Computer-Assisted Language Learning (Call): The Use of PRAAT with Babcock University

'Demola Jolayemi[1]PhD *cum laude* & Oyinloye, Comfort Adebola[2] PhD

Abstract

The use of the English language continues to be viable and veritable across the countries of the continent, even in the non-native environments such as Nigeria, Ghana, and India, where English is the official language. As an index of achievement within these non-native contexts, there is a great premium on learning the various aspects of English. The psycholinguistic circumstances of teaching and learning English in such contexts call for concerted pedagogical efforts to satisfy the expected learning outcomes. Thus, within the field of Computer-Assisted Language Learning (CALL), an objective of this paper is to identify the various technology that can assist the teaching, learning and improvement of the English pronunciation. The second objective is to illustrate with the PRAAT software the applicability of technology for the improvement of the English pronunciation. Structurally, the paper is divided into two parts: Part One identifies some technology generally applicable to language teaching, learning and improvement. It lists 35 types of technology that possess the propensity to improve the English pronunciation. This list is divided into four different categories, namely: Hardware (13: 1-13), Software (9, 14-22), Hardsoftware (5, 23-27), and Virtual Technology (9, 28-35). Some of these are summarised into four Plates (Plates 1-4). Part Two of the paper discusses PRAAT as one of the best and most current software for learning, teaching and improving oneself in the English pronunciation. It illustrates with 11 screen captures (Pictures 1-11) the viability and applicability of the software to language learning, using *This is Babcock University, Ilishan*. The paper recommends a simulation of the native-like environments offered by the Computer-Assisted Language Learning technology for the desired proficiency of language learning, at this instance, the English pronunciation.

Keywords: Technology, Computer-Assisted Language Learning, English pronunciation, PRAAT

Part One:

Technology

Psycholinguistically speaking, anyone whose language acquisition process has completed or almost completed before acquiring/learning another language has found itself in a bilingual situation. This situation has been set such that the first used language is called FIRST language while the next one possessed is SECOND, a.k.a. L1 and L2, respectively (Mcneill, 1970; Brown &Bellugi, 1972; Brown, 1973; Insup, 1976; Steinberg, 1982; and Jolayemi, 1999). In an L2 situation, there is a whole lot of difference in the approach to the teaching and learning of the language, in this circumstance, English. One of the hallmarks of teaching and learning English in the non-native contexts is the application of specially designed, arranged and packaged pedagogy, tools and materials, called technology. Technology usage may have a little application when teaching English to the native speakers; if used to a large extent in that context, it is for the impaired native learners.

It is, thus, a very legitimate, indeed, conscious engagement to apply as many types of technology (tech, henceforth) as possible to teach the English language in a non-native context, and most necessary for the improvement of the English pronunciation.

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[1] Professor of English and Digitised Linguistics, The Dean, Faculty of Arts and Education, University of Africa, Toru-Orua (UAT), Bayelsa State, Nigeria. E-mail: demola.jolayemi@uat.edu.ng, demolajolayemi@gmail.com
[2] Associate Professor of English Education and Curriculum Studies, Babcock University, Ilishan, Ogun State, Nigeria
E-mail: oyinloyec@babcock.edu.ng, comfortadebolaoyinloye@gmail.com

The application of technology in English language classrooms especially, the use of video, tape recorder and CD ROM performs a miracle in the spoken English of L2 learners. It empowers the students to go at their pace more so as they have opportunity to replay the teacher's lecture at their own time (Oyinloye, 20007; 2010 & 2013). Affirming this, the research works carried out at different times by (Adedeji, 2010; Allen, 2011; Dotimi & Hamitlton, 2013; Oyinloye & Egbuna, 2017) reported internet services as a powerful tool behind students' academic achievement and teachers' delivery in the classroom. To them, ICT is a powerful tool for attaining social, economic, educational, scientific and technological tool for developing a nation. In addition, Oyinloye & Egbuna (2017) report a positive result on the influence of information and communication technology on teaching and learning in the Nigerian universities, as it is empirically proved that the computer has become a new classroom for the learners. Also, Ihezue (2019) stresses that L2 classrooms can only bring out intelligent use of oral English when the computer is fully detected, acknowledged and properly administered in the teaching of a second language.

Generally speaking, much work has been done on the needs and types of tech used by teachers. In a Course entitled 7374: Introduction to Technology in Schools, Capaldo, Flanagan, and Littrell, (2008) interviewed some teachers on the different types of tech they used in the classroom. The answers included: Camera, Camcoder, Digital Camera, Smartboard, Search Engines, and the Internet. The others were: Educational Software, Productivity and Application Software, Drawing and Illustration Programs, Cell Phones, Keyboarding, and FM System, the last two being language tech for the deaf students.

But specifically, much work has also undergone on the applicability of deploying tech in pronunciation (Chun, 1998; Shyamlee, 2012; Technology for Pronunciation, 2014; and Wang, 2016). There has also being a specific description given to all the computer-mediated tech for teaching and learning a language. This has been code-named CALL, meaning Computer-Assisted Language Learning (Chapelle, 1997; Ehsani, & Knodt, 1998; Neri, Cucchiarini, Strik, & Boves, 2002; Neri, Cucchiarini, & Strik, 2006; Lee, 2008; Jolayemi, 2013; Pi-hua, 2015; Liu, & Hung, 2016). With a resounding success, studies have shown that tech to teach pronunciation has been most rewarding in the non-native environments (Hincks, 2003; Banafa, 2004; and Hismanoglua, & Hismanoglub, 2010). Thus, a number of tech has been designed, experimented with and used (Eskenazi, 1999; Ferrier, & Reid, 2000; and Eurotalk, 2002); and the list is endless. In the literature, most of the appropriate tech for the improvement of pronunciation have been listed. The following list is from Akinjobi (2017) in a paper for the Speech Clinic: TV, Radio, and Cable news. She also categorises some others under Electronic Media Sources (EMS), Internet Sites and Links, Social Networking Sites, Dictionaries with Audio Aids, Computerised Speech Laboratories, and Films (pp. 5-9).

Technology for the English Pronunciation

In listing these techs for the purpose of this paper, we shall identify them under four typologies which we call Plates, namely: Hardware, Hardsoftware, Software, and Virtual. Thus, below are some of the Technology to teach, learn and improve the English pronunciation:

Plate 1 - Hardware: 1. Smartphones 2. iphones 3. TV/Cable 4.Radio 5. Computers: laptop 6. ipad 7. book-note 8. palm-note 9. Surface Computer 10.Cassette Player 11.Video Player 12.Projector 13.Smartboards, etc.

Plate 2 - Software: 14. Cassette 15.CD 16.DVD 17.PRAAT 18.SFS 19.WASP 20.Speech Analyzer 21.LINGwaves 22. ProCoach, etc.

Plate 3 - Hardsoftware: 23. *Daniel Jones English Pronouncing Dictionary* 24.*Cambridge English Pronouncing Dictionary* 25.Language Laboratories 26.Digitised Linguistics Science Laboratories 27.Films, etc.

Plate 4 - VIRTUAL: 28. Internet 29. Website

30.   www.dialectsarchive.com
31.   http://accent.gmu.edu
32.   www.bbc.co.uk/worldservice/learningenglish/grammar/pron/
33.   www.uiowa.edu/~acadtech/phonetics/about.html#
34.   https://app.speechace.co/placement/course/1
35. Podcast, 36. YouTube, etc.

Some of these techs are summarised in Figure 1, below.

Figure 1: Technology to Teach, Learn, and Improve English Pronunciation

HARDWARE 1 **Record Player, Cassette Player, Cards, Radio, Television, Smart phone, Smart board, Projector, Computer..**	**SOFTWARE 2** **Record plate Cassette, CD, DVD SFS, WASP, Speech Analyzer, LINGwaves, PRAAT, ProCoach…**
HARDSOFTWARE 3 **Daniel Jones Pronouncing Dictionary, Cambridge English Pronouncing Dictionary…**	**VIRTUAL 4** **Internet, website, Speech Ace: https://app.speechace. co/placement/course/ 1 ...**

P R O N U N C I A T I O N

Source: The Present Study

Plate 1: Hardware for the Improvement of the English Pronunciation

Hardware can be described as equipment, a tool or device used for general communication construction or instruction purpose. But strictly digitally speaking especially in computing, it is used to describe some parts of the computer such as the frame of the Control Point Unit (CPU), and mother board. It is normally static and fixed; most of the times, it serves as a host or driver of other items for an operation to be performed. This description includes all of the items in Plate 1; and examples are 1. Smartphones 2.iphones 3. TV/Cable 4.Radio 5. Computers: laptop 6. ipad 7. book-note 8. palm-note 9. Surface Computer 10.Cassette Player 11.Video Player 12.Projector 13.Smartboards; and even more.

Plate 2: Software for the Improvement of the English Pronunciation

Software is a device that usually contains encrypted or coded information or communication for a specific purpose. Except coded in the Read-Only-Memory/Mode (ROM), software can be erased and replaced, unlike hardware. It serves as a guest to be hosted by the hardware to manifest the purpose of the information encoded in it. Software can never be useful without the hardware to drive it. Examples as indicated above are: 14. Cassette 15.CD 16.DVD 17.PRAAT 18.SFS 19.WASP 20.Speech Analyzer 21.LINGwaves and 22.ProCoach. Items 17-22 are specifically digitised linguistic analysis computer software that are deployable for the improvement of the English pronunciation. This has led to a body of knowledge now referred to as Digitised Linguistics, and anyone who does a consistent linguistic analysis using any software is now referred to as a Digitised Linguist. Studies are many that have used many of the software for pronunciation. Some of the champions in this expertise are Josef Schmied, 1995, Daffid Gibbon 1996, Peter Ladefoged, 2001; Martins Weisser, 2001; Keith Johnson, 2003; Paul Boersma& David Weenink, 2004; Alexandra Thies, 2005; 'DemolaJolayemi, 2006, 2008a, 2014, 2015, 2018; Lee, 2008; Peter Ladefoged& Keith Johnson, 2011; and AdenikeAkinjobi, 2013a). This list of such software, as stated above is endless, but examples are: 14. Cassette 15.CD 16.DVD 17.ProCoach 18.SFS 19.WASP 20.Speech Analyzer 21.LINGwaves and 22.PRAAT. The last on the list, PRAAT (item 22), demonstrates how software can be used to improve pronunciation, which engages a subsequent section of this paper.

Plate 3: Hardsoftware for the Improvement of English Pronunciation

There are some software that come in both hardware and software modes, this is because it is possible to have both made for the end-users. Examples of this are: 23. Daniel Jones English Pronouncing Dictionary and 24.Cambridge English Pronouncing Dictionary. Both of these pronunciation tech can be obtained in the hard and soft modes. Furthermore, it may also be that the function of one is highly dependent on the other, almost like a pair of things. 25. Language Laboratories and 26. Digitised Linguistics Science Laboratories are a mode like that, which can be classified as Hardsoftware. Lastly on this Plate are 27. Films, which can both be obtained as both hard and soft. It is to be noted that the English syntax has not yet permitted us to pluralise hardware nor software with the -s plural marker. Hence, 1 Hardware as well as 100 Hardware (without the plural marker "s"); and 1 Software is as well as 100 Software.

Plate 4: Virtual Tech for the Improvement of the English Pronunciation

There are a very useful tech that reside within the realm of the cloud. They are accessible only by the means of the internet through specified Universal Resource Locators (URLs), which are good to learn, teach, and improve the English pronunciation. Because of their virtual nature, they are also and most commonly called online resources. Examples are: 28. The Internet 29. World Wide Websites (www); through which many other online pronunciation tech can be obtained, such as:

30. www.dialectsarchive.com
31. http://accent.gmu.edu
32. www.bbc.co.uk/worldservice/learningenglish/grammar/pron/
33. www.uiowa.edu/~acadtech/phonetics/about.html#
34. https://app.speechace.co/placement/course/1
35. Podcast, 36. YouTube, etc.

Part Two

PRAAT:

Around 2003/2004, Paul Boersma and David Weenink of the Institute of Phonetics Sciences, University of Amsterdam, Netherlands wrote a program named PRAAT, a Dutch word which means "talk" in English. It is, up till now, free linguistic software that can be downloaded using the Universal Resource Locator of: http://www.fon.hum.uva.nl/praat/download_win.html. The main highlight of the program is that it is multi-task software, which is very handy for users of many categories such as: the phoneticians, phonologists, speech pathologists, voice coaches, and forensic experts. It can be excited by only sound files in the following formats: AIFC files, AIFF files, FLAC files, MP3 files, NeXT/Sun (.au) files, NIST files, and WAV files (Boersma&Weenink, 2013). The program has gone through various versions comprising many modifications and improvements; an earlier version being 4.404 and the latest 5.3.49.

How PRAAT is Operated

Three initial steps must have been taken before PRAAT can be used. The first is that the user must have downloaded the program into the computer, which will present the PRAAT icon in Picture 1 on the computer, as below.


Picture 1: PRAAT's Icon

Secondly, the user must have a sound file saved in the computer to be imported into PRAAT. To do this, the user can use any digitised sound recording device, like The Audacity, saved by Export, to be imported into PRAAT later, as done in this study. The user may also directly record a corpus into the computer with the PRAAT Recording menu following the steps presented below. Double click the PRAAT icon and receive a pair of windows up on the computer screen. On the left is the *PRAAT Objects* and on the right is the *PRAAT Picture*, as shown below:
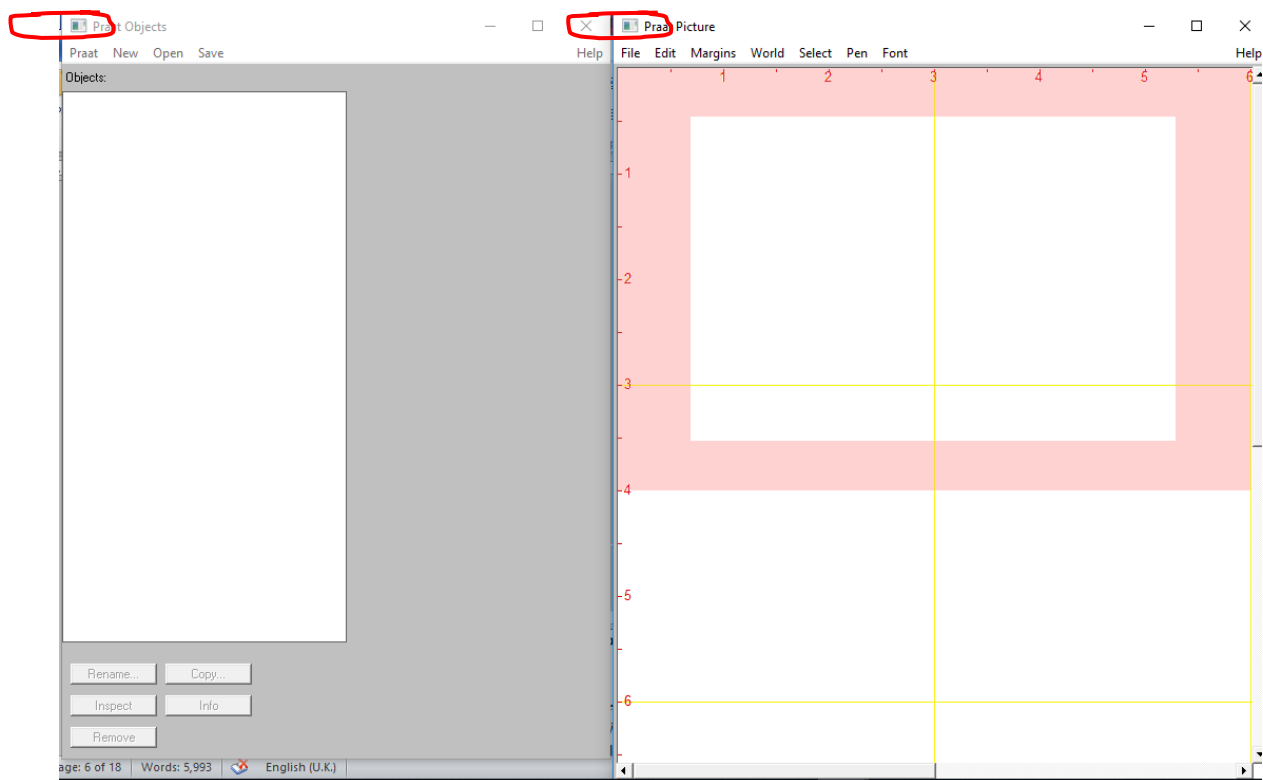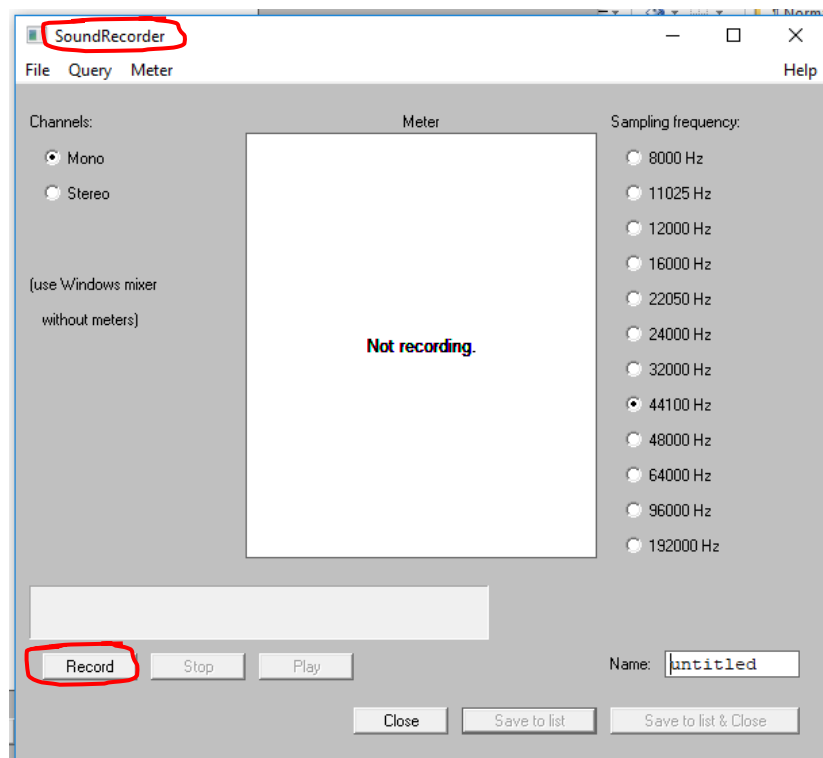
Picture 2: Screen Capture of PRAAT Object and PRAAT Picture Windows

The left window, as can be seen, has four menus at the top left corner – PRAAT, New, Read, and Write. **New** is used to record with PRAAT, the one the user needs now, when clicked, giving a direction to record with "Record mono sound":
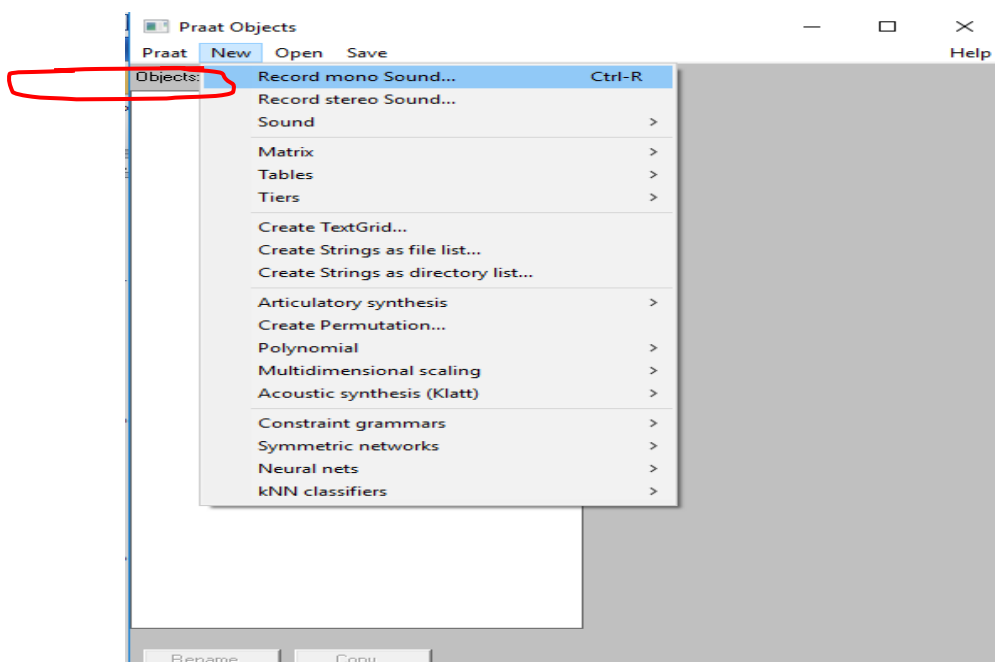
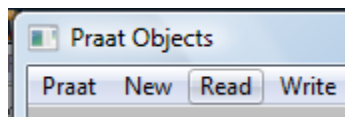**Picture 3: Screen Capture of PRAAT Objects and Recording Menus I**

Another click on "Record mono sound", the Window to do the internal recording shows up as "SoundRecorder", and the recording done by a click on "Record" that manifests on this new Window as:

Picture 4: Screen Capture of PRAAT Objects and Recording Menus II

Read to import a sound file into PRAAT. Below the window are five additional menus – Rename, Inspect, Remove, Copy, and Info. The PRAAT Picture window on the right is a display window where acoustic pictures are shown and where analyses can be performed as indicated on the menus of the window.

The user may wish to record his own sound using PRAAT tool by clicking the New Menu, which gives an array of directions that can be dutifully followed. Among the directions under the Menu is *Record mono Sound*, which enables the user to record own sound and save for use with PRAAT. When this recorded sound is saved, it automatically comes up on the PRAAT Objects Window. But the user has the appropriate sound file already in his computer, the next step is to load it into PRAAT by clicking on the Read Menu of the PRAAT Objects Window and follow the directions for the location of the sound. These two actions can originate from the slate below as captured from PRAAT Objects:

Picture 5: Screen Capture of PRAAT Objects Displaying Key Menus

As soon as the expected sound comes up on the PRAAT Objects, another array of menus show up at the left side of the window, namely: Sound help, Edit, Play, Query, Modify, Annotate, etc. when these menu appear, they can be applied to the imported sound until the desired objectives are achieved by the user.

Most of the time, PRAAT is used to show acoustic evidence of utterances that one intends to analyse. To achieve this we often add textgrids to the corpus of utterances we want to analyse, by clicking on the *Annotate* menu and follow a number of directions until textgrids show up below the sound we had already created. Thus, we have the textgrids for "This is Babcock University, Ilishan" whose WAV File, we recorded with the PRAAT recording tool, as indicated below:
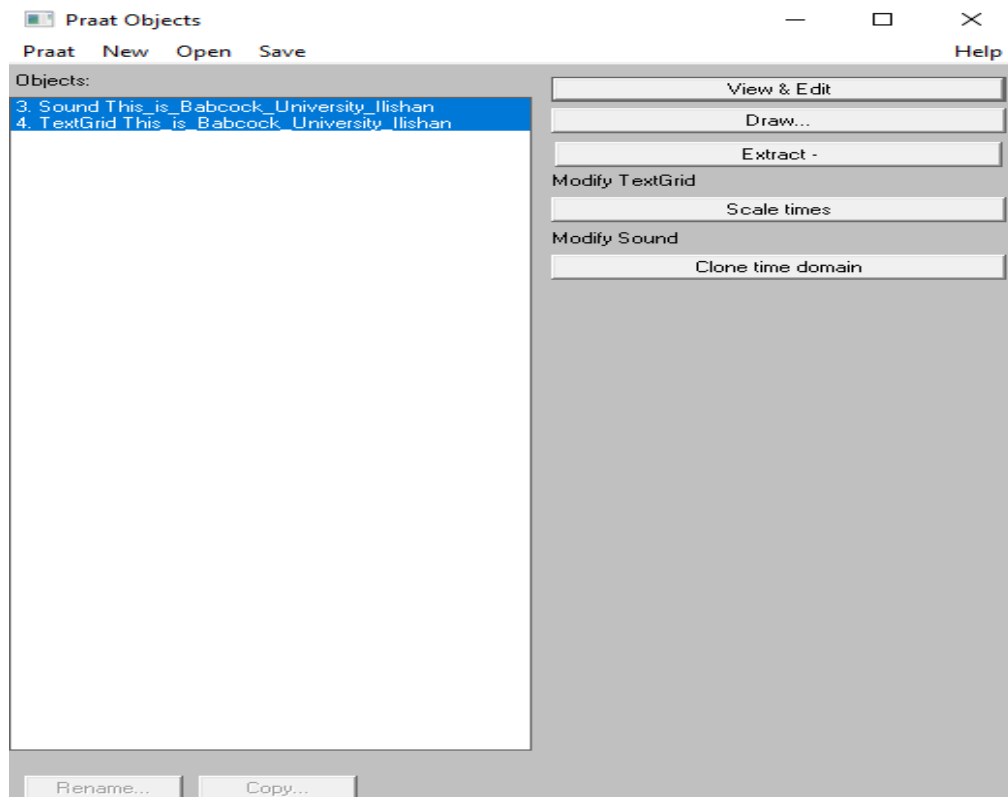
Picture 6: Display of PRAAT Objects Window

To begin to show the acoustic products of the recorded sound, we have to click on the *Draw Menu* at the left side. As soon as we do this, the PRAAT Picture window is filled by the acoustic picture shown below:
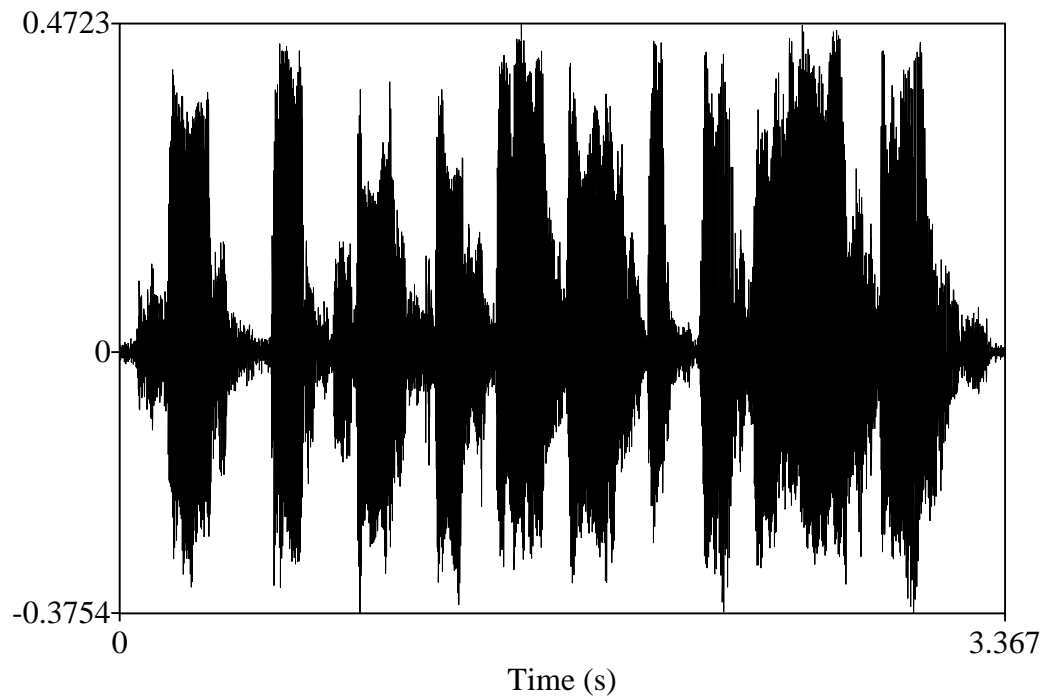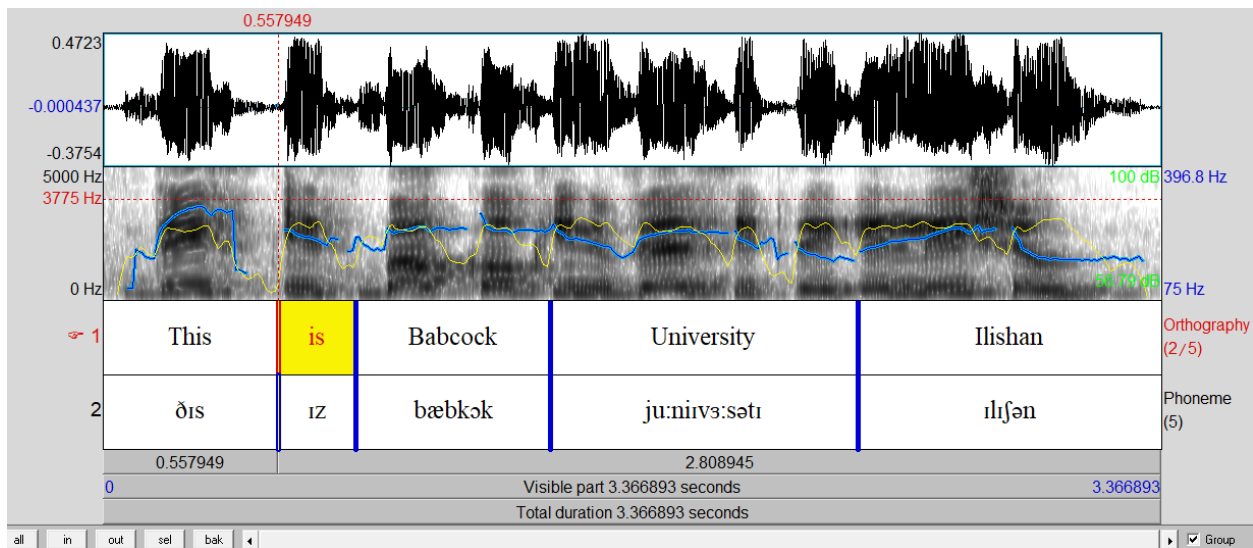

Picture 7: PRAAT's Oscillogram of *This is Babcock University, Ilishan*

But if you are also interested in filling the picture with additional information such as dividing into segments by syllables, annotating orthographically and phonemically like we did here, or any other operation on your mind, you will further click the *Edit Menu* on the right side of the PRAAT Objects, which gives you the opportunities by following the menu directions. This will open for you another picture that contains further acoustic information of your recorded sound showing the sounds' oscillogram in form of waves or what is called excursions. You will also be able to obtain the utterance' spectrogram, and if you like, display its pitch, intensity and formant by clicking on the top menus of this new window called TextGrid. In the segmentation processes, of importance are the directions under *Boundary*, which will enable you to divide up into smaller bits of an utterance such as into words, syllables or isolated alphabet, phone or phoneme. You will also find the *Tier Menu* very useful as it will assist you to add as many levels of annotation as you desire for your analysis. If you are able to achieve this, you will have been able to create a similar thing we have below which we have achieved by clicking on the File Menu of the TextGrid Window. This will direct you to a number of options one of which is *Draw visible sound and TextGrid.* This leads to Picture 8 that is displayed below.
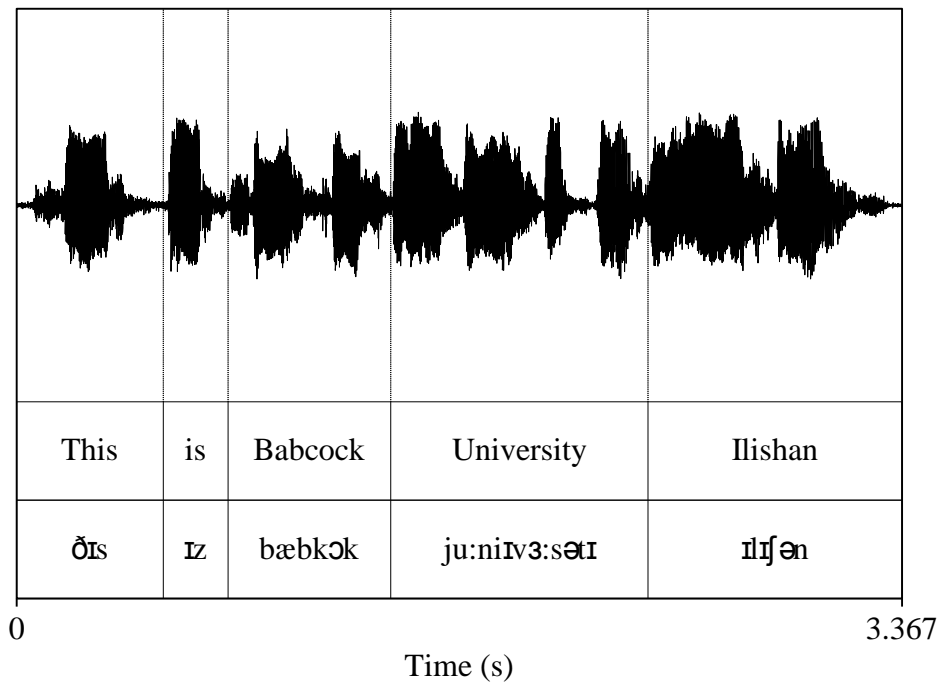
Picture 8: PRAAT's Oscillogram of *This is Babcock University, Ilishan*With Annotations

However, you may also want to display the TextGrid window exactly the way it is created, so as to be able to show additional information that is not captured in the drawing of Picture 8. This is achieved by simply clicking the Click **Open,** the third menuon PRAAT Objects, then **Readfrom** file, which will enable you import the already saved sound file. Because in an analysis of this type, you need to annotate the sound segments of the utterance, the next step is todraw down the **Annotation menu** on the PRAAT Objects Window in order to click **TextGrid,** which will allow for the annotation, and another line joins the imported sound line. The final stage to commence the annotation is to highlight these two lines, go back to the PRAAT Objects Window and click the **View & Edit** menu. From this point, the menus on the newly opened window will assist in the annotation processes, the help menu on the page is also definitely of immense assistance. The successful engagement of the described processes will give birth to something like Picture 9 presented below:

Picture 9: Acoustic Dump of *This is Babcock University, Ilishan* Displaying Oscillogram, Spectrogram and Annotations by Orthography and Phonemes

When all is done, the user will locate the **File** menu of the page and click the **Save TextGrid as text File**, then saves the picture for the future-use. To get a copy on a Windows document as we did in Picture 9, the user may then have to resort to what is called Acoustic Dump of the TextGrid, which can be obtained by a screen computer capture done by clicking on ctrl+Print Scan of your computer keyboard. The next operation to be performed is to open to the Window's Paint Artist program in the *Accessories* of the computer; when this is opened, TextGrid earlier print-scanned can then be pasted or dumped. You may employ the menus of Paint Artist to select the portion of the TextGrid desired. Following our own illustrative corpus, we have the acoustic dump of *This is Babcock University, Ilishan* in the Picture 9 above.

This is a gist of how PRAAT, as a computer-based technology, is operated; however, we hasten to add that there is a lot more to know if users would methodically follow the help file of the program offered by Paul and David. There, is information on Picture Window, Special Symbols, Phonetic Symbols, Text Styles, etc.

Summary

With the demonstration and explanation above, we have been able to introduce PRAAT as a computer-based tool that is unavoidable in language learning, especially in the class of phonetics and phonology. By this, we hope we have motivated the users enough to stimulate them to explore the greatness of the program. We have also been able to show what benefit the students and teachers stand to derive, for the engagement of the psychomotor domain. It tasks the students' practical involvement, healing any moment of dullness, thereby making the class fun. The dreary language class, especially, phonology, with its esoteric symbols and technical rules that often lead to rote rather than note learning dissolves into a class of happiness. Coupled with techno-maniac tendency of our students, nowadays, the digitised language laboratory will be a haven for our active students who desire explorations and innovations in the computers. PRAAT offers itself as a linguistic channel for this exploration into the abundant knowledge yet to be acquired in the analysis of speech sounds supported by scientific evidence. This, thereby, improves both the (English) language receptive and productive proficiencies within the general Computer-Assisted Language Learning linguistic ambiance.

References

Adedeji, O.A. (2010). *The development of modern information and communications technology*. Ibadan: Creative Educational Publications.

Akinjobi, A.A. (2012a). *A phonological investigation of vowel weakening and unstressed syllable obscuration in educated Yoruba English*. Germany: Lambert Publishing.

Akinjobi, A.A. (2012b). Academic competence and linguistic performance: English intonation tune assignment by some Nigerian English language postgraduate students, *JNESA, 15*(2), 1-12.

Akinjobi, A.A. (2013a). Viability of Social Network Sites as Access to the English Language Interactive Learning: Assessment of 'English Language Clinic Forum' on Facebook, *Journal of Education and Practice, 4*(1), 20-33.

Akinjobi A.A. (2013b). Non-enculturation sources of standard spoken English for non-native speakers: The Nigerian Example. *Lagos Review of English Studies LARES*, *17*(2), 1-13.

Allen, M. C. (2011). *Third-Year students' perceptions of the use of ICT at a teacher training College in Namibia*, Unpublished M, Phil Thesis submitted to the Department of Curriculum Studies, Stellenboach University, Namibia.

Bamgbose, A. (1979). The English language in Nigeria.In J. Spencer (Ed.), *The English language in West Africa* (pp. 35-48).London: Longman.

Banafa, F.H.H. (2004). *The impact of the internet and multimedia on pronunciation and oral communication of Arab college students learning English in the United States*.Ph.D. Thesis, New Mexico State University. Retrieved April 30, 2018 from https://www.learntechlib.org/p/122161/.

Banjo, A. (1976).The standardization of English in Nigeria.*West African Journal of Modern Languages, XV*(2), 123-127.

Banjo, A. (1995).On codifying Nigerian English. In A. Bamgbose, A. Banjo, & A. Thomas, (Eds.), *New Englishes*(pp. 133-159). Ibadan: Mosure.

Boersma, P. &Weenink, D. (2004).*PRAAT*.Department of Phonetic Sciences, University of Amsterdam, Netherlands.http://www.fon.hum.uva.nl/praat/

Brown, R. &Bellugi, U. (1972). Three processes in the child's acquisition syntax. In A. Cashdan& E. Grugeon (Eds.), *Language in education: A course book* (pp. 136-144). London: Routledge&Kagan Paul.

Brown, R. (1973). *A first language: The early stages*. Cambridge, Mass: Harvard University Press.

Capaldo, C., Flanagan, K., &Littrell, D. (2008).*Teacher interview*.Retrieved April 20, 2018 from http://philaliteracy.org/wp-content/uploads/2014/05/2013-What-are-the-different-types-of-technology-you-use-in-your-classroom.pdf

Chamberlain, M.E. (2013). *The scramble for Africa*.Oxfordshire.Routledge.

Chapelle, C.A. (1997). CALL in the year 2000: Still in search of research paradigms? *Language Learning and Technology*, 1, 19-43. Retrieved April 20 from http://llt.msu.edu/ vol1num/chapelle/ default.html

Chun, D.M. (1998). Signal analysis software for teaching discourse intonation. *Language Learning and Technology*, 2, 61-77, Retrieved April 20 from http://llt.msu.edu/vol2num1/ article4/index.html

Collins, R.O. (1969), (ed). *The partition of Africa: Illusion or necessity?* USA: John Wiley & Sons, Inc.

Dotimi, D.A. & Hamilton-Ekeke, J. T. (2013).Information and communication technology (ICT)-e-learning in Nigerian tertiary institutions.*The Librarian and Information Manager*, *6*(1), 44-59.

Ehsani, F. &Knodt, E. (1998). Speech technology in computer-aided learning: Strengths and limitations of a new CALL paradigm. *Language Learning and Technology,* 2, 45-60. Retrieved April 20 from http://llt.msu.edu/vol2num1/article3/index.html

Eskenazi, M. (1999).Using automatic speech processing for foreign language pronunciation tutoring: Some issues and a prototype. *Language Learning and Technology*, 2, 62-76. Retrieved April 20 from http://llt.msu.edu/vol2num2/article3/index.html

Ferrier, L. & Reid, L. (2000).Accent modification training in The InternetWay1.*Proceedings of InSTILL* (pp. 69-72). Dundee, Scotland.

Fry, D.B. (1979). *The physics of* speech. Cambridge: Cambridge University Press.

Gibbon, D. (1996). *Acoustics of spoken English*.An online resource material.Bielefeld University, Bielefeld, Germany.

Hincks, R. (2003).*Speech technologies for pronunciation feedback and evaluation.ReCALL, 15*(1), 3-20. © 2003 Cambridge University Press. DOI: 10.1017/S0958344003000 Printed in the United Kingdom.

Hismanoglua, M. &Hismanoglub, S. (2010). Language teachers' preferences of pronunciation teaching techniques: traditional or modern? *Procedia Social and Behavioral Sciences,* 2. 983-989. Retrieved April 23, 2018 fromhttps://www.sciencedirect.com

Ihezue, C. (2019). Oral English Usage of Teachers as Determinants of Spoken English among Students in Public Secondary Schools in **Ilishan**-Remo, Ogun State.An Unpublished B. A (Ed.) Project submitted to the Department of Education, Babcock University

Insup, T. (1976).*Introduction to psycholinguistics*. Cambridge: Holt Renehart&Winstow.

Johnson, K. (2003). *Acoustic and auditory phonetics*. Oxford and Cambridge: Blackwell.

Jolayemi, 'Demola. (1999). Language acquisition: Its implications for English students in second language contexts. In E. Adegbija (Ed.), *The English language and literature in English: An introductory handbook* (pp. 81-96). Ilorin: Department of Modern European Languages, University of Ilorin, Ilorin, Nigeria.

Jolayemi, 'Demola (2009). Overmilitarisation of the Nigerian polity: A socio-acoustic analysis of *Gbòzà*. In Dele Adeyanju(Ed.), *The sociolinguistics of English and Nigerian languages*, (pp. 223-237). Muenchen: Lincom Europa.

Jolayemi, 'Demola. (2006). *Stress pattern of Nigerian English: An empirical phonology approach*. Gottingen, Germany: CuvillierVerlag.

Jolayemi, 'Demola. (2008a). Acoustic analysis of tone and stress: An illustration with varieties of English spoken in Nigeria. In Wolf, Hans-Georg; Lothar Peter & Frank Polzenhagen (Eds.), *Focus on English: Linguistic structure, language variation and discursive use.Studies in honour of Peter Lucko*, (pp. 106-119). Leipzig: Universitaetsverlag.

Jolayemi, 'Demola. (2008b). The science and art of listening. In 'DemolaJolayemi&OlatundeAyodabo (Eds.), *Effective communication skills for higher education: The use of English* (pp. 53-67). Oyo: AjayiCrowther University.

Jolayemi, 'Demola (2008c). Acquisition of the speaking skills.In 'DemolaJolayemi&OlatundeAyodabo (Eds.), *Effective communication skills for higher education: The use of English,* (pp. 68-86). Oyo: AjayiCrowther University.

Jolayemi, 'Demola. (2013). Doing Phonetics by Computer: Introducing *PRAAT. English Language Teaching Today (ELTT), 10*(1), 9-18.

Jolayemi, 'Demola. (2014). Rhythm in TijanSallah's "Share": A Metrical Phonology Approach. In WumiRaji (Ed.), *Contemporary literature of Africa – Tijan M. Sallah and literary works of the Gambia* (pp. 73-100).Amherst, New York: Cambaria Press Inc.

Jolayemi, 'Demola. (2015).Anatomoacoustic evidence for obstruents and sonorants.In TundeOpebi, Josef Schmied, Tope Omoniyi&KofoAdedeji (Eds.), *Essays on language in societal transformation.A festschrift in honour of SegunAwonusi. REAL Studies 9*, (pp. 15-27). Gottingen, Germany: CuvillierVerlag.

Jolayemi, 'Demola. (2018) *ProCoach*. Rose-Medical Limited. Retrieved 7 May, 2018 from http://www.rose-medical.com/pronunciation-coach.html

Kachru, B.B. (1995). *Foreword*. In A. Bamgbose, A. Banjo, & A. Thomas, (Eds.), *New Englishes*(pp. 133-159). Ibadan: Mosure.

Ladefoged, P. (2001). *Vowels and consonants: An introduction to sounds of languages*. Oxford: Blackwell.

Ladefoged, P. & Johnson, K. (2011). (6th ed.). *A course in phonetics*. Boston: Wadsworth, Cengage.

Lee, S.T. (2008). *Teaching pronunciation of English using computer assisted learning software: An action research study in an Institute of Technology in Taiwan*. A Doctoral Thesis, School of Education, Faculty of Education, Australian Catholic University, Melbourne, Victoria, Australia.i-xviii, 1-219.

Liu, S., & Hung, P. (2016). Teaching Pronunciation with Computer Assisted Pronunciation Instruction in a Technological University. *Universal Journal of Educational Research, 4*(9), 1939-1943. Retrieved April, 20 from http://www.hrpub.org DOI: 10.13189/ujer.2016.040902

Mackenzie, J.M. (1983). *The partition of Africa 1880-1900 and European imperialism in the Nineteenth Century*. New York: Methuen & Co Ltd.

Mcneill, D. (1970). *The acquisition of language*. NY: Harper & Row.

Neri, A., Cucchiarini, C., &Strik, H. (2006). ASR-based corrective feedback on pronunciation: Does it really work? *Proceedings of International Conference on Spoken Language Processing 2006* (pp. 1982–1985). Pittsburgh, PA.

Neri, A., Cucchiarini, C., Strik, H. &Boves, D. (2002). The Pedagogy-Technology Interface in Computer Assisted Pronunciation Training. *Computer Assisted Language Learning,* 15, 441-467.

Odumuh, A.E. (1987). *Nigeria English*. Zaria: Ahmadu Bello University Press.

Ogunsanya, A. (2009). The emergence of English as a first language among the elite children in Lagos metropolis. In D. Adeyanju (Ed.), *The sociolinguistics of English and Nigeria languages*, (pp. 129-177). Muenchen: LINCOM Europa.

Oyinloye, C.A. (2007). Effects of Audio and Aural strategies on the teaching of English language in Secondary Schools in Ekiti State. In Ayo Dada (Ed.), *African Journal for Contemporary Issues in Education (CONTEMPOR)*, *1*(1 & 2) 59-63.

Oyinloye, C.A. (2010). *Two variants of audio-lingual methods as determinants of junior secondary school students' learning outcome in oral English in Ogun State*.An unpublished PhD Thesis, University of Ibadan, Ibadan, Nigeria.

Oyinloye, C.A. (2013). Technology and textual instructions as determinants of students' reading effectiveness in Nigerian Secondary Schools.*Contemporary Humanities,6*(1) 1-16.

Oyinloye, C.A. &Egbuna C.C. (2017). Influence of information and communication technology (ICT) use on teaching of and learning in Nigerian universities. *International Research Review (IRR), 3*(1), 1-9.

Pekanham, T. (1990).*Scramble for Africa: The white man's conquest of the dark Continent from 1876 to 1912*. United Kingdom: Random House.

Pi-hua, T. (2015). Computer-Assisted Pronunciation Learning in a Collaborative Context: A Case Study in Taiwan. *The Turkish Online of Journal of Educational Technology (TOFET), 14*(4), 1-13.

Rose Medical Solutions Limited. (2018). *Pronunciation coach.*http://www.rose-medical.com/

SANS. (2017). *Introducing a new pronunciation activity tool for language learners*. Retrieved April 30, 2018 from sansinc.com/introducing-new-pronunciation-activity-tool-language-learners/

Schmied, J.J. (1995). National standards and international corpus of English. In A. Bamgbose, A. Banjo, & A. Thomas, (Eds.), *New Englishes*(pp. 339-348). Ibadan: Mosure.

Shyamlee, S.D. (2012). Use of technology in English language teaching and learning: An analysis. *International Conference on Language, Medias and Culture IPEDR, 33,* 150-156.IACSIT Press, Singapore.

Steinberg, D.D. (1982). *Psycholinguistics*. London: Longman.

Technology for Pronunciation, (2014).Technology for Pronunciation.*English Teaching Professional,* 95, 1-5, November.

Thies, A. (2005). *Acoustic phonetics and PRAAT: Theoretical background.*A tutorial mimeograph.Department of Linguistics and Literature, University of Bielefeld, Bielefeld, Germany.

Wang, X. (2016).*Applying new technology to upgrade non-English speakers' English speaking skills*. MA Thesis in Teaching English as a Second Language field project proposal, University of San Francisco, San Francisco, United States of America. i-iv, 1-52. *Master's Projects, and Capstones*. 331. https://repository.usfca.edu/capstone/331

Weisser, M. (2001).*A corpus-based methodology for comparing and evaluating native and non-native speaker accents.*An unpublished doctoral dissertation, Department of Linguistics and Modern English Language.Lancaster University, Lancaster, United Kingdom.

Weinberger, S. (2015).*Speech accent archive*. George Mason University. Retrieved April, 24 from http://accent.gmu.edu

Wesseling, H.L. &Pomerans, A.J. (1996).*Divide and rule: The partition of Africa, 1880-1914*. Westport: CT. Praeger.

Websites
The International Dialects of English Archive (IDEA): www.dialectsarchive.com
The Speech Accent Archive: http://accent.gmu.edu
BBC Learning English: www.bbc.co.uk/worldservice/learningenglish/grammar/pron/
The Sounds of American English:www.uiowa.edu/~acadtech/phonetics/about.html#
https://www.sansinc.com/introducing-new-pronunciation-activity-tool-language-learners/
http://www.rose-medical.com/pronunciation-coach.html
http://hstrik.ruhosting.nl/wordpress/wp-content/uploads/2013/04/a99.pdf
https://app.speechace.co/placement/course/1

Also from Akinjobi (2013b, p. 6)
http://livemocha.com/blog/2013/03/26/turn-your-tv-on-and-support-your-language-learning/
http://www.youtube.com/watch?v=Rl4-4tUo2GE