



Journal of Education, Teaching, and Learning is licensed under
A [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

ANDROID-BASED APPLICATION OF SPEECH TO TEXT AS A STRATEGY TO IMPROVE STUDENTS' WRITING COMPETENCE: A CASE STUDY IN PUSTAKA RUMAH ALOY WRITING TRAINING COMMUNITY IN PONTIANAK, INDONESIA

Chairil Effendy¹⁾, Dedy Ari Asfar²⁾, Syarifah Lubna³⁾, BinarKurniasari Febrianti⁴⁾, Riani⁵⁾

¹⁾Universitas Tanjungpura, Pontianak, Indonesia

E-mail: chairil.effendy@fkip.untan.ac.id

²⁾Badan Riset dan Inovasi Nasional, Jakarta, Indonesia

E-mail: dedy018@brin.go.id

³⁾Badan Riset dan Inovasi Nasional, Jakarta, Indonesia,

E-mail: syarifah.lubna@brin.go.id

⁴⁾Badan Riset dan Inovasi Nasional, Jakarta, Indonesia,

E-mail: bina003@brin.go.id

⁵⁾Badan Riset dan Inovasi Nasional, Jakarta, Indonesia,

E-mail: rian017@brin.go.id

Abstract. This paper describes strategy learning for stories writing learning by applying an android-based application of speech to text. This application media has not been used optimally in text-based learning in Indonesia. Data analysis applied a qualitative approach without using statistical calculations. Data analysis was conducted through three stages that are: reducing data, presenting data, and drawing conclusions. As a result, the writing strategy applying the android based application of speech to text was proven and able to improve the story writing skills of junior high school students in the writing training community named Pustaka Rumah Aloy in Pontianak, Indonesia. The application of the speech to text showed better results on the students' ability to write stories and the writing class became more fun and enjoyable.

Keywords: strategy; speech to text; android, writing

I. INTRODUCTION

The development of technology and information based on android has an effect on the ease of obtaining information and knowledge. Anyone can use android for learning purpose. In fact, the use of android technology in learning Indonesian can improve students' abilities, for example using android-based speech to text technology for writing skills.

In language there are four skills that must be mastered, namely listening, speaking, reading, and writing. Writing skills for students are still considered a frightening and troublesome specter compared to other skills. Writing skills require students to be proficient in assembling words, sentences, paragraphs, and using good and correct spelling.

In addition to these factors, the low ability to write texts is also influenced by teacher factors and supporting facilities. Teachers still use less attractive learning models, such as lectures and assignments. This makes students more passive, namely listening to explanations from the teacher, learning is

still teacher-centered, while students are only passive participants. Students are not introduced to learning strategies that can motivate them to think creatively.

One way to increase student interest in learning to write that is easy and fun is to use android-based speech to text media. Speech to text is a technology that can convert voice data into text data. This allows a computer or smart phone device to understand human language through voice commands so that it can convert the voice into writing.

Speech to text is a technology that allows a device or computer to receive input in the form of spoken words and then translate it into data that is understood by the computer (Herlim, 2002). Input in the form of voice can be converted into text that can be read. The sound received by the computer/device is then matched with a certain pattern so that the sound can be recognized as text. The resulting writing or text can then be processed by a computer for use in other needs. This technology also allows computers/devices to

communicate with humans using natural language (Suryadharma, K., Budiman, G., & Irawan, 2014).

Hotta (2011) in his research proposed and tried to do speech to text on homonym words in Japanese speech. This study took the meaning of Japanese vocabulary from the same vocabulary, such as: "hashi" which means "chop-sticks" and "hashi" which means "bridge".

Areni, I. S., & Bustamin (2017) in their research proposed and tried to do speech to text on homophone words in Indonesian speech. This study took the meaning of Indonesian vocabulary on vocabulary that has the same pronunciation sound. The data used were taken from six sources consisting of three men and three women.

Chamidy (2016) in his research proposed and tried to develop speech to text for speaking Arabic vocabulary based on different dialects. This research was to match the voice with the Arabic text contained in the Qur'an. The data used were 3000 voice samples with 150 voice samples obtained from five native Indonesian speakers who are not very fluent in Arabic.

Deng, L. et al (2013) in his research proposed and tried to perform speech analysis on Microsoft using deep learning. This research was conducted as an improvement on previous speech research. Speech research at Microsoft previously used the Hidden Markov Model with Gaussian Mixture Emissions (GMM-HMM) method, which was then updated using the Deep Neural Network (DNN) method or better known as deep learning. The data used uses some voice data from several languages, such as French, German, Spanish, and Italian. Based on these experiments, the error obtained is lower than before. In the experiment using GMM-HMM, an error of 23% was obtained, while using DNN it decreased to 13%.

Moreover, Dahl, G. E., Yu, D., Deng, L., & Acero, (2012) in his research proposed and tried to perform speech analysis on large vocabulary speech recognition (LVSR) using the Context Dependent-Deep Neural Network-Hidden Markov Model (CD-DNN-HMM). This research was conducted as a comparison to the Deep Neural Network-Hidden Markov Model (DNN-HMM) method that has been done previously. In this study also compared the computations performed on the two methods. The resulting accuracy in this experiment increased from 5.8% on DNN-HMM to 9.2% and the error given decreased from 23.3% to 16.0%.

Very relevant research regarding student learning in the classroom using speech to text has been carried out by Shadiey, Rustam et al (2014). The results of this study indicate that statistical analysis shows speech to text is useful for learning and can improve student achievement. The results also reported that speech to text is useful for following the speech of teachers or peers when they cannot hear clearly. Students then make recordings using speech to text so as to produce notes or writings that can be studied later.

Based on the results of research regarding speech to text, it can be concluded that this application is also useful as a strategy to improve students' writing skills. This application can be an innovation in education, especially in teaching writing skills by implementing the adage of journalists in

writing features, namely "Write as you speak." In fact, this speech to text application is very easy to install on student devices.

Isn't it in the current era of the industrial revolution 4.0 that students are more likely to use gadgets to communicate in cyberspace? By looking at this fact, gadgets are actually an opportunity and a challenge for teachers in Indonesia in using smart phones as something that students really like. Thus, the speech to text media in android-based devices must be used to improve students' ability to write stories in Indonesian subjects.

Speech to text media is an effort to improve writing skills. This media has not been used in text-based Indonesian learning in schools. Some writings related to speech to text are mostly done for the development of this application in the field of information technology with various languages, but not as a medium for learning retelling skills in Indonesian subjects.

There is an adage in writing journalistic features that says, "Write as you speak." The meaning is, writing and constructing a written narrative is the same as when speaking (see (Djuraid, 2006) and (Nasir, 2010)). Thus, this paper aims to describe the use of an Android-based Speech to text application as a strategy in learning to write stories. It is hoped that this paper can be a model for teachers in teaching writing lessons by speaking/telling stories using the speech to text application.

II. METHODOLOGY

This study applies a qualitative approach. The use of a qualitative approach will produce verbal and nonverbal data. Verbal and nonverbal data obtained from the subject and/or behavior observed in natural situations. Verbal data consists of the results of interviews, observations, student speech, the process and results of learning to write stories with speech to text applications. Meanwhile, nonverbal data is in the form of photos in learning activities to write stories using speech to text strategies.

The data of this study were obtained from junior high school students and observed behavior during writing training in the Pustaka Rumah Aloy writing training community. The research data was collected at the secretariat of the Pustaka Rumah Aloy Writing Training Community Center in Pontianak, Indonesia. The research data were taken from two different classes for one month in November 2021. The first class implemented a writing strategy using speech to text applications and the second class without using speech to text applications. Data were collected by researchers through observations when mentors (teachers) as research partners carried out learning using speech to text strategies. The data collected naturally according to the reality in the field.

Data analysis used a qualitative approach, without using statistical calculations. After that, the data results are interpreted, validated, checked for validity, and described. In their activities, researchers are directly involved in every stage with mentors as partners in the field. These stages start from planning, implementing, observing, and reflecting.

Data analysis was conducted through three stages, namely reducing data, presenting data, and drawing conclusions. Data reduction was done by recording, interpreting, and selecting (categorizing) research data related to the focus of the problem. Presentation of data by providing an overview that leads to obtaining answers to research problems. The presentation of the data was grouped based on the research focus. Drawing conclusions described the results of research as a whole about something that was being researched as it is. Researchers interpreted the data to produce findings. The research data were analyzed qualitatively. The validity of the data was done by triangulation (observations, interviews, and documentation). In order to achieve data reliability, discussions were held between researchers and the teachers involved. The validity of the data obtained at the time of planning, process, and evaluation results. The success criteria related to the ability to write stories (content, organization, and linguistic aspects) were based on the results of learning to write stories using the speech to text strategy. Meanwhile, in terms of products, students were said to be able to write stories, if they manage to collect stories that had been developed and edited by students.

III. DISCUSSION AND RESULTS

A. *The Problems of Writing Lessons for Students*

Learning to write is generally regarded as something that is less fun and scary for students. This can also be caused by ineffective teaching methods and a lack of correct and enjoyable writing practices. Therefore, in order to make learning more meaningful, teachers can change the learning media used. For example, learning to write in the classroom must use appropriate media to create enjoyment for students.

According to Abidin (2013) the low ability of Indonesian students in writing is caused by the following factors. First is the low quality of teachers in teaching students to have better skill in writing. Second is the teacher's lack of knowledge in terms of providing various appropriate writing strategies. Third is the use of inappropriate writing strategies or approaches. Fourth, some teachers still use thinking, writing, and control patterns and learning to write in schools is more likely to teach theory about writing, not how to actually write.

According to Subandiyah (2015) learning to write in schools usually uses the Jigsaw model, Write Around, the TPS (Think Pairs Share) learning model. Among these models, the average teacher chooses the TPS model because it prioritizes the power of "reflection" or contemplation of students in thinking and writing down what they are contemplating on a series of problems, questions, and answers to the problems at hand. Good writing products can be produced if students are able to appreciate and reflect on a problem in depth.

Furthermore, with the TPS (Think Pairs Share) model in learning, it is hoped that intuition will emerge in them and begin to put it in written form. However, this TPS model is very good for students who are already familiar with high order thinking skills (HOTS) thinking. In fact, according to Harsiati (2018) the literacy skills of Indonesian students are

still very low and have not been trained with high order thinking skills (HOTS). This is due to the standard content of Indonesian junior high school subjects that have not provided a large portion of high-level reading skills in various contexts. In fact, before being good in writing, students need to read a lot of books and be able to understand the content of reading that is oriented towards high order thinking skills (HOTS) in order to produce good words, sentences, and paragraphs in writing.

In the context of improving students' writing skills, a very easy and fun strategy is to apply the "write as you speak" model based on the speech to text application. This is applied because students like to talk and tell stories with their friends. Thus, writing lessons must start from a learning strategy that is fun and easy to implement. That is, the model of storytelling and speaking has been practiced daily by students in interacting with friends at school and family at home.

B. *Writing Learning Strategies Using Speech to Text*

Learning strategies are patterns of teaching actions that function to achieve certain learning objectives. In fact, there are still many teachers who have difficulty in achieving the target in teaching students' writing skills. Therefore, it is necessary to select and master a truly effective learning strategy. The right strategy in learning to write will have a major contribution to the development of student literacy. Thus, the strategy chosen and used is to make speech to text applications as an effort to improve students' writing skills.

Learning to write stories is very suitable for using speech to text applications because writing stories only reproduces narratives that are already in the minds and hearts of students. This is easy to do because the genre of story writing consists of four things (personal recount, factual recount, imaginative recount, and procedural recount). This is in line with what is explained by Kosasih (2014) that there are four types of retelling texts. First is a personal recount text. This text tells of events that the author has experienced directly, for example, travel stories, events during vacations. Second is a factual recount, such as traffic accidents, natural events, and the life story of a character. Third is imaginative recount, such as fairy tales, legends, and other folk tales. Fourth is procedural recount. This kind of text is usually used in court in order to clarify cases or evidence in a case.

Writing these narratives can take advantage of the speech to text application by students in class. The stages in learning to write using the speech to text application are as follows.

1) *Speech to Text Application Introduction and Installation Stage*

This recount text is very easy to teach by using speech to text media. Students can be asked to appear directly in front of the class to tell stories as well as write with speech to text media. Moreover, the retelling text has a sequential text structure starting with orientation, chronology of important events, and reorientation so that it is very suitable to use speech to text media.

First, look for the speech to text application in the play store. Second, install speech to text from the play store on the android device. Third, open the speech to text application when it will be used. Fourth, allow the speech to text application to record. Fifth, make sure the 'settings' setting is in Indonesian. Sixth, switch voice to writing (record) voice by pressing the mike button (voice speaker) so that the mike changes color to red. This means that your voice is ready to be transferred to written form in the speech to text application. Make sure punctuation instructions are mentioned at the end of the sentence, such as mentions (period, question mark, exclamation mark, etc.). Seventh, when you have finished telling the story, stop recording your voice by pressing the mike button so that the mike turns green. The finished writing can be edited directly in the speech to text application. Eighth, the sound results that have been in the form of writing can be shared on (WhatsApp, Classroom, E-mail, Facebook, etc.). Pay attention to the following image procedure.

Search Apps on Playstore



Fig.1 Search Apps on Playstore

Install App



Fig. 2 Install App

Open the App



Fig. 3 Open the App

Allow speech to text Recording

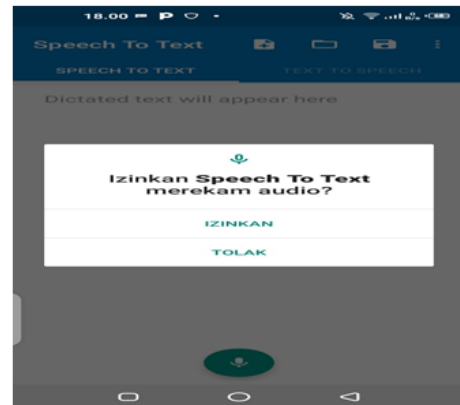


Fig. 4 Allow speech to text recording

Set Target Language



Fig. 5 Set target language

Voice to Writing (press mic button to record)



Fig. 6 Voice to Writing (press mike button to record)

The results of the voiceover (recording) can be edited (press the mic button)



Fig. 7 The results of the voiceover (recording) can be edited (press the mike button)

Share Post Results on (Whatsapp, Classroom, Email, Facebook, etc.)

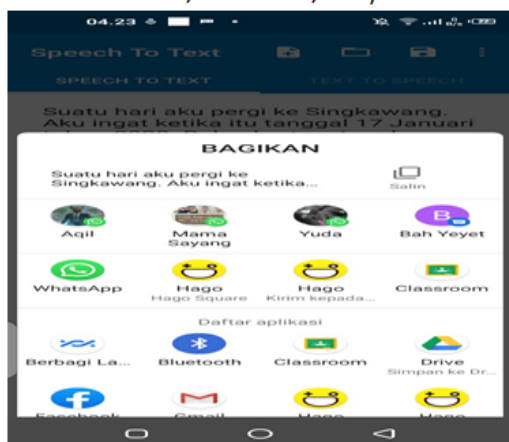


Fig. 8 Share post results on Whatsapp, Classroom, email, Facebook, etc

2) Stage of Organizing Writing through the Speech to Text Application in Pustaka Rumah Aloy Writing Training Community

At the stage of organizing writing in class, it is carried out through six stages of activities. The six stages of the activity, namely (1) students are asked to appear in front of the class, (2) students open the speech to text application on the smart phone and press the record button, (3) start the story in the form of story orientation to be delivered, (4) students tell the chronology of important events, (5) students convey a reorientation of the story, and (6) after finishing telling, students can share the results of the speech to text earlier to the social media group of the class that has been determined (WhatsApp, Facebook, etc.).

Based on the results of the field notes, on average, students could tell the recount text that they had experienced well. Students shared their personal experiences in a fun way. All students enjoyed learning models using speech to text applications. Although there were some students who stuttered in telling stories, but these students could finish the story well. Some students seemed to smile and sometimes laughed at the stories of students who were appearing in front of the class. Based on the process assessment, student activities at the stage of organizing essays were categorized as good. This means that creative students developed narratives with a storytelling style according to the personality of each student.

C. Stage of Developing and Editing Writing in Pustaka Rumah Aloy Writing Training Community

At this stage there were two activities carried out by students. First, developing writing by adding data or narratives that were lacking into stories that had been made based on speech to text. Second was editing the speech to text that had been developed in accordance with the rules of spelling, diction, sentence structure, and paragraph layout.

At the stage of developing writing, students wrote stories based on the narratives that they had compiled when telling stories while improving the results of writing to be more perfect. At the editing stage, students made edits and improvements to their essays. Students edited with three activities, namely self-editing, peer editing, and clarification. Editing was carried out in three aspects, namely content editing, text organization editing, and language editing.

In its implementation, at the stage of developing writing and editing with the speech to text strategy, several advantages were obtained. The advantages were as follows. 1) Students were able to tell stories (communicate) as well as write stories with effective choice of words, sentences, and paragraphs. The narrative presented was coherent in accordance with the substance of the content of a recount text. 2) Students were able to carry out the editing process on the substance of content, organization, and language. The ability of students to edit the substance of the content can be seen from the completeness and composition of the recount text

(orientation, chronology of important events, and reorientation). Next, students' ability to edit linguistic aspects could be seen from diction, sentences, paragraphs, grammar, spelling, and punctuation.

IV. CONCLUSIONS

In teaching writing as well as speaking a teacher is directed to improve students' abilities so that they can communicate properly and correctly, both spoken and writing. One of the strategies is that teachers can use speech to text media as an alternative in learning to write and one-way oral communication.

Writing strategies using speech to text applications have been proven to improve story writing skills for junior high school level students in Pustaka Rumah Aloy writing training community in Pontianak, Indonesia. The application of the speech to text strategy has been proven to have a better effect on the results of students' ability to write stories and create a class that is more fun and not boring.

This android-based speech to text media can increase students' interest in learning to speak and write at the same time. This media can also be used in text-based learning of Indonesian at school. Especially as an effort to improve the ability to write stories for junior high school students.

The adage "Write as you speak" by using speech to text media is proven to be good in classroom learning. Students can be asked to appear directly in front to tell stories as well as write with speech to text media. Thus, the Android-based Speech to text media becomes a strategy in learning that can invite students to write by speaking / telling stories.

REFERENCES

- Abidin, Y. (2013). *Pembelajaran Bahasa Berbasis Pendidikan Karakter*. Refika Aditama.
- Areni, I. S., & Bustamin, A. (2017). Improvement in Speech to Text for Bahasa Indonesia Through Homophone Impairment Training. *電腦學刊*, 28(5), 1–10.
- Chamidy, T. (2016). Metode Mel Frequency Cepstral Coeffisients (MFCC) pada klasifikasi Hidden Markov Model (HMM) untuk Kata Arabic pada Penutur Indonesia. *Matics*, 8(1), 36–39.
- Dahl, G. E., Yu, D., Deng, L., & Acero, A. (2012). Context-dependent pre-trained deep neural networks for large-vocabulary speech recognition. *IEEE Transactions on Audio, Speech, and Language Processing*, 20(1), 30–42.
- Deng, L. et al. (2013). Recent advances in deep learning for speech research at Microsoft. *In ICASSP*, 26, 64.
- Djuraid, H. N. (2006). *Panduan Menulis Berita*. UMM Press.
- Harsiati, T. (2018). Karakteristik Soal Literasi Membaca pada Program Pisa. *LITERA: Jurnal Penelitian Bahasa, Sastra, Dan Pengajarannya*, 17(1), 90–106. <https://doi.org/10.21831/ltr.v17i1.19048>.
- Herlim, L. (2002). *Pengenalan Kata dengan Menggunakan Fuzzy Logic untuk Menggerakkan Robot Mobil (PhD*

- Thesis)*. Petra Christian University.
- Hotta, H. (2011). Japanese Speaker-Independent Homonyms Speech Recognition. *Procedia-Social and Behavioral Sciences*, 27, 306–313.
- Kosasih, E. (2014). *Cerdas Berbahasa Indonesia (untuk SMA/MA Kelas XI)*. Erlangga.
- Nasir, Z. (2010). *Menulis untuk Dibaca: Feature & Kolom*. Yayasan Pustaka Obor Indonesia.
- Shadiev, R. et al. (2014). Investigating Applications of Speech-to-Text Recognition to Assist Learning in Online and Traditional Classrooms. *International Journal of Humanities and Arts Computing*, 8, 179–189. <https://doi.org/10.3366/ijhac.2014.0106>
- Subandiyah, H. (2015). Pembelajaran Literasi dalam Mata Pelajaran Bahasa Indonesia. *Paramasastra: Jurnal Ilmiah Bahasa Sastra Dan Pembelajarannya*, 2(1), 111–123. <https://doi.org/https://doi.org/10.26740/parama.v2n1.p%25p>
- Suryadharma, K., Budiman, G., & Irawan, B. (2014). Perancangan Aplikasi Speech To Text Bahasa Inggris Ke Bahasa Bali Menggunakan Pocketsphinx Berbasis Android. *EProceedings of Engineering*, 1(1).