and used in their classes towards the use of innovative teaching technologies, especially web based resources (Deveck, 2012). It seems necessary important for teachers to know how to implement web based resources in their subjects.

Mathematics is no doubt a course of discipline which is widely used in all spheres of human endeavor and it has gained wide recognition in the contemporary activities globally.

Many factors have been identified as the major reasons why student hate Mathematics or failed Mathematics this includes the way Mathematics is taught in a rather abstract manner by

teachers (Nekany, 2007). Agbor – Etang sited in Nekang (2004) noted that the problems in teaching sciences especially mathematics is traced to the teaching methodology used. He added that these problems metamorphosed to affecting both the future professional Mathematicians and also of similar concern to the physicist, statisticians, engineers, economist and sociologists.

Gender issue in learning has been of great concern to the educators. Torto (2013) results showed that the success rate of females was lower than the males. Harbor – Peters (2001) opined that boys have some features which favour their higher achievement and interests in Mathematics than girls. He further stressed that gender issue in Mathematics has been a source of concern. Mathematics has been male – stereotyped because it has been observed to be abstract and difficult and having characteristics which boys are lured to. However, contrary to the above – some researches have debunked the myth that Mathematics is a subject suitable for boys only they observed that male and female students taught by the professional Mathematics tutors benefited equally (Nekang & Agwagal, 2010).

It is based on the above premises that the research study aimed at Assessing of Mathematics Teacher Factors Towards the Use of Web-Based Resources for Teaching in Secondary Schools in Niger State.

Web based resources can be considered as key intellectual property in a competitive learning environment. Although WBR exist (Ygci, Sirakaya and Ozudogu, 2015; Osguthoorpe and Graham, 2014 and Longe, 2010) research evidence shows that they are being used to enhance teaching among teachers. Presently, web based learning access Are few and there are untrained or lack of trained teachers in secondary schools, but teachers in Nigeria or Niger State in particular have not been using it. More preference has been given to the use of outdated methods such as, discussion, lecture, fieldtrip, project method among others. Interestingly, few online or web based strategy has been used at secondary school level and the resulting perception and attitude to their uses has been inconclusive. Based on the above, the study therefore: intends at Assessing of Mathematics Teacher Factors Towards the Use of Web-Based Resources for Teaching in Secondary Schools in Niger State.

Objectives

The research work has the following objectives. To;

1. Examine gender influence of secondary schools Mathematics teachers perception towards the use of web based resource in Niger State.

2. Examine gender influence of secondary schools Mathematics teachers attitude towards the use of web based resources in Niger State.

Research Questions

The following research questions were raised to guide the study

1. How does gender influence secondary schools Mathematics teachers perception towards the use of web Based resources in Niger State?

2. How does gender influence secondary schools Mathematics teachers attitude towards the use of web based resource in Niger State?

Research Hypotheses

The following hypothesis were formulated to guide the study and tested at 0.05 level of significance.

HO_1: There is no significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State.

HO_2: There is no significant difference between secondary schools Mathematics teacher's attitude towards the use of Web based resources in male and female in Niger State.

Methodology

The research design adopted for this study was a descriptive survey research design. According to Best (2017), is a scientific method which involves observing and describing the behaviour of a subject without influence. It is suitable to use survey type of research design. The descriptive survey design is used to describe the distinctiveness of individual or group, the relationship that exist between variables which includes assessment of Mathematics teachers perception and attitude towards the use of web-based resources.

The target population was all the Mathematics teachers in senior secondary schools totaling 1,063 in the 486 secondary schools in Niger State. The population shares the same characteristics such as enumeration, environment, syllabus among other.

The sample of the study consisted of 285 secondary school Mathematics teachers that were drawn from the participating schools. The schools were randomly selected from the three senatorial districts of Niger State. The sample selected was representative of the entire population of Mathematics teachers in senior secondary schools in Niger State.

The research instrument that was used in this study to collect the data was a questionnaire and it was designed by the researcher. The questionnaire was titled "Mathematics Teachers Perception and Attitude towards the use of Web-Based Resources Questionnaire (WBRQ)". The questionnaire was divided into three Section (Sections A, B, C,); section A, was used to elicit responses on the demographic data of the respondents. Section B, consists of ten items designed to elicit data on respondents' perception of web-based resources (WBRQ). Section C, consists of items tailored to generate data on Mathematics Teacher's Attitude towards WBRQ. Section B of WBRQ is LIKERT scale of WBRQ: Extremely Important (EI), Moderately Important (MI), Strongly Agreed (SA), Slightly Important (SI) and Not Important (NI). Which were coded 5, 4, 3, 2 and 1 point respectively. Similarly, Section C is a LIKERT scale of: Strongly Agee (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD), and were coded 5, 4, 3, 2 and 1 point respectively.

The instrument was validated by two lecturers, all from the Department of Educational Technology, Federal University of Technology Minna, for face and content validity. The validators were requested to validate the items on suitability, clarity, logical arrangement of the items among others. Their suggestions and recommendations were taken into consideration in the production of the final draft of the instrument (see appendix B). Similarly, since the questionnaire is psychologically based, it was also validated by a psychologist and ICT Expert in C.O.E Minna Niger State.

A pilot test was conducted to test the reliability of the instrument. A total number of 20 Mathematics teachers from selected secondary schools in Niger State which is part of the population and not part of the study. The questionnaires were distributed and retrieved by the researcher. The administration was done and a reliability coefficient of r=0.75 and 0.72 from the variable perception and Attitude was obtained respectively using Cronbach"s Alpha. Based on the coefficient index obtained, the instrument was considered reliable. (See appendix C)

Permission was obtained from the Management of the sampled secondary schools to get approval in order to sample Mathematics Teachers. The participants were be briefed on the objectives of the study; researcher and the research assistants administer the questionnaire on the sampled teachers. The sampled questionnaire was collected immediately after they have been filled within a giving duration after weeks of administration procedures the data was sorted, coded and analyzed.

The data gathered from the sampled teachers was analysed using descriptive statistics. The descriptive statistics provided answers to the research questions using mean and Standard Deviation. t-test analysis was used to test research hypotheses; the significant difference was ascertained at alpha level of 0.05. The Statistical Package for Social Science (SPSS Version 23) was used for the analysis.

Results

Research Question One: How does gender influence secondary schools Mathematics teachers perception towards the use of web Based resources in Niger State?

Table 1: Mean and Standard Deviation Male and Female secondary schools Mathematics teachers' perception towards the use of web based resource in Niger State

	GENDER	N	Mean	SD
Q1	MALE	193	3.52	1.458
	FEMALE	92	3.98	1.167
Q2	MALE	193	3.12	1.398
	FEMALE	92	3.51	1.181
Q3	MALE	193	3.26	1.325
	FEMALE	92	3.64	1.105
Q4	MALE	193	3.37	1.364
	FEMALE	92	3.66	1.260
Q5	MALE	193	3.38	1.310
	FEMALE	92	3.87	1.121
Q6	MALE	193	3.37	1.277
	FEMALE	92	3.57	1.161
Q7	MALE	193	3.42	1.305
	FEMALE	92	3.78	1.108
Q8	MALE	193	3.31	1.235
	FEMALE	92	3.64	1.075
Q9	MALE	193	3.42	1.297
	FEMALE	92	3.65	1.133
Q10	MALE	193	3.40	1.292
	FEMALE	92	3.58	1.141
	Male Grand Mean		**3.36**	
	Female Grand Mean		**3.69**	

Decision Mean = 3.00

The Table 4.3 shows male and female of perception secondary schools Mathematics teachers' perception towards the use of web Based resources. This indicates that all the items in both male and female scored more than 3.0 decision mean, that is male grand mean score is 3.36 and female grand mean score is also 3.69 which imply that all the items were accepted which

translate to perception towards the use of web Based resources in Niger State. Based on the results of analysis of research question three. The implication is that, there is no disparity between male and female perception on the use of web Based resources.

Research Two: How does gender influence secondary schools Mathematics teachers' attitude towards the use of web based resource in Niger State?

Table 2: Mean and Standard Deviation of Male and Female secondary schools Mathematics teachers Attitude towards the use of web based resource in Niger State

	GENDER	N	Mean	SD
Q1	MALE	193	3.27	1.355
	FEMALE	92	3.49	1.288
Q2	MALE	193	3.23	1.288
	FEMALE	92	3.39	1.249
Q3	MALE	193	3.28	1.301
	FEMALE	92	3.35	1.253
Q4	MALE	193	3.47	1.303
	FEMALE	92	3.68	1.195
Q5	MALE	193	3.33	1.201
	FEMALE	92	3.54	1.199
Q6	MALE	193	3.33	1.308
	FEMALE	92	3.61	1.204
Q7	MALE	193	3.36	1.284
	FEMALE	92	3.50	1.245
Q8	MALE	193	3.12	1.275
	FEMALE	92	3.38	1.194
Q9	MALE	193	3.22	1.390
	FEMALE	92	3.13	1.400
Q10	MALE	193	3.05	1.255
	FEMALE	92	3.36	1.314
	Male Grand Mean		**3.27**	
	Female Grand Mean		**3.44**	

Decision Mean = 3.00

The Table 4.4 shows male and female of secondary schools Mathematics teachers' attitude towards the use of web based resource in Niger State. This indicates that all the items in both male and female scored more than 3.0 decision mean, that is male grand mean score is 3.27 and female grand mean score is also 3.44 which imply that all the items were accepted which translate to positive attitude towards the use of web Based resources in Niger State. Based on the results of analysis of research question four. The implication is that, there is no disparity between male and female attitude on the use of web Based resources.

Hypotheses Testing

Hypothesis One: There is no significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State**.**

Table 1: Shows t-test comparisons of perception rating of male and female towards the use of web based resources

Variable	N	Df	X	Sd	t-Cal	Sig
Male	193	283	33.56	9.57	2.92	0.003
Female	92		36.88	7.35		

S: Significant at p< 0.05 alpha level

The result of the t-test on male and female perception of Mathematics teachers perception towards the use of Web based resources in Niger State as shown in (Table 4.7) revealed a F (1, 283) = 2.92; P=0.003 with this result, the hypothesis was rejected because p-value of 0.003 on the table was lesser than the pre-set level of significant of p<0.05. With this finding, the implication is that there was significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State

Hypothesis Two: There is no significant difference between secondary schools Mathematics teacher's attitude towards the use of Web based resources in male and female in Niger State.

Table 2: Shows t-test comparisons of attitude rating of male and female towards the use of Web based resources.

Variable	N	Df	X	Sd	t-Cal	Sig
Male	193	283	32.65	8.75	1.65	0.35
Female	92		34.43	8.01		

NS: Not Significant at p>0.05

The result of the t-test on male and female perception of mathematics teacher towards the use of Web based resources in Niger State as shown in (Table 4.9) revealed a f (1, 283) = 1.65; P=0.35 with this result, the hypothesis was accepted because p-value of 0.35 on the table was lesser than the pre-set level of significant of p>0.05 With this finding. The implication is that there was no significant difference between the male and female secondary schools Mathematics teacher's attitude towards the use of Web based resources in Niger State

Findings of the Study

1. There was significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State**.**

2. There was no significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State

Discussion of Results

There was significant difference between the male and female secondary schools Mathematics teacher's perception towards the use of Web based resources in Niger State. This is in agreement with the findings of Yanti (2017) conducted a research to assess the students' perception of difficult topics in Mathematics in some selected senior secondary schools (SS) in Kano State Nigeria. It was show that gender had a significant influence on their perception of difficult topics in Mathematics. Also in concord with findings of Michael *et al* (2016) who carried out research on perceived usefulness, perceived ease of use and gender on social media adoption among university students in Ghana.

There was no significant difference between the male and female secondary schools Mathematics teacher's attitude towards the use of Web based resources in Niger State. This is in agreement with Ogunlade *et al* (2016) who carried out study to examined University stakeholders' (academic and technical staff) attitude towards the use of E-tutoring for distance learning in Nigeria. The result revealed that there is no significant difference between male and female academic and technical staff attitude toward the use of E-tutoring for distance learning in Nigeria. Also it is in agreement with the work of Falode, Usman, Ilobeneke., Mohammed., Godwin & Jimoh, (2016) who investigated effectiveness of computer simulation instruction on the attitude of Geography students towards map reading. The results indicated that there was no significant difference between the attitude of male and female students exposed to the package.

Conclusion

From the findings of this study, it is concluded that both male female secondary school Mathematics teacher's have positive perception towards the use of Web based resources. From the findings of this study, it is concluded that both male female secondary school Mathematics teachers has positive attitude towards the use of Web based resources.

Recommendations

Based on the findings that emanated from this study, the following recommendations were made:

1. Stakeholders in secondary schools should provides necessary ICT devices that can accommodate web based resources for the teaching and learning of Mathematics in the secondary schools
2. There is a need for periodic seminar and orientation on the use of web based resources for the teaching and learning of Mathematics in the secondary schools.

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