Project-Based Instruction: Integrating Technology in Speaking Instruction

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ABSTRACT

Many Indonesian students of English experience difficulty in mastering their speaking skill which is considered as an indicator of their success in language learning. One approach to enhance this skill is through the integration of technology in classroom speaking instruction. There is potential in the use of technology to support students' performance in speaking. This study which was of a quasi-experimental design concerned the use of the digital camera in one project-based speaking instruction. It involved thirty eleventh grade students of SMAN 18 Palembang who were assigned either to an experimental group or a control group. The results showed that there was a significant difference in students' speaking performance before and after the intervention (t=4.672, sig=0.000). In addition, there was a significant difference in the performance (t=3.633) between the students who learned using the digital camera and those who did not. This paper aims to present the rationale and the results of this study which integrated technology to support the teaching of speaking in the English language classroom through project-based instruction.

KEYWORDS: Project-based Instruction, speaking instruction, technology

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Introduction

Nowadays, the need to master English is increasing. Most people would agree that being able to speak in English is one way of mastering English. They believe that speaking is an indicator of success in learning the language. Many language learners also regard the speaking ability as the measure of knowing a language (Burkart, 2004). According to Burkart (2004) these learners define fluency as the ability to communicate with others much more than the ability to read, write, or listen to spoken language.

Indonesia has also taken steps to prepare the students to be able to speak in English. Indonesia has set the aims for English language learners through a school based curriculum to prepare students to reach informational level (BSNP, 2006). At this level, language learners are expected to be able to use English as a channel to communicate accurately and concisely. Therefore, the language learners are expected to spend more time to practice speaking and access all opportunities to apply their language orally to enable them to produce ideas through the language.

In fact, barriers such as having no ideas in speaking or lacking opportunities to speak can be addressed if students are encouraged and accustomed to do so. In this case, project based learning instruction plays a role. This method requires the students to drive themselves in applying their knowledge by using their own investigation and allowing them to come up with ideas provoked by the issues and questions relevant to their lives. Through this method the students are expected to be engaged in speaking up and exploring their use of English orally. Railsback (2002) agrees that project-based instruction is an authentic instructional model or strategy which can become a source for learners' improvement in social and communication skills which are 21st century competencies. Project-based instruction benefits students since it encourages them to choose their own topics relevant to their own experiences, as well as allows them to use cultural or individual learning styles.

In taking real world issues as the aim of instruction, integrating technology in project-based instruction is a part of the requirement. Technology as a global advanced tool in project-based speaking instruction provides language learners with the opportunity to get involved in producing English as a global language. The students will not only develop their language ability but also apply their knowledge of technology as members of society who are aware of developments in technology. Technology will be a real life tool to engage students and place them at the centre of the learning process.

This study focused on the use of the digital camera as the technology which is relevant to students' lives. That is because digital cameras are common tools used in daily life. Many students have it at least as one of the features in their mobile phone. By using the digital camera, the students could organize their project by taking the real object picture and then reporting it in the speaking activity. Therefore, looking at all the benefits offered by the method of using the digital camera in project-based speaking instruction, the authors tried to find out whether the method of using digital cameras in project-based speaking instruction can improve students' speaking performance.

Theoretical framework

Project-based instruction

As stated by the Pelavin Research Institute (2010)*,* project-based instruction is a student-centred, multi-modality, active learning approach to education. It is a teaching and learning strategy with the students at the centre of the learning process. This is the strategy in which the students are provoked by teacher instruction in the form of questions or problems about a concept. The result of students' learning then is shown from their final project. The final project is the media for the students where they present the knowledge they have learned with the real life concept. Thus, the project begins by presenting students with knowledge and concepts and then, once the students have learned these, the project gives them the opportunity to apply them (Buck Institute of Education, 2010).

Furthermore, related to the use of project-based learning instruction in improving English ability, Fried-Booth (as cited in Moss, & Van Duzer, 1998) states that project-based learning functions as a bridge between using English in class and using English in real life situations outside of class. It is all about the integral knowledge of English as a skill that has to be mastered and the use of English in real life as a natural language. Thus, the strategy will lead the students to give more attention, use their critical thinking, and try to present their ideas resulting in a project product. In addition, project-based learning instruction requires the students to take ownership of the learning process by solving the problem given. The students are engaged by open-ended questions or problems that will lead them to apply their knowledge in the form of a real life concept by using cognitive tools.

Moreover project-based learning instruction requires technology as the cognitive tools (Krajcik, Blumenfeld, Marx, & Soloway, 1994) as cited in Thomas (2000), which is part of learning in the 21st century. Hence, a complete project cycle will let the students experience a real life knowledge implementation through real world tools.

The concept of using digital cameras as teaching medium

A teacher must be able to prepare the effective method to engage the students to be active and involved in the teaching and learning process because teaching is guiding and facilitating the students to gain knowledge and skills. Christison (1990) states that teaching should apply the concept of cooperative learning. This concept is used in the classroom to increase motivation and attention. It is designed to help the students develop a positive image of self and others. Thus, to attract the students' attention to learn and gain skills and knowledge, a teacher should develop strategies to facilitate learning.

Using teaching and learning media is one of the strategies leading towards success in the teaching and learning process. Using media can boost students' motivation to learn (Hamalik, cited in Arsyad, 2006). In addition, using instructional media is a strategy to make the teaching and learning situation more meaningful. That is because the media used will be appropriate for the learners' learning focus. Dick and Reiser (1989) state that without a good theoretical rationale the use of specific materials may become simply mechanical, with the fond hope that what is presented to learners will eventually become meaningful to them. Thus the decision to use media must be based on what capability is being learned and how the events of instruction can best be presented when particular media are employed.

Knowing the use of media means knowing how the term media can be defined. The word, media (plural) was derived from the Latin *medium* meaning "between". The term refers to anything that

carries information between a source and receiver. Media are considered as instructional when they are used to carry messages with an instructional intent. Dick and Reiser (1989) also defined teaching media as the physical means (other than the teacher, textbook, and supplementary print materials) by which instruction is delivered to students. Furthermore, the National Education Association (NEA) cited in Sadiman, Raharjo, and Haryam (1986) explained that a medium is everything that can be used to deliver message(s) in order to stimulate students' thought, feeling, attention, and interest in the learning process. In short, it can be said that instructional media can be defined as the tools to facilitate the students' exploration of knowledge.

Related to how the term media is defined, technology can be classified as media in teaching. Dick and Reiser (1989) explained that media can be classified based on three categories. The first category is the format of the media which is related to the physical form of the media, for example, audio format as cassette tape, and visual, or verbal format as print. The second category is the material, that is, the item of the media. The third category is technology.

The term technology deals with tools, techniques, procedures, the artefacts and processes fashioned by modern industrial man to increase his physical and mental power (Anglin, 1995). Besides, Molenda and Pershing (2008) state that technology can help learners not only to master higher-level skills but also to apply new knowledge to novel situations, especially those outside the classroom, referred to as the transfer of learning. It can be said that technology is a medium that can be used as the tool to enhance students' motivation and engagement in learning since it will transfer the learning process to applications in the real world.

Technology can be classified as a medium that is constantly developing according to human needs. Thus, technology is the appropriate media in teaching and learning. Tatar and Robinson (2004) state that, one of the major challenges in education is to ensure that all students are prepared for today's more technologically advanced world. Using technology in teaching and learning then can set the learners to have opportunities to practice the new skills in context that resemble the real world.

Further, the digital camera classified as mobile media is one form of technology that is used widely today. Tatar and Robinson (2004) explain that as technological tools (e.g. the digital camera), are becoming more common, teachers and students have increasingly integrated them into their work. The digital camera is categorized as a technological device. It is a tool that will help learners transfer their learning for real world use.

Using digital cameras in project-based speaking instruction
As explained previously teaching is not only a matter of giving the material about a certain subject for the students, it is also more about how to facilitate and guide the students to learn and gain knowledge. Finocchiaro (as cited in Larsen-Freeman, 2000) describes that teaching is trying to keep the students' motivation high by using a variety of activities. It also implies that teaching is not explaining everything by an all-knowing teacher, but having a discussion with the students, asking probing questions, letting the students think for a period of time and then responding. It is how to make the students learn.

Using the digital camera then is one of the ways to involve the students in the teaching and learning process. As explained previously, the digital camera can be considered as a technology that can be used in teaching. By using the digital camera students are provided with opportunities to enhance their learning experience. Furthermore, the digital camera is expected to be effective in project-based instruction as a strategy supporting the teaching and learning process.

In conclusion, the digital camera is a tool in project-based instruction for teaching speaking that engages the students in the learning process. It will lead the students to follow the speaking instruction and solve the issue as effectively as possible. They can present the project through speaking performance.

Method and procedures

Data collection and analysis
This study was a quasi-experimental study which applied a non-equivalent control group design. There were two groups in this study, the experimental group and the control group. The experiment was conducted in 14 meetings - one meeting for the pre-test, twelve meetings for the treatment, and one meeting for the post-test. Each meeting was over two consecutive forty-five minute periods.

The population of the study was all the eleventh grade students of SMA Negeri 18 Palembang. There were a total of 243 students in six classes. Two classes were chosen to be assigned to either the experimental or control group. Fifteen students from Eleventh Science 1 were assigned to the experimental group whereas 15 students from Eleventh Science 2 were assigned to the control group. The selection was done using purposive sampling. The samples chosen were taught by the same teacher and had an English score in the range of 75 to 85 which can be seen from their report book for the previous semester. The English standard score of the school was 75, thus by deciding to take the sample that had the scores in the range above, it is believed that it could represent the population of the study.

The project-based instruction in teaching speaking was the treatment for the experimental group. The method was also completed by the use of the digital camera as the tool for students. In this study, the digital camera in project-based speaking instruction was used as the tool for the learners to enhance their learning experience. The students took an image and then presented the result of the project through speaking. Thus, by getting the students' participation in choosing the issue of the speaking topic, the students would directly be involved in learning as well as using their critical thinking which is the focus of project-based instruction.

The control group did not receive the above treatment. It can be said that the students in the control group were taught by using the conventional way in which the students did not have any chance to reflect the ideas they had with their daily life application which was really different from the concept of project-based learning instruction. However, since the research was focused on speaking, the topics that were given for both of the groups during the teaching and learning process were the same.

In this study, the students were given a pre-test and post-test in speaking. They were asked to tell orally in English each idea they had about the topic they had chosen from among the topics provided which were designed based on the curriculum of the eleventh grade students of senior high school. In this process, the writer recorded audibly and visually the activity in which the students performed their speaking.

The speaking scores were collected by using the Student Oral Language Observation Matrix (SOLOM) (Gottlieb, 1999). It is an analytical rubric. It can be used to determine English acquisition phase, diagnose student needs, and record the progress of individuals and groups.

Validity and reliability

For the purpose of achieving a high degree of content validity, the test was devised in accordance with the purpose of the study, that is to measure students' performance by using the digital camera in project-based speaking instruction. To know whether the questions given were valid, students' competence in English, their age, and their social life were considered. Since the test was focused on speaking, the topic for the speaking test was formulated by considering the school curriculum and the prescribed English book.

Besides, since the study was focused on a speaking test which tends to be subjective, raters were needed to give objective scores to the students' achievement. Thus, the reliability of the scores given by the two raters had to be checked. In order to know the reliability, the test was tried out on other students at SMA Negeri 18 Palembang. The sample was taken from a class that was not in the main study, eleventh science 3, but was similar in achievement to the actual sample. Then, after the students' results were obtained, the two raters were asked to help analyse the students' speaking performance. The student's speaking scores from both of the raters were correlated using SPSS 17 (Statistical Package Social Science) for Windows. Spearman's rho was used to see the correlation of the scores from the two raters. The reliability of the test was 0.81. Since the reliability coefficient of the test was higher than 0.70, the test was considered reliable.

Findings

First the students' scores in score intervals and categories were classified in the forms of frequency and percentage. Through classifying the scores based on the score interval, the score results would be qualitatively known. The results are as follows:

Table 1
Score Interval for Speaking Performance

No.	Score Interval	Category
1	5-10	Poor
2	11-15	Fair
3	16-20	Good
4	21-25	Very good

The distribution of the scores in the experimental group shows that almost all of the students' scores increased after receiving the treatment. It is clearly seen that the students achieved better scores in the post-test after the treatment. Before the treatment, there were 8 students (53%) who were categorized as fair and 7 students (47%) were categorized as good. After receiving the treatment, there were 13 students categorized as good and only one student (6.6%) remained in the fair category. There was also one student (6.6%) who was categorized as very good. Moreover, the result of the paired-samples t-test showed that there was a significant difference before and after treatment (t=4.672, p=0.000).

Table 2
The Pre-Test and Post-Test Scores Distribution in the Experimental Group

Score Interval	Category	Pre-Test		Post-test	
		Frequency	Percentage	Frequency	Percentage
5-10	Poor	0	0%	0	0%
11-15	Fair	8	53%	1	6.6%
16-20	Good	7	47%	13	86.6%
21-25	Very Good	0	0%	1	6.6%

Meanwhile, in the control group, the improvement of students' scores before and after the treatment was not as big as that in the experimental group. From the result of the pre-test in the

control group, the lowest score interval was 11-15 and the highest score interval was 16-20. There were seven students (47%) who achieved the scores in the 11-15 interval. Eight students (53%) achieved the scores in the 16-20 interval. The mean of the scores was 15.67.

In the post-test, the same interval scores were found. The lowest score interval was 11-15 and the highest score interval was 16-20. Seven students (47%) achieved the scores in the 11-15 interval. The remaining eight students (53%) also still obtained scores in the 16-20 interval. The mean of the scores was 16.13. Table 3 presents the scores distribution in the control group.

From the mean scores it can be seen that, there was improvement in students' scores from pre-test to post-test. The mean score in pre-test was 15.67 while the mean score in the post-test was 16.13. However, the improvement was not big.

Table 3
The Pre-Test and Post-Test Scores Distribution in the Control Group

Score Interval	Category	Pre-Test		Post-test	
		Frequency	Percentage	Frequency	Percentage
5-10	Poor	0	0%	0	0%
11-15	Fair	7	47%	7	47%
16-20	Good	8	53%	8	53%
21-25	**Very Good**	**0**	**0%**	**0**	**0%**

Furthermore, in order to find out if there was a significant difference in speaking performance of the students who were taught using the digital camera in project-based speaking instruction and those who were not, the result of the post-test scores in the experimental group and control group were compared by using the independent samples t-test. Based on the analysis, the value of t was 3.633, at the significance level 0.05 in a two-tailed testing with (df) 28, the critical value of t is 2.048 (See Appendix A). Since the value of t obtained was greater than the critical value of t in the table, that means there was a significance difference between the post-test mean in the experimental group and the post-test mean in the control group. In other words, the method of using the digital camera in project-based speaking instruction can improve students' speaking performance.

Discussion

Based on the findings, after receiving the treatment, the students' speaking performance in the experimental group was better than that in the control group. The use of the digital camera in project-based speaking instruction can improve students' speaking performance. The progress was probably due to several factors.

Firstly, through the method, the students were trained to develop the ideas to speak. Using the picture as the product of the project assisted the students to explore and develop the ideas during speaking. Pictures which were the requirements to be taken as the product of the project might symbolize certain ideas related to topic being discussed. The pictures were the referents for the students to express the meaning of the idea they had. Therefore, it would be easier for them to develop and share the idea.

Getting more opportunities to speak can also be one of the important factors. During the treatment, the students were provided with the lesson topic in line with the school curriculum. The first activity in the classroom provided the students with a reading text related to the topic or pictures that can symbolize the idea about the topic. This starting point then led the students to

speak as it generated a small discussion in which they might give their personal opinions or share ideas about a certain topic. In the little discussion the students also practiced applying some language features such as expressing opinion, agreement and disagreement, or presenting ideas in the form of hortatory exposition and spoof related to the issue given for the topic.

In the project cycle, the students took the picture that could present their ideas related to the topic of the lesson. That means, they connected the lesson to the real-life situations in which they symbolized those situations through the project. In the classroom activity, they had to share their ideas orally by applying the language features. Indeed, the method helped the students to express their opinions, ideas or thoughts related to the topic of discussion. The reason was they could directly participate in the learning process. They became the doers. They prepared everything they needed by themselves so that they could present it and share it with others. In the process, the students also operated the technology they had that made them become more excited in learning. Besides, by experiencing the process directly the learners experienced deeper understanding.

Overall, the method of using the digital camera in project based speaking instruction can be considered as an effective method in enhancing speaking.

Conclusion

Based on the findings, it could be concluded that using the digital camera in project-based speaking instruction really works in promoting students' speaking ability in the EFL context in Indonesia. In fact, the method works by increasing students' awareness of their learning. It puts the students at the centre of the learning process. It gives them opportunities, through the use of technology, to be involved in carrying out the project to get the experience in learning. Therefore, this study recommends that the teacher, especially the teacher who teaches in a senior high school in Indonesia and other similar contexts, applies the method of using the digital camera in project-based speaking instruction. Since this study mainly focused on talk as performance, further research could be conducted to cover other forms of the functions of speaking such as talk as interaction and talk as transaction.

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Appendix A

t Table

cum. prob	*t* .50	*t* .75	*t* .80	*t* .85	*t* .90	*t* .95	*t* .975	*t* .99	*t* .995	*t* .999	*t* .9995
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646

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