

PRE-SERVICE TEACHERS' KNOWLEDGE AND ATTITUDE TOWARDS WEBQUEST INSTRUCTION IN TERTIARY INSTITUTIONS, KWARA STATE

By

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Abstract

Inadequate knowledge and attitude has been found to be a barrier toward webquest instruction. Pre-service teachers need adequate knowledge and skills on the emerging trends of ICT. Therefore, this study was carried out to assess the pre-service teachers' knowledge and attitude toward webquest instructions in tertiary institutions in Kwara State. The descriptive survey research design was adopted for this study. The population of this study comprised all the pre-service teachers in the tertiary institutions in Kwara State. The sample size consisted of 320 pre-service teachers selected across three tertiary institutions in Kwara State using simple random sampling techniques. The instrument for data collection were two researcher's design questionnaires titled: "Pre-service Teachers Computer and Webquest Literacy Questionnaire (PTCWLQ)" and "Pre-Service Teachers' Attitude towards Webquest Questionnaire" (PTATWQ)". The validity of the instruments were done using expert judgement while the test-retest reliability of the instruments yielded 0.83 and 0.76 respectively. Data collected were analyzed using descriptive statistics and Analysis of Variance. It was shown that pre-service teachers have low level of knowledge on web-quest instructions and positive attitude towards using webquest as a means of instruction. Also, results showed that the knowledge and attitudes towards web-quest instruction possesses by the pre-service teacher was not differ based on gender and level of education. It was thereafter recommended that pre-service teachers' knowledge of webquest should be improved through training and workshops on webquest instructions. Also, computer education should be incorporated into the pre-

service teacher' education programme so as to get them acquainted to the use of the internet to facilitate webquest instruction.

Keywords: Pre-service Teachers, Knowledge, Attitude, Web-quest instructions

Introduction

Information and Communication Technologies (ICT) have become key tools and have a revolutionary impact on how people see and live in the world. The place of ICT in education and the world, in general, cannot be ignored. Modern day businesses are conducted and facilitated through the use of telephones, fax machines, and computer communication networks through the internet. This phenomenon has given birth to the contemporary e-commerce, e-government, e-medicine, e-banking, and e-education among others. Adebayo (2008) summed up that ICT is a revolution that involves the use of computers, internet, and other telecommunication technology in every aspect of human endeavor. He posited that ICT is simply about sharing and having access to data with ease. It is regarded as the super highway through which information is transmitted and shared by people all over the world.

Webquest has been defined as an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet. Learners gather information, analyze a body of knowledge, transform it in some way into new understandings and demonstrate in-depth understanding of the material by creating a final product that others can react or respond to (Milson & Downey, 2001; Strickland, 2005). There are different types of webquest, taking the form of mystery tasks, retelling of a situation, problem solving, or judgment decisions. All types of webquests share the same optimal goal; they aim at structuring and directing higher-order learning using computers. In a webquest the learner must interact with the new knowledge to formulate a new hypothesis or to create a new artifact for which the use of computers is essential (Williams, 2004).

Webquest also share the same structure as they all follow a template design of (introduction, task, sources of information, process, evaluation and conclusion). The introduction describes the topic and purpose of the webquest, provides necessary background information and catches the

readers' attention to draw them into the quest. The task explains to the students what they are going to do in the activity, the final performance or product and the tools to be used. The Process describes the steps for completing the task. The resources provide the students with the necessary resources to complete the task and websites. The Evaluation describes to the students how their performance or products will be evaluated and displays a rubric to measure the product as objectively as possible. The Conclusion wraps up the activity, summarizing what the students have accomplished during the Webquest in a short paragraph. Additional links or questions can be included to encourage students to extend their thinking beyond.

The webquest model was created as a tool for integrating Internet use into classroom activities. webquest asks young people to use the Internet to learn about an issue and apply that knowledge to attitudes and to enhance their own environments or future orientations (Abbit & Ophus, 2008). It is a synthesis of Inquiry methods, cooperative learning, problem-based learning, constructivism, and technology integration. Webquest came out as one of the buzz terms that emerged in the last 15 years in multiple fields of education and teacher education alike as they are used to achieve the best use of learners' time, knowledge acquisition and integration and extending and refining knowledge. After working with a Web-quest, learners will have grappled with a significant amount of new information and made sense of it and guidance for the students and instructors. Webquests also help focus students' attention on the provided resources, rather than having students search for them. And they are linked to a variety of positive affective outcomes, such as motivation, increased level of engagement, positive attitudes, and decreased anxiety.

Recently, teacher educators have applied the webquest model with preservice teachers in order to develop technology integration skills related to those used in everyday schools. Webquest allowed educators to see how the Internet could be used in classrooms for inquiry-based teaching and learning. When working with webquest, learners take newly-acquired information and transform the information into authentic learning. Scaffolding in webquest allows students to learn in a different way they are been doing traditionally (Dodge, 2002). Scaffolding creates a temporary framework to support student performance beyond their capacities while completing a webquest (March, 2003). Dodge (2002) states that webquest

allow learners to have a structure to their learning that allows them to act more skilled than they really are and allows the bar of what students can produce to be raised. Scaffolding learning makes learners work with new approaches with the help needed to succeed in these attempts. Scaffolding is used to support the gradual acquisition of knowledge and skills, may help preservice teachers to better understand the underlying assumptions and assess the feasibility of webquest for their teaching (Wang & Hannafin, 2008).

Webquests have become an effective method of incorporating technology with educational concepts. In an interview, Dodge stated his intention for creating a webquest sparked from an interest in allowing his students to further connect with his in-class lesson (Starr, 2000). Using his knowledge of educational technology, Dodge was able to gather information and resources online to support his lesson plans. His creation of a student-centered activity had the ability to integrate online resources with activity-based learning (Dodge, 2002). The development of higher-order thinking skills with content-based learning in the Web-Quest format may prove to be successful, but further research is needed in this area. March (2003), one of the co-developers, states that webquests allow students to construct meaning on a complex topic, preferably in a way that motivates working together and testing ideas in a real-world. Teachers also have the option of developing webquest activities with Fila mentality, less invasive process requiring less instruction. Through appropriate planning and development, teachers are learning how to effectively implement lessons that facilitate inquiry based learning (Tam 2000; Lim et al., 2003; Peterson, Caverly, & MacDonald, 2003; Starr, 2012). This structured format shifts the focus to student-centered learning through instructor-facilitated instruction and guidance.

Webquest continue to be a successful method of allowing the student to connect with material through online resources. The primary concern, as an instructor, regards setting up a problem or task for the student to accomplish. Setting up a task also requires adequate prompting to ensure that the student investigates the correct online references. Currently, much of the research published on webquest describes methods of implementing this tool into classroom instruction. Although instructors have developed most webquest, some research has revealed that student-developed webquests are also being implemented in classes (Peterson, Caverly &

MacDonald, 2003). This method of student-centered instruction relies on the technological ability of the students and the instructor in order to create an effective outcome and remains in the infancy of web-quest implementation.

Knowledge, in a broad sense, refers to the understanding, awareness and information acquired through experience, learning, or study. It is the foundation for decision-making, problem-solving, and overall cognitive process (Abubakar & Sam, 2015). The lack of technology-supported-pedagogical knowledge and skills have been identified as a major barrier to technology integration and common reasons given by teachers (Snoeyink & Ertmer, 2002; Williams et al., 2000). For example, in a study of Scottish schools, Williams et al. (2000), found that lack of skills in the use of databases and spreadsheets was seen as an inhibiting factor by more than 10% of elementary school teachers. Snoeyink and Ertmer (2002), in their study of one middle class school in the United States, also found that limited computer knowledge or skills contributed to the lack of technology integration by teachers. The teachers in their study did not attempt any technology-related activities with their students until they had developed basic skills such as logging onto the network, opening and closing files and applications, and basic word processing. In addition to the lack of technology knowledge and skills, some teachers are unfamiliar with the pedagogy of using technology. According to Hughes (2005), teachers need to have a technology-supported pedagogy knowledge and skills base, which they can draw upon when planning to integrate technology into their teaching.

Attitudes of students toward web-quest instruction have influence over the future use of web-launched instructional materials. They also determine the extent to which web-based resources are educationally beneficial for students in classroom learning environment (Sanders & Morrison-shetler, 2001). Some studies (Bichelmeyer, 2005; Fox & Henri, 2005; Hill & Hannafin, 2000) have concluded that positive attitudes enhance the learning process specifically the motivation to learn and the ability to retain information in a given situation (Jawahar & Elango, 2001). A negative attitude may lead to computer resistance a phenomenon that can be found among experienced as well as inexperienced users. A person's attitude towards computers and related technology could determine his/her performance with the technology and the satisfaction he/she draws from the

experience. The success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of teachers involved. Among the factors that affect the successful use of computers in the classroom are teachers' attitudes towards computers (Huang & Liaw, 2005). Attitude, in turn, constitutes various dimensions. Some examples of these are perceived usefulness, computer confidence (Rovai & Childress, 2002), training (Tsitouridou & Vryzas, 2003), gender (Sadik, 2006), knowledge about computers (Yuen & Ma, 2001), anxiety, confidence, and liking (Yildirim, 2000).

Positive teacher attitudes towards computing are critical if computers are to be effectively integrated into the school curriculum. A major reason for studying teachers' attitude towards computer use is that it is a major predictor for future computer use in the classroom (Myers & Halpin, 2002). Khine (2001) studied 184 pre-service teachers and found a significant relationship between computer attitude and its use in the institution. This finding was corroborated by Yuen and Ma (2001) who, using the Chinese Computer Attitude Scale for Teachers (CAST), found that 216 secondary teachers in Hong Kong who were making the instructional use of computers, and their results revealed that their attitudes, general usefulness, behavioural control, and pedagogical use to be significant in determining the use of ICT. Kumar and Kumar (2003) reported that most teachers believed that the amount of computer experience has a positive effect on attitude towards computers. Jackson et al., (2001) indicated that female users, compared with males, are more inclined to hold negative reactions to computers and such differences may have resulted in the different ways of using computers.

The literature reviewed above showed that the use of technologies are very effective for teaching and learning and can increase students' learning achievement. Innovative technology integration efforts are especially critical if we expect enlightened practices to ultimately emerge in classrooms. Pre-service teacher education has been criticized for failing to transform traditional practices to changing innovative practices. In order to develop the skills needed to integrate technology into everyday pedagogy, pre-service teachers need exposure to curricular and classroom use of innovative technology. Pre-service teachers need to use technology in non-trivial ways, providing higher level learning opportunities that address authentic pedagogical problems so as to increase their knowledge

and build in them a positive attitude towards the effective integration of webquest instruction in the teaching and learning.

It is evident that many pre-service teachers in Nigeria still rely much on the traditional lecture method of teaching, neglecting the intrinsic value of the use of ICT (Adebowale, Adediwura & Bada, 2009). There is still low level of enlightenment among pre-service teachers on knowledge and utilization of the emerging trends of ICT for better Educational enterprise. A large number of pre-service teachers rarely utilize the tremendous value of ICT in discharging their responsibilities as teachers. The traditional lecture method persistently dominates most of their teaching and learning activities. This clearly shows that pre-service teachers needs more knowledge and skills on the emerging trends of ICT. Inadequate knowledge and attitude has been found to be a barrier toward webquest instruction among pre-service teachers in Kwara State because most of the pre-service teachers in the institutions may not be exposed to the use of the webquest application by their lecturers (Sadik, 2006). This study, therefore was carried out to assess the pre-service teachers' knowledge and attitude toward webquest instructions in tertiary institutions in Kwara State.

The general purpose of this study is to investigate the pre service teachers' knowledge and attitude towards web quest instruction. Specifically, the aim to:

- i. find out preservice teachers' knowledge level of webquest instructions in tertiary institutions in Kwara State.
- ii. examine the pre-service teachers' attitude towards using webquest as a means of instruction in tertiary institutions in Kwara State.
- iii. establish whether pre-service teachers' knowledge of webquest instructions depend on gender and level of education.
- iv. determine whether pre-service teachers' attitude towards webquest instructions depend on gender and level of education.

Research Questions

The following research questions were raised to guide the study:

- i. What is the pre-service teachers' knowledge level of webquest instructions in tertiary institutions in Kwara State?
- ii. What is the attitude of pre-service teachers towards using webquest as a means of instructions in tertiary institutions in Kwara State?

Research Hypotheses

The following null hypothesis were tested at 0.05 levels of significance:

Ho₁: There is no significant difference in the pre-service teachers' knowledge of webquest instructions on the basis of gender and level of education.

Ho₂: There is no significant difference in the pre-service teachers' attitude towards webquest instructions on the basis of gender and level of education.

Methodology

This study employs the descriptive survey research design. Descriptive research is an appropriate choice when the research aim is to identify characteristics, frequencies, trends, and extent to which different conditions can be obtained among variables under study. The design is adopted to provide relevant and accurate information about the knowledge and attitude of pre-service teachers towards webquest instructions in tertiary institutions in Kwara State. The population of the study consists of all pre-service teachers (both male and female) in tertiary institutions in Kwara State. A sample of three hundred and twenty (320) pre-service teachers were selected across the students' level of education using simple random sampling technique from four tertiary institutions in Kwara State. Two researcher's design questionnaires were used as research instrument for data collection. The instruments were titled: "Pre-service Teachers Computer and Webquest Literacy Questionnaire" (PTCWLQ) and "Pre-service Teachers Attitude Towards Webquest Questionnaire" (PTATWQ). The first instrument had two sections section A and section B respectively. Section A deals with the demographic data of the respondents such as institution, gender and level of education while section B consist of fifteen items on four point Likert scale about computer and webquest literacy. Also, the second instrument had two sections section A and section B. Section A deals with the demographic data of the respondents while section B also consist of fifteen items on four point scale on attitude towards webquest. The respondents were asked to indicate the degree of truthfulness about their knowledge and attitude towards webquest instructions. Expert judgement was used to ensure the validity of the two instruments. Their opinions, amendments and suggestions were incorporated into the final draft of the instruments. The reliability of the instruments was established

using test-retest method of reliability and the value of 0.83 and 0.76 were established for the instruments respectively. The data collected were analysed using descriptive statistics to answer the two research questions while Analysis of Variance (ANOVA) was used to test the two research hypotheses at 0.05 alpha level.

Results

This study is concerned about assessing the knowledge and attitude of pre-service teachers towards webquest instructions in Kwara State tertiary institutions. Three hundred and twenty (320) questionnaires were administered, and all were successfully (100%) completed. The data collected for this study were analyzed and the result presented in tables below.

Research Question One: What is the pre-service teachers' knowledge level of webquest instructions in tertiary institutions in Kwara State?

In order to determine the level of pre-service teachers' knowledge of webquest instructions in tertiary institutions in Kwara State, the response of each of the respondent on each of the fifteen items four points Likert scale response format, which was in continuous data, were summed up to have a total minimum of 15 and a total maximum of 60 with the range of 45, was categorized into three categorical forms of Knowledge levels which are Low, Moderate, and High level. Based on the fifteen items that measure knowledge of webquest instructions, the respondents' total point between 15 – 30, 31 – 45, and 46 – 60 were categorized as Low, Moderate, and High knowledge level of web-quest instructions. Hence, the result is presented in the table 1.

Table 1: Summary of the Pre-service Teachers' Knowledge Level of Webquest instructions.

Level	Range	f	%	Remark
Low	15 – 30	171	53.4	*Low level
Moderate	31 – 45	85	26.6	
High	46 – 60	64	20	
Total		320	100	

It was revealed in Table 1 that 171 (53.4%) of the total responses showed low level of pre-service teachers' knowledge, 85 (26.6%) of the total responses showed moderate level of pre-service teachers' knowledge, while

64 (20%) of the total responses showed high level of pre-service teachers' knowledge of web-quest instructions. This revealed that above average (53.3%) of the total respondents showed low level of knowledge of webquest instructions.

Research Question Two: *What is the attitude of pre-service teachers towards using webquest as a means of instructions in tertiary institutions in Kwara State?*

In order to determine the attitude of pre-service teachers towards using webquest as a means of instructions in tertiary institutions in Kwara State, the response of each of the respondent on each of the fifteen items four points Likert scale response, which was in continuous data, were summed up and having a total minimum of 15, maximum of 60 with the range of 45, were categorized into two categorical form of attitude, which are Negative and Positive attitudes. The points between 15 – 37, and 38 – 60 were categorized as Negative and Positive attitude respectively. The result is presented in the table 2.

Table 2: Summary of the Pre-service teachers' Attitude towards using Webquest as a Means of Instruction.

Attitude	Range	F	%	Remark
Negative	15 – 37	97	30.3	
Positive	38 – 60	223	69.7	*Positive
	Total	320	100	

It was revealed in Table 2 that 97 (30.3%) of the total responses showed negative attitude towards using web-quest as a means of instructions, while 223 (69.7%) of the total responses showed positive attitudes towards using web-quest as a means of instructions. This revealed that majority (69.7%) of the responses from the respondents showed positive attitudes towards using web-quest as a means of instructions in tertiary institutions in Kwara State.

H₀₁: *There is no significant difference in pre-service teachers' knowledge of web-quest instructions based on gender and level of education.*

Table 3: Summary of Analysis of Variance on the pre-service teachers' knowledge of web-quest instructions based on gender and level of education.

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	130.49	11	7.68	0.97	0.50
Intercept	33310.91	1	33310.91	4.23	0.00
Gender	11.80	1	11.80	1.50	0.23
Level	3.01	2	1.50	0.19	0.12
Gender*Level	10.96	2	5.48	0.70	0.50
Error	646.51	303	7.84		
Total	39586.00	320			
Corrected Total	777.00	319			

From the table 3 above, it was revealed that the F-value of 1.50 for gender is not significant at 0.05 alpha level (p value of $0.23 > 0.05$). Also, the F-value of 0.19 for level of education is not significant at 0.05 level of significant (p value of $0.12 > 0.05$). This implies that there is no significant difference in the pre-service teachers' knowledge of web-quest instructions based on gender and their level of education. Hence, the stated null hypothesis that there is no significant difference in pre-service teachers' knowledge of web-quest instructions based on gender and level of education is hereby accepted.

HO₂: *There is no significant difference on the attitude of pre-service teachers towards using web-quest as a means of instructions based on gender and level of education.*

Table 4: Summary of Analysis of Variance on Attitude of Pre-service Teachers towards using Webquest as a Means of Instructions based on gender and level of education.

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	97.33	11	5.73	1.13	0.35
Intercept	36150.52	1	37150.52	7.10	0.00
Gender	6.32	1	6.32	1.24	0.27
Level	1.83	2	0.92	0.18	0.84
Gender*Level	47.89	2	23.97	4.71	0.21
Error	417.31	303	5.09		
Total	42294.00	320			
Corrected Total	514.64	319			

The above table showed that the F-value of 1.24 for gender of the pre-service teachers is not significant at 0.05 alpha level in relation to their attitude towards using web-quest as a means of instructions (p value of 0.27 > 0.05). Also, the F-value of 0.18 on the respondents' level of education is not significant at 0.05 significant level (p value of 0.84 > 0.05). This shows that the attitude of pre-service teachers towards using web-quest as a means of instructions does not depend on gender and level of education. Therefore, the above stated null hypothesis is not rejected.

Discussion of findings

The result of the data analysis revealed that majority (53.4%) of the pre-service teachers in tertiary institutions in Kwara State have low knowledge level on webquest instructions. This can be explained that pre-service teachers in tertiary institutions in Kwara State lack specific technology-supported-pedagogical knowledge and skills that are related to classroom instructions and management. Lack of skills is one of the common reasons why the teachers are not using webquest to enhance effective teaching. This finding corroborate the findings of Williams et al. (2000), Kumar and Kumar (2003), and Adebowale, Adediwura and Bada (2009) who reported that lack of skills in the use of databases and spreadsheets, limited computer knowledge and skills contributed to the lack of technology integration by teachers in classroom instructions. In addition to the lack of technology knowledge and skills, some teachers are unfamiliar with the pedagogy of using technology. According to Hughes (2005), teachers need to have a technology-supported pedagogy knowledge and skills base which they can draw upon when planning to integrate technology into their teaching.

Moreover, this study found out that pre-service teachers in Kwara State showed positive attitudes towards using web-quest as a means of instructions. This implies that the teachers recognized the importance of webquest instruction as a means of acquiring and transforming knowledge using constructivist learning and high-level critical thinking in the classroom. Webquests is used to facilitate learning in a manner that allow learners to take an active role in their learning. Positive attitudes enhance the learning process specifically the motivation to learn and the ability to retain information in a given situation (Jawahar & Elango, 2001). A negative attitude may lead to computer resistance a phenomenon that can

be found among experienced as well as inexperienced users. Since the study found out that pre-service teachers exhibit positive attitude towards using webquest as means of instruction, this can permit development of technology-supported pedagogy knowledge and skills by the teachers. A person's attitude towards computers and related technology could determine his/her performance with the technology and the satisfaction he/she draws from the experience. Hence, the success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of teachers involved. It has been found out that among the factors that affect the successful use of computer technology in the classroom for instruction are teachers' attitudes towards computers (Huang & Liaw, 2005). This assertion was corroborated by Yuen and Ma (2001) who stated that the instructional use of computers and their results revealed that affective attitudes, general usefulness, behavioural control, and pedagogical use to be significant in determining the use of ICT.

Also, the study revealed that there is no significant difference in pre-service teachers' knowledge of webquest instructions based on gender and level of education. This implies that the knowledge of webquest instructions does not depend on gender and level of education. This finding was supported by Perkin and McKnight (2005) who reported that the knowledge of webquest allow both male and female to learn by a method that is more effective, engaging, and meaningful. They commented that both gender create the webquest to support learning with technology in higher education.

In addition, the study found out that there is no significant difference in the attitude of pre-service teachers towards using web-quest as a means of instructions based on gender and level of education. This means that attitude of pre-service teachers towards using webquest does not based on gender and level of education. This finding was supported by Bain and Rice (2006) when they found out that there is no gender differences in technology. The results of their study indicate that gender does affect students' attitudes toward technology for the participants of the study. The majority of females do not perceive computers as being difficult for themselves, other females, or males.

Conclusion

The low knowledge level of pre-service teachers towards webquest instruction has a significant influence on integrating internet use into classroom activities. However, positive attitude of pre-service teachers towards the use of webquest as means of classroom instruction can enhance improvement in the knowledge level of pre-service teachers towards webquest instructions if adequate training can be provided for all the pre-service teachers on the use of webquest, since the knowledge and attitude towards webquest does not depend on gender and level of education.

Recommendations

Based on the findings of this study, the following recommendations were made;

- 1) Pre-service teachers should be trained on how to make use of webquest in their classroom instructions.
- 2) Computer education should be incorporated into all levels of pre-service teachers' education, so as to get them acquainted to the use of the internet to facilitate more learning.
- 3) Seminars/workshops on the diverse use of webquest in the classroom should be organized periodically for all categories of teachers.
- 4) Pre-service teachers should be encouraged to research into ways and manners to improve the knowledge of students towards computer learning and technology.

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