

DEVELOPMENT OF A COMPUTER- BASED MULTIMEDIA PACKAGE FOR TEACHING IGBO CULTURAL FESTIVAL (NEW YAM FESTIVAL) TO STUDENTS OF ABIA STATE COLLEGE OF EDUCATION TECHNICAL AROCHUKWU.

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Abstract

Students of Igbo language in Nigerian Colleges of education require instructional materials that put together various cultural festivals in forms that can be easily studied and interesting as well. Hence, the authors developed a multimedia instructional package to achieve such objectives. In specific, the developed instructional multimedia package contains new yam cultural festival of Arochukwu kingdom. Prior to the development of the package, the authors reviewed of some materials on new yam festival as well as interviewing some prominent persons in Arochukwu. The reviewed materials as well as the interviews form part of the multimedia instructional package. The instructional package has examination section where students' knowledge on new yam festival (Ikeji) will be tested. Student can view his/her examination result immediately after finishing the examination. Likewise, the lecturer can view students' results after the examination session. In addition, the instructional package contains brief description of Arochukwu new yam festival in textual, video and pictorial formats. The instructional package was developed using java programming language and developed under java netbeans integrated development environment (8.2). MySQL database was incorporated into the developed instructional package for storage of various data, such as students' results and users' login details. The database and its tables were created using MYSQL workbench (8.0). The developed multimedia instructional package was tested by students and they expressed their satisfaction with the performance of the developed instructional package. Hence, the students recommended the used of the developed multimedia package for the teaching of Arochukwu new yam festival in the College.

Keywords: New Yam Festival, Computer- based Multimedia Package , Cultural Festivals in Igbo land ,Ikeji, Abia State College of Education (Technical), Arochukwu

1.0 Introduction

Culture is simply a way of life of group of people. It embraces what they eat, wear, belief, their customs and arts among others. Culture serves as a unifying factor; bring peace, harmony and development among group of people. It is the importance of culture to society that made it to find its way into the curriculum of schools. In Igbo language programme of some the Nigerian Colleges of Education. Culture feature in some of the Igbo courses in Nigerian Colleges of Education (NCCE, 2020). In such courses, Igbo cultural practices are taught. Igbo cultural festival is one of the cultural practices being taught in Igbo language section of department of languages in Nigerian Colleges of Education.

Igbo cultural festival is taught in Nigerian Colleges of Education using a variety of teaching methods such as lecture, discussion and role play among others. Although, teaching Igbo cultural festivals using the above methods is effective, but it will be more effective and interesting as well if multimedia instruction approach is adopted. The use multimedia instruction may bring improvement in teaching of Igbo cultural festivals as it is very effective (Cyril,2016). Therefore, the researchers, proposed the development of a computer- based multimedia package for teaching cultural festivals (New Yam festival) in Arochukwu for students of Abia State College of Education Technical Arochukwu

2.0 Statement of the Problem

The present methods of teaching Igbo cultural festival using lecture, discussion and role play is not enough for teacher to achieve the objectives of instruction in Igbo cultural festivals. Igbo cultural festival is multi-dimensional activity. It encapsulates knowledge, skills and attitudes. Teaching of Igbo cultural festivals therefore, require additional method(s) as well as instructional materials. Combining computer-based multimedia instructional package with traditional methods may improve instructional delivery in Igbo cultural festivals. It may also increase students' interest and retention concerning instruction in Igbo cultural festivals. Hence, the researchers proposed a computer-based multimedia instructional package for teaching cultural festivals in Igbo land.

3.0 Objectives of the Study

The objectives of the study are to:

1. Design the computer-based multimedia instructional package
2. Develop the computer-based multimedia instructional package
3. Validate the developed computer-based multimedia instructional package

4.0 Literature Review

The literature review is conducted under the following headings, Arochukwu new yam festival, concept of multimedia, multimedia instruction, and effectiveness of multimedia instruction.

New Yam Festival

New yam festival is an annual event that takes place annually in many communities within South-east, Nigeria. Ikeji is the name given to new yam festival in Arochukwu in Abia State, Nigeria. Ikeji take place at every September of a year to mark the celebration of bountiful harvest of yam of the outgoing year and usher in a new planting session. It is celebrated by the nineteen villages that make-up Arochukwu. It is a festival that identifies a typical Arochukwu man. It is a tradition that no Arochukwu man eats a new yam until is blessed by the ancestors. Ikeji Aro as popularly called has a calendar that is approved by Eze Aro in council.

Ikeji Aro is unique to the Aros. It is one period to celebrate tradition, culture and pay homage to their ancestors. It is also a period to celebrate Aro gods and deties. Believers praise their ancestors; worship them for protection and prosperity. Aros (Arochukwu people) in their various plantations return to grace the occasion. They come home with yams, goats, fowls and fishes to sacrifice to their late parents.

Ikeji festival begins with 'AFOR OKPO NAZA AWADA'-a day the messenger of the kingdom who is usually a native of Agbagwu village opens and sweeps the 'AWADA' where Aro shrine is located. In specific, 'AWADA' is located in Ugwuakuma village. Activities of Ikeji festival follow religiously in line with the calendar approved by Eze Aro in council. The sweeping of 'AWADA' Aro is followed by 'AFOR MGBAPE AWDA'-the formal opening of the event. There are AFOR NDU-ASA NWA EKPE, NKWO NZUKORO, EKE ODO, ORIE EGBUGBU, AFOR OSU, NKWO EKPE IBOM ISII, EKE EKPE, NKWO NWUPU, MMANYI NA IBOM ISII and EKE NWUPU MMANYI NA AMUZE. These special market days attract different programmes. The climax of this event is the 'EKE EKPE', a day where it is compulsory for the nineteen villages to file out at Amaikpe square in Obinkita village in their best regalia and dance to perform before a large audience and a panel of judges select from great Aro sons and daughters rich in Aro culture and tradition. Prizes are given to the best cultural dancers in a bid to manage the growth and preservation of Aro tradition. EKE EKPE day marks the end of Ikeji festival after which all the villages go home happily with their cultural dancers (Imuoh, 2007).

Concept of Multimedia and Computer-based Multimedia Instruction

Multimedia is information that contains elements such as text, graphics, pictures, video, animations and sound. Multimedia is used in communication, banking, entertainment, religion and education among others. The multimedia used in education is termed as multimedia instruction. Multimedia instruction has become a powerful medium for explanation of concepts, theories and abstract things which make learning more meaningful (Gupta & Sehgal, 2012). The multimedia instruction presented via computer is referred to as computer-based multimedia instruction. Computer-based multimedia instruction is very effective in increasing students understanding of concepts, events and attitudes.

Effectiveness of Multimedia Instruction

Multimedia instruction is very effective tool for increasing students' learning outcomes. The following empirical studies captured the effectiveness of multimedia instruction. Akinoso (2018) conducted a research to investigate the effectiveness of multimedia on students' performance in mathematics. Two schools were randomly selected from Educational District V. Intact classes were purposely assigned into experimental and control. Quasi experimental design was adopted. Mathematics Achievement Test with reliability coefficient of 0.81 using KR-20 was used. Data collected were analyzed using ANCOVA. No significant effect exists between the Treatment and achievement in mathematics, the mean achievement score of experimental group was higher than that of control. Also, significant effect did not exist on treatment and gender, but, male have higher achievement mean score ($X = 57.50$) than female counterparts ($X = 54.13$). Multimedia positively influenced the academic performance of students in mathematics.

Cyril (2016) carried out a study on the Effects of Multimedia Instruction on Retention and Achievement of Basic Machining Skills in Mechanical Craft Practice. The study was conducted in four selected Technical colleges in Adamawa and Taraba states Nigeria. The population was 252 students in National Technical Certificate (NTC) 2. A sample of 156 were drawn from the population using Yaro Yamane's formula. The design of the study was experimental. The sample drawn was divided into control and experimental groups. Experimental group were taught with multimedia instruction while control group were taught with demonstration method. Instructional video files, and lesson plan, teacher's made test for pretest and posttest, were the instrument developed, validated by three experts and used for data collection. Two research questions and two hypotheses were raised. Mean and standard deviation were used to answer the research questions. t-test statistics was used to test the hypotheses at 0.05 level of significance. The research findings indicated that there is a significance difference between the mean performances of students in the experimental group than those students in the control group. In specific, the students in the experimental group performed better in mechanical craft practice and in retention test than those in the control group. Hence multimedia instructions have more effect on learning achievement and retention of skills in craft practice. The study recommended that multimedia instructional tool is an effective tool for enhancing teaching and learning of practical skills in mechanical craft.

5.0 Methodology

This study adopted water fall model with feedbacks. The waterfall model consists of linear sequence of phases, in which the previous phase must be completed before the next one can begin. The completion of each phase is marked with the signing off of a project document for that phase (Maciaszek & Liong, 2005). The phases in waterfall model are requirements analysis, system design, implementation, system testing (verification), system deployment and maintenance. Requirements analysis phase is the first phase of development where all the software requirements from client are gathered, analyzed and documented. Design phase concerned with the description of the structure of the software to be implemented, the data which is part of the system, the interfaces between the system components and sometimes the algorithms used (Sommerville, 2001). Implementation phase involves coding the software (programming). In system testing phase, the software developed is tested in order to find out whether it meets the specifications given by client. Deployment phase concerned with handing the developed software to the client for production use (Maciaszek & Liong, 2005). Maintenance phase on the other hand is characterized by changing codes as result of client's improper requirement determination, mistakes during design process and changes in client's requirements among others. Software development in waterfall model as already seen imposed that the previous phase must be completed before the next one. But in real situation some inadequacies in the requirements analysis may become evident during design, construction or testing necessitating further requirements analysis, some potential reworking of design and further software construction and test (Bennett, McRobb & Farmer, 2010). To address these defects or shortcomings, waterfall model with feedback was proposed with feedbacks between phases (back arrows as shown in figure 1). A feedback signifies an undocumented but necessary change in a later phase, which result in a corresponding change in the previous phase. Feedbacks (back-arrows in figure 1) between phases are possible, and indeed likely. A feedback signifies an undocumented necessary phase. Such backtracking should but rarely does, continue to the initial phase of requirement analysis (Bennett, McRobb & Farmer, 2010).

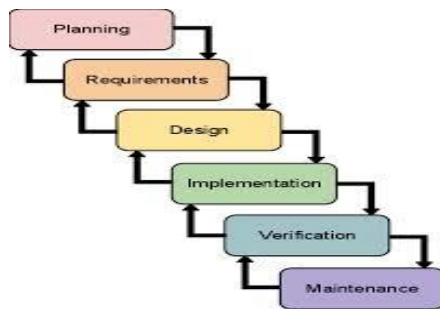


Figure 1: Waterfall Model with feedbacks

5.1 Software Requirement Specifications

The authors observed the current teaching and learning of Igbo cultural festival in the College as well as reviewing literatures on computer-base instructions. The information and the experience gathered enable the authors to formulate the following software and hardware requirements of the computer-base multimedia instructional package to be developed:

5.1.1 Hardware Requirements

- (a) RAM: 1 GB or above
- (b) Hard disk: 4 GB or above
- (c) Processor: 2.4GHZ or above

5.1.2 Software Requirements

The following specification are needed

- (a) Window 10
- (b) MySQL
- (c) J.D.K
- (d) J.R.E.
- (e) Netbeans (eg. Version 8.2)
- (f) Connector J 5.6

4.1.3 System Users

- 1.Admin
- 2. Lecturer
- 3.Students

5.1.4 Functional Requirement Specifications

Admin

- 1. Login and logout.
- 2. View, add, delete, update and print lecturer, students and admin usernames and passwords

Lecturer

- 1. Login and logout.
- 2. View and print students' results

Students

- 1. Login and logout.
- 2. Learn theory
- 3. Take examination
- 4. View and print results

5.1.5 Non-Functional Requirement Specifications

- 1. Provide data security
- 2. Be efficient during operations
- 3. Be portable
- 4. Be reliable

5. Maintainable

5.2 Design

5.2.1 System Physical Architecture

The system follows client-server architecture with two layers; the application and the database layer. The application layer is the, Graphical User Interface (GUI) while the database layer is the database system (MySQL). The architecture is shown in figure2.

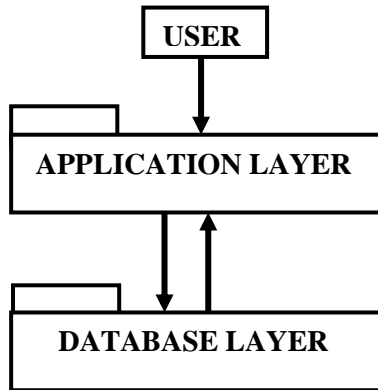


Figure 2: Two Layer Architecture

5.2.2 Use Case

Use case diagram documents the basic functions of the software. Figure 3 shows the use case that documents the basic functions of the system.

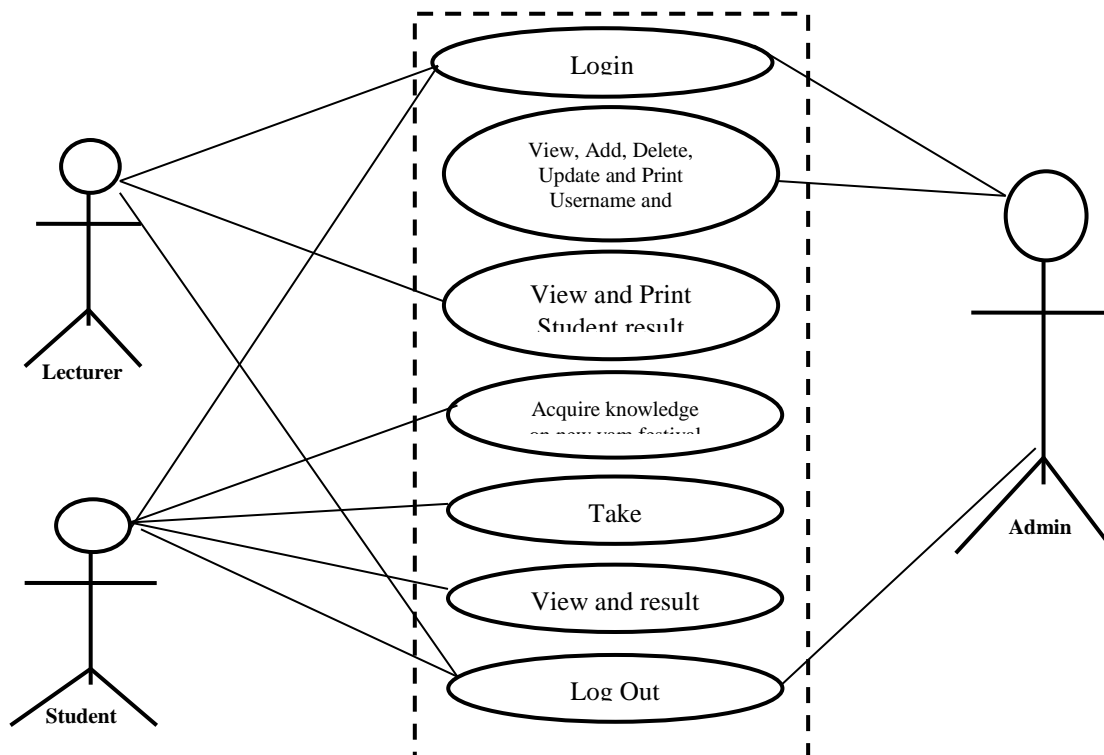


Figure 3: Use case

5.2.3 Input Forms Design

The multimedia instructional package contains three login forms, namely, general login form, admin login form and lecturer login form respectively. Each of these login forms contains two input fields; username and password where users can enter their respective usernames and passwords. In addition, they contain login buttons that send the data typed in the input fields to the database. Figure 5 shows a snapshot of the general login form while figure 6 shows a data manipulation form in admin section that allow admin to add new usernames and passwords as well as changing them among others.

5.2.4 Main menu

The main menu contain the following : admin login, lecturer login, brief description of new yam festival, video interview on new yam festival, pictures on new yam festival, examination, back and exit buttons as shown in figure 7. Figures 8,9 and 10 shows a sample of frames for brief description, video interview and pictures concerning new yam festival in Arochukwu kingdom.

5.2.5 Examination Module

The examination module is a multiple choice test environment. It contains textfields where students can enter their details. It also contains start exams, finish, submit and clear buttons. In addition, it contains countdown clock. The radio buttons of the multiple choice test become active as soon as the exams button is clicked. At the same time the clock start. The radio buttons become inactive when the clock reaches 0 seconds as shown in figure 11. Immediately after the examination student can view his/her result. The interface that shows student result is shown in figure 12.

5.2.6 Database Design

.MySQL database was used to build the database of the multimedia instructional package. Since the package has three login forms (e.g. figure 5), it implies that there must be three tables to store the data to be collected from such forms. Furthermore, since such forms contain two textfields (2) each, it implies that the tables must have columns, namely, username and password. However, an additional column of S/N is added as shown in figure 4. In addition, since students are to interact with multiple choice test module at the end of the learning process, there must be additional table that enable the storage of students result (score or total marks) along side with his/her details. Such tables were collectively depicted in figure 5.

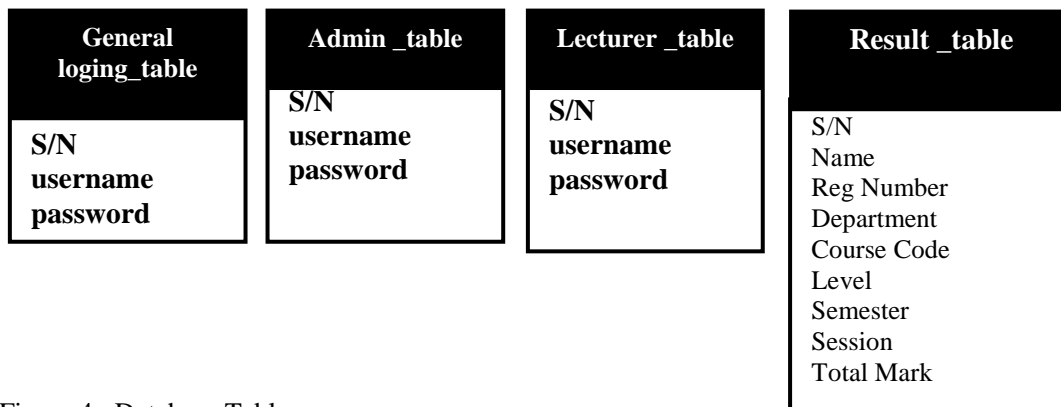


Figure 4: Database Tables

5.3 Implementation

The computer-base multimedia instructional package was implemented using Java programming language under netbeans(8.2) IDE. All the database tables were constructed using workbench (8.0).

5.3.1 Outputs

The following are a sample of the outputs of the multimedia instructional package when running.

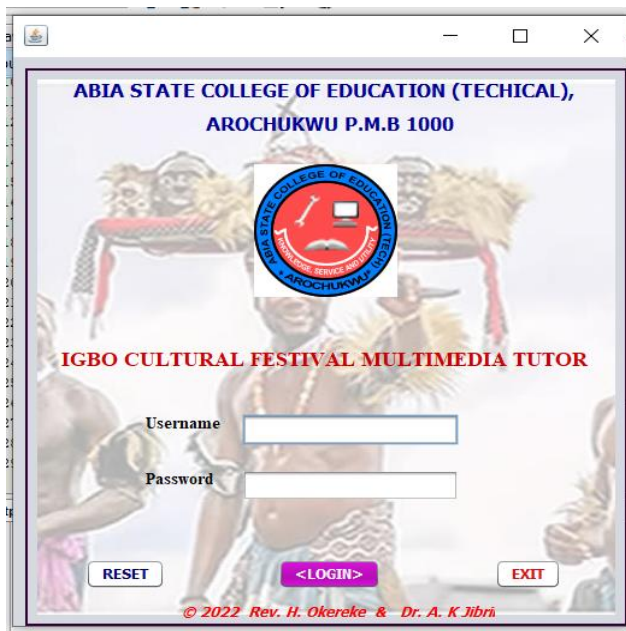


Figure 5: General Login form

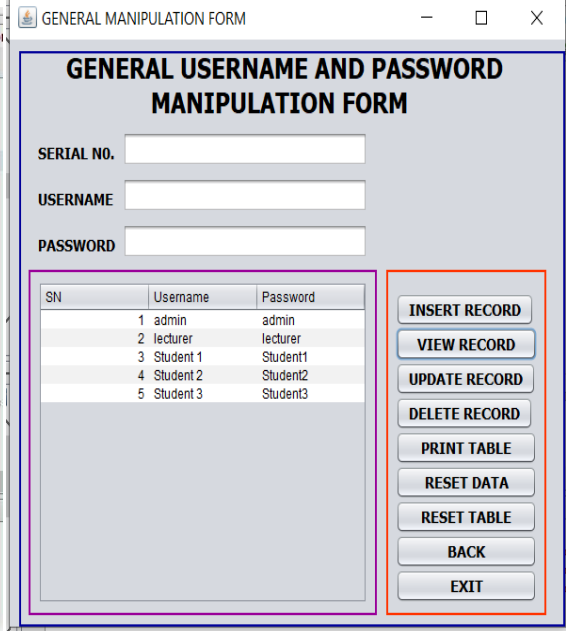


Figure 6: A view of user names and passwords stored in database

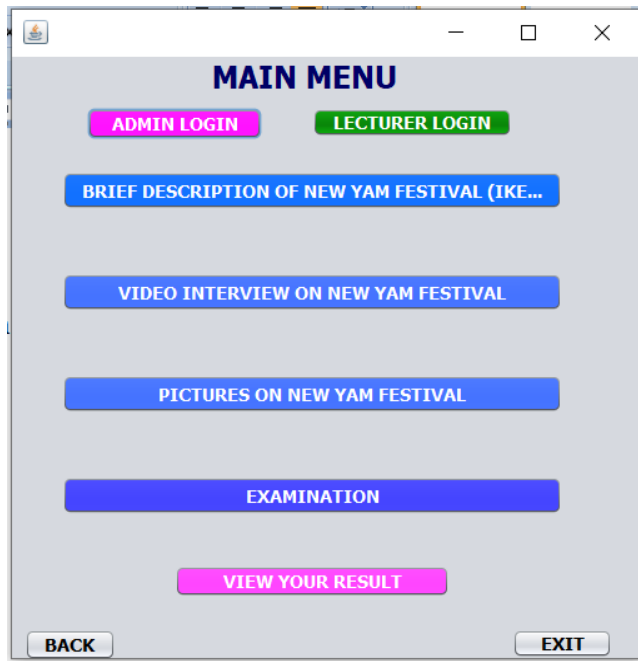


Figure 7: Main men

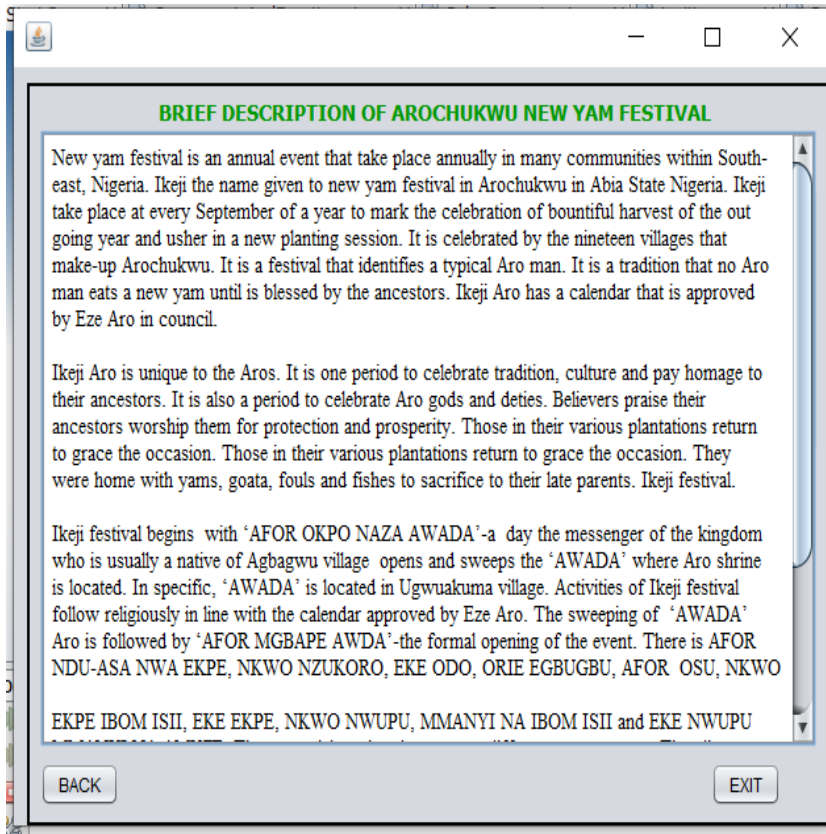


Figure 8: A Frame showing a brief description of Arochukwu new yam festival (Ikeji)

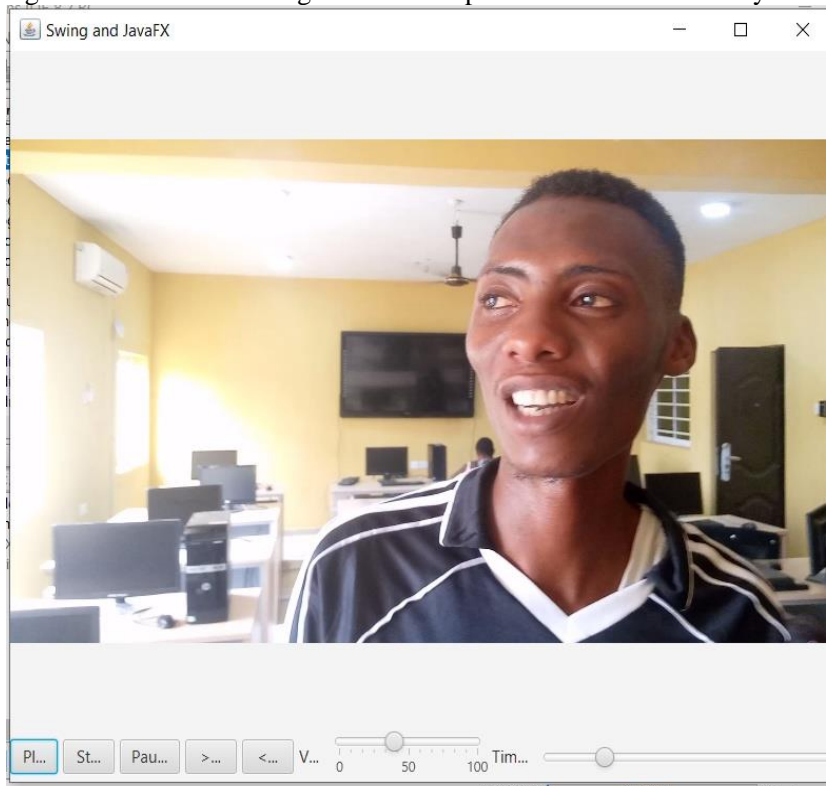


Figure 9: A video interview on Arochukwu new yam festival (Ikeji)

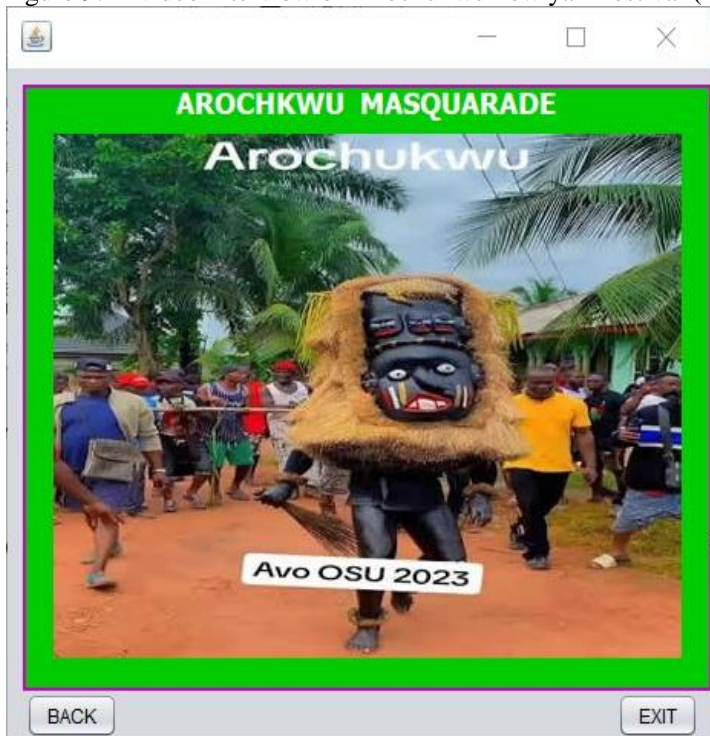


Figure 10: A Photo of Arochukwu new yam festival (Ikeji)

ABIA STATE COLLEGE OF EDUCATION (TECHNICAL), AROCHUKWU
DEPARTMENT OF LANGUAGES (IGBO EXAMINATION)

NAME: Chidinmma Nwosu REG. NUMBER: NJ20/IGB/SOS/5024 DEPARTMENT: Languages

COURSE CODE: IBG 213 LEVEL: 2000 SEMESTER: Second SESSION: 2022/2023

START EXAMS CLOCK
Time left: 82

PLEASE, ENSURE THAT YOU FILL ALL THE ABOVE TEXTFIELDS BEFORE CLICKING ON THE START EXAMS BUTTON ABOVE
PLEASE, ENSURE THAT YOU FILL ALL THE ABOVE TEXTFIELDS BEFORE CLICKING ON THE START EXAMS BUTTON ABOVE

B. AMANGWU
 C. UGWUAKUMA
 D. AMUKWA

9. WHAT IS THE NAME OF THE VILLAGE THAT ALL THE NINETEEN VILLAGES GATHERS TO THANK THE ENCESTORS FOR THE SUCCESS OF THE FRSTIVAL?

A. IBOM ISII
 B. AMAIKPE OBINKITA
 C. AMAOBA ROUNDABOUT
 D. UGWUAKUMA

10. WHICH OF THE FOLLOWING IS THE MAIN PURPOSE OF IKEJI?

A. MERRY MAKING
 B. GATHER ALL THE !! VILLAGES IN AROCHUKWU
 C. THANK GOD FOR GOOD HARVEST OF NEW YAM
 D. BRING ABOUT UNITY AMONG ALL THE 19 VILLAGES IN AROCHUKWU

BACK **FINISH** **SUBMIT** **CLEAR**

Figure 11: Multiple choice test on new yam festiva

The image shows a software window titled "STUDENT RESULT VIEW". It contains two main sections. The top section displays the following student information: STUDENT NAME: John Favour, REG NUMBER: 2000, DEPARTMENT: Igbo, COURSE CODE: Igbo 111, LEVEL: 100, SEMESTER: First, SESSION: 2023/2024, and TOTAL SCORE: 7. The bottom section is for searching, with the label "ENTER YOUR REG NUMBER" and an input field containing "2000". Below the input field are four buttons: "PRINT", "RESET", "SEARCH", and "EXIT".

Field	Value
STUDENT NAME	John Favour
REG NUMBER	2000
DEPARTMENT	Igbo
COURSE CODE	Igbo 111
LEVEL	100
SEMESTER	First
SESSION	2023/2024
TOTAL SCORE	7

ENTER YOUR REG NUMBER: 2000

Buttons: PRINT, RESET, SEARCH, EXIT

Figure 12: Student Result View containing a student result

5.3.2 Testing and Evaluation

The system was tested at each of its developmental phase by the developers and corrections were made at the same time in order to conform to the software specification requirements of the project. Thereafter, the developed package was handed over to the potential users (students) for evaluation. Students interacted with the developed system and then filled copies of questionnaires designed to measure their satisfaction with the developed package. Table 1 shows the means and standard deviations of their responses to the questionnaire.

Table 1 Mean and Standard Deviation of Responses of Students on their Satisfaction with the Performance of the new developed Instructional package.

N=12

S/N	Item	\bar{X}	SD	Remark
Functional Software Requirements				
Admin				
1	The software enable admin to login and logout	3.86	0.36	Agree
2	The software enable admin to add new username and password	3.86	0.36	
3	The software enable admin to update username or password	3.93	0.27	Agree
4	The software enable admin to delete username and password	3.71	0.43	Agree
5	The software enable admin to view username and password	4.00	0.00	Agree
Lecturer				
6	The software enable lecturer to login and logout	3.71	0.47	Agree
7	The software enable lecturer to add new lecturer username and password	3.79	0.69	Agree
8	The software enable lecturer to update lecturer username and password	3.50	0.44	Agree
9	The software enable lecturer to delete lecturer username and password	3.57	0.76	Agree
10	The software enable lecturer to view lecturer username and password	3.71	0.47	Agree
11	The software enable lecturer to view examination result	3.64	0.63	Agree
12	The software enable lecturer to print examination results	3.79	0.58	Agree
Student				
13	The software enable student to login and logout	3.79	0.43	Agree
14	The software enable student to learn from theory module	3.93	0.27	Agree
15	The software enable student to take examination	3.93	0.27	Agree
16	The software enable student to view his/her examination result	3.79	0.43	Agree
17	The software enable student to print his/her examination result	3.93	0.27	Agree
Non-Functional Software Requirements				
18	The software is well organized	3.79	0.43	Agree
19	The Software window environments are attractive	3.57	0.44	Agree
20	The software buttons are responding to mouse click quickly	3.50	1.12	Agree
21	The feedback messages provided by the software through dialog boxes are self-explanatory	3.29	0.20	Agree
22	I felt comfortable when using the developed software	3.50	1.10	Agree
23	It is easy to navigate to different parts of the software	3.79	0.31	Agree
24	The software provided adequate data security	3.57	0.51	Agree
25	The software produce accurate calculated results	3.57	1.12	Agree
Recommendation				
26	The developed multimedia instructional package can be used for instructional purposes in the College	3.86	0.36	Agree

N =Number of respondent SD =Standard Deviation \bar{X} =Mean

The data from table 1 above shows that students agreed that the developed multimedia instructional package performed the functions that was designed to performed. This is evident from the fact that all the items in the table had mean values greater than the cut-off point of 2.50. Furthermore, the values of the standard deviations (SD) were very small. This signifies that the opinion of students were very close for all the items. Finally, the mean value of item 26 was found to be 3.86. This value implies that the students unanimously recommended that the developed multimedia instructional package can be used for teaching Arochukwu new yam festival in the College.

6.0 Conclusion and Recommendation

Igbo language is one of the Nigerian languages taught in Nigerian colleges of education. To make teaching and learning of Igbo language courses in Nigerian colleges of education more effective, efficient and interesting, the authors proposed a multimedia instructional package to be used to teach Arochukwu new

yam festival. The multimedia instructional package has three modules; theory and examination and database. The theory module contain three instructional units, namely, brief description of new yam festival, video interview on new yam festival and pictures on new yam festival respectively. The examination module is a multiple choice test that measure students; understanding of the lessons presented by the computer-base multimedia instructional package. The database stores users' login details as well as students results. The developed computer-base instructional package was evaluated by students and the result of the evaluation revealed that the multimedia instructional package is effective and efficient as well. The evaluators (students) recommended the use of the developed instructional package for teaching new yam festival in the College.

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