Effect of Project-Based Learning Using E-Poster on Indonesian EFL Students' Speaking Ability across Personality Types

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Abstract
Preparing students to compete and face any challenges of the rapid changes of globalization is a responsibility of any form of education. Students' success in today's learning lies on their ability to utilize technology as the heart of globalizationas well as to communicate in English effectively within a variety of purposes. Project-based learning, as one of the technology-based activities, is believed to be an effective method to facilitate the use of technology and oral communication skill in English as a foreign language (EFL) classroom. This article investigates whether there is a significant difference in students' speaking ability between students taught through PBL using e-poster and those taught through conventional method. It also determines whether there is a significant difference in students speaking ability between extrovert and introvert students taught through PBL using e-poster. Sixty-one Indonesian secondary level students from two intact classes were involved and assigned randomly into experimental and control groups. The quantitative data were collected through pre-test and post-test from both groups. Analysis of the first result revealed that students who were taught through PBL using E-poster significantly outperformed those who were taught through a conventional method. Conversely, the second result showed that students' personality types (extrovert and introvert) did not affect their speaking achievement.
Keywords: e-poster, EFL students, personality types, project-based learning, speaking ability

Introduction

The development of information and communication technology (ICT) brings a change in the context of educational need. ICT is often perceived as a device in constructing knowledge in the education system to increase its quality (Sangrà & González-Sanmamed, 2010). By emerging ICT into the classroom, traditional teaching method transforms into a new model of teaching where teacher and students are essentially linked into limitless platforms and opportunities of tools, experiences, material resources to increase their productivity. ICT also exposes connection and access to knowledge and information from the global context that would fit into the classroom and it offers a vivid and authentic environment to involve teacher and students in engaging learning process. Thus, with the use of ICT, the classroom instructional purpose not only focusses on teaching about technology or explaining how to utilize it, but also encouraging students to apply technology to relate their knowledge and skill (Eady & Lockyer, 2013).

The ability to employ technology should be completedwith the ability to demonstrate and share what is learned. Meaningful and successful use of technology is acquired when students are able to communicate their ideas and thoughts clearly and effectively within different context and purposes (Eady & Lockyer, 2013). In order to facilitate EFL students to be successful in the today's learning, Project-based Learning (PBL) as one of the learning methods proposed by the 2013 Curriculum in Indonesia, is regarded as a way to facilitate the integration of ICT and communication skill as part of the 21st century skills in the classroom (Education and Culture Ministry of Indonesia, 2017).

The present study was intended to examine students' speaking ability after being taught by using PBL through e-posters as the final product of the integration of technology in learning to speak in English. It aimed to combine ICT with a traditional poster appearance to make it more visually appealing, effective, and efficient to deliver ideas (Shin, 2012 as cited in Masters, 2017). More specifically, the students were assigned to create a paperless format of a poster displayed through LCD projector by including various ranges of media elements (texts, colors, graphs, pictures, etc.) on the poster. The research questions are formulated as follows:

(1) Is there any significant difference in the speaking ability of EFL students taught through project-based learning (PBL) using e-poster and those taught using the conventional teaching strategy?
(2) Is there any significant difference in the speaking ability of the extrovert students and introvert students taught through project-based learning (PBL) using e-poster?

Literature Review
EFL Students' Speaking Ability

For Indonesian EFL students, in particular, the ability to communicate orally signifies a real challenge as not all students have the experience in speaking in English (Hosni, 2014). Students do not have enough confidence and have severe anxiety to speak English. They are also too shy, reluctant, and often have high pressure to speak. Consequently, they prefer speaking in their mother tongue to speaking English (Ur, 2012). This complexity may rise from the lack of an effective instructional teaching strategy applied by the teacher and the shortage of opportunities to practice English in a formal setting.

Project Based Learning

Project Based Learning (PBL) extends the beneficial and effective method of instruction in the classroom (Thomas, 2000). The students who experience PBL are proven to achieve better in language skills including speaking, critical thinking and knowledge attainment (Du & Han, 2016). PBL as students-centered learning focuses the process of learning on real-world problem as directed by the essential question to drive the project. Students then explore their creativity to provide an open-ended answer to the problem throughout the completion of the project. Additionally, Krauss and Boss (2013) assert that students obtain essential knowledge, skills, and personalities by working in teams or groups to conduct an investigation. Through PBL, the students also respond to authentic questions which enable them to communicate in purposeful ways through the stages of PBL.

There have been a number of studies performed to provide evidence of the significant use of PBL focussing on students' speaking ability. Zare-Behtash and Sarlak (2017) conducted research that tried to examine the influence of PBL on EFL university students' speaking ability. The result of this study can be concluded that PBL was an effective method to promote EFL students' speaking ability. On a different level of students, Torres and Rodriguez (2017) investigated how elementary students could enhance their speaking ability in the EFL classroom through PBL. From the results of data analysis collected from field notes, students' oral performance and interview, it was revealed from both studies that PBL encouraged students to increase oral production, helped to lessen speaking anxiety in the second language as well as improved the school life and community learning interest. Shortly stated, PBL has been implemented in speaking activities and successfully improved the students' speaking ability.

It is important to note that many of the studies on PBL focussed on university and primary school students. Therefore, it is necessary to investigate studieson the use of PBL to enhance the speaking ability of students in another level of education in the Indonesian context in particular. In addition, only a few studies included technology into students' final project during PBL. For example, a study conducted by Gónzalez, Molina, and Cardona (2017) integrated the use of technology in the project assigned to students. The result showed that students could improve their oral production in English, creativity in using technology and collaboration.

Personality Types

Further review of literature indicated that students' personality types (extrovert and introvert) could be as variables which affected students' success on foreign and second language learning (Ellis, 1994; Dornyei, 2005). A result of the study by Yusef-Hasirchin (2014) showed that extrovert students speak more fluently compared to introvert ones. In contrast, Souzandehfar, Souzandehfar, Farsi, et al. (2014) and Chen, Jiang, and Mu (2015) testified that introversion-extroversion was not the main factor influencing students' accomplishment in oral English learning since there was no significant difference in students' speaking scores between students from different types of personalities. Thus, a further investigation on the effect of personality types (extroversion and introversion) on students' oral communication achievement is still possibly needed since the result of some research are inconsistent and contradictory.

Method

Design and Subjects of the Study

This study employed a quasi-experimental research design because it is not possible to select the students randomly as the subjects of the study. The subjects of the study were 61 students of a vocational high school at Banyuwangi Regency, East Java, Indonesia. The students were from two intact classes and assigned randomly into the experimental group (31 students) and the control group (30 students). Before the study was conducted, these two groups of students were homogenous in terms of their speaking ability. In this study, the independent variable was the application of PBL using e-poster and the dependent variable was the students' speaking ability. In addition, personality types were used as the moderating variables to divide the students in the experimental group into two smaller groups: extrovert and introvert students.

Procedure of the Study

Session	Experimental Group	Control Group
1	Pre-test administration	Pre-testadministration
2	Students were givenmaterialson procedure textsand exercises They were introduced to PBLand asked to work in pair or a small group tothink of the importance of procedure text in the digital era. (Stage 1) They were also asked to plan a project and make a work schedule. (Stages 2& 3)	Students were givenmaterialson procedure texts and exercises Students were given homework to think of a procedure text in pair or a small group.
3	• Students were asked to present the draft they had orally. Their oral presentations were given feedback by the teacher. • Theyrevised their procedure textsand as the project they were guided to make e-posters based on their procedure texts. They continued working on e-posters outside the class period. (Stage 4)	• Students were asked to make a draft of procedure text by using mind mapping. • The students' drafts were given feedback by the teacherand theyrevised their procedure texts.
4	• The students present their e-posters in groups using LCD projector. • The students' presentationswere scored by the teacher using scoring rubricsfor speaking and multimedia. (Stage 5, continued)	• The students present their procedure textsin groups. (Continued) • The students' presentationswere scored by the teacher using scoringrubric for speaking.
5	• The remaining students presented their e-posters. (Stage 5) • The students were asked to share their opinion about the project implementation. (Stage 6)	• The remaining students presented their procedure texts. • The studentswere asked to share their opinion about the teaching and learning process.
6	Post-test administration	Post-test administration

The research ran in 6 sessions. The first and last sessions were used for pre-test and post-test administration. The second to the fifth sessions were used for the teaching process in which the students in the experimental group were taught through PBL using e-poster,while those in the control group were taught conventionally without PBL. The PBL was conducted by following the six stages of PBL: (1) Start with essential questions; (2) design a plan for the project; (3)

create a schedule; (4) monitor students and project progress; (5) assess the outcome, and (6) evaluate the experiences (Harun, 2006). The schedule for research is shown in Table 1.

Table 1. *The Schedule of Research*

The final works of the students in the experimental group were e-posters produced in pairs or groups through PBL. Some of the titles of the e-posters are "How to Wash Clothes in Washing Machine," "How to Shop Online" and "How to Draw Cash from ATM Machine"

Data Collection

The data on students' speaking ability was derived from speaking test scores gained from pre-test and post-test administered before and after treatment respectively. The students' speaking ability was scored by using a scoring rubric adapted from Hughes (2003) containing a number of speaking elements: content, vocabulary, pronunciation, accuracy, and fluency. The different scores of the pre-test and post-test were used to indicate the students' progress in their speaking ability. The scores also showed the difference of the speaking ability of the students in the extrovert and introvert sub-groups. The data of the students' personality types were gained by using questionnaire distributed to the experimental group. The questionnaire were constructed based on Jung model (1971, as cited in Maltby, Day & Macaskill, 2010) and adapted according to how extrovert and introvert students think, behave, interact and learn within the teaching and learning process. There were 21 questionnaire items which were arranged to represent dimensions of extrovert and introvert personality types namely: direct energy outward to people and conversation (extrovert) and direct energy inward to one's own world (introvert). Based on the questionnaire data the students were classified into extrovert or introvert students.

Results
The results of the study are presented in the order of the answers of the two research questions.

The Difference in Speaking Ability of Students Taught through PBL Using E-Poster and those Taught Using Conventional Teaching Strategy
To determine the result of the research, preliminary statistical analyses of the pre-test scores of the experimental and control groups were performed to ensure that the requirement of the assumption of normality of the distribution and homogeneity of the scores were fulfilled. The result of Kolmogorov-Smimov test showed that the speaking ability scores of students in the experimental and the control groups were normally distributed since all of the p-values of pre-test (0.317 and 0.158) in the two groups were greater than 0.05 level of significance. The scores were also homogenous as the result of the Levene test indicated that the comparison of the pre-test scores of both groups (0.268) was greater than 0.05.

Since there was no violation on normality and homogeneity on the pre-test scores of the two groups, parametric statistical analysis with independent samples t-test was administered to investigate the difference in the speaking ability of the students in the experimental and control groups. The result of independent samples t-test between the experimental and control groups in the speaking pre-test is depicted in Table 2.

Table 2. *Comparison of Pre-test Scores of the Experimental and Control Groups*

Score	Group	N	Mean	SD	t-count	p-value	Analysis
Pre-test	Experimental	31	56.16	11.748	0.326	0.746	Not significant
	Control	30	55.23	10.423			

Note: $t_{table\ (5\%;\ 59)} = 2.001$

Table 2 shows that the pre-test scores of experimental and control groups test are quite comparable. Since the comparison of the mean of the experimental group (56.16) and that of the control group (55.23) with t-count 0.326 is smaller than t-table (2.001) and the p-value (0.746) is greater than 0.050 level of significance, it can be conjectured that there is no significant difference in speaking ability of the students in the experimental and control groups before being given the treatment. Accordingly, the comparison of the post-test scores of the two groups was also conducted by using independent samples t-test,and the result is displayed in Table 3.

Table 3. *Comparison of Post-test Scores of the Experimental and Control Groups*

Score	Group	N	Mean	SD	t-count	p-value	Analysis
Post-test	Experimental	31	67,68	10.943	2.102	0.040	Significant
	Control	30	62,10	9.716			

Note: $t_{table\ (5\%;\ 59)} = 2.001$

Table 3 reveals that the comparison of the mean of the experimental group of students (67.68) is higher than the mean of the control group of students (62.10). Furthermore, with t-count (2.102) greater than t-table (2.001) and p-value (0.40) smaller than 0.050 level of significance, it is apparent that the difference of speaking ability between experimental and control groups of students after being exposed to the treatment is significant. The null hypothesis stating that there is no significant difference in the speaking ability of EFL students taught through PBL using e-poster and those taught using the conventional teaching strategy is rejected. In other words, the treatment of PBL using e-poster affected the speaking ability of the students in the experimental group which is better than the speaking ability of the students in the control group who were taught using the conventional teaching strategy.

The Difference in Speaking Ability of the Extrovert and Introvert Students Taught through PBL Using E-Poster

Given that the result of analysis of the data to answer the first research question showed that there was a significant difference in the speaking ability of students taught through PBL using e-poster and those taught using conventional teaching strategy, the analysis continued to test the hypothesis of the second research question. The null hypothesis states that there is no significant difference in the speaking ability of extrovert and introvert students taught through PBL using e-poster. Independent samples t-test was also utilized to test the second hypothesis. Based on the data analysis from the personality type questionnaire distributed to 31 students of the experimental group, it was revealed that there were 17 extrovert students and 14 introvert students. The result of the analysis between extrovert and introvert students in the experimental group was demonstrated in Table 4.

Table 4. *Comparison of the Post-test Scores of the Extrovert and Introvert Students*

Score	Group	N	Mean	SD	t-count	p-value	Analysis
Speaking post-test	Extrovert	17	66.50	11.269	0.654	0.518	Not-significant
	Introvert	14	69.11	10.771			

Note: $t_{table\ (5\%;\ 29)} = 2.045$

Table 4 portrays that the speaking ability of extrovert and introvert students is not significantly different, even though the mean of the extrovert students (66.50) is smaller than the mean of introvert students (69.11). Moreover, the t-count (0.654) is smaller than the t-table (2.045), and the p-value (0.518) is bigger than 0.05 level of significance. Thus, the null hypothesis stating that there is no significant difference in the speaking ability of extrovert and introvert students taught through PBL using e-poster is accepted. This indicates that there is no significant difference in the speaking ability of the extrovert students and introvert students taught PBL using e-poster. It also means that the personality types, extrovert and introvert in particular, do not contribute to students' speaking ability when they were exposed with the treatment of PBL using e-poster.

Discussion

The results of the present study are discussed about the two research questions. The discussion is intended to interpret the results in relation to the existing theories and relevant research studies.

The Difference of Speaking Ability of Students Taught through PBL Using E-Poster and those Taught Using Conventional Teaching Strategy

This study revealed that there was a significant difference in the speaking ability of students who were taught through PBL using e poster and those who were taught conventionally without PBL. The finding of this study is pertinent to the experts who assert that PBL is an instructional method which is more effective than the traditional method (e.g., Thomas, 2000). In EFL speaking classes, PBL created a learning circumstance in which the students work in teams to generate oral communicative forms in the target language (Dooly & Sadler, 2016). At the beginning of the project, students were anxious to express themselves using English since they have never spoken in English. They mostly communicated in their mother tongue because they were hesitant and embarrassed to use English to speak (Ur, 2012). They could not speak in complete sentences since they did not have enough vocabulary. In addition, they still pronounced some words inappropriately and somehow were also afraid to make mistakes on grammar.

Nevertheless, such speaking problems gradually subsided as the treatment of PBL exposed students to more opportunities to speak in English, enabled them to practice more and concentrate more on content rather than on the form. By doing the project, the students could explore any possible resources, to design and organize the ideas, to prepare their oral presentation, to rehearse their oral presentation draft, and finally to present their e-posters orally. They were offered peer and teacher feedback as well as assistance like translation especially for students having difficulty with communication and the task (Torres & Rodriguez, 2017). This also provided them with vocabulary, the pronunciation of some words, and sentence structure. In a nutshell, in spite of the anxiety and language limitation, students essentially constructed their oral production through a series of activities offered within the stages of PBL as it was verified by the higher speaking ability

indicated by the scores obtained by students in the experimental group compared to those in the control group who were taught traditionally without PBL.

This finding of the study is in line with the result of research studies conducted by Zare-Behtash and Sarlak (2017). The result of this study was similar to the present study as they pointed out that PBL was an effective method to increase EFL university students' speaking ability. The studies also showed students' positive attitude toward the implementation of PBL in speaking class. The result of studies carried out by Torres and Rodriguez (2017) also confirmed the success of implementation of PBL in improving elementary students' English-speaking ability as they were exposed to several speaking activities in the projects. The results displayed that the students were fostered to increase oral production in aspects of comprehension, vocabulary, grammar, fluency, and pronunciation. From the analysis of data from fieldnotes and interviews, it was indicated that students diminished their anxiety in speaking English and boosted awareness of their school community and society.

Applying e-poster as students' project-based technology for oral presentation in this study signified a real assistance in generating students' new ideas, activating their existing knowledge, exploring creativity and expressing their communicative skills in the form of interesting multimedia products to accommodate their procedural texts. By working together collaboratively in teams to create e-poster project through PBL, students were involved in a conducive learning environment that enabled them to discuss, decide and devote time, energy, and effort to produce a finished product (Padgett, 1994 as cited in Boggu & Singh 2015). Gónzalez, Molina, and Cardona (2017) highlighted the finding by concluding that applied project-based technology in language classroom encouraged a meaningful learning process of speaking and improved students' self-confidence as well as their interaction. Additionally, with the integration of technology as the students' group project, PBL allowed them to increase their creativity, communication, and collaboration skill needed in the 21st century learning.

The Comparison of Speaking Ability of Extrovert and Introvert Students Taught through Project-Based Learning (PBL) Using E-Poster

With regard to the second research question, the result of this study revealed that there was no significant difference in the speaking ability of extrovert and introvert students who were taught through PBL using e-poster. In other words, personality types of students—be they extrovert ot introvert—did not affect their speaking ability when they were taught through PBL using e-poster. While it was stipulated that personality types could be a factor that affects second language learning (e.g., Ellis, 1994; Dornyei, 2005) the application of PBL which gave students opportunities to interact more with other students in teams in the completion of the project led to an effect which is not supportive of the stipulation,

It is commonly postulated that extrovert students are more successful and fluent in oral communication compared to introvert students (Dewaele & Furnham, 1999). This perception is primarily based on the extroverts' preference for social contact with their environment in which they are active, showing a strong desire to communicate, and willing to express their ideas through speaking with others. Introverts, on the contrary, tend to avoid public exposure as they are less sociable and feel more comfortable for not taking part in communication (Khodareza & Taheri,

2015). Yet, this study suggested the opposite result in that both extrovert and introvert students could equally accomplish better in their speaking ability through PBL using e-poster.

Souzandehfar et al. (2014) reported the same finding which showed that there was no meaningful correlation between extrovert-introvert personality types and students' speaking ability in IELTS test. Their research also reported that there was no significant difference between extrovert and introvert students in their speaking ability. We suspected that the extrovert students felt anxious when there was no exposure of English in the classroom. The extrovert students might be comfortable and fluent in speaking in their mother language, but they found it hard to speak in English. Conversely, introvert students who were interested more in the academic study felt prepared in speaking English as they enjoyed more on reading and listening in English than involving in oral interaction. They tend to have more exposure in English outside the classroom by themselves.

This study was also supported by Chen et al. (2015) who testified that introversion-extroversion was not the main factor influencing students' accomplishment in oral English learning. In line with Souzandehfaret al (2014.), the justification rooted from the observation which showed there were probable factors concerning the result: the setting of foreign language class which did not provide natural communication situation and students' language output and intake. When introvert students equipped themselves with enough language input from reading any English resources and probably had suitable method to develop their English, on the other hand, the nature of extrovert personality could not ensure that they speak accurately. Although they were talkative and spoke much, they tend to speak with limited vocabulary, appropriate pronunciation as well as sentence pattern. Chen at al. (2015) also included motivation and culture as the factors influencing the students' ability in speaking English. Students who were interested in learning English, despite their personality types, would be highly motivated to perform better in communicating in English. Moreover, unlike Western culture, Asian culture encouraged students to be quiet and pay attention to the teacher's explanation in classroom as a form of respect to their teacher. Consequently, extrovert students who are active in their nature tend to be passive and quiet during the teaching and learning process.

However, the result of this study was contradictory to what was resulted on studies conducted by Yusef-Hasirchin (2014). The result of this study informed that the extrovert students achieved better than introvert students in oral performance. Compared to the introvert students, extrovert students more actively participated in an assigned task and accomplished a higher level of accuracy and fluency. Their findings disclosed that there was a significant difference in speaking ability between extrovert and introvert students and this is contradictory with the result of the present study.

Conclusions

This article has presented the result of exploration on the effect of PBL using e-poster on Indonesian EFL students' speaking ability across personality types. The result revealed that there was a significant difference on speaking ability between students taught through PBL using e-poster and those taught conventionally without PBL.The treatment of PBL using e-poster contributed to students' speaking ability as it showed that the students in the experimental group

achieve better scores than those in the control group. Compared to the conventional teaching strategy applied in the control group, the speaking activities offered through learning stages of PBL were proven effective to accommodate students in increasing their speaking ability in spite of their fear of speaking and language limitation. The result also indicated that there was no significant difference between extrovert and introvert students taught through PBL using e-poster. Extrovert and introvert students had an equal chance to achieve better in speaking test since there was no evidence that their personality types affected their speaking ability. The difference in the students' speaking ability was possibly influenced by factors of foreign language classroom setting, students' intake and output, motivation and culture. Thus, it is important that English teachers take more concern on those possible factors and exclude the personality types to help students improve their achievement in their speaking class. Recognition of those factors will assist teachers to understand and decide which learning strategies are effective for extrovert as well as introvert students in language learning and particularly in speaking.

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