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DEVELOPMENT OF ELECTRONIC LEARNING PLATFORM "PHONETIC LABELING FEATURES" (OLAF) MICROSOFT EXCEL 2013 BASED

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Abstract. Phoneme labeling is a method to define a phoneme features. Phoneme is the smallest meaningful unit of sound which classified by voiced/voiceless, place of articulation, and manner of articulation. To label a phoneme based on its classification correctly, students of English Education department who programmed Introduction to Linguistics got difficulty. Therefore, their understanding and score is under the passing grade. The objective of the research is to develop an electronic media to improve students who programmed Introduction to Linguistics course ability to master phoneme labeling. The electronic media platform is Microsoft Excel 2013. In developing the media, there are stages to build it, those are defining process, planning, building, testing, and disseminating. The research subject focuses on students of STKIP Al Hikmah year 2016/2017 who programmed Introduction to Linguistics course. The data collected are analyzed quantitatively. The result is an electronic learning media based on Microsoft Excel 2013 called OLAF that specifically developed to enhance students understanding in labeling English phonemes. Students understanding after using OLAF is significantly increasing. It is reflected through their errors in the post-test is significantly decreasing. Students' feedback after using OLAF is satisfied because OLAF drilled and motivate them to learn phoneme labeling easier because the can use OLAF in their mobile phone.
Keywords: Phonemes; labeling; electronic learning; electronic media; OLAF

A. INTRODUCTION

Linguistics science is a domain that could not be separated to students who are majoring in language education, literature, or pure language studies. The portion of linguistics science is vary based on how the curriculum is designed to achieve the learning outcome. The curriculum of English Education Department in STKIP Al Hikmah put Introduction to Linguistics as a language science program that is obligational to take for the second semester students in 2017.

One of linguistics science branch studied in Introduction to Linguistics course is phonology. Phonology is linguistics study of sound pattern (Yule, 2010). He added that phonology main subject is to learn sound system and pattern in a language. Those subjects tend to be mentally abstract than physical sound articulation. There is sub-topic discussion in Phonology called labeling phonemes. To apply label for a phoneme, students must understand phoneme's place of articulation (PoA), manner of articulation (MoA), and the voiced/voiceless (VoV).

In digital age, e-learning is a common term especially for students in university level. E-learning is a learning process using electronic devices. Along with technology growth, the definition of e-learning is adjusting to the latest technology introduced (R.M.F. Rennie, 2006). Nowadays, electronics devices is not only limited to hardware device but also software (Chatfield, 2012). Therefore, an alternative method to memorize phoneme label table (Chaer,

2011), (Sapir, 1921), (Victoria Fromkin, 2003), that serves information in detail about recognizing types of PoA, MoA, and VoV need to be rethought (Resnick, 2002).

Excel is a spreadsheet software developed by Microsoft that commonly used to process data. It has features that could potentially used to develop learning media to enhance students' understanding of PoA, MoA, and VoV. The learning media should be in-line to era that students faced today (Bowles, 2004). The era of information is very close and widely of open on their hands. It is literally on their hands because information could be accessed through smartphones, laptops, or personal computer.

The e-learning media called Phonetic Labeling Features (OLAF). It is a set of functions in Microsoft Excel that focused to drill students' knowledge in PoA, MoA, and VoV. The method used to drill is giving repetition questions in different game sessions.

The aims of developing e-learning media through Microsoft Excel are 1) to develop e-learning media based on popular software that all students possible to have it, 2) to correlate the students' achievements in labeling phoneme and using OLAF significantly increasing, 3) to know students' responses and feedback about OLAF.

B. MATERIALS AND METHOD

1. Electronic Learning Media

Electronic devices such as computer, laptop, smartphone, and internet is very popular today. Information and Communication ministry released that smartphone users on 2018 in Indonesia are more than 100 million active users (Kominfo, 2015). Compared to the total citizen of Indonesia which is around 200 million, the active user of smartphone nearly achieve 50%. This number showed that Indonesia citizen is very familiar to communication technology.

Learning media is an visual aids that used by teachers to help them giving clearer explanation (Arsyat, 1993; Usman, 2008). It is also overcome communication obstacles in learning process (Kustijono, 2003), a messenger and informant from speaker to the listener (Criticos, 1996; Santyasa, 2007).

Electronic Learning is a process to seek knowledge (practice and education) using electronic media, usually related to information technology which is used as a interaction aids in learning (Bowles, 2004). The process to seek knowledge means an effort to transform analog resource of learning process in school or campus into digital media (Purbo, 2002). The digital media is a learning system that using information technology to build knowledge, skill, and character. The characters built through information technology are to take benefit of computer, to use independent learning material, and to schedule learning time allotment (landasanteori.com, 2015). It is in-line with (Prasodjo, 2015) that the letter "e" in e-learning means a terminology of all learning activities using electronic devices and/or internet.

There are not many learning designs in e-learning (Robin Mason & Frank Rennie, 2006). They mentioned some learning designs in e-learning, there are: 1) Dialog model. It is using email, bulletin board, real-time chatting, group discussing and debate, and tutor and moderator. 2) Involvement. It is responding structured assignments, active in learning, cooperating and creating activities in small group. 3) Support. It is a periodic face-to-face contact, supervised online tutorials, peer support, suggestion from experts, feedback in every activities, good service, and the software. 4) Control. Meaning, students' attention in controlling the core activities and motivate their selves to accomplish it. Related to learning designs, students' characters outcomes are 1) ability to use electronic technology, 2) to take benefit of computer based work, 3) to use learning media independently, 4) to get familiar to check schedule, curriculum, learning progress, and administrative activities anytime (M. Suyanto, 2005), 5) to be able to manage simply, personally, quickly (Purbo, 2002).

In learning activity using e-learning, there are advantages and disadvantages compared to other methods (A. H. Suyanto, 2005). He mentioned the advantages are 1) e-moderating features teacher and students' communication through internet, 2) teacher and students could monitor the learning progress independently, 3) students could review their work anywhere

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since internet connection available, 4) information could easily get from internet, 5) relatively efficient. On the other hand, disadvantages is also mentioned, those are: 1) teacher – students interaction is decreasing, 2) the raise of business/commercial tendency, 3) learning process tend to be drilling than educating, 4) students who do not have high determination to study tend to fail.

Excel is a spreadsheet software built by Microsoft. It is an electronic spreadsheet that is used to process data such as lists, mathematical calculation, finance, statistical calculation, building chart, and analyze data (Etheridge, 2007). Formulas are the engine of Microsoft Excel. This software is intended to do aggregate reports, complicated calculations, smart logical engine, and others (Kusleika, 2014).

2. Voiced/Voiceless, Place of Articulation, and Manner of Articulation

In the process of sound production, vocal cords is supported by air stream from lung to vibrate it (Chaer, 2011). In the process there are sounds that vibrate and not vibrate the vocal chord, (Yule, 2010) explained Voiced and Voiceless term to classified that phenomena. Voiceless is a condition when the vocal cord spread apart and the air from the lung passes is. Voiced is a condition when air stream from the lung passes vocal cord and creating vibration.

Place of articulation is a specific location sound produced (Yule, 2010). The location is classified to bilabial, labiodentals, dentals, alveolars, alveoplatas, retroflex, palatas, velars, pharyngeal and glottals. (Odden, 2013; Yule, 2010).

Manner of articulation is the way they are pronounced just by listening to them (Marc, 2015; Yule, 2010). They classified it into stops, fricatives, affricates, nasals, liquids / approximant, glides, glottal stops, flaps / taps, trills.

3. Method

a. Subject

The subject of the research is Phonetic Labeling Features (OLAF) as an electronic learning media based on Microsoft Excel 2013.

The data collected from observation, pre-test, post-test, and questionnaire. The pre-test, post-test, and questionnaire conducted to all students of English Department of STKIP Al Hikmah who programmed Introduction to Linguistics course in 2017 as the tester of the software. There are 8 students and all of them are male.

b. Measurement

The researchers and consultants are eligible to observe the development of OLAF. The observation sheets are included in planning and building process. Those are mind mapping, synchronizing, installing data, management, and bug testing.

In pre-test and post-test there are twenty questions that focus on labeling phonemes. The questions between them are not the same but identical. All questions are closed answered questions. Each questions will be given score of 5.

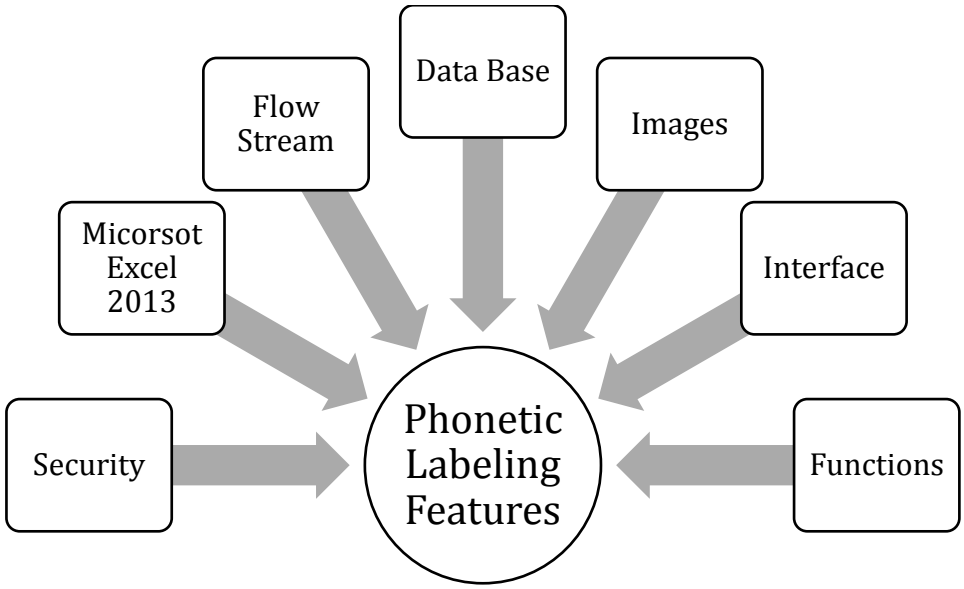
In questionnaire there are seven closed answer questions and one open answer question. The closed questions are scaled from 1 to 5 which scale 1 is completely disagree to 5 is completely agree.

C. RESULT & DISCUSSION

1. OLAF Prototype

The primordial design of OLAF is accommodating introduction of phoneme labeling. It is including voice/voiceless, place of articulation, and manner of articulation combined with phonetics transcription. Therefore, students know the label of the phonemes.

In building the system in order to make OLAF fully well functioned, there are step followed: 1) drawing the flow stream, 2) build the data base, 3) preparing pictures, 4) creating interface, 5) function management, 6) setting security.



Picture C.1. OLAF Prototype Content

Table C.1. Final Test Bug OLAF

Developer	Flow Stream	Data base	Images	Interface	Functions	Security	Total Bug	Status
1	2	0	0	0	3	1	6	Fixed
2	1	0	0	1	1	1	4	Fixed
3	3	1	0	0	1	0	5	Fixed
4	2	0	0	0	1	1	4	Fixed
5	4	0	0	1	1	0	6	Fixed

2. Students Pre-Test and Post-Test

The pre-test and post-test schedule was announced by the lecturers in the beginning of Phonology topics discussion in Introduction to Linguistics course. Which 15 days later is the Pre-test. The next 15 days after pre-test conducted is the post-test. In between the first 15 days, students were study independently through reading books and discussions. In second 15 days after pre-test, students drilled and practiced independently labeling phoneme through OLAF. The lecturers' role is as the facilitator of the class. They do not dominating the class through giving explanation or examples but they tend to enforce students to search the knowledge from library, internet, conducting forum discussions, and/or giving stimulus to achieve the answer. Furthermore, they gave guidance of mistakes and errors occurred. The pre-test and post-test are conducted through Google Form and the answer is downloaded to be scored. The pass grade score of the pre-test and post-test is 60.

Table C.2. Tests Score

Name	A	B	C	D	E	F	G	H	Description
Pre-Test	21	12	33	72	63	27	39	48	2 of 8 passed (25%)
Post-Test	66	59	69	96	87	72	69	75	7 of 8 passed (87.5%)

Correlation is an analysis technique which is included in measures of association (Burhanuddin, 2012). It is used to measure strength between two variables in a certain scale.

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To determine the correlation coefficient, this research used Pearson scale which is using -1 to 1, counted through its formula. (Dajan, 1986; Siegel, 1997; Supranto, 2008). The general reference of correlation criteria (Supranto, 2008):

Table C.3. Correlation Criteria

r	Correlation Criteria
0	No correlation
0 – 0.5	Weak correlation
0.5 – 0.8	Average correlation
0.8 – 1	Strong correlation
1	Perfect correlation

Table 4: Pre-Test and Post-Test Correlation

Name	X	Y	X^2	Y^2	XY
A	21	66	441	4356	1386
B	12	59	144	3481	708
C	33	69	1089	4761	2277
D	72	96	5184	9216	6219
E	63	87	3969	7569	5481
F	27	72	729	5148	1944
G	39	69	1521	4761	2691
H	48	75	2304	5625	3600
JUMLAH	315	593	15381	44953	24999
r			0.957		

X = Pre-Test Score
Y = Post-Test Score

The correlation coefficient result 0.957 means the correlation of post-test score after practicing using OLAF is high. It is proven that OLAF has significant positive effect of enhancing students understanding in labeling phoneme.

3. Discussion

This study found that Microsoft Excel 2013 which is a software to manage data and numbers could be used as interesting learning media that could be accessed by students easily because the software is very popular and compatible for most information technology devices such as computers, laptops, and smartphones. It is proven that all students has no complaint related to software used.

In building OLAF there are effort to make it come true. Meaning it is not no obstacles at all. Researcher found obstacles when building OLAF. Those are: 1) It needs average to high specification computer or laptop to run debugging process fast. Even though it is "just" Excel, it could sometime hang because it is charged of your pc processor and RAM. We recommend minimum specification of computer or laptop used at least using Intel Dual Core processor, 2 GB of RAM, and 512 of storage. Another way is to shut down all applications that are not necessary to open for reducing processor and RAM work. 2) to keep enrich and read Excel related book or forums in order to improve the knowledge using formula or macro in Microsoft Excel 2013. 3) Consultant is one important aspect in OLAF building. They could help and improve the quality of OLAF. It is recommended that agreeing the schedule to meet consultant is set in the beginning of the research project. Related to schedule, there are, usually, some cancelation of meeting, to face this problem contacting consultant periodically and make a flexible schedule is advantageous.

There are three phase of testing in OLAF, in every test OLAF is consulted to the consultants. Most of the consultation result is related to the flow stream of the logical work in OLAF. Flow stream is sets of functions to command OLAF does a certain work. For instance,

consultant suggested of giving minus score to create competition atmosphere. If the user tried to answer the questions in OLAF, there are three possibilities in giving score. First if the answer is true, the system will add score 10. If the answer is false, the system will add score -5. If there is no answer, the system will add score 0. Another suggestion by consultant is the enrichment of question bank and its picking system. OLAF chose the questions randomly, it makes in every trial the students served different set of questions.

Students' enthusiasm is reflected in the answer questionnaire. Students agree that OLAF could help them memorize and understand phoneme labels. The process of understanding it through repetition sets of questions served to students. The repetition given is not the questions but based on the same label.

Students' feedback related to OLAF interface seems to "computerized". It is still far from friendly-look for students who use this media for their learning media. They suggested that colors used should be more interesting and calm. Another suggestion is OLAF should be developed like a game based learning media and a discussion room available in it. On the other hand, some students feels that OLAF is complicated to use. It needs simplification on choosing answer section. Another comment related to OLAF used in Android operating system is the font and button are too small for smartphones.

D. CONCLUSION

The goals of this research project are fully accomplished. The first goal is to build e-learning media based on a software that could be used in various information technology devices such as computers, laptops, and smartphones. OLAF fulfills that goal that it could be used in computers and laptops which use Windows operating system and smartphones which use Android operating system. The second goal is to prove a hypotheses that students' understanding in labeling phoneme is significantly increasing after using OLAF as an e-learning media that could be conducted everywhere. The hypotheses is proven through the post-test scores of students who program Introduction to Linguistics course in labeling phonemes. The third goal is to get feedback from OLAF users which the result is OLAF is accepted by them but need further development to make users more convenience to use it.

Through this research, further research could be conducted to enhancing OLAF performance in interface sector. Further development of OLAF could be proposed to readjust OLAF into a game based e-learning media that support discussion features with a lot of users in the same time.

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