

THE INFLUENCE OF MULTIMEDIA ON TEACHING SPEAKING TO INTROVERT STUDENTS

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Abstract – The purpose of this study was to determine the effect of multimedia on introvert students in developing their speaking skills. This study used experimental research and ex-post facto data to determine the differences in students' speaking abilities before and after treatment. Pretest and Posttest of the study were conducted to analyze the effect of multimedia on speaking activities. Respondents were first-semester students majoring in Geological Engineering and Environmental Engineering at the AKPRIND Yogyakarta Institute of Science & Technology (now: AKPRIND Indonesia University) in the 2023/2024 academic year. The results of the data analysis showed that the Shapiro-Wilk normality test was conducted to assess the distribution of difference scores, resulting in a p-value of 0.0001458 ($p < 0.05$), which indicates that the data were not normally distributed. Based on the results of the p-value, the non-parametric Wilcoxon Signed-Rank Test was used instead of the paired t-test to determine whether there was a statistically significant difference between the two sets of scores. Results of non-parametric analysis in R: Wilcoxon signed-rank test with data continuity correction: $\text{dmb\$POST}$ and $\text{dmb\$PRE}$ $V = 1016$, $p\text{-value} = 1.16\text{e-}08^{***}$ Alternative hypothesis: the actual location shift is not equal to 0 The Wilcoxon test results ($p = 1.16\text{e-}08$, or 0.0000000116) show a statistically significant difference between the pre- and post-test scores. This indicates a significant improvement in students' speaking ability, after the multimedia presence intervention.

Keywords: Multimedia, Introvert and Speaking Skill

Abstrak – Tujuan dari penelitian ini adalah untuk mengetahui pengaruh multimedia terhadap siswa introvert dalam mengembangkan keterampilan berbicara mereka. Penelitian ini menggunakan penelitian eksperimen dan data ex-post facto untuk mengetahui perbedaan kemampuan berbicara siswa sebelum dan setelah perlakuan. Pretest dan Posttest penelitian dilakukan untuk menganalisis pengaruh multimedia pada aktivitas berbicara. Responden adalah mahasiswa semester pertama jurusan Teknik Geologi dan Teknik Lingkungan Institut Sains & Teknologi AKPRIND Yogyakarta (sekarang: Universitas AKPRIND Indonesia) tahun ajaran 2023/2024. Hasil analisis data menunjukkan uji normalitas Shapiro-Wilk dilakukan untuk menilai distribusi skor perbedaan, menghasilkan nilai p sebesar 0,0001458 ($p < 0,05$), yang menunjukkan bahwa data tidak terdistribusi normal. Berdasarkan hasil nilai p , Uji Wilcoxon Signed-Rank non-parametrik digunakan sebagai pengganti uji t berpasangan untuk menentukan apakah terdapat perbedaan yang signifikan secara statistik antara kedua set skor. Hasil analisis non-parametrik dalam R: uji peringkat bertanda Wilcoxon dengan koreksi kontinuitas data: $\text{dmb\$POST}$ dan $\text{dmb\$PRE}$ $V = 1016$, nilai- $p = 1,16\text{e-}08^{***}$ Hipotesis alternatif: pergeseran lokasi sebenarnya tidak sama dengan 0 Hasil uji Wilcoxon ($p = 1,16\text{e-}08$, atau 0,0000000116) menunjukkan perbedaan yang signifikan secara statistik antara skor pre dan post test. Hal ini menunjukkan peningkatan yang signifikan dalam kemampuan berbicara siswa, setelah intervensi kehadiran multimedia.

Kata Kunci: Multimedia, Siswa Introvert dan Keterampilan Berbicara.

1. INTRODUCTION

The information era has increased the various forms of our communication, especially in education or in learning teaching activities in the classroom. It can be done in written and spoken language. Spoken and written language are the most important tools for communication (Alsaawi, 2019).

Nowadays, tools and applications are used to make or build a communication. Computer, laptop, handphone, facsimile or telegraph can be used to communicate ideas or opinion. Texts, pictures-static and animated, and videos are useful for delivering messages or opinions. They are able to be found in multimedia. Multimedia is a kind of integrated or interrelated media to make an easier communication (Turban et al., 2002 as quoted by RI. Wardhana, 2019).

Media for learning teaching activities is very important. An English lecturer has to be able to choose the teaching media appropriately to guide his or her students well. There are many kinds of media for guiding students on learning English, but it depends on the way of using it to promote learning the language. Shofi (2020) wrote that the feature of combining multimedia such as video for learning speaking gives a lot of advantages. It makes students aware of what they are doing on speaking activities by watching their videos, like the way of pronouncing words, their fluency on uttering sentences and their expression on communicating a topic. As a result, the students can be more interested on their activities and make them to be more active on participating in speaking activities.

Multimedia can be used as a tool to arise students' eagerness on expressing ideas or opinion on what they see, feel and experience through their imaginations and things or events which they experienced with. It also increases their speaking skills development. Lindstrom (1994) wrote, as quoted by Neo (2001, p.: 2) that the use of multimedia in industries; educational institutions; has been used around the world, as it has been influence in developing productivity and retention numbers, where study has shown that people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see, hear and do simultaneously.

Referring to those explanations above, there are things to be considered such as: 1) The suitability of multimedia for language classes, 2) The usefulness of multimedia on helping the students in developing their language skills, 3) The compatibility of media to students' learning modes and learners' ability levels, 4) The appropriateness of media for learners' ages, and 5) The lecturer has to consider whether the media used is too complicated or not and will it switch the class focus from language learning to technology learning or not.

The psychological theory is taken from Alwisol (2024) about extrovert and introvert, which are psychological terms. It was introduced by C. G. Jung (1920s) who stated his explanation on different attitudes of people use to direct their energy. In line with Jung's theory, Alwisol (2024) also writes the same things about extraverts and introverts. Alwisol adds that introverts tend to selectively observe first then talk or act, solitary and even anti-social. But extraverts tend to give more attention to their environment, active and easy going. Alwisol says that both introverts and extraverts attitudes are in personality, but usually one is more dominant (extraverts), while others are less dominant (introverts).

While extroverts always try to make themselves as the center of attention, introverts are a vice versa. Introverts are comfortable with the client communication style, have the ability to work individually, no need to be always in a team. But, introverts have difficulties with communication and are unwilling to take the floor – no need to attract attention. Introverts are able to make communication but with a very limited number of people, and they do not like to be the center of attention.

Speaking is an activity where two or more people make a communication orally. It means that people produce sound, words, and sentences meaningfully. Laksana (2016) who said that speaking is an activity involves two or more people who are both hearers and speakers, and also give responses to what they talk about.

Assessing speaking is not as easy as it is spoken. It is very important to decide which criteria or aspect will be used to assess: accuracy or fluency. Both accuracy and fluency are important. They make the students ability on using the language more perfect and can be understood well. Erita Budi (2012) cites from Brown (2001) that when someone can speak a language, it means that he can carry on a conversation reasonably competently and the benchmark of language acquisition mastery is the demonstration of an ability to accomplish pragmatic goals through an interactive discourse with other language speakers most of the time.

There are two kinds of assessment rubrics. They are holistic scoring and analytic scoring rubrics. Holistic scoring rubric is a global scoring of the students' performances, and analytic scoring rubric is a scoring that is done by giving rating scores based on the criterion, like grammar, fluency, and others. It is stated by Mertler (2001) that a holistic rubric requires the teacher to score the overall process or product as a whole, without judging the component parts separately (quoted from Nitko,

2001); in contrast, with an analytic rubric, the teacher scores separate, individual parts of the product or performance first, then sums the individual scores to obtain a total score (quoted from Moskal, 2000; Nitko, 2001). This research used a holistic rubric.

There are some problems of teaching English to the subjects, such as: 1) It is done in the first or second semester. Students have not realized their understanding, orientation, and the needs of English for their future; 2) English is not one of their major subjects; it makes students only focus on their major subjects; 3) There are a large number of students in a class. There are 40 or more in a class; 4) Most students are lack of motivation on learning English.

This research studies *The Influence of Multimedia on Teaching Speaking to Introvert Students*. It is done to find if multimedia influences the effectiveness of introvert students' ability on developing their speaking skills or not. This research compares the pretest and posttest gain scores of introvert. It is done to see if multimedia has an influence because multimedia has texts, pictures, animations, sounds and videos which will stimulate students to be more active on expressing their ideas.

This research is stressed on the significance of the influence of multimedia presence on introvert students' ability in developing their speaking skill. Thus, the question of this research is: *Is there any significant difference in the influence of multimedia on introvert students in developing their speaking skill?*

There are two benefits of doing this research. a). Theoretically, it is an alternative perspective on using learning teaching media for developing students' English skills (especially, speaking skill) and an improvement of learning teaching technique on teaching speaking to introvert students; b). Practically, it is one of alternatives method on teaching speaking to various students' characters, and a reference on choosing suitable media in developing vocational students' speaking skill.

The experimental group of this study is introvert students. They are all in the same semester. The group has the same pretest, treatment and posttest. The hypothesis of this research are as follows: $H_0: \mu_1 = \mu_2$ means there is not difference effect of multimedia on introvert students in developing their speaking skill; and $H_1: \mu_1 \neq \mu_2$ means there is a difference effect of multimedia on introvert students in developing their speaking skill.

2. METHOD

Experimental research, which can be applied in various fields of sciences and knowledge, is applied in this study. Experimental research works on difference relationship which implies a cause and effect relationship between two variables or more where there are treatments and measurements involved. Sereyath Em (2024) quoted from (Leppink, 2019), wrote that experimental research is used on various fields, including psychology, education, medicine, and the natural sciences; researchers are able to test hypotheses, make predictions, and contribute to our understanding of how variables interact and influence behavior, outcomes, or phenomena.

Ary et al. (2002) stated that experimental research is a scientific study where the researcher manipulates at least one independent variable, controls other relevant variables, and observes the effect on one or more dependent variables. It means that there are two variables in experimental research, they are: independent and dependent variables. The manipulation is the treatment applied to independent variables. Observing the difference impact between the two groups after they are given the treatment is the important idea. It is also stated by Odle and Mayer (2009) that experimental research is based on a methodology that meets three criteria: a) random assignment-the subjects are randomly assigned to treatment groups, b) experimental control-all features of the treatments are identical except for the independent variables, and c) appropriate measures-the dependent measures are appropriate for testing the research hypothesis.

2.1 Research Procedure

Experimental research was applied in this study. There were some steps in the experiment procedure. It started with pretest, followed by treatment, and ended with posttest. The subjects were

the first semester of Geological and Environmental Engineering students academic year 2023/2024. There were 87 students in the English classes, and the activities of the semester were done from August up to December 2023, but the activities of the research were done in 8 weeks. All of the research activities were done in their classrooms once a week from 07.30 up to 09.20 A.M. or for 100 minutes.

Here are the steps done in this study: a) Questionnaire is used to obtain information which subjects are extrovert and introvert, b). Pretest was an oral test, individual assignment, c). Treatment was applied by giving students pictures, mini videos, linear and non-linear multimedia, and d). The posttest was oral test, and it was an individual assignment.

Here are the questionnaire statements made by Susan Cain (2025), and it is a multiple choice which needs true or false answers. It makes students give certain answer choices. There are 20 statements that have to be answered. the questionnaire contains habitual actions which the students usually do and the students' psychological characteristics. The psychological questionnaire is presented in Table 1.

Table 1. Extrovert-Introvert Questionnaire

No.	Statements	True	False
1.	I prefer one-on-one conversations to group activities.		
2.	I often prefer to express myself in writing.		
3.	I enjoy solitude.		
4.	I seem to care about wealth, fame, and status less than my peers.		
5.	I dislike small talk, but I enjoy talking in-depth about topics that matter to me.		
6.	People tell me that I'm a good listener.		
7.	I'm not a big risk-taker.		
8.	I enjoy work that allows me to "dive in" with few interruptions.		
9.	I like to celebrate birthdays on a small scale, with only one or two close friends or family members.		
10.	People describe me as "soft-spoken" or "mellow."		
11.	I prefer not to show or discuss my work with others until it is finished.		
12.	I dislike conflict.		
13.	I do my best work on my own.		
14.	I tend to think before I speak.		
15.	I feel drained after being out and about, even if I've enjoyed myself.		
16.	I often let calls go through to voice-mail.		
17.	If I had to choose, I'd prefer a weekend with absolutely nothing to do to one with too many things scheduled		
18.	I don't enjoy multi-tasking.		
19.	I can concentrate easily.		
20.	In classroom situations, I prefer lectures to seminars.		

The table gives some knowledge of extroverts and introverts. Extroverts are easy going – they can get in touch easy with unknown person and do not have a fear of a possible negative reaction. They also feel comfortable stay among people – there will have more attention and energy. But, extroverts sometimes do not care one's comfortable feeling and they can turn a public speech into a show. Extroverts always try to make themselves as the center of attention, introverts are a vice versa. Introverts are comfortable for the client communication style, has ability to work individually – no need to be always in a team. Introverts are able to make communication but with a very limited number of people, and they do not like to be the center of attention.

There are 87 students consisting of 56 males and 31 females. The results obtained from the questionnaire are 37 extrovert students and 50 introvert students. Their age is of 18 up to 22 years old. They were from Geological and Environmental Engineering and they were the first semester, academic year 2023/2024. This research was done at Institut Sains & Teknologi AKPRIND Yogyakarta (now: Universitas AKPRIND Indonesia), in August – December 2023, but the research was done for 8 weeks.

The steps of collecting data have several steps in doing this study. The first step was distributing questionnaire. Questionnaire was used to determine which students are extroverts and which are introverts. This research used two instruments, they are: Instrument 1: a). Questionnaire (grouping the research subjects) and it was a psychological matter and was given in the first time of the research. The questionnaire contains 20 statements which have to be answered with 'true' or 'false'. Then, from the questionnaire, it was known that there are 37 extroverts and 50 introverts. b). Instrument 2: there two times oral tests, oral test 1 and oral test 2. Those tests were used in pretest (Oral test 1), before treatment and post-test (Oral test 2), after treatment. By comparing the pretest and posttest results, the gain scores were found.

2.2. Data Analysis

Data analysis deals with the research type implemented in the study. This research is an experimental research, and it is a true experimental research for the implication of this research is to find out whether there is any significant effect of multimedia on extrovert and introvert vocational students in developing their speaking skill. It usually uses quantitative method.

This study used questionnaire which was used to decide the experimental groups. It was a psychological questionnaire. The questionnaire was analyzed to categorize into extrovert and introvert groups. Both groups were experimental groups. They had the same treatment of using multimedia.

Pre-test was given after the students had their first topic about Past Tenses. The students had to apply the material on telling their past experience. After the pre-test the students had the treatment using multimedia products (series of static pictures, animated pictures and mini videos); then they were asked to choose their own topic which was based on their major. Both pre and post-tests data were used to validate the research findings.

All findings were analyzed and validated quantitatively using R. Thus the significances of the research result can be seen clearly. Shuttleworth (2013) said that true experimental design is regarded as the most accurate form of experimental research, for it tries to prove or disprove a hypothesis mathematically, with statistical analysis.

3. RESULTS AND DISCUSSION

Referring to the problem of this study, whether there is any significant difference in the influence of multimedia on introvert students in developing their speaking skill, the analysis presented was the answers of the research question and hypothesis proposed in this study. The hypothesis are: 1). There is not any difference effect of multimedia on introvert students in developing their speaking skill ($H_0: \mu_1 = \mu_2$), and 2). There is a significant effect of multimedia on introvert students in developing their speaking skill ($H_1: \mu_1 \neq \mu_2$). The discussion is based on the research design implemented in this study; experimental research means a quantitative design.

Data analysis was carried out using statistical software named R. The measurement was done by doing calculating the differences between posttest and pretest scores, then it was used for a normality test in R using the Shapiro-Wilk Normality Test. The analysis result is shown below

3.1 Analysis Result

First, we calculate the differences between posttest and pretest scores, and the result is then used for a normality test in R using the Shapiro-Wilk Normality Test.

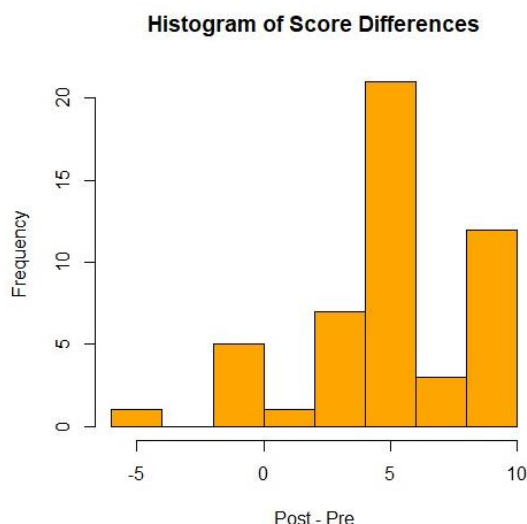


Figure.1. Histogram of the difference in English-speaking scores (posttest minus pretest) for 50 students. The distribution is right-skewed, with most students showing a positive difference, indicating improvement.

The histogram shows that the largest difference between pre- and post-test scores is 5 points, while the highest difference is 10 points. A difference of -5 points indicates that at least one student scored lower on their post-test. The difference between the two test scores is used in the normality test using the Shapiro-Wilk normality test. Below is the normality test result in R:

Shapiro-Wilk normality test

data: dmb\$diff

W = 0.88376, p-value = 0.0001458

Next, a Shapiro-Wilk normality test was conducted to assess the distribution of the difference scores, resulting in a p-value of 0.0001458 ($p < 0.05$), indicating that the data are not normally distributed.

Last step, given the result of the p-value, a non-parametric Wilcoxon Signed-Rank Test was used in place of the paired t-test to determine whether there was a statistically significant difference between the two sets of scores. Below is the non-parametric analysis result in R:

Wilcoxon signed-rank test with continuity correction

data: dmb\$POST and dmb\$PRE

*V = 1016, p-value = 1.16e-08****

alternative hypothesis: true location shift is not equal to 0

The Wilcoxon test result ($p = 1.16e-08$, or 0.0000000116) indicates a statistically significant difference between pre and posttest scores (Figure 2). This suggests a meaningful improvement in students' speaking performance following the intervention of multimedia presence.

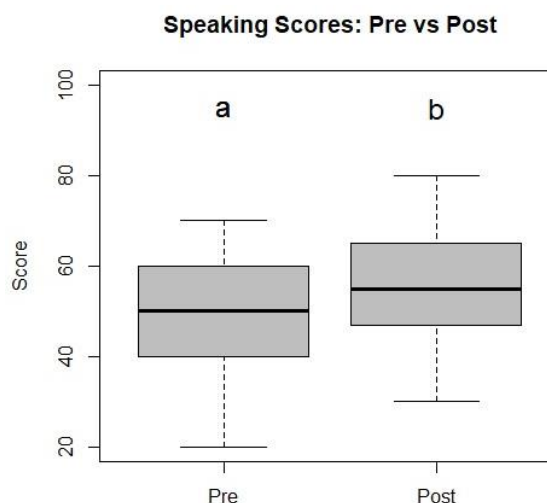


Figure 2. Boxplot comparing English-speaking pretest and posttest scores of 50 students. The posttest scores are significantly higher than the pretest scores, as indicated by different letters (“a” and “b”).

The boxplot above visualizes the result of the Wilcoxon test. Different letters (“a” and “b”) mean that the posttest shows a significantly higher score than the pretest, indicating an improvement in the students’ speaking skills on the presence of multimedia.

3.2 Discussion

The result shows that there is a significant difference from the gain scores that obtained from the pretest and posttest using R of Saphiro Wilk Test analysis. The test shows that there is a significant difference influence of multimedia to introvert students on developing their speaking skill. There is a positive influence on using the media.

Experimental research was done to observe and find out if there is a significant difference effect of using multimedia on the students’ progression in developing their speaking skill. The research result shows that there is a positive advantage to the introverts. It can be seen from Figure 1 that a Shapiro-Wilk normality test was conducted to assess the distribution of the difference scores, resulting in a *p-value* of 0.0001458 ($p < 0.05$), indicating that the data are not normally distributed. Then, the result of the *p-value*, a non-parametric Wilcoxon Signed-Rank Test was used in place of the paired t-test to determine whether there was a statistically significant difference between the two sets of scores. The analysis of the non-parametric result in R: *Wilcoxon signed-rank test with continuity correction, data: dmb\$POST and dmb\$PRE, V = 1016, p-value = 1.16e-08***, alternative hypothesis: true location shift is not equal to 0. The Wilcoxon test result ($p = 1.16e-08$, or 0.0000000116)* indicates a statistically significant difference between pre and posttest scores. This suggests a meaningful improvement in students’ speaking performance following the intervention of multimedia presence.

4. CONCLUSION

Learning and analyzing the results of the data, finally here are the conclusion of the research. They are: a). there is significant difference of multimedia presence to the introvert students on developing their speaking skill; b). the use of multimedia gives positive influence on learning teaching speaking to the experimental group. Statistical measurements show that introverts have gained better improvement on developing their speaking skill in the presence of multimedia. It is for answering statements or issues in the previous section and future work of the research. For it is not a perfect research, there are some suggestions like: a). English lecturers should be aware of using high technology products as one of alternatives on varying English learning teaching activities, and b). there should be collaborations among the institution, lecturer and researcher on finding out the

effectiveness of technology products influences and their use for language learning teaching activities.

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