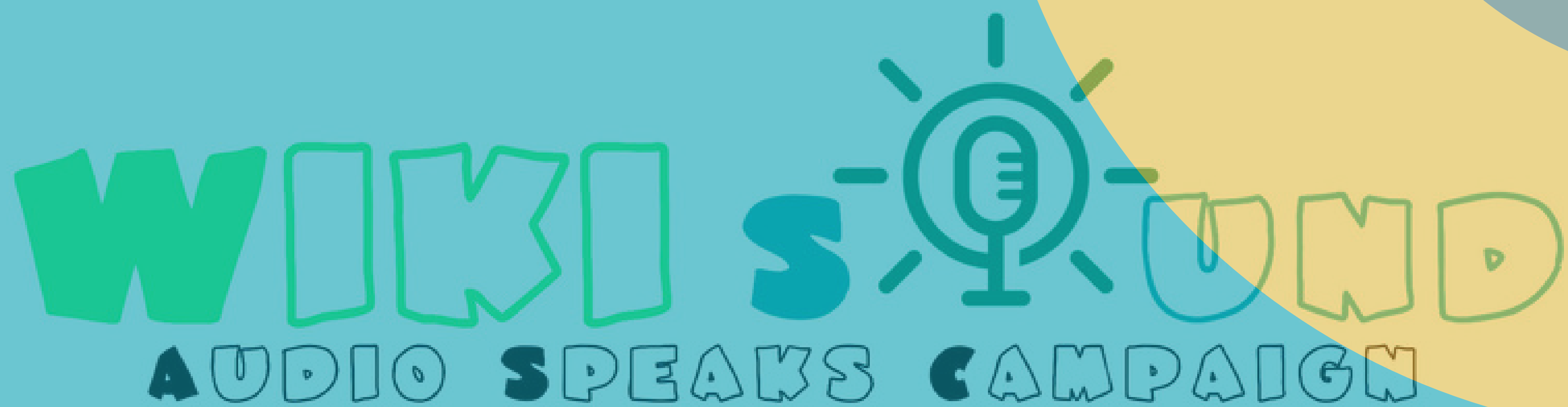# 2023

PROJECT RESEARCH

WIKISOUND-AUDIO-SPEAKS-CAMAPAIGN

Wikisound Audio Speaks Campaign Research

Research was conducted on sound in Wikimedia movements and outside Wikimedia to have a moderate knowledge of sound to help in building an impactful sound in Wikimedia movement at large, especially to support editors of the different communities as well as to provide an excellent sound-making an usage.

Abstract

In the Wikimedia movement, seeing many different editors and versions of contributionsthe (editing) like write-up, and uploading (consisting of images, sounds, and videos, we have identified the need to understand the development, and impact of **sound** in the Wikimedia movement and a way forward to improve the sound by the implementation of a comprehensive approach towards sound among Wikimedians.

The three local and major languages in Nigeria were interviewed using Google doc to collect data for this project research, The library was visited to collect data concerning some aspects of the local languages that have to do with a sound like words and their pronunciation, speaking technique, language dialects, cultural drum beating, traditional music, religious recitation and cultural incantations.

The wiki research starts by focusing on collecting information on instrumental equipment that enhances the storing, production, and equalization of sounds, extending to the skills and techniques used in carrying out the activities of sound using sound instruments in combination with tools (applications software) that are outside Wikimedia and that tools that are available in Wikimedia movement that helps in processing sound effects to be systematically used according. Moreover, the cascading techniques coding of using the sound effectively and efficiently in Wikimedia sister projects see impactful results.

The research collects almost all the audio files in three major languages which comprise Hausa, Yoruba, and Igbo within Wikimedia Commons, and the number of people contributing with sound.

Lastly, information was collected on what audio and sounds are all about, the composition of sounds, and the file extension format comprising the free licensed format and license file extension format, to see that it reflects in knowing what is legally acceptable, how it is permissible to be conducted and when is appropriately needed just to justify in seeing credibility and impact.

TABLE OF CONTENTS

TABLE OF CONTENTS

Introduction

03

Presenting a brief historical background of Wikipedia
in relationship to sound and WikiSound Audio Speaks
Campaign.

Wikipedia was founded on 15 January 2001 by Jimmy Wales and Larry Sanger, becoming the free-content online encyclopedia that was written, maintained and published by a community of registered volunteers, with the purpose of gathering free knowledge sharing around the world, followed by other Wikimedia sister projects consisting of Wiktionary, Wikivoyage, Wikisource, Wikimedia Commons, Media Wiki, and so on. Sister projects work collaboratively to support each other, looking at Wikimedia Commons; a free respiratory for uploading files including images, sound, PDF and video, all files can be link to various Wikimedia sister projects pages to appear as usable relevant content i.e pages and articles are expected to have a supporting media file that will help in knowledge sharing , looking at sound; this research prioritized in conducting simple basic research that will provide information for Wikimedians to develop skills and experience in sound related activities that will help in production, upload, usage and building technical skills on sound as well as learning the license regulations and other Wikimedia regulations on sound.

Looking at WikiSound Audio Speaks Campaign from angle of projection in Wikimedia movement, is an international Wikimedia campaign across Wikimedia ecosystem that focus on sound technicalities, physical sound composition and other aspects of sounds production. This Research aims to lay a foundation for sound production, sound upload, sound editing/contribution, and a comprehensive collection of information on sound in three Nigerian local languages considering language etymology, as well as research on different local wikis to comprehensively understand the relationship between the three major languages on sound activities, contribution and relationship between the language and sound. This work research is part of WikiSound Audio Speaks Campaign 2023, strategic plans to provide impactful knowledge using sound in various Wikimedia sister projects under four local language Wiki.

04 **Aim and Objectives**

The purpose of conducting the research, certain goals laid to achieve an important objectives and imapact.

Aim

This research aims to briefly highlight what sound is all about from its origins along with its significance, acquiring info on sound composition and usability, in and within Wikimedia, concerning language vocalization.

Research Objectives

The objective is to acquire sensitive and innovative skills in developing the aim of the research by putting it forward towards advancing sound technological features and editors' skills in Wikimedia Commons and other Wikimedia sister projects, some of the objectives include the following;

Objectives

- Sound Composition.
- Language words.
- On-Wiki Sound status.
- Off-Wiki Sound status.
- Editors skills and experience.
- Sound statistics.
- Tools Enhancements.

Scope Limitation

The scope of this research is limited to some areas of studying sound, that's acquiring the basic knowledg, information, and statistics that will help Wikimedians and WikiSound Audio Speaks Campaign team in building a foundation that will kick-startWikimedia activities related to sound in Wikimedia movement, this research will focus on knowing curriculum of sound, what sound is all about, what is made up of sound, the implications and uses of sound in human life relating to sound. also, this research focuses on knowing four major languages English, Hausa, Yoru,ba and Igbo, to acquire the interrelationshipsthe for between sound and languages. Furthermore, on-wiki research scope to documents provided guidelines of editing sound, regulations, and violatio.

Methodology

The method used in obtaining information, collection of data and other ways of identifying informtion.

The method used in conducting this research is by sourcing information through credible internet websites related to the three languages and in relation to sound, furthermore, e-library and libraries were sourced to obtain data and information. For the Wikimedia information and statistics are obtained from Wikimedia at large, information like the number of users that have skills and experience in sound, the number of sounds in Wikimedia Commons and its usage, basic coding techniques implemented by Wikimedians as a means of editing sounds appearance in different Wikimedia Sister projects. Communities were reached using Google Doc survey, to collect information on each community experience.

- Library
- Independent Credible Reliable Sources.
- On-Wiki Guidelines Pages
- Off-Wiki Sound related websites
- Survey

50%
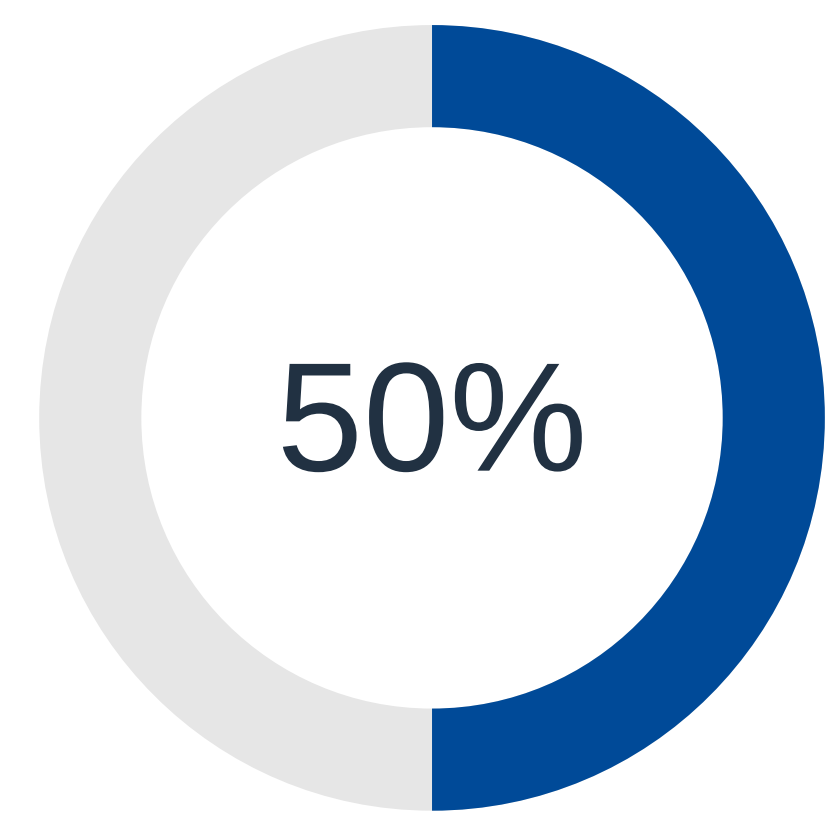
ON-WIKI

50% of infromation and data obtained is from Wikimedia.

35%
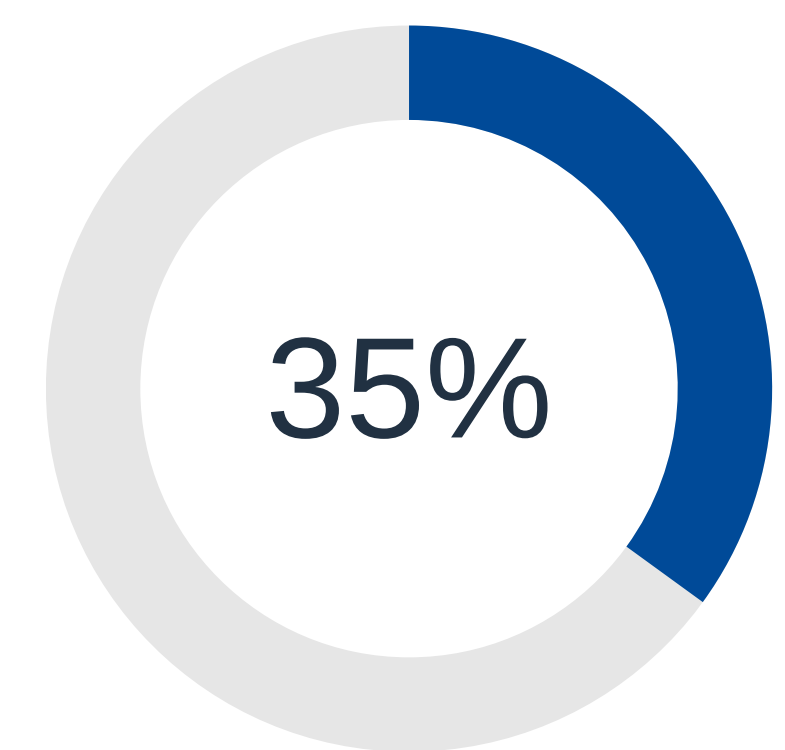
LIBRARY

35% information are sourced from library.

10%
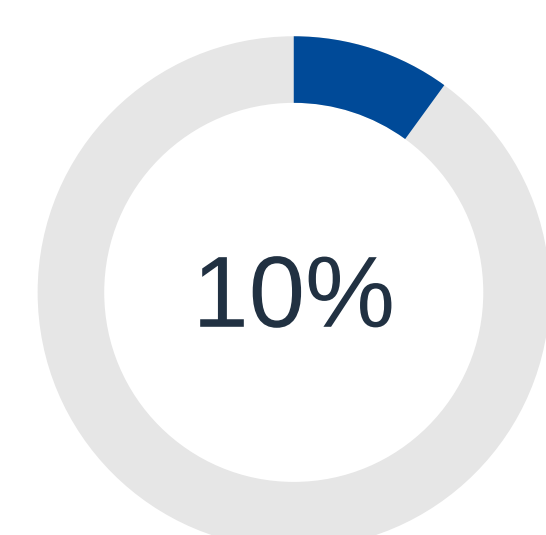
CREDIBLE WEB

10% of information are sourced from indepedent reliable sources.

10%
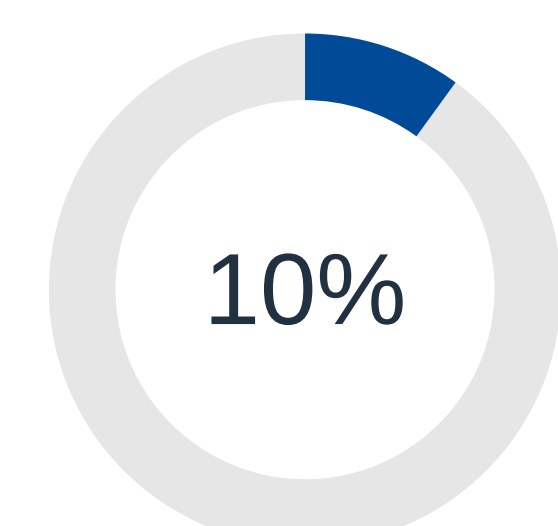
SURVEY

10% are obtained through conducting survey in three major languages in Nigeria

Findings

Founded problems in sound development in Wikimedia and outside putting into consideration to overcome them by finding solutions to bring positive changes.

Problems Obtained

Lack of participation

Inadequate trai ning

Lack of skills

Minimal sound

Lack of awareness

Less accessibility

Lack of participation

Many users among the experienced ones and new bies are not participating in sound-related activities in the Wikimedia movement, voluntary work is inadequate, grant application on sound is very low, no training, discussions among active users that contribute massively to the Wikimedia is less, audios uploaded in Wikimedia Commons are mostly from users with moderate experience in the Wikimedia community.

Skills, training and accessibility

As a result of having no or very less workshops, training and lesss accessibility to sound guidelines pages, many editors in the Wikimedia movement have no skills to contribute, with sound, either skills of making uploads into common, linking audios or adding audios where audio is relatively needed in Wikimedia pages.

Minimal sound

The number of audio files currently in Wikimedia Commons is very less compared to the number of images uploaded, Only four major languages in Wikimedia have the 80% of all audio uploaded, that's English having the highest number of audio followed by Arabic, French, and Mandarin. 20% of all audios uploaded are distributed among the other local language wikis, with some wikis having no audios at all or the audios not categorized or used on any page, most of the audios are used in Wiktionary for words oral pronunciation, Wikimedia projects campaign like Wiki Loves Africa and Wikimedia Pages Wanting Audios and others not exceeding five projects are participating with less audio activities in the movement.

Sounds

What is sound, what made up of sound, its compositio, ways of productions, storing, processing and usage.

Wha is sound?

Sounds are naturally or artificially created when an object or something is vibrating or moving causing a wave that contains noise. Sound moves as a wave, transported via a medium, for instance, a liquid such as water or a solid such as tongue, or a gas such as air. Therefore, sound does not take part in the vacuum of a space. A sound wave can be said to be an example of a compressignal or longitudinal wave, there are particles in the wave that goes parallel towards the direction in which the is traveling, the theory of sound creation by air, solid, or gas can be said to be as a result of movement. To human understand sound is noise produce by natural or artificial phenomenahumans that human understand its meaning or having no meaning just noise.

Origin

Sound existed long before human creation, towards the digital world at the very end of the 19th century, a man called Oliver Lodge created the first moving coil or a dynamic loudspeaker. The latter uses a diaphragm in other to create sound and a horn to amplify it. During WW2, sound technology evolved further with the introduction of the coaxial Duplex driver released in the year 1943.

Components of sound

The five main characteristics of sound waves include
- wavelength
- amplitude
- frequency
- timeperiod
- velocity

Sources

Sound sources can be divided into two types, natural and man-made. Examples of natural sources are animals, wind, flowing streams, avalanches, and volcanoes. Examples of man-made sources are airplanes, helicopters, road vehicles, trains, explosions, factories, and home appliances such as vacuum cleaners and fans.

Uses of sound

The common areas where sound is effectively used is in the following fields
- Communication.
- Observation.
- Information.
- Entertainment
- Notification.
- Signal.

Audio technology

The phonograph, invented by Thomas Edison in the year 1877, could both record sound and play it back. One of the earliest types of phonograph sold was recorded on a thin sheet of tinfoil wrapped around a grooved metal cylinder, the stylus will be connected to a sound-vibrate diaphragm indenting the foil into the groove as the cylinder rotated. The most advanced instruments used in measuring sound are sound level meter (SLM), also known as a sound meter, noise meter, decibel meter, or sound pressure level (SPL) meter, These are measuring instruments created to measure sound levels in a standardized way.

Sound recording

There are two common main types of sound recording procedures, that is analog and digital. The analog sound recording is using an electromagnetic signal to record the audio vibrations on magnetic tapes, while the Digital sound records convert the audio vibrations into numbers that can then be stored electronically without loss in sound quality.

Digital

Digital audio is a representation of sound recorded in, or converted into, digital form. In digital audio, the sound wave of the audio signal is typically encoded as numerical samples in a continuous sequence. For example, in CD audio, samples are taken 44,100 times per second, each with a 16–bit sample depth.

Analogue

Analog recording is a technique used for recording analog signals (sound). This enables later playback of recorded analog audio, Analog audio recording started with a mechanical systems like the phonautograph and phonograph, it was later electronic techniques were adopted such as wire and tape recording were developed.

Sound implication

There are many fields where sound is effectively used to enhance huma life, looking at those areas can be broadcasting (radio and television) they use audio technology to produce and deliver the sound to the intended destination. Moreover, sound is an efficient means of human communication and telecommunication at large, looking at this from the perspective, audio plays an important role in the Wikimedia movement by enhancing free knowledge sharing.

The analog recording method is storing analog signals directly in or on the media. The signal can be stored as a physical texture on a phonograph record or a fluctuation in the field strength of a magnetic recording. Analog transmission processing methods use analog signals to distribute audio content. It is in line with the contrast to digital audio where an analog signal is sampled, and quantized in order to produce a digital signal which will then be represented, stored, and transmitted as discrete numbers.

07 S o u n d s

Silent technology

The Silent Sound Technology is a modern method of using sound, it use electromyography to track every minute muscle contractions that will take place after speaking (speech). Without uttering a sound, there are monitored signals that are transformed into electrical pulses that can then create the speech electronically.

Audio format

An audio format consist of two part structure, that is a container and a codec. Looking at a container is a special file in which multimedia data, that is audio, is compressed and stored, while a codec is a piece of programmed software that is designed used to perform the data task compression and to also decode the data during playback. Furthermore, a container is a place where the audio files are stored and the codec is the tool that makes them smaller, making them easier to store, the coming together of codec and a container is what is called the audio format or format. Therefore, there are three main types of audio formats:

1. Uncompressed,
2. Lossless compressed, and
3. Lossy compressed formats.

Audio files has different file extensions which include– MP3, WAV, FLAC, OGG, WAV and what have you. These file extensions are used to identify the specific audio file formats used in storing digital recordings, that is to say audio formats and audio file extension are different in some ways, ideologically, file extensions works under different file format. This will help Wikimedia editors to identify the differences in recording and conversion of audio files into a fee license file extension formata.

Ogging

An OGG file format means Ogging, it stores audio files such as music and recordings. In ogging compression the audio data is stored in OGG container. The audio files are now compressed with audio compression called Vorbis. Moreover, OGG file includes the othe information of metadata of the recorded audio, like track data and artist information. However, one can always use multiple compression methods like Vorbis, FLAC, Opus, Theora, and so on.

Advance AudioCoding

AAC extension is short form of "Advanced Audio Coding", it is a standard audio container format for compressing digital audio and data. It is improved in several aspects, this format produces a better sound quality at the same bitrate when compared to older audio formats.

FLAC

FLAC means the Free Lossless Audio Codec which was abbreviated as FLAC, it has emerged as a new alternative to other similar audio formats like Apple Lossless (ALAC) and WMA Lossless. FLAC is a perfect balance between audio quality and size reduction. It provides audio resolution of about 32 bitrates per 96 kilo Hertz (32b/96 kHz) when it is compared to CD's 16-bit / 44.1 kHz, and also at the same time, it makes the files 30 to40% smaller than it was, even though they are still bulkier than MP3s, FLACs provide a much better audio quality. The format is also compatible with several of platforms.

WAV

The Waveform Audio Format, simply abbreviated as WAV, is regarded as a raw and uncompressed audio format that was developed by Microsoft and IBM and is primarily used on Windows-basedwith platforms. looking at the development of superior or best lossless formats such as FLAC. WAV has lost some of its CD quality, but the format but is still quite popular to many sound creators and widely available due to its usage.

Wikimedia codec

The Wikimedia movement procedure and method used in producing audio files under the different container and a codec is specific, specific in a way that the container has to be a free license container, editors have the option to produce audio files considering the Wikimedia movement project scope on audio allowable file types, the most important aspect about Wikimedia Commons files uploading is that they are designed only to accept a free content, so as well as audio has to be in a free container and codec feature, the following is a simple method used in providing a free audio file extension through conversions or recording:

Audio: Ogg-container (using FLAC, Speex, Opus or Vorbis codecs with file extension .oga), MIDI, WAV (16-bit PCM format and 32-bit IEEE uncompressed format), FLAC (.flac), MP3 (.mp3) or Opus (.opus).

TThe above procedure can be done using different methods of recording sound, there are different technological tools, gadgets and applications softwares that does that in accepted way, for instance the Audiacity, Audio converter, Mstudio and Wikimedia tool called Spell4wiki.

Languages
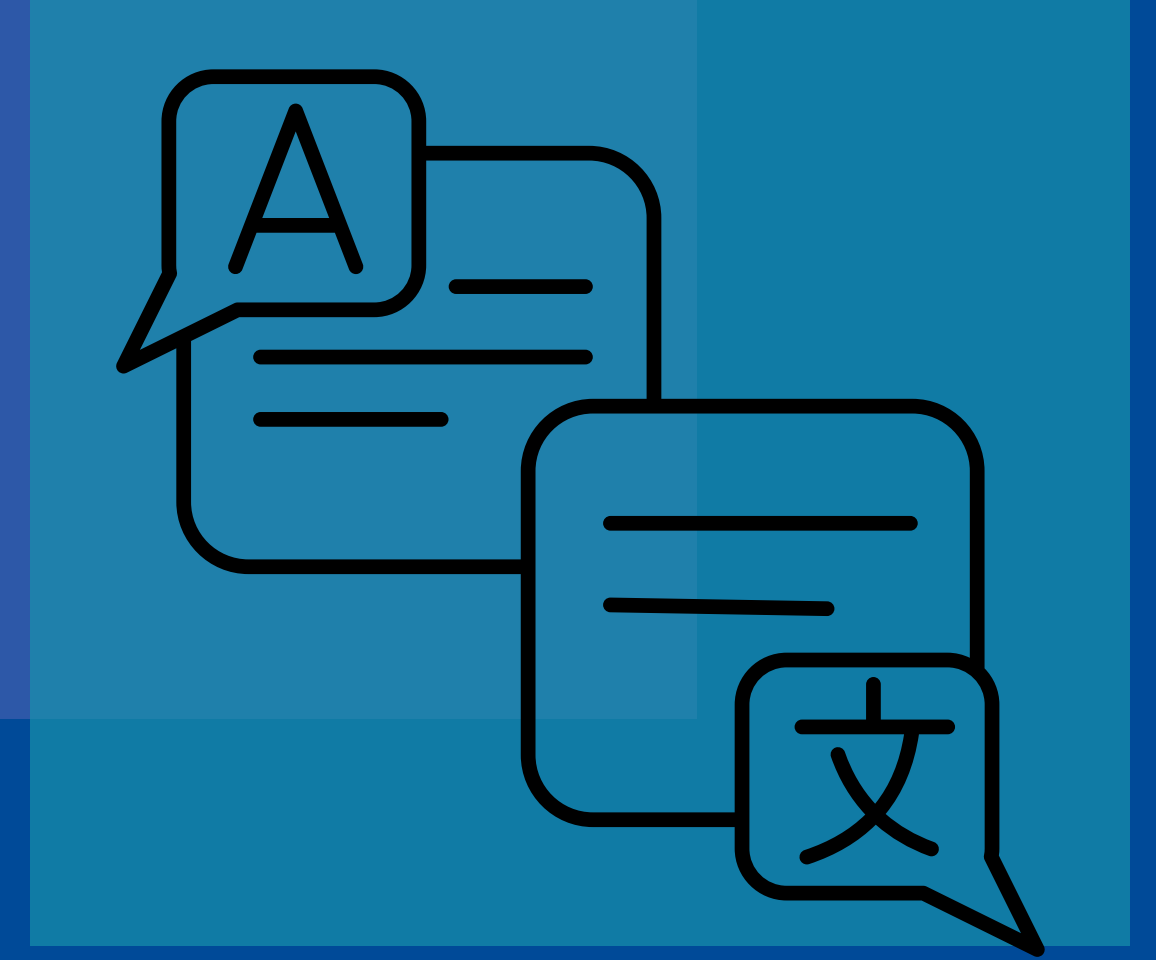
Overview

Language is the essential key factor in communicating among human beings, language is said to be language when there is a communication channel between partners, either using oral, writing, or sign to deliver a meaningful comprehensive messag. In every language comprehensive communication is the key to speaking between two bodies, the main purpose of every language is to have a comprehensive understanding, that is what brought the idea of speaking, writing, and body language signsmessage, looking at oral speaking; it is made up of sound waves utter by mouth passing through air to ear to enable understanding, sounds represent the message in wave format, that's what made up of every language, looking at the sound from this angle one will understand that sound is very important in language skills and speech communication, every word is in form of audio, in language communication sound uttered by human beings are regarded as words, while sounds uttered by other creation like Animals, musical instruments, natural phenomena, and artificial man-made materials are regarded as music, vocalization, noise and so on.

English language

In the English language according to Oxford Dictionary 2022, there are more than Six Hundred Thousand words 600,000 in total, each word can be pronounce using different English accents starting from American English AE, British English BE, Australian English ATE, and other accents of English language, pronunciation of some words varies, words like University and Future are often pronouncedpronounced in the United Kingdom as /ˈfjuː.tʃər/, while the United States of America pronounces it as /ˈfjuː.tʃɚ/. Taking the above into consideration each word can have two or more sound pronunciationshas as a result of different accents. English have two major accents American and British with other minor accents of Native English and other nonnative, that adapted the English language like Nigerian English Accent, Ghanaian English accent, South African accent, and Arabic accent.

Oxford Dictionary possesses almost 273,000 headwords; 171,476 of those words are currently in use, while 47,156 are regarded as obsolete words and around 9,500 derivative words are included as subentries. In the Oxford 3000, it provides a list of 3,000 core words that are frequently used in everyday life. The words have been chosen according to their frequency in the Oxford English Corpus and according to learners of the English language.
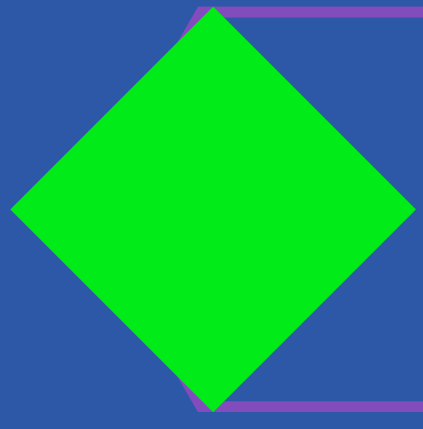
Languages
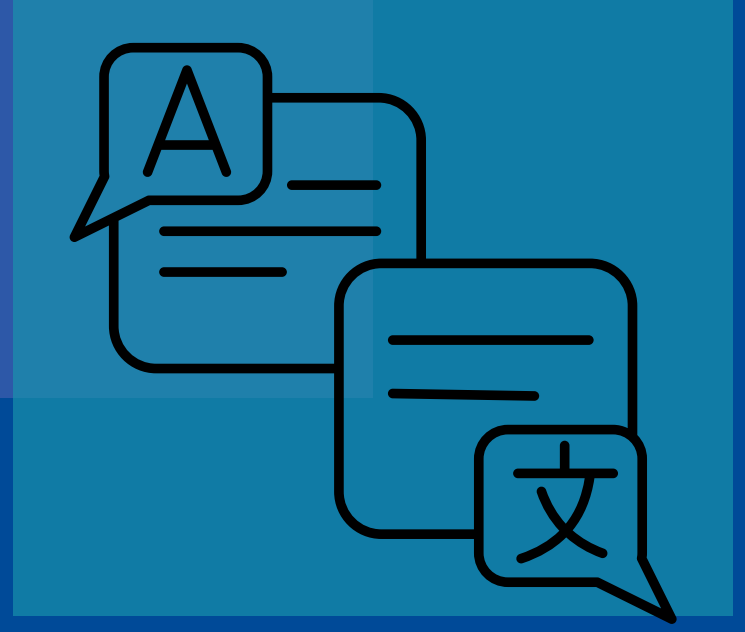
Hausa language

The Hausa language is a Chadian language spoken by Hausa people from Nigeria, Niger, Chad, and other African countries, is the largest spoken language in West Africa and second in Africa. language has more than ten dialects combined, including Katsinanci, Dauranci, Kananci, Hadejanci, Guddaranci, Arewanci, Zamfaranci, Sakkwatanci, Kurhuwayanci, and Zazzaganci. The Hausa language has evolved in different accents and pronunciation of words, advancing from old Hausa literature to classical one, most people living in rural areas of Hausa land speak old Hausa, while those living in urban areas speak the same Hausa accent, especially those who in the metropolis of Kaduna, Kano, Katsina, and Zaria. The Hausa language is full of literature with slogans, wise sayings, recitations, traditional songs, traditional music,c and other spoken compositions that are part of their daily life. looking at this sound can be producedobtaine,d, documented in Wikimedia Commons through recording, and uploading fair use files and other audio that are in the public domain. Looking at Hausa words, according to a book written by Neil Skinner titled Kamus Na Turanci da Hausa, the book contains more than ten thousand words translated from the English language to Hausa, that is to say, those Wikitionary words are expected to have audio recorded and get upload in Wikimedia Common.

Igbo language

The Igbo language is (ásừsừ Ìgbò) is Niger Congo language spoken mostly in Nigeria as native and first speaking language. There are around 18 to 25 million Igbo speakers living primarily in the south eastern part of Nigeria in an area called as Igboland. The Igbo literature is the speaking and writting of literature among the different Igbo people. Before the advents of writing among them, Igbos practic oral literature, folk songs, religious incantations and poetry

Yoruba language

Yoruba language is a language wide spread spoken language mostly in West African countries, with a majority speakers and origin in South western and Central Nigeria. It is spoken by ethnic Yoruba people. The number of Yoruba speakers is roughly estimated as 50 million native speakers, with addition of about 5 million second language speakers. Beign a spreading language, it is primarily spoken in a dialectal area ranging from Nigeria, Benin, and Togo with smaller minority migrated to some communities in Côte d'Ivoire, Sierra Leone and Gambia. Yoruba language has many dialects among which include Ekiti, Igbomina, Ijebu, Ijesa, Oyo, Ondo, Owo, Ikale, Ilaje, Ikare, Yagba, Gbede, Ijumu, Ife, Ikiri, Isabe, Ijo, and Irun . The standard Yoruba is not precisely agree, but the two closely related dialects is Oyo and Lagos dialects.

Languages
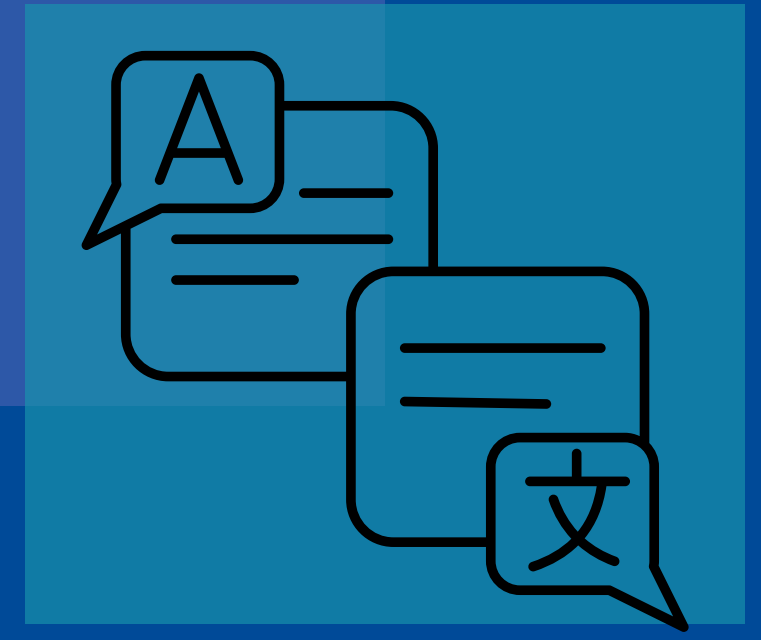
The Yoruba geographical dialect consists of several dialects, which can be classified ainto five major dialect areas:
- Northwest,
- Northeast,
- Central,
- Southwest, and
- Southeast.

Overall languages

Instrumentals

09

Materials aside from human organs that produce sound to be putten into consideration in producing sounds.

Introduction

Instruments are equipment used in making, creating, producing, or maintaining some relevant to the designated instrument to perform a particular task, or purpose, Looking at instruments from this angle, task related to sound also has different instruments allocated to sound processing and other function.

Audio or musical instruments are physical equipment used in producing or adjusting sound, the instruments come in different shapes, forms, and origins. Looking at the human body and natural animal organs, different organs in animals produce sound using the mouth, nose, and other animal organs that produce sound. For instances, a human uses his hands to clap, making this a sound, that can used in different   like in telecommunication or musical songs

Other musical instruments are created in a broad way of styles and shapes, using different kinds of material. Early, musical instruments were made from the availability of materials found within the human environment, such as horns, shells, and parts of plants. As instruments developed through evolution, many people extended the instrument to be more sound-producing applications instanceanimathe, with more melody, simple to use, loud amplifying, and other aspects of sounds. That is what brought the use of modern musical instruments like piano, trumpet, electric guitar, and other instruments.

Audio equipment

Audio equipment refers to any devices; mechanical, electrical, or combination of both, which are used to reproduce, record, maintain, or process sound in different ways. This audio equipment includes microphones, radio receivers, recorders, AV receivers, CD players, tape recorders, amplifiers, mixing consoles, effects units, headphones, and turntables.

uAdio electronics can be described as a process of converting sound to electrical signals while processing the electrical signals turning the processed signals into sound.

Instrumentals

09

Materials aside from human organs that produce sound to be putten into consideration in producing sounds.

Different Types of Musical Instruments

There are many inst that will help in producing music in Wikimedia movement, thesel instruments are categorized based on the type of sound they peoduce, and can be categorised under four different types, and they are listed below:

1. String Instruments
2. Percussion Instruments
3. Keyboard Instruments
4. Brass/Wind Instruments

Below are some of the musical instruments that produce a musical sound, the list below is all physical equipment, while others are electrical equipment.

- Piano
- Flute
- Veena
- Drums
- Mridangam
- Violin
- Guitar
- Triangle
- Trumpet
- Saxophone
- Mouth organ
- Cello
- Xylophone
- Clap box
- Electric guitar
- Bass guitar

- Bugle
- Harp
- Harmonium
- Oboe
- Maracas
- Cymbal
- Accordion
- Bongo drums
- Bell
- French horn
- Banjo
- Conga drums
- Keyboard
- Gong
- Pipe organ
- Comet

- Tambourine
- Trombone
- Ukulele
- Electronic drums
- Drum pad
- Clarinet
- Harmonica
- Tuba
- Bass drum
- Snare drum
- Euphonium
- Piccolo
- Lute
- Marimba
- Bassoon
- Cornet

Tools and Application Softwares

The available tools found in Wikimedia movements that helps in sound task and other non Wikimedia applications softwares that perform tasks on sound.

Audio software and tools are any programmed settings in the form of application that collects command in other to create audio, listen to audio, or manipulate sound files based on editors' or users' desire. In some cases the word gadgets is used for tools, A gadget is a tool or software that works under a particular software design to perform a specific task. There are many tools, application software, and gadgets in the Wikimedia movement and outside that work freely in carrying out audio tasks, like recording, editing, and other manipulation. The following are some of the tasks of application software:

- Recording live audio, or
- Upload recorded audio or music
- Save and output audio as a variety of file types (e.g. .wav, mp3, flac, etc.)
- Simultaneously record for multiple tracks.
- Large production
- Virtual mixing
- Virtual instrument rack
- Swappable patches via a sound or instrument

Application software, tools, and gadgets are available on computers and mobile phones. importantly, there are available tools in Wikimedia movements that help in doing different activities on sound like recording, editing, and other tasks. On this page, several applications and software are listed to help Wikimedia editors and users in carrying out their tasks according to what they want to achieve. full descriptions of how to use those applications and tools are not provided.

PC App Softwares

- Audiotool
- KSDV
- Audacity
- Speechactors
- Descript
- GarageBand
- Qtractor
- LMMS
- Ardour
- DarkWave Studio
- Hydrogen
- SoundBridge

Wikimedia tools

- Spell4wiki
- Upload Wizard
- MP3splt
- Shtooka recorder

Mobile applications

- To MP3 Converter
- Mstudio
- WaveEditor
- Audio Converter
- Wavepad

Skills and Techniques

11

The available tools found in Wikimedia movements that helps in sound task and other non Wikimedia applications softwares that perform tasks on sound.

Introduction

Recording of audio files requires skills, learning, and, techniques to be applied to achieve the desired goal. According to the research conducted, we managed to bring some useful important skills that will help in sound-related work

Recording

To record audio files you can use the available devices or tools you have in your possession like Mobile phones, Personal computers, Recording devices, and studio equipment, Through Wiki you can use Lingua Libre or Spell4Wiki tools to record and upload directly. Through a Personal computer, you can use Audacity or any suitable application software of yours to record, convert, and upload, You can watch video tutorials here to see how recording, conversion, and uploading are carried out using Mobile phones, PCs, or Wikimedia tools.

Converting Audio Files to upload audio files make sure you are conversant with the Wikimedia Commons Licensing and copyright policy and guidelines.

Uploading

To upload audio files you first need to convert the audio files to the Wikimedia Commons repository accepted file's extension format, that's to correspond. e. with the free license file extension for audio files which is either i.e WikiSound.aacAdvanced Audio Coding or i.e. WikiSound. which is ogloggingor i.e WikiSound.flac which is Free Losslessfind Audio Codec, or you use wav or i.e WikiSound.Wav, these four audio file extensions formats are accepted worth for inclusion in Wikimedia Commons to Wikimedia Sister projects. The next step is to access the Upload Wizard through this Upload Wizard, you can finf Video tutorials on how to use the Upload Wizard in Wikimedia Commons.

Legalization, License and Wikimedia Regulations

The available tools found in Wikimedia movements that helps in sound task and other non Wikimedia applications softwares that perform tasks on sound.

Wikimedia Commons accept only free content uploaded as a free images and other media files that are not subjected to copyright restrictions, that is what allowed and gives absolute privilege for everyone reuse it, anytime, for any purpose. The use may however be restricted under a certain circumstances governing its changes not listed here, see Commons:Non-copyright restrictions, and the license may require other some special measures. There are also some certain material, the copyrights of which have expired in a particular country while still applying in another. Some of the details are explained below. Wikimedia Commons works to ensure that such restrictions are mentioned and well explained on the audio description page; however, it is the responsibility of reusers to make sure that they use the media according to the license and shouldn't violates no any applicable law.

Wikimedia Commons only accepts media
- that are explicitly freely licensed, or
- that are in the public domain in at least the United States and the source country of the work.

Wikimedia Commons does not accept fair use justifications: You can take a look at Commons: Fair use. Media licensed exclusively under non-commercial licenses (like CC BY-NC-SA) are not accepted either. The license that applies to a sound file has to be indicated clearly on the file description page using any provided copyright tag template. All information required by that license must be provided on the description page. The information that will be given on the description page has to be adequate so that it will allow other users to verify the license status. License details have to be well specified on the description page should be sufficient to allow others to verify the license status.

All copyrighted material on Commons (not in the publicdomain) must be licensed under a free license to completely and irrevocably allow anyone to reuse the file for any purpose; simply writing that "the material may be used freely by anyone" or similar isn't sufficient. Importantly, the license has to meet the following criteria: The preferred audio container format is either Ogg or other file types are supported. When uploading audio files use the file type oga, flac. FLAC also embedded in the Ogg container or its native container format is suitable for applications where lossless compression is needed, for example, projects where a file has to be edited many times.

Media Files and Editors

Number of sounds in Commons, usage in Wikimedia movements and editors that are working in improving sound.

There are 96,846,225 files in Wikimedia Commons including images, videos, PDF, and audio files, looking at audio files There are inadequate audio files in Wikimedia Commons when looking at the number of images uploaded to Wikimedia Commons. In this research, we have managed to obtain statistics on the number of audio files uploaded in different categories, and the number of audio files used in English Wikipedia, English Wiktionary, Hausa, Yoruba, and Igbo local wikis, this will help in knowing what to contribute in the future and what way forward to bring positive change in Wikimedia.

Statistics

The following statistics are sourced from three major large categories in Wikimedia Commons, a total number of audio files are obtained,and the number of audio files used in four local wikis is obtained. Mostly, the audio files come from the following categories Lingua libre, Audio files, and Spell4wiki categorie.

Wikimedia projects	Spell4wiki	Audio Files	Lingua Libre
Hausa Wiki	No 218 | linked 76	----	No 9 | linked 4
Yoruba Wiki	No 690 | linked 622	----	No 1 | linked 1
Igbo Wiki	No 1069 | 907	----	----
English Wiki	No 547 | 329	No 1,735 | linked 1,064	No 18,730 | linked 18,730
TOTAL	**2,524**		**33,640**

Overview

Look at the above audio statistics, The statistics are collected from three major categories limiting the scope of the research to only three categories and to four Wikimedia project languages that's English, Hausa, Yoruba, and Igbo. the exact number of audio can not be precisely obtained due to every hour of upload, linking, and deletion of unwanted audio, so the above statistics are very close to the number of audio in four languages, the number that has been used, and the projects used.

14

Media Files and Editors

Number of sounds in Commons, usage in Wikimedia movements and editors that are working in improving sound.

Spell4Wiki

Spell4Wiki is one of the largest tools used among Wikimedians in uploading audio files of different languages, the tool has a specific category containing several subcategories, in different language Wikis. English, Hausa, Yoruba and Igbo have a total of 2,524 audio files combined, almost 90% of the audio combined have been linked to several Wikimedia projects. Importantly, the research shows that most language audios of many languages are mostly linked to English Wikimedia projects. For instance, most of the Igbo audio files from the category Files uploaded by Spell4wiki in the ig category are used mostly in English Wikimedia projects, 784 audio files out of 1069 are linked to en. Wikipedia, while 59 are linked to Wikidata, only 10 have been linked to ig. wiktionary.

Lingua Libre

The Lingua Libre is a powerful tool that helps users upload audio files, as of March 2023 180 subcategories are containing audio files of different language and from different user, the audios in Language Libre are higher than the ones in Spell4Wiki due to friendly use by most editors from United States of America and United Kingdom. Most editors from Nigeria happen not to be using Lingua Libre, rather they prefer Spell4wiki because it was first introduced to them by event organizers.

Editors

According to the survey carried out in three Nigerian local languages, most of the editors are entirely not aware of sound activities in the Wikimedia movement, many of whom have not across anything related to sound, not have idea or skills in uploading and linking audio files in local language Wikis or Wikimedia sister projects, among the experienced editors (co-founders of User Groups) are as well not been doing activities on audio files, according to a statistics on Wikimedia Commons from a category collecting users with audio upload; the category categorizeduploader 30 editors contributing with audio files out thousands of active editors and uploadera, this shows and prove that audio related work in Wikimedia moveinsufficientany efficient, more effort has to be putten in seeing effectiveness and efficiency of audio in Wikimedia movement at large.

Conclusion remarks

This research presented here shows that audio-related activities require in-depth research for Wikimedians to fully understand audio and its implications in the entire Wikimedia movement, seeing that a lot of Wikimedians are not aware of sound-related activities especially among experienced users and leaders of different communities, putting this into consideration make it obligatory for us to focus on creating awareness and campaigns on sound to onboard more editors and participants. There is also a gap in Wikimedia movement related to every responsibility that has to do with collaboration in terms of moving audio-related challenge the activities, which is also one major challeng.

We have also learned that other technical skills need to be developed and added among Wkimedians not relating to Wikimedia skills which every Wikimedian needs to know about audio technicalities. Importantly, there is a need for familiarity with tools and equipment in sound production.

In this sound Wikimedia movement, different training, workshops, and seminars have to be well arranged consecutively for Wikimedians to address a series of knowledge and skills that have to do with audio, which will help Wikimedians in getting all the aim knowledge needed in contributing with audio files. Audio activities are far more difficult than image activities, so there is a need for in-depth knowledge, license, skills, and editing technical concepts of audio in and outside the Wikimedia Movement.

Recommendations

	Recommendations	Priority
1	There is an extreme need for consecutive campaigns, training, meetings, seminars, and workshops on audio for editors to acquire skills in contributing to audio content accordingly.	● HIGH
2	Collaboration: there is a need for collaboration among experienced users to develop audio in different languages, as English audio can be used in another language wiki written in English, for words or article pronouncitation.	● HIGH
3	Establishing works related to sounds in User Groups, Hubs, and Fan Clubs for rapid growth development.	● HIGH
4	Language rehabilitation from native speakers for accurate knowledge sharing on sound, as admin, not related to language can not patrol sound not relating to his language.	● HIGH

References

- Wade-Matthews, Max (2003). Musical Instruments: Illustrated Encyclopedia. Lorenz. ISBN 978-0-7548-1182-4.
- Music Library Association (1974). Committee on Musical Instrument Collections. A Survey of Musical Instrument Collections in the United States and Canada, conducted by a committee of the Music Library Association, William Lichtenwanger, chairman & compiler, ed. and produced by James W. Pruitt. Ann Arbor, Mich.: Music Library Association. xi, p. 137, ISBN 0-914954-00-8
- Campbell, Murray; Greated, Clive A.; Myers, Arnold (2004), Musical Instruments: History, Technology, and Performance of Instruments of Western Music, Oxford University Press, ISBN 978-0-19-816504-0
- Morton, David (April 1998). "Armour Research Foundation and the Wire Recorder: How Academic Entrepreneurs Fail". Technology and Culture. 39 (2): 213–244. doi:10.2307/3107045. Retrieved January 25, 2023.
- Schoenherr, Steven E. (July 6, 2005). "Recording Technology History". Recording Technology History. University of San Diego. Archived from the original on February 16, 2019. Retrieved January 25, 2023.
- Flatow, Ira (April 4, 2008). "1860 'Phonautograph' Is Earliest Known Recording". NPR. npr. Retrieved January 25, 2023.
- Kartomi, Margaret J. (1990), On Concepts and Classifications of Musical Instruments, University of Chicago Press, ISBN 978-0-226-42548-1
- http://copyright.gov/circs/circ56a.pdf
- Elsea, Peter (1996). "ANALOG RECORDING OF SOUND". UCSC Electronic Media Studios. UC Santa Cruz. Retrieved January 25, 2023.
- https://commons.wikimedia.org/wiki/Category:Lingua_Libre_pronunciation
- https://commons.wikimedia.org/wiki/Category:Files_uploaded_by_spell4wiki
- https://docs.google.com/forms/d/e/1FAIpQLSdpscfQAgrRfE_FqxbH4blQXqoc67fc5RGsy3xM79e--gRImw/viewform?usp=sf_link
- Abraham, in his Dictionary of Modern Yoruba, deviates from this by explicitly indicating the nasality of the vowel; thus, inú is found under inún, etc.
- Awde, Nicholas and Onyekachi Wambu (1999) Igbo: Igbo–English / English–Igbo Dictionary and Phrasebook New York: Hippocrene Books.