

Enhancing Vocational Students' English Speaking Skills through integrating Augmented Reality (AR) and Picture Word Inductive Models (PWIM): A Comparative Study

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Abstract. Competency in speaking English becomes necessity in this digital and global era particularly for vocational students major in graphic design. This study contributes a comparative overview of using augmented reality (AR) and picture word inductive model (PWIM) to the traditional teaching method as two different methods to upgrade students ability in conversational setting. This research also looks for the students' perspective about the process of delivering materials they have undergone in the classroom. The method applied in this research is mixed method with quantitative and qualitative technique. The quantitative data the pre-test and post-test scores while the qualitative is gained from the interview done by the researchers. There are two groups in this study, one group is taught by using AR-PWIM and the second is trained by using conventional teaching method. Both of the groups were given pre-test and post-test to know their initial score. Subsequently, the teaching process is done with the same learning content. The result of this research shows that the students who studying using the AR-PWIM scored higher score in post-test and reported positive engagement in learning. When it comes to the experiential results, both groups feel that the learning materials are moderately adequate to enhance their speaking skill.

Keywords: Augmented Reality, English, Speaking, Picture Word Inductive Model

1 Introduction

Since the increase of interrelated and digital tools, the role of English as a global lingua franca cannot be ignored and it now takes bigger part in the interconnected world [1], [2]. There is no doubt that it is not just as an academic requirement, but it is also as a tool to communicate across countries. For the graphic design students, the ability to speak and to communicate by using English is two essentials aspects that they should posses to work in industrial field professionally [3]. Unfortunately, the conventional approaches to language teaching frequently do not meet the requirements for creating immersive, captivating, and interactive experiences essential for developing fluency in spoken English. This many-sided challenges the educators to create a new solution and this study looks into the plausibility of integrating augmented reality (AR) with Picture Word Inductive Model (PWIM).

Most of the work in artwork requires ability to communicate in English. This field includes several areas such as graphic design, web development, animation, and video productions [4]. For that, English is required to facilitate the communication and interaction. The professionals in design will have possibility to meet clients from different countries where speaking English is conducted among them [5]. For that reason, mastering English is necessary to have and in order to get a better teaching experience, interactive and varied method students is an obligatory for vocational students. On the other hand, the way English

is taught in the class is less interactive as the media used is limited to printed book only. Nowadays, alteration from conventional to technological method in education is needed to give various teaching method and learning style. Unfortunately, some educators still put the traditional method on top of their list. Learning styles, however, also play big roles on how the students understand the lessons. [6] It is one of the reasons why some teachers and students still use the conventional method in their classroom. Albeit the fact that several people regard this as a teacher-centered, there is a positive attitude of it that makes this as one of the methods that is still currently exist. Nonetheless, one method to provide interactive media is augmented reality (AR). It has taken place in several aspects of human lives include in education. It is also stated as technological progress which uniting objects in virtual world with the one in reality [7]. Moreover, it has been widely used in some areas such as education, health and business. Regarding the advantage of using AR in education is notable.

The medium has huge impact on supporting educators in reconstructing and representing the real objects which impossible to see with naked eye. [8]. This current study tries to see the combination of AR and picture to enhance the fluency in spoken English for vocational students. The use of picture to enrich students' ability in writing has been long used by some educators. However, little is known about its effectiveness to enhance speaking skills. Picture Word Inductive Model (PWIM) is one of strategy used to enrich the process of transferring the lessons. This strategy is introduced in 1999 by Calhoun which using familiar pictures and objects to induce words from the pupils listening and speaking vocabularies. As part of class action strategy, This has proved to improve the students' writing ability by showing pictures containing familiar objects to fully help learners into exploration about new vocabularies, adding words to their writing, and ultimately developing the title, sentence, and paragraphs about their picture [9] This method has proved in improving the students' ability compared to those who did not get the instructions. [10], [11].

There are several steps conducted before this technique applied in the classroom. The educators choose the pictures then asking the students what kind of visual they see. Next, the picture is labelled by marking the line from the identified object or area. Subsequently, the students say the words aloud before being asked to find many words to develop their ideas [12] While telling the words, they also may add other relevant-words to the pictures they have seen. Later, the instructor lead the students to make a title to the picture word chart and ask them to make sentences.

2 Methodology/Materials

This study elucidates how to improve speaking skill of vocational students by involving Augmented Reality (AR) and Picture Word Inductive Model (PWIM). There are five methods employed in doing this study from selecting participants, planning materials, acting (teaching), observing and reviewing the results [13]. Thirty four students from graphic design of Politeknik Negeri Media Kreatif PSDKU Medan are involved in this research. They were chosen based on their participation in the major mentioned before. The selection is done to confirm that the participants are in the same English class but with different English skills.

Once the selection is done, the participants were diverted into two different groups. Each group consists of seventeen students with the first group is trained with conventional method whereas another group is taught by using the AR-PWIM method. The team who teach both of the groups is the same. In collecting data, both quantitative and qualitative methods were employed to collect various phase of language learning and involvement. [14]

- a. The researchers do pretest before the first meeting. It is done to know the extent of participants score in speaking as well as their vocabulary background knowledge. There are ten questions given in this initial phase and just done once for both groups. While doing pretest, the team used field notes to record important responses and activities that are required to get the quantitative data.
- b. Interview. Both of groups were interviewed in order to get the information about their involvement, motivation and fulfillment with the corresponding treatments and technologies in learning English. The result from this is the qualitative data that describes how the participants' opinions and feelings toward the training they experienced.
- c. Classroom observation. This stage is conducted to ensure the treatment done well as what have been planned before. In both groups, observers took notes on any particular challenges that the participants encounter during the treatment.

The research intercessions consisted of two different teaching methods.

- a. Conventional teaching method. This method has several characteristics [15], [16]. The students and lecturers are in the same place with major role is from the lecturers. This teacher-centered method has been used for many years. It usually uses the printed literatures with papers, pen and teacher delivered the materials with conventional platforms.
- b. Trained by Augmented Reality (AR) and Picture Word Inductive Model (PWIM). The group was taught by using the AR-PWIM method. It has ten units where each unit is represented by pictures. These combinations involve images, audio and words. Students were motivated to listen attentively to the audio once they scanned the picture. This project-based instruction allowed the participants to integrate their background knowledge with the pictures they were seeing.

The collection of the data helps the researchers to a rigorous analysis in order to get meaningful insights and deductions. [17] These are the stages which applied to the participants in analyzing the data.

- a. Quantitative Review. In this stage, the data from speaking pre and post-test are used in order to get the statistical figure. The researchers used the paired t-test to see if there were a significant gap in speaking proficiency after the intervention was conducted in both groups.
- b. Survey Exploration. This step is done to ensure that the researchers get the patterns and trends in students' involvement, motivation and contentment with the teaching technique conducted in the class. Quantitative and qualitative survey data provided an entire responds from the participants.
- c. Qualitative Analysis. This stage is done by observing the classroom activities which giving the researchers the figures of behavior, interactions and the effect of teaching by using conventional and AR-PWIM methodologies.
- d. The route-planning of quantitative and qualitative data exhibited all-round comprehensive of the impact traditional teaching method and the application AR-PWIM technique on students' ability in English speaking for Graphic design students. This triangulation approach verified the preciseness and the accuracy of findings in this study. The methodology in this study aimed to apprehend both quantitative improvements and qualitative progress in comprehending the speaking skill in English. It is important to notice both of the engagement and involvement [18]. It gives the present study all-encompassing differences between the two techniques.

3 Results and Discussion

3.1 Results

The study results are based on comprehensive investigation into the comparison between students who trained by conventional technique and students who taught by the prototype which combine augmented reality (AR) with picture word inductive model (PWIM). The following segment gives a deep analysis of the results, focusing both quantitative and qualitative aspects of the study.

- a. An improvement in speaking competency among students who tutored with the AR-PWIM is higher compared to those who experienced the traditional teaching method. This data was gathered by analyzing the pre- and post-test assessment. The result is on the table below

Table 1. Comparison of the Students' Mean Scores
In The Pre-Test and Post-Test (Trained Using ARPWIM)

Assessment	n	\bar{x}	S.D	M.D	t	Sig.
Pre-test	34	16.70	3.46	6.22	13.48	.000
Post	34	24.80	5.84			
*p<.05						

- b. The group which underwent the conventional teaching method showed a moderate increase in speaking ability scores, as shown by a low statistic progress ($P < 0.03$). The mean speaking ability score did not rise significantly from pre-test to Y post-test, exposing the evident and stagnant progress in language skills within the traditional teaching method. These results highlight the teacher-dominant resulted in the participants being passive and relying too much on their tutors.

Table 2. Comparison Of The Students' Mean Scores
In The Pre-Test And Post-Test (Trained Using Conventional Teaching Instruction)

Assessment	n	\bar{x}	S.D	M.D	t	Sig.
Pre-test	34	15.80	3.23	5.78	13.48	.000
Post	34	21.65	4.85			
*p<.03						

- c. The group which trained by applying the AR-PWIM had the lowest score for the pre - test at 6 (one student) and the highest score was 26 (three students). After having the treatment the lowest score of the post test was improved to 9 (one student) and the highest score to 35 (five students). Contrary, the conventional teaching method gave lower impact to the students' improvement with the lowest score in the pre-test was 5 (2 students) and the highest score was 28 (four students). After being taught conventionally, the lowest score in post-test was 7 (three students) and the highest score was 29 (three students)

For the qualitative data, interviewed is implemented to get the participants' opinions towards integrating AR-PWIM. At this step, only this group which were interviewed. Here are the results from the interview.

- a. According to 15 participants the lesson is a fun way to learn and it gives them enjoyment in studying speaking

- b. All of the students think that the contents of these lessons are suitable for their level
- c. All of the participants say that the materials are well-built.
- d. All of the participants agree that the this training has been well-organized
- e. Ten students say that the learning activities are engaging
- f. All of the participants think that integrating AR-PWIM can improve their speaking ability and enrich their English vocabularies achievement effectively
- g. Twelve students feel that the AR-PWIM can maximize their understanding in speaking English
- h. All of the students think that they can apply the knowledge for their daily activities as a graphic design student.
- i. All of the students agree that this integration is better used than the conventional teaching method they used to have.
- j. All of the students want to try learning other three skills in English through this integration of AR-PWIM.

3.2 Discussions

The benefits of using augmented reality in education are crucial to underscore. This technology allows an interactive experience with the real object by combining the virtual objects produced by computers with the real objects found around individuals in actual moment [19], [20]. Furthermore, this technology has the potential to be combined with teaching method namely picture inductive model. The results of these two techniques show that students not only get the higher score but also give the authentic and immersive experiences in studying English particularly in speaking. On the other hand, conventional teaching method also helped students to improve their speaking ability to certain extend.

In this research, the participants get helped by the authentic materials used. They listened to the audio and trained by traditional method where the teacher is present. While the conventional method offered structured learning, it lacked in the opportunities to give an enjoyable experience for the students. Albeit the fact that the score after the post-test was not as high as the one with the AR-PWIM method, the run-of – the- mill teaching method is still valuable to do in the classroom.

Comparing the AR-PWIM to the conventional teaching method: Whilst the fact that both of the method improved but the higher improvement in score is when the students taught by the AR-PWIM method. The conventional method offered a simplicity to the learners since they do not have to provide themselves with any additional tools. Regardless of how they perceived the materials, but this method still offered rudimentary method in teaching English. The option between either applying conventional teaching or using technological tool such as combining augmented reality with picture word inductive model depend on the discrete goal that the educators have. The conventional teaching method, as mentioned earlier, has several downsides such as difficulty in exchanging ideas and making significant progress. This method benefited the lecturer in focusing and controlling the flow of the classroom. On the contrary, the students who supplied with the combination of AR and PWIM fostered in the way they understood and acquired new vocabularies from the audio. The students in this group admitted that this prototype diversified the listening and speaking materials and provided the practical material in English. Moreover, this integration is also possible to use for those learners who wish to have independent study because the material can be stored in their own devices such as smart phones.

3.3 Practical Entanglement

The findings of this study have indicated that teaching with the additional and practical tool bring more constructive approach in teaching English to the vocational students. By integrating the AR with the PWIM into language order, lecturers can provide the graphic design students with an effective and innovative language experiences. Additionally, this method can also be applied when teaching for disabled students or those who have special needs in education.

3.4 Shortcomings and Forthcoming Study

While the study presented valuable comprehension, some limitations should be listed. This research is done in a short period of time with only thirty-four participants. The study is expected to do in a longer period for instance six months with hundreds of participants involved. The chapters in the prototype created are ten units only but only five units taught in the classroom. The forthcoming study should research more specific differences between the two groups in terms of results, perception and treatment. Moreover, further research is vital to explore detailed results. By creating interactive content and applying pedagogical strategies when teaching in conventional setting and technological environment will result in better performance of the students. Identifying the best practices indeed help educators in optimizing the use of these technologies and tailor them to the specific needs of their students and curriculum [21]. Comparative studies could also examine the relative effectiveness of these technologies in different educational settings such as to teach writing and listening, providing insight into which technology is best suited for a particular learning objective.

4 Conclusion and Recommendations

This research has investigated the impact of teaching English in two different ways and environments on the vocational students. The research results have exhibited precious insights into the benefits and weaknesses of traditional method and technological tools in class setting, giving the alternative for delivering the materials for speaking. The results showed that students who are trained with the conventional method gained lower score in their post-test whereas another group with students who experienced taught by using the augmented reality and picture word inductive model got higher marks on their final test. When the researchers did the interview and class observation, both groups were delightful by the use of authentic and creative materials they had in English class. Furthermore, they all made effort in doing exercise and answering the pre and post-test. The students in both group expecting the continuous participation in this study and looking for the materials for reading and writing.

The choice between using traditional or technological teaching method is long-established question which educators should answer. However, the answer depends on several related facts such as the availability of technology, the readiness of the students and the amount of time for delivering the materials. In conclusion, whatever the method is, the objective is to provide the learners engaging and interesting moment in speaking class. By doing so, they will be enriched and improved both in skills and scores. Based on the findings gathered in this study, there are several recommendations from the researchers to the educators, institutions and later researchers.

- a. Integrating the conservative teaching method with the technological needs to be further conducted to find how the effectiveness of using two methods at the same time. These innovative ways propound enveloping and interesting method to language teaching,

leveraging the language ability of students. This can be done by making blended methods in teaching.

- b. Long-term research is also suggested to do by the future researchers to seek for the sustainability of using augmented reality and picture word inductive models in language teaching. One whole semester is suggested to see the comparison in the mid-term score and final-test score.
- c. Educative Approach: Researchers can turn into specific strategies, content, and pedagogical methods that are most successful. Acknowledging the best method can help educators in maximizing the use of this tool.
- d. Professional Growth: Institutions should give the chance for their lecturers to train and to develop their skill in creating a technological tool. This occupies the educators with new knowledge and allow them to design teaching aids that they have planned and arranged.

In conclusion, comparing groups with conventional teaching to the technological teaching gives new insight to the researchers about the method to teach English. Regarding the results, the group which trained with the AR and PWIM outperformed their counterpart with traditional teaching. Even though this study is conducted in a small scale with short period of time, but the researchers gained the opinion gathered from the students about the original resource used and the variety of topics in the audio.

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