



## A Web Based Igbo Language Tutor for Beginners

Ebem, D.U.

<sup>1</sup>Department of Computer Science  
University of Nigeria  
Nsukka, Nigeria

E-mail: [deborah.ebem@unn.edu.ng](mailto:deborah.ebem@unn.edu.ng),  
Phone: +234 805 281 0722

### ABSTRACT

A web based application for the teaching and learning of Igbo Language has been developed. It was designed and implemented using object oriented analysis methodology and Hot Potatoes software suite was used for the evaluation.

**Keyword:** Igbo, language, tutor, We-based System and Nigeria.

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### 1. INTRODUCTION

Language is an important characteristic of all human beings. It is part of culture and a great instrument for cultural conservation. The world community is made up of many languages and each of these languages is being used to identify one language group or race [1]. The strength of a society is anchored on the unity of language. Therefore, the importance of Igbo language in achieving and sustaining Igbo identity cannot be over emphasized. The Igbo language (also known as Ibo) is an African language, spoken in several African countries including Nigeria, Equatorial Guinea and Congo among others. Having about eighteen million speakers, it is ranked fifth in the ranks of languages based on numbers of native speakers after Chinese, English, French and the likes [2]. It is one of the major languages of Nigeria. It is spoken in the South Eastern States of Abia, Anambra, Ebonyi, Enugu and Imo, as well as in the northeast of Delta State and in the southeast of River State. In the states of Abia, Anambra, Ebonyi, Enugu and Imo, Igbo is the main language of trade and commerce.

Even though Igbo is taught at all levels in eastern Nigerian schools, English remains the lingual Franca of the country. Reading and writing in Igbo is not very common. In many urban areas, Igbo is often replaced by Nigerian Pidgin English and Igbo speakers are typically multilingual in English. It has been observed that Igbo language is fast deteriorating. In the schools, markets, public places, business sectors and most annoying at homes, people seem not to speak Igbo language any more, oblivious of the fact that Igbo language is one of the major forms of Igbo identity [1]. Most of them are not good in speaking, writing and reading in Igbo. United Nations, through one of the Nigerian dailies, reported that by the year 2050 most of the world's minor languages will be extinct because parents no longer communicate with their children in their mother tongues [2]. This report was made towards the end of year 2006.



The issue of the extinction of some of our native languages is something of great concern and thus there is need to incorporate opportunities of how to solve the problem. Some persons have taken it upon themselves to address this issue and some others have tried to find a solution to the problem by creating platforms where such a language can be learnt. This work a web based Igbo Language tutor for beginners is one of such solutions.

Learning a new language takes substantial determination and time especially for adults. Still, access to the right tools and materials can make a huge difference. Today, the internet has unquestionably become a huge part of our lives. It has become not only the largest information resource in the world, but the quickest means of communication. The use of technological tools through e-learning makes up a large part of materials that can make learning a language an easy task. E-learning is a complete term that defines educational technology that electronically supports learning and teaching [2] [3]. This broad interpretation focuses on new applications and developments, and also brings learning and media psychology into consideration. The advantages of e-learning include the ability to cover the gap between a teacher and learner, the opportunity for learning at a self-pace with lots of repetition and social interactivity where learners can share their thoughts about what is being learnt [3].

According to [4], "a language is a living entity; it can grow or die, depending on many factors such as the attitude of its owners. While positive attitude enhances language growth and development, negative attitude leads to its endangerment and eventual death." This motivates the exploration of the internet in this study as an option to preserve the Igbo language and make it easily accessible to those who also intend to learn the language. This study is however not the first to explore opportunity in internet as means of learning a language. The aim of this study is to design and develop an online Igbo language tutor for beginners. The study will therefore develop an online tutor system that will make the learning and speaking of Igbo easy and popular amongst the upcoming generations. This paper is divided into the following sections: introduction, objective of the study, literature review, methodology, results, summary, conclusion, recommendation and future work.

### 1.1 Aim and Objectives

The aim of the study is to design and develop a system that will aid the learning of the Igbo language. The specific objectives will be to;

- (i) Show frequently used words in form of images for easier reference.
- (ii) Create a guide for new Igbo language learners.
- (iii) Create an access point for Igbo language learning material.
- (iv) Develop structured contents for Igbo language learners organized by way of course modules.
- (v) Evaluate proficiency using quizzers.
- (vi) Create an avenue for online learners to interact.

## 2. LITERATURE REVIEW

Learning a new language takes considerable effort and time especially for adults. However, access to the right tools and materials can make a huge difference. The use of technological tools through e-learning makes up a large part of materials that can ease the task of learning a language. Other factors that might influence the learning include previous exposure to the language being learned, learning style as well as personal inclinations and determination. Igbo (Asụsụ Igbo), or Ibo, one of the largest languages of West Africa, is spoken by 18 million people in Nigeria. It belongs to the Benue-Congo group of the Niger-Congo language family. The language is thought to have originated around the 9th century AD in the area near the confluence of the Niger and Benue rivers, and then spread over a wide area of southeastern Nigeria. Igbo is one of the spoken languages of Nigeria.



It is spoken in the Southern Delta states of Abia, Anambra, Ebonyi, Enugu, and Imo, as well as in the northeast of the Delta State and in the southeast of Rivers State. In the states of Abia, Anambra, Ebonyi, Enugu, and Imo, Igbo is the main language of trade and commerce. (<http://en.wikipedia.org/wiki>). Although Igbo is taught at all levels in eastern Nigerian schools, English remains the principal literary language of the country while Igbo remains a spoken and colloquial language. Reading and writing in Igbo is not very widespread. In many urban areas, Igbo is often replaced by Nigerian Pidgin English. Igbo speakers are typically bilingual in English. There are approximately 30 Igbo dialects, some of which are not mutually intelligible. For the most part, however, differences are lexical and phonological (Ethnologue). The large number of dialects has hindered the development of a standardized spoken and written Igbo. Standard literary Igbo, based on the Owerri and Umuahia dialects, in use since 1962, are not universally accepted by speakers of other dialects. Standard Igbo aims to include words from other Igbo dialects as well as loan words from other languages [7, 8]. Figures 1 and 2 below depict the map of Nigeria showing the major tribes/languages and the six regions and the states in each region respectively.

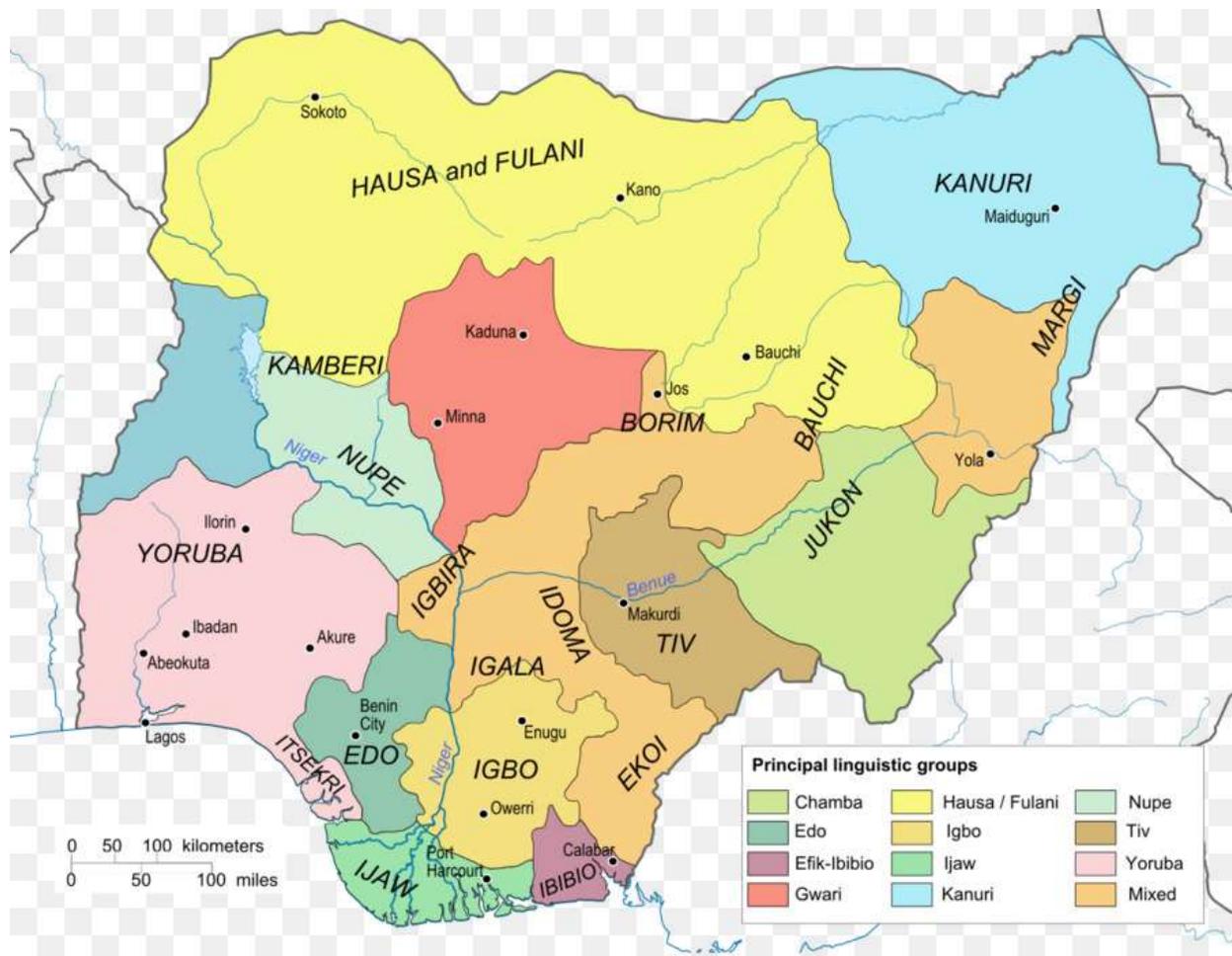


Figure 1: Map of Nigeria showing the major tribes/languages.

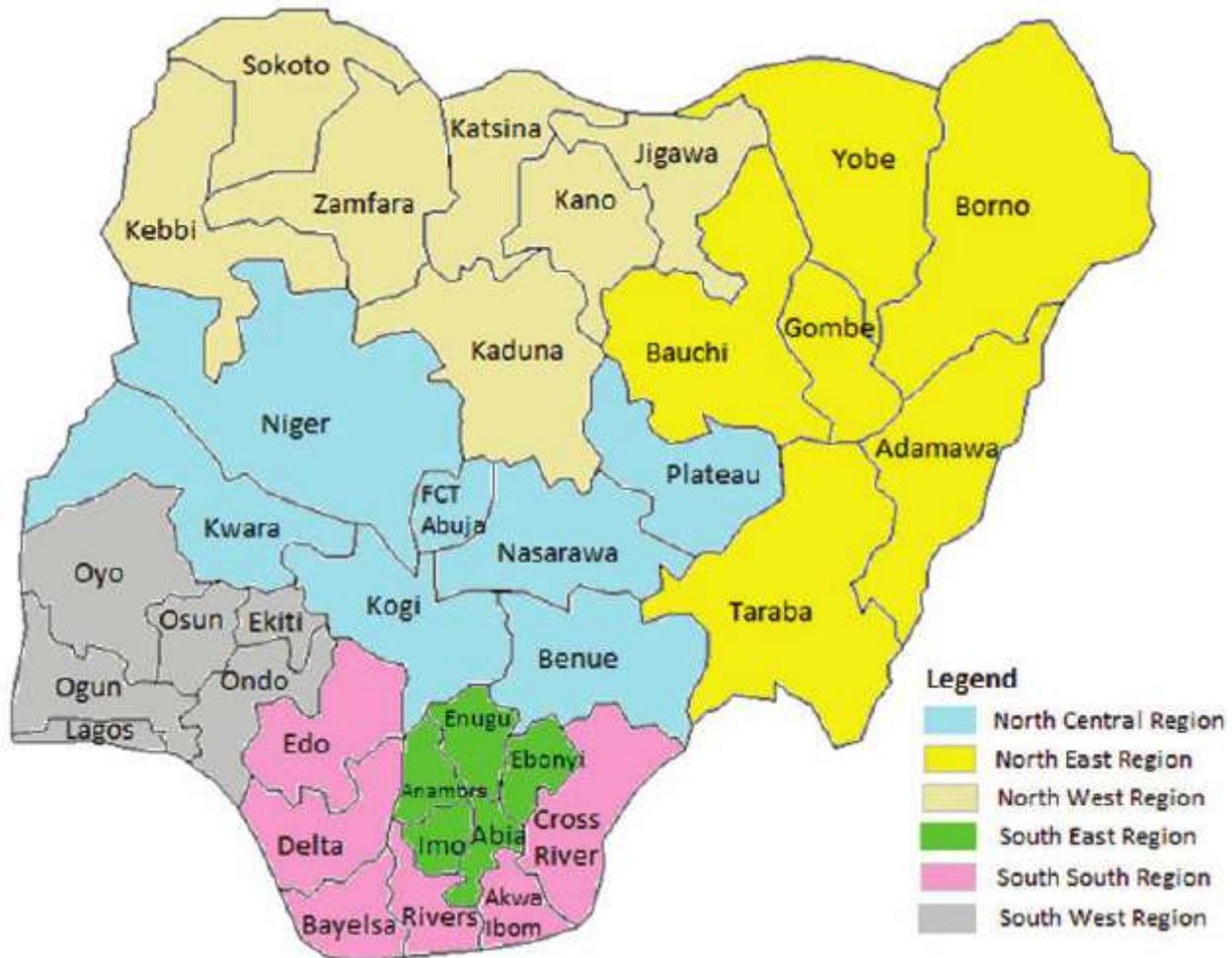


Figure 2: Map of Nigeria showing the six regions and the states in each region

## 2.1 Theoretical Framework

(AI) concerned with the interactions between computers and human (natural) languages. It is the process of computer analysis of input provided in a human language (natural language), and conversion of this input into a useful form of representation. It can also be defined as a theoretically motivated range of computational techniques for analyzing and representing naturally occurring text for a range of tasks or applications. The input and output text of a NLP can be written as text or speech. A full NLP system should be able to:

- i. Paraphrase an input text.
- ii. Translate the text into another language.
- iii. Answer questions about the contents of the text.
- iv. Draw inferences from the text.



Natural Language Processing (NLP) involves mapping the given input in the natural language into a useful representation. According to [10], Natural Language Processing is an interdisciplinary working subject which gathers attention from five different domain experts:

1. Linguists: practitioners who want to understand languages.
2. Psychologists: people who want to understand the processes of language comprehension and production.
3. Philosophers: experts who want to know how rational thought relates to language; how words come to mean things.
4. AI Practitioners: professionals who want to develop models of human reasoning, involving language processing.
5. Computer Scientists: professionals who want to develop better applications that involve the processing of natural languages.

Also, Natural Language Translation (NLT) which is a key application in the field of natural language processing and its requirements to deliver more robust and dependable system that will be resistant to failure irrespective of users' inputs. NLT is used to convert a source language to a target language. For the purpose of this project, the source language is English language while the target language is Igbo language. Machine translator is a subfield of computational grammar that explores the use of computer software to translate text or speech from one natural language to another. Meanwhile natural language processing deals with the process of analyzing natural human languages by converting the source language to the target language [11]. [11], provides Natural Language Processing (NLP) for translating English language to Yoruba language. The paper looked at the different methodologies of NLP which includes Natural Language Translation (NLT), which is the key application in the field of natural language processing. In their design, the input is text only. Their different objectives include: to design a platform for NLP English language to Yoruba language, deploy this platform to any operating system and evaluate its usefulness among people. This paper focused only on translating Yoruba words and phrases into their English language equivalent. The system did not first teach basics of the Yoruba language before implementing a translator. This is a drawback to the designed system.

There are four (4) types of learners and they include: visual, auditory, reading/writing preference and kinesthetic [13, 14]. Some authors [15] and [16] stated that there are seven types of learners; they include the above plus logical, social and solitary. Online learning has been explained differently using different terminologies making it difficult to develop a generic definition. Terms that are commonly used include e-learning, internet learning, distributed learning, tele-learning, computer-assisted learning, web based learning and distance teaching [17]. There are many definitions which reflect the diversity of practice and associated technologies of online learning. For example, while some researchers define online learning as educational material that is presented on a computer, others define online instruction as an innovative approach for delivering instruction to a remote audience, using the web as the medium [17].

However, according to [12], online learning can be defined as not just the presentation and delivery of the materials using the web, but also it involves the learner who uses the internet to access learning material, interacts with the content, instructor and other learners. In addition, it involves the learning process which should be obtained to support the learner in order to acquire and construct knowledge and to grow from the learning experience. Briefly, we say that online learning can be defined as an approach to learning and teaching process that utilizes acquisition and usage of the knowledge in an educational context by using primarily internet and communication technologies in collaboration. Online learning can be in the asynchronous format. The communication between the instructor and the learner occurs in the asynchronous format, especially over the internet. In this format, the instructor and learner do not meet at the time of content delivery. But, rich interaction is occurred by using e-learning technologies like threaded discussion boards and e-mail and the instructors may post lecture notes for online access and schedule assignments online.



## 2.2 Empirical Study

The importance of English and its recognition as language of unity in Nigeria is endangering the Nigerian languages especially Igbo and there is need to do something to save our languages from extinction. The issue of the extinction of some of our native languages is something of great concern and thus there is need to incorporate opportunities of how to solve the problem. Some persons have taken it upon themselves to address this issue and some others have tried to find a solution to the problem by creating platforms where such a language can be learnt. This work a web based Igbo Language tutor for beginners is one of such solutions. The researchers in [29] discussed the development of a web-based educational resource and tool for supporting teaching and learning of Nigerian indigenous languages which are Igbo, Hausa and Yoruba. The authors emphasized on the significance of our indigenous languages saying if well harnessed, that it will be critical in realizing the national developmental goal. They listed some of the challenges of presenting and deploying teaching and learning resources about indigenous concepts and objects for use by indigenous students or teachers in a second language.

Some of the challenges are:

6. The issue of gap connected with communicating indigenous concepts in a language different from the source language which is mainly English language in Nigeria.
7. Another challenge is the difficulties associated with web based design generally such as usability and scalability. Also structuring of web based tutor resources contents and tools in such a way it will be sensitive to the cultural context is an issue.

Having in mind the challenges listed, the authors went further to develop a web based environment that allows tutors and learners to express themselves using their indigenous languages instead of using the English language thereby providing an avenue for relating learning to their experiences. One of the tools among many incorporated in their design is the language translation tool that is the facility for translating text across languages. It translates from English to any of the three indigenous languages. It makes it possible to use English platform as an anchor language for learning and communicating across the indigenous languages. E.g. if a person enters a sentence in English, the Igbo, Hausa, or Yoruba translation of the sentence can be generated using the system.

[30], developed an interactive mobile application with basic tutorials in the learning of Yoruba language on handheld devices. That is anyone willing to learn, write, read and speak the Yoruba language can use the system. First, he talked about the unhealthy competition between English language and our Nigeria indigenous language with our native languages struggling for survival. The system was designed putting in mind the shortcomings of already existing system reviewed by the author and developing one that will be better. It covered most of the basic things one needs to know about Yoruba language judging from the use case diagram.

The survival of our indigenous languages continues to be a major concern to many writers and [2] is not an exception. In view of this, he presented a paper, a standalone Igbo learning system that enables interested learners to learn the language (Igbo), at their convenience especially where there is limited or no internet connectivity. He designed the system based on the experiences gathered on the already existing system developed for the younger generations who will be mostly affected to learn the language. He consulted Igbo textbooks and Igbo dictionaries to know how the language is been taught at elementary level in other to help in the design of his system. In designing the system, there are five learning activity which include courtesy, day, household, numbers, parts of the body and time. The learner selects the learning activity he/she wants and then clicks on the sound button to play the lesson. He also talked about the advantages of e-Learning systems over traditional learning environment.

E-Learning systems will help in the continuity of the language especially when the system is aimed at children since



they learn well at that early stage in life while eliminating the tension and difficulty associated with classrooms and teachers. This system's lack of pictorial lessons will make it harder to learn since it is targeted at children. Also the absence of after lesson quiz will make it difficult to know the progress of the learners. [28], examined the experience of teachers in the use of new technologies to teach the Igbo language. The study tries to determine the extent to which this technology is available and accessible to Igbo teachers. It also tries to check their competence and the challenge they face that limits the use of this new technology in the teaching of the Igbo language. The author also suggested that the teaching of the Igbo language be taken to another level since it is already taught in school in the south-east region. This can be achieved by creating platforms for those students and learners who wish to learn the language but have no access point in doing so. This work fills the gap by providing the platform.

Also, efforts are being made to maintain our language which is fast deteriorating which is one of the points the author stated. Designing an e-learning system that teaches Igbo language will be a great step in actualizing the writer's suggestion. This work a web based Igbo Language tutor for beginners provides the solution. The authors in [4] while writing on safeguarding the Igbo language through teaching Igbo to children stressed on the importance of our language. They stated that the people who lose their language have lost their identity. They also talked about the difficulty the people have in transmitting the language to their children. In view of this, they encouraged the Igbo parents to go extra mile in ensuring that their children learn the language. They also recommended that our language awareness and maintenance should be the concern of all Igbos to save the language from endangerment and possible extinction. They also discovered that many of our parents view Igbo negatively and rejects its importance in their cultural and social identity. If the parents do this, what about the children? The authors' recommendation about the need for our children to learn their language is very good. What if a parent is willing to teach the child but have little or no time to do so, then what happens? That is why an Igbo language tutor system is needed for such a case and for anyone who wishes to learn the language whether Igbo or non-Igbo. If this is done, then the aim of this paper will be easily accomplished.

[3], discussed the development of a Yoruba language E-Tutor for mobile phones on the android platform which can tutor both kids and adults on the basics of Yoruba language. He talked about e-Learning system and the advantages of e-Learning which include among others the ability to cover very large distance between a teacher and a learner, the opportunity for learning at a self-pace with lots of repetition and social interactivity where learners can share their thoughts about the lesson. After the design, an evaluation was carried out to get feedbacks from 40 participants who installed and explored the app. This was done by distributing a questionnaire to the said group. The result showed that majority of the users rated the app above average. [3], also intends to make the app available on the android market and to extend it to other mobile platforms which is a thumbs up to the author for trying and really joining the race to fight the extinction of our indigenous language.

[32], developed a system to aid individuals in learning Yoruba words and their meaning. The development of the system is based on the integration of ideas from computer aided education; computer mediated communication as well as techniques in artificial intelligence. The linguistic knowledge in their learning language is derived from a morphological analyzer of Yoruba which was developed using natural language processing (NLP) techniques. Some of the functionalities of the system include: getting meaning to some English words in Yoruba language, updating Yoruba dictionary, allocation of syllable sign, alphabets module and word segmentation module. A project was carried out by [33] the design and implementation of learning-aided software in English language and the three basic languages in Nigeria (Igbo, Hausa and Yoruba).



The project was aimed at teaching and enlightening people on an educational platform where they can learn the aforementioned languages and equally have fun while at it. Its significance was centered on the fact that most children find it difficult to interact in their mother tongue but can do so in English language. Therefore, their main focus in this project is to create an avenue where the mind of a child is stimulated to develop interest in local languages such as Igbo, Yoruba, and Hausa. They believed that the standards of education can be improved by providing information technology resource such as computers and so on. The authors from [33] didn't state explicitly how the system will accomplish the aim of the project or the different functionalities of the system. They just said that a platform will be created to enable beginners learn the native languages. They claimed that the project will on its own increase the level of interest in our native languages and also prevent our languages from going into extinction.

Individuals have continued to stress on the importance of language and for one to maintain the language where he/she is coming from. Design and implementation of an electronic Yoruba translator was developed by [34]. An electronic dictionary is a dictionary whose data exists in different forms and can be accessed through a number of different media. Its aim is to develop a dictionary of English to Yoruba translation where words can be easily translated from English to Yoruba. The system in [34] will do the following: allow a user know the particular meaning of a word, help them know the proper spelling of words, help them develop a more natural command of Yoruba, help increase a student's dialect, help know how a particular words should be used and to enable students understand the meaning of words quickly without difficulties.

An Hausa language interactive learning system was developed for the training of beginners, foreigners and other people interested in learning Hausa language and it seeks to save the possible extinction of the African Indigenous language and hence be categorized as an indigenous Nigerian language salvage material [31]. Some of the theoretical background used in the realization of this work include; computer assisted language learning (CALL) and interactive learning system (ILS). The system allows users to learn just alphabets and numbers of the Hausa language and it was aimed at primary and secondary school students. He concluded by saying that language learning system for indigenous languages is an area that should be invested heavily because of the benefits it has to offer and to save it from possible extinction.

Having gone through some related literatures and reviewed them, it is clear that many are interested in maintaining our language and culture. In conclusion, from the review above, from the books read and from arguments and suggestions from people, it has been observed that Igbo language needs immediate attention in order to save it from possible extinction. In view of this, we have embarked on this project: to develop a system that will help save our native Igbo language from possible extinction and also to help improve our culture and identity and to provide opportunities for the younger generations to learn the language.

### 3. METHODOLOGY

Object Oriented Analysis and Design Methodology (OOADM) were used. OOADM was achieved using three techniques; object oriented analysis, object oriented design and object oriented implementation. There are a number of different notations for representing these models, such as the Unified Modeling Language (UML). The commonly used UML diagrams are as follows: Use Case Diagram, activity diagram, class diagram, sequence diagram, and so on. We equally used Hot Potatoes software for student's evaluation. Hot Potatoes software allows one to make six different types of self-test exercises. These exercises can also quite easily be imported into any Learning Management System (LMS) like Moodle to be used for assessment of learning content.



Figures 3 and 4 below depict the use case diagram and the program flowchart for the project. In this system there are only two actors, the user and the admin.

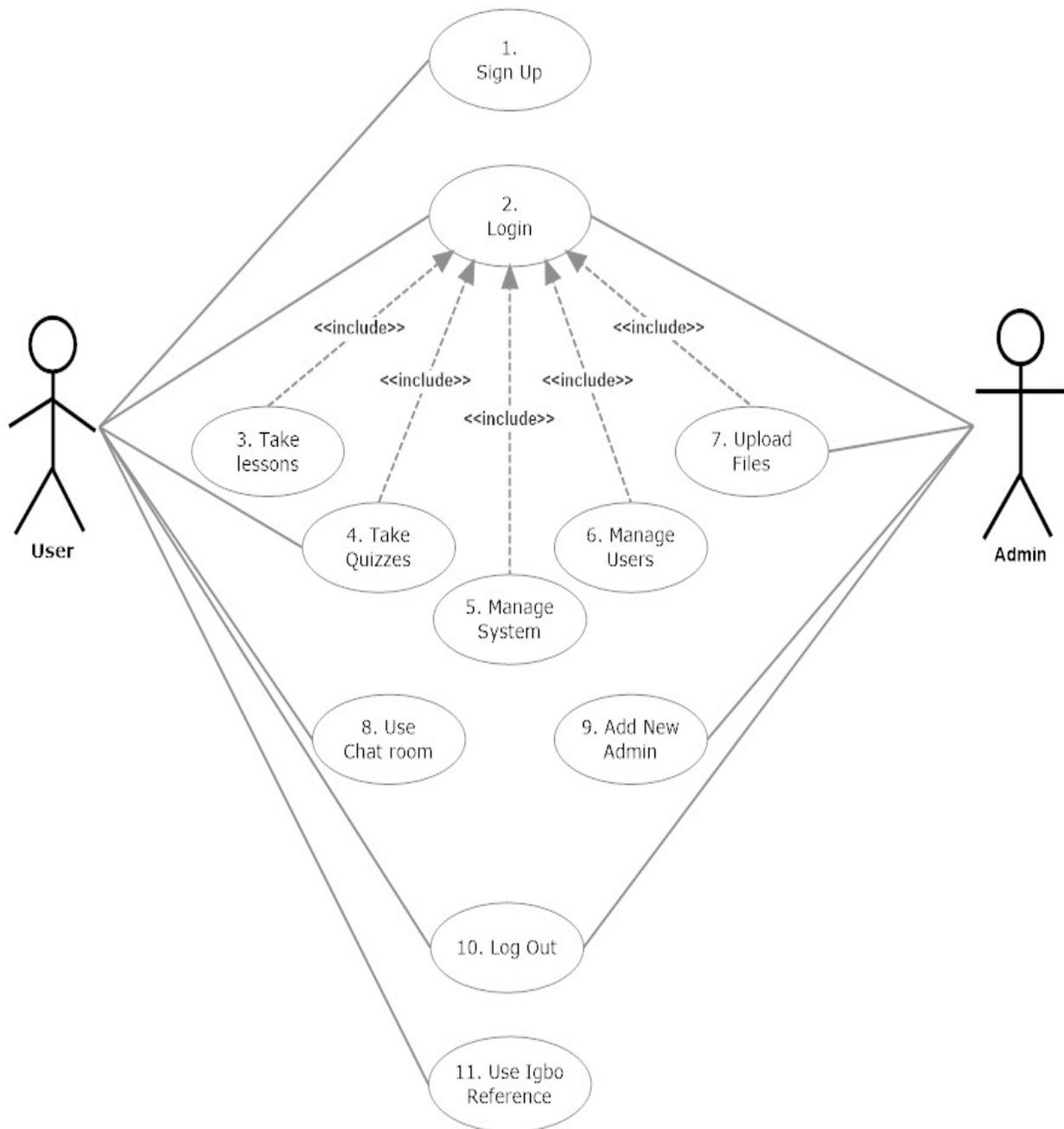


Figure 3: Igbo tutoring system use case diagram

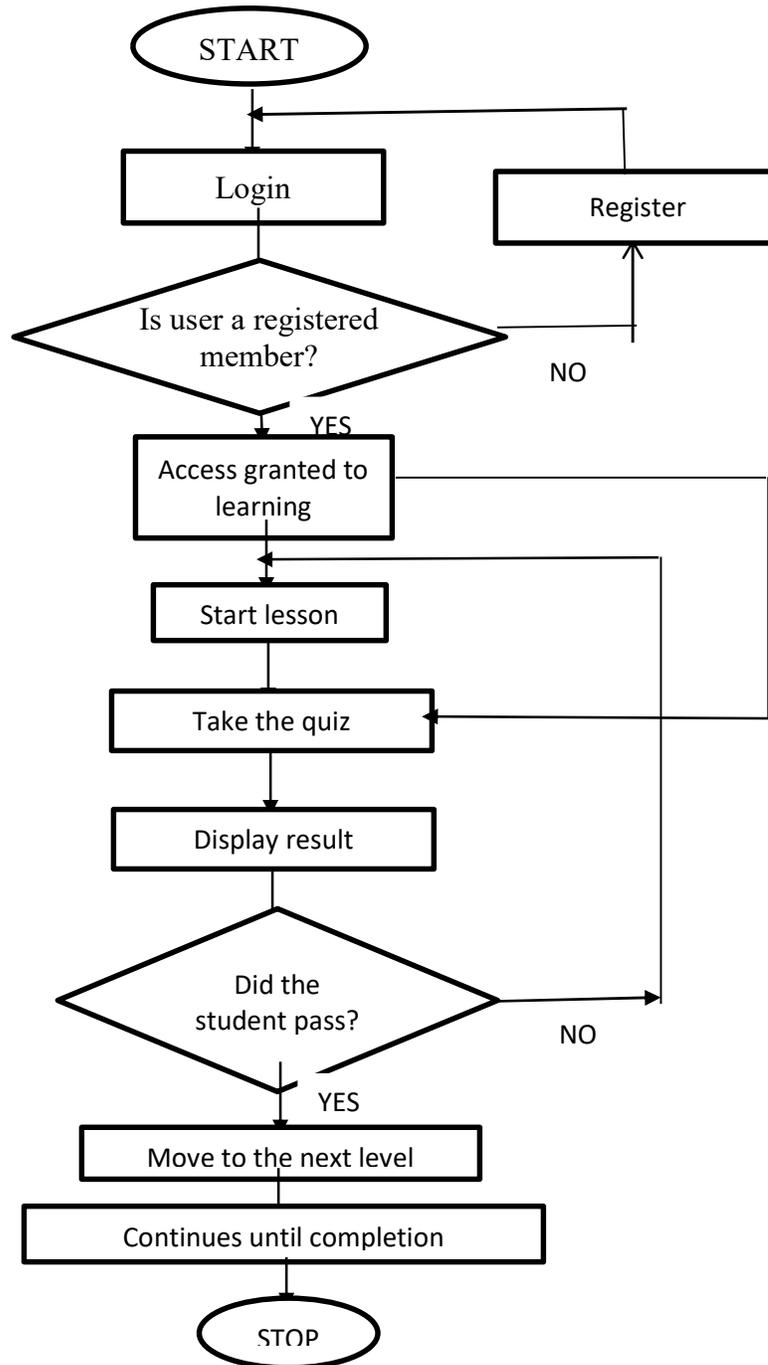


Figure 4: flowchart of a user



## 4. RESULTS

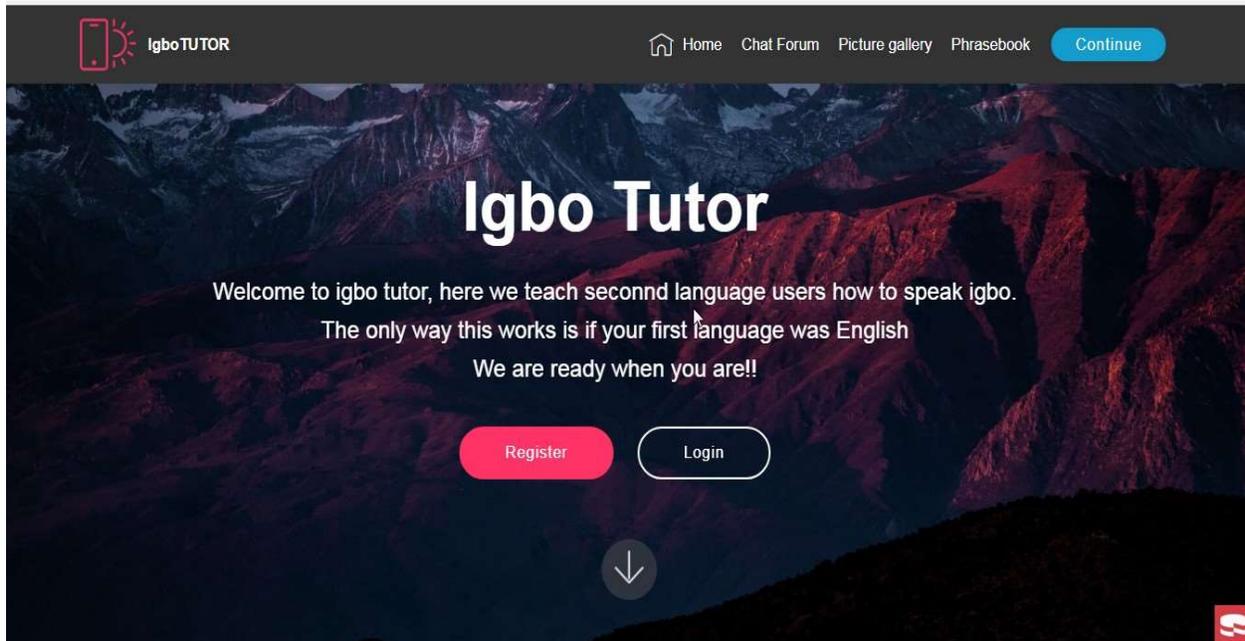


Figure 5: Home page

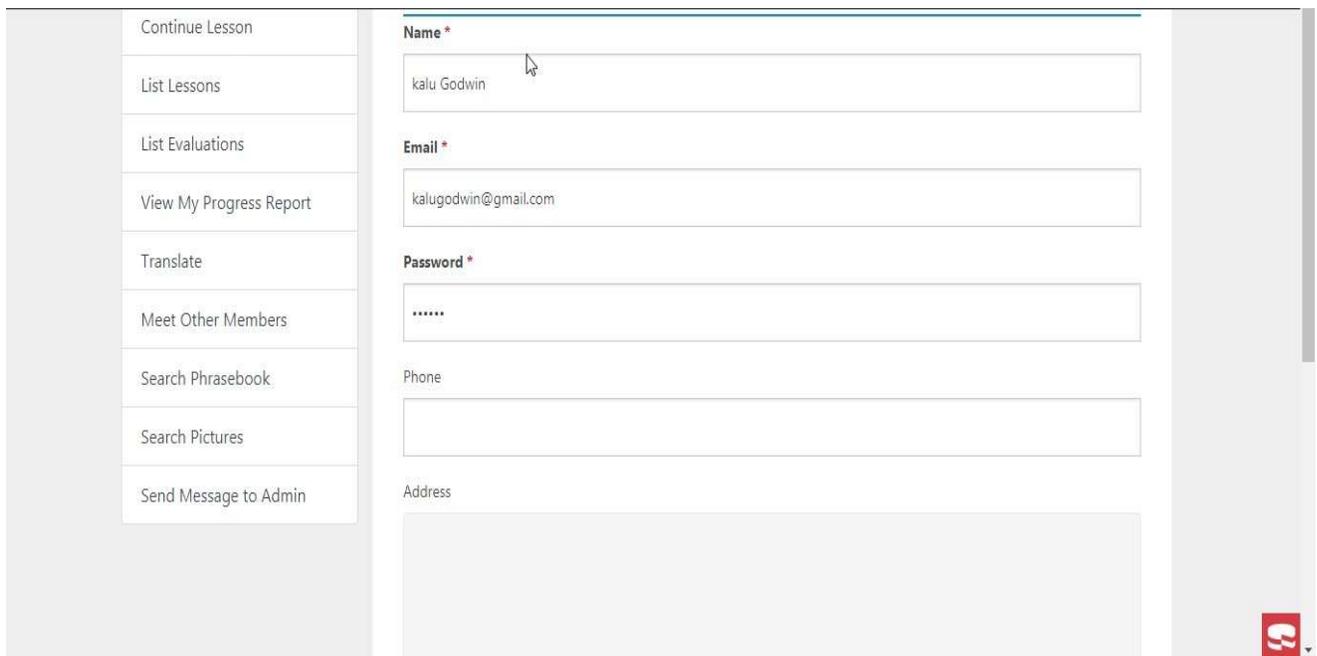


Figure 6: Signup page



Send Message to Admin

Address

City

State Of Residence

State Of Origin

SUBMIT

Figure 7: Signup page2

IgboTUTOR

Home Chat Forum Picture gallery Phrasebook welcome Umego Ginika Logout

Update My Profile

Continue Lesson

List Lessons

List Evaluations

View My Progress Report

Translate

Meet Other Members

Search Phrasebook

Search Pictures

Send Message to Admin

Your Profile **BEGINNER**

Name	Umego Ginika
Email	umegoginika@gmail.com
Password	sabina
Phone	
City	
State Of Residence	
State Of Origin	
Id	2
Created	11/13/18, 8:04 AM
Modified	11/13/18, 8:04 AM

Address

Figure 8: Welcome page

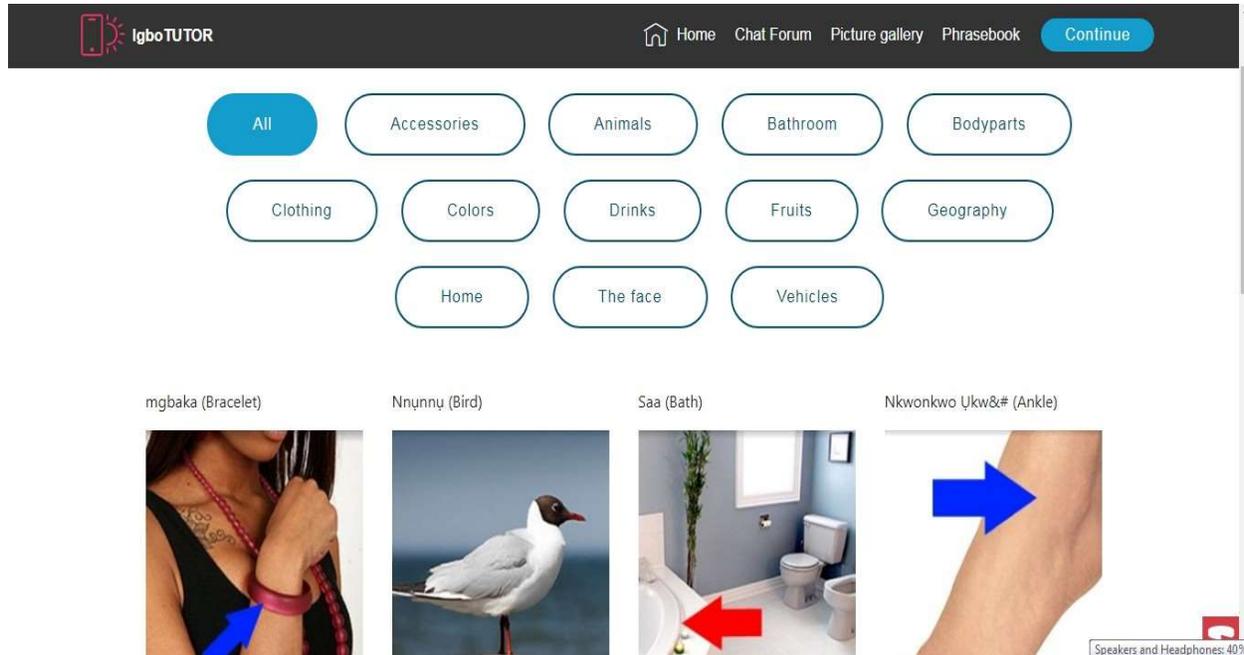


Figure 10: picture gallery page



Figure 11: picture gallery page



Figure 12: phrasebook page

Figure 13: phrasebook page



The screenshot shows the 'Igbo TUTOR' web application. The top navigation bar includes a home icon, 'Home', 'Chat Forum', 'Picture gallery', and 'Phrasebook'. A user is logged in as 'welcome Umego Ginika' with a 'Logout' button. The main content area displays 'Lesson one' with the following text:

The first lesson is going to focus on Igbo alphabets and are responding words. From the menu bar, we have touched these two things to a reasonable extent. So I suggest you guys to go look at it more time and prepare for the assessment ahead.

So I will just be listing the alphabets with words that can be formed with their as A is for apple.

The Igbo alphabet is 36. 28 consonants and 8 vowels.

Vowels	Example
a	Aka – hand
e	Envi- friend

A yellow button labeled 'Take Evaluation 1' is positioned at the bottom of the content area.

Figure 14: lesson page

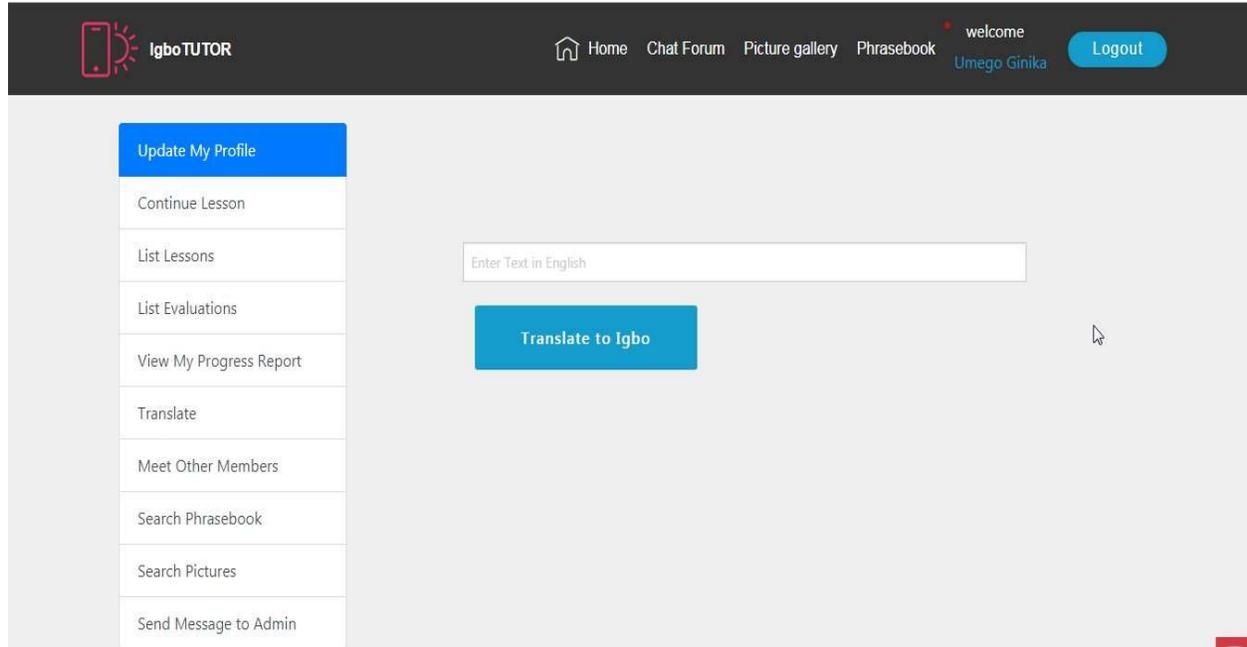


Figure 15: Translate page



## Igbo Connect

[Go Back to Igbotutor.](#)

Message	Time	Administrators
sabina joined the channel	9:33:07 AM	
sabina hy, guys I am new here.	9:33:39 AM	• sabina

Translate to igbo



Figure 16: Chat forum page

## 5. SUMMARY

The main purpose of this project is to develop an application that will teach, encourage and increase the usage of Igbo language to save it from possible extinction. The need for it is very clear due to the fact that most Igbo people hardly speak their native language. The internet has become very pervasive and accepted as tool making it easier to reach out to a lot of persons. So it will be a lot easier to teach our people who are lacking in this aspect how to read, write and speak in their mother tongue. It will equally connect different Igbo people all over the world with the help of our chat forum where everyone gather to learn from one another or have a chat. This software is easy to use as everything is made as simple as possible. It is web based application and is accessible to anyone who wishes to use the system all over the world. This project will equally help deliver our culture and language from dying.



## 6. CONCLUSION

The emergence of internet has become a major resource in modern businesses and learning, thus online learning has gained significance both from teachers and students. It has created new and widespread opportunities for learners making it easier as they tend to learn from the comfort of their home. This software is one of the numerous solutions for those who have no access to learning materials and teachers even though they are eager and willing to learn. This work, a Web Based Igbo Language tutor was developed using different web technologies. MySQL was used as the database management system for storing data. The analysis and design of the system was done with object oriented analysis and design methodology (OOADM). The modeling was achieved using the unified modeling language notation (UML). Different works talking about the importance of maintaining Nigeria native languages written by different authors were reviewed and this work improves on some of them.

## 7. RECOMMENDATION

Having seen the efficiency and the need for the system, we recommend that it should be adopted and permanently hosted by the Igbo community or the “ohanaeze ndi Igbo community” in Nigeria. There should be a powerful awareness to help promote our language and at the same time promote our culture and ultimately save our language from fading away.

### 7.1 Suggestions for further works

For the purpose of future studies, more lessons and more words should be included. Also the chat forum should be made into a mobile application to enable them interact and learn easily using their mobile phones. Online examination should be organized and the winner should be given a befitting reward.



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