

**THE EFFECT OF ICT ASSISTED PROJECT-BASED LEARNING AND
LEARNERS SELF-DIRECTION ON WRITING COMPETENCY OF
SOPHOMORE STUDENTS OF THE INTERNATIONAL BALI HOTEL
SCHOOL DENPASAR**



AN ARTICLE

by

NI LUH PUTU DIAN SAWITRI

NIM 1029011063

**LANGUAGE EDUCATION STUDY PROGRAM
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ABSTRACT

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Keywords: ICT based PBL, self-directed learning, writing competency.

The aim of this study was to prove whether the implementation of ICT based PBL and the students' self-directed learning give a significant effect to the students' writing competency. The study was a quasi-experimental study by applying 2 x 2 factorial design. The population was 5 classes (128 students) of sophomore students of the International Bali Hotel School in academic year 2011/2012, in which 4 classes were taken as samples which were then assigned into two different groups; experimental group and control group, by *Random Sampling to a class*(intact group). The research data were collected through questionnaire and test and that the result was then analysed using *Statistical Two-Way Anova* and *Tukey test*. The results show that, first, there was a significant effect of ICT based PBL strategy on students' writing competency, in which the students who were taught using ICT based PBL have higher writing competency than those who were taught by using conventional teaching strategy. Secondly, there was a significant interaction between self-directed learning and ICT based PBL. Third, there was a significant difference on students' writing competency taught using ICT based PBL strategy with high level of self-directed learning, where students with high level of self-directed learning performed better when they were taught using ICT based PBL strategy rather than conventional teaching strategy. Fourth, there was a significant difference between the writing competency of the students with low level of self-directed learning when they were taught by using ICT based PBL compared to those students taught using conventional teaching, in which it was found that conventional teaching was more effective to students with low level of self-directed learning. Students taught using conventional teaching strategy yielded better result in writing competency compared to those treaded using ICT based PBL strategy.

ABSTRAK

Sawitri, Dian Ni Luh Putu (2012), *Pengaruh Pembelajaran Berbasis Proyek dengan Bantuan Teknologi Komunikasi dan Informasi serta Tingkat Kemandirian dalam Belajar terhadap Kemampuan Menulis Siswa Semester Dua Sekolah Tinggi Perhotelan Bali International Denpasar*. Thesis, Jurusan Pendidikan Bahasa, Program Pasca Sarjana, Universitas Pendidikan Ganesha.

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Kata kunci: ICT based PBL, self-directed learning, writing competency

Tujuan penelitian ini adalah untuk membuktikan apakah penerapan pembelajaran berbasis proyek dengan bantuan ICT dan kemandirian dalam belajar berpengaruh secara signifikan terhadap kemampuan menulis siswa semester dua Sekolah Tinggi Perhotelan Bali Internasional. Penelitian ini dirancang dalam bentuk eksperimen dengan menerapkan desain 2x2 faktorial. Sampel dalam penelitian ini melibatkan empat kelas Management Perhotelan yang diambil dari populasi 5 kelas siswa semester dua divisi Management Perhotelan. Data dalam penelitian ini dikumpulkan melalui tes dan kuisioner. Berikutnya data dianalisis dengan menggunakan analisis *two-way ANOVA* dan tes *Tukey* yang berhasil merumuskan beberapa hasil sebagai berikut. Pertama, terdapat perbedaan signifikan antara kemampuan menulis siswa yang diajar menggunakan teknik pembelajaran berbasis proyek dengan bantuan ICT dibandingkan dengan hasil kemampuan menulis siswa yang diajar menggunakan teknik konvensional. Kedua, terdapat perbedaan kemampuan menulis siswa yang memiliki kemandirian belajar yang tinggi yang diajar melalui teknik pembelajaran berbasis proyek dengan bantuan ICT dibandingkan dengan teknik konvensional. Ketiga, terdapat perbedaan signifikan dalam kemampuan menulis siswa yang memiliki kemandirian belajar yang rendah ketika diajar dengan teknik pembelajaran berbasis proyek dengan bantuan ICT dan teknik konvensional. Siswa dengan kemandirian belajar rendah memiliki hasil menulis lebih baik ketika diberikan melalui teknik konvensional. Keempat, terdapat interaksi antara kemandirian belajar dengan teknik pembelajaran berbasis proyek dengan bantuan ICT.

Introduction

In the world of global competition, each country tries to prepare its human resources to face the challenge posted by the modern world. The challenge in this modern world requires people to be technology literate which means that people should be able to make use of the technology to solve problem as well as nurturing their sense of having a lifelong learning. This is important because rendering to the fifth pillar of education launched by UNESCO, it is stated that people should learn how to live sustainably, making use of all the existed technology to help building up a better future.

In relation to language learning, students' competency in language learning should be achieved equally across the four language skills (listening, reading, speaking and writing). The four language skills are actually interrelated to one another. Students can speak when they have enough exposure to listening, and they can write well when they are exposed to comprehensive types of reading materials. However, among those four skills, the productive skills (speaking and writing) are considered to be the most challenging skills. Unlike speaking, writing requires a more comprehensive and systematic idea to be presented to the reader because there writer would not be there to clarify any unclear ideas. Therefore, writing should be concise, coherent, organized and structured well, and also grammatically correct.

Hanson (2009) said that writing can be a pleasant experience by which ideas and feelings spill onto pages and computer screen and yet writing can also be a painful experience that blocks and stalls ideas and memories causing writers, teachers, or students to feel frustrated and insecure. Even to a well-educated person, writing is a tiring process and needs to be carefully planned. This point is strengthen by what and Applebee et al. (1986:14) stated that students have difficulty performing adequately on analytic writing task, as well as persuasive task that ask them to defend and support their opinion.

Applebee et al. (1986) further argued that students are having such difficulties organizing their thoughts in writing. He further suggested that they need much further guidance in how to think about what they write. This indicates that developing students' writing ability needs more than just a strategy. It is important to create a creative and challenging learning environment as well as considering learners' characteristic in dealing with their learning needs.

To create a creative and challenging situation in learning can be achieved by in cooperating learning with Information and Communication Technology (ICT) which is an open media for students to explore and learn. However, integrating ICT in learning would be useless if students are not assigned to a meaningful task to do. Therefore, students need to do a more meaningful project making use of ICT to enhance their writing skill.

According to Bas and Omer (2010), project based learning is an instructional method centered on the learner. Project based learning allows in-depth investigation about certain topic. It is a comprehensive approach to classroom teaching and learning and designed carefully to meet the right outcomes/goals. Project grows out of challenging question that cannot be answered by rote learning. Therefore, students have to engage in a real problem, challenging task, and of course meaningful.

Another important factor to take into account is the notion of the learners themselves. It should be understood that each learner has their own characteristic which contributes to their learning. The attribute that need to be considered is the quality of learner in taking the responsibility of their own learning. This kind of character highly related to the nature of doing a project based learning where students are given the freedom to choose, design and execute project and at the same time, construct their knowledge.

The demands of globalization necessitate our students to be more conscious, controlled, independent, and active in their learning (Chee et al. 2011). Dealing with project and information communication technology, in this case, blog, requires the students' to be more active, creative, independent, and innovative in constructing their own information and knowledge to accomplish the project. Students need to arrange how to best present the information in a blog and access the information by themselves. That kind of independence in learning is also known as self-directed learning.

Self-directed learning has all the characteristics to promote independent and active learning. The independency of students to self-direct themselves has widely known as learners' self-direction. Knowles (1975) promotes self-directed learning as a part of adult learning where students have all the independency in planning, performing, as well as evaluating their learning. Each and every student is believed to have different level of self-directed learning. This influences their perception in carrying out an independent and active learning. Some students might be well developed in an independent environment while the others might show their best performance in a guided setting.

Even though different scholars define self-direction differently as process and personal trait, this research following the definition of self-direction as a character possessed by individual in managing their own learning to a greater or lesser degree. Like other personal quality, self-direction in learning comes in different intensity in each individual. Some might have high self-direction and some others have low self-direction in learning. Students with high self-direction in learning are able to manage their own necessities in achieving their learning goal. On the other hands, students having low self-direction in learning count mostly on what people ask them to do, and take less initiative in promoting their own learning. This would affect their performance in doing the task given and how they perceive the project as a part of learning.

Based on the information above, and considering the benefits of project based learning in students' life, as well as the importance of ICT in education, this study is therefore aimed at finding out the effect of ICT based PBL with differing self-direction in learning toward students' writing competency. This becomes essential because it is going to be analyzed how ICT based PBL will affect the writing competency of students with high self-direction in learning and low self-direction in learning.

In relation to those statements above, this research attempted to answer four statements of problems. Among those six problems there were major problems and minor ones. The major objective that was trying to be proven was whether or not ICT assisted PBL gives significant effect on students' writing competency; the second one is to figure out whether there is a significant interaction between the ICT assisted PBL and learners' self-direction. The other minor objectives still related to the two major ones, (1) where this study was also aimed at revealing the significant difference on students' writing when they were taught using ICT assisted PBL compared to the conventional teaching strategy and that they have a high self-direction in learning; (2) finding out whether a significant difference on writing competency exists among students with low self-direction when taught using ICT based PBL than those taught by conventional teaching.

Theoretical Review

The Nature of Writing

Writing is originating and creating unique verbal construction that is graphically recorded. Hanson (2009:28) argues that writing can be both a pleasant and painful experience. It is considered to be a pleasant experience when we have things to say and spill

it on the computer screen or on the paper. However, it could be one painful experience whenever our idea was blocked and this could frustrate the writers. Further Hanson (2009:29) states that writing helps the brain organize and reflect. Writing enables students to make sense of complex, multifaceted pieces of information. As one of productive skills, writing covers the ability to create and produce it well. As what Marhaeni (2005) states that writing is viewed as cognitive process and creative process. As a cognitive process, writing is a mean to express the ideas in our mind. The ideas should be shaped creatively in such a way that it can really convey what it wants to convey.

Another view states that writing integrates two components, such as: cognitive and linguistic components. Cognitive components include process how writers use their knowledge to construct meaning through words. The meaning is indicated from clearness of ideas that can make the readers grasp the points of the writing. Meanwhile, linguistics components, which involve grammar, style, punctuation, diction, spelling, and mechanics; support the pieces of ideas in order to construct the whole intended meaning.

The competency in writing requires the students to be able to express meaning in short functional text and simple essay acceptable in real life context. To achieve this competency, students are introduced to kinds of functional texts and are expected to produce piece of writings. Schult (2003) explicates that creative process, in this case writing, is a time consuming process. Therefore, in assessing writing competency, teacher needs to apply an ongoing process of assessment that covers not only the result but also the development of the students.

Furthermore, students also need to know for what purpose are they writing. This will make writing activity more contextual. According to O'Malley and Pierce, (1996), there are at least three types of writing purposes. The first one is informative writing, for example descriptive writing and report on something. Second is narrative/expressive writing, for example recount and narrative. Third is persuasive writing which attempt to influence others and initiate action or change.

Descriptive persuasive writing

The primary purpose of descriptive writing is to describe person, things, or places in such a way that a picture is formed in readers' mind. It does not tell the reader that the flower is beautiful; it shows them that the flower is beautiful. According to Applebee et al. (1986:

20) descriptive writing is used in all modes of writing (narrative, expository, and persuasive) to create vivid lasting impression of the thing being described.

There are some characteristics of a good descriptive writing based on booksnutsreadingclub.com. The characteristics are:

1. Good descriptive writing includes many vivid sensory details that paint a picture and appeals to all of the readers' sense of sight, hearing, smell, touch, and taste when possible. Descriptive writing may also paint pictures of the feelings the person, place or thing invokes in the writer.
2. Good descriptive writing often use figurative language such as analogy, similes and metaphors to help create a vivid picture in readers' mind.
3. Good descriptive language uses precise language. General adjectives, noun, or verbs are less used in a good descriptive writing. The writer should choose specific word that could convey exactly the meaning that she/he intended to.
4. Good descriptive writing is organized. Some ways to organize descriptive writing include: chronological (time), spatial (location), and order of importance.

In persuasive writing, the writer attempts to win the reader by series of arguments. In persuasive writing, it is not necessarily to provide both sides of positive and negative point of views, only one thing that is being emphasized and that will be the case for the whole writing. Persuasive writing follows basic essay format which covers introduction, body (argument1, argument2, etc), and conclusion. In this research, the students are expected to create a persuasive writing to promote something and influence the reader to choose that particular thing being promoted.

Project Based Learning

The Buck Institute for Education (BIE) provides a comprehensive understanding about Project based learning. In this site, it is stated that in project based learning, students go through an extended process of inquiry in a response to a complex question, problem, or challenge. Project based learning is rooted from constructivist theory, where it is believed that students should construct their own knowledge to help them retain the knowledge longer.

Some people might consider project based learning similar to problem based learning. Nevertheless, Moursund (2003) states that project based learning constitutes a broader category of instruction than problem based learning. While project may address specific problem, it can also focus on areas that are not problem. A key characteristic of

project based learning is that the project does not focus on learning about something; rather it focuses on doing something. Project based learning is action oriented (Moursund, 2003). However, it is important to understand that there is no universally agreed upon definition of what constitutes project based learning.

In project based learning, students produce a product, presentation, or performance (Moursund, 2003). In line with Moursund, Boss and Krauss (2007) state that in project based learning, students investigate open ended question and apply their knowledge to produce authentic products. Projects typically allow for student choice, setting the stage for active learning and teamwork. As project based learning involves complex cognitive skills, it facilitates various learning experiences.

Further elaboration about project based learning is provided by Jason Ravitz and Carolyn Thorsen (2004) who stated that Project Based Learning as a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks. From the definitions above, we can conclude that the real mission of project based learning is to create a product as a result of long period of inquiry. That is why, normally project based learning needs more time compare to other basis of learning.

Self-direction in learning

Today, education is not as a matter of transferring what is known, but rather it should encourage active inquiry to support lifelong education (Smith, 2002). The concept of Self Directed learning, as introduced by Malcolm Knowles, was drawn from the notion of andragogy. Knowles argued that andragogy is the arts and science that helping adult learn. It puts more emphasize on the characteristics of adult learners and how they manage themselves as active learners and achieve their goal in learning. Knowles (1975) assumes that adult self-concept moves from that of dependent personality toward one of a self-directing human being as he or she matures. This idea was also supported by to Merriam (2001) who argues that there are five assumptions underlying andragogy which describes the learner as someone who (1) has independent self-concept and who can direct his or her own learning, (2) has accumulated a reservoir of life experiences that is a rich source of learning, (3) has learning needs closely to changing social roles, (4) is a problem centered and interested in immediate application of knowledge and, (5) is motivated to learn by internal rather than external factors.

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Based on the theory above, self-directed learning in writing for this research is defined as personal judgment of someone's ability to plan, organize, execute, and evaluate writing activity to meet the writing competency.

ICT assisted PBL

Since it first emerged, project based learning has been implemented by teachers, educator and teaching practitioners all around the globe. It was developed into various projects across curriculum and disciplines. However in this era of technology, project designers integrate their idea with current technology.

PBL which has been enhanced by the use of ICT has three new dimensions (Moursund, 2003) namely;

- ICT as an aid to carrying out the work in a project. This includes using ICT in a project's product, presentation, or performance.
- ICT as part of the content of a project.
- ICT as the vehicle that helps create a teaching and learning environment in which students and teachers are both learners and facilitators of learning-that is, they function as a community of scholars.

Another definition comes from Simkins, et al. (2002). They use the term multimedia to represent ICT. They defined project based multimedia learning as a method of teaching in

which students acquire new knowledge and skills in the course of designing, planning and producing a multimedia product.

Research Method

This research made use of the nonequivalent Control Group Design where instead of choosing the individual randomly to form new classes, this design makes use of intact group or classrooms which are formed on the basis of some natural grouping. (Sax, 1979).

The research was done in *Sekolah Tinggi Perhotelan Bali International* (STPBI) or also known as The International Bali Hotel School. The population of this study was the sophomore students of Hotel Management division. The research was done particularly in the academic year of 2011/2012 which was started from January until March 2012.

This research was designed following the *post-test only control group design* with an account to the moderator variable, this research also using a two by two factorial design (2x2). There were three variables being analyzed in this research, namely two independent variables and one dependent variable. In this research, it was seen the effect of ICT based PBL (A) and also the learners' self-direction as moderator variable (B) upon students' writing competency. The moderator variable was classified into high level of self-direction and low self-direction.

The instruments used in this research were questionnaire to know the level of students' self-direction, as well as writing competency test to get the score of students' writing. All the instruments have been through a validity and reliability test to ensure that it would yield valid data. The data were then analyzed by using descriptive and inferential statistic. For the hypothesis testing the analysis was done by using two-way ANOVA and continued by post-hoc test known as Tukey test.

Finding and Discussion

There were four problems that need to be revealed in this research. The first research question was to know whether ICT based PBL gives a significant effect upon students' writing competency. From the descriptive statistic, it can be seen that the mean score for students taught using ICT based PBL was 36.87 which was higher than the mean score for students taught with conventional teaching strategy 30.76. The difference between these two means were also proven significant in the two-way ANOVA result which showed the F value

of 4.24 which was higher than the value of F_{cv} that was 3.99. This indicates that the difference between the two means were significant where the students taught using ICT based PBL gain better writing competency compared to those students taught using conventional teaching strategy.

How can this result be achieved? The answer lies on the essence of the project done in this research. The students in experimental group were asked to design a project of promoting their own imaginary hotel in a free web blog (*multiply.com*). As the nature of project based learning is cooperative and constructive learning, in this project the students were also put in a group of three students. What they have to do was to design their own blog as a medium to promote their imaginary hotel. In the blog they have to write three different writings of their hotel facilities. Since they have to 'sell' their hotel as a commodity they have to write a descriptive persuasive writing promoting their hotel. Even though they work in group, each student responsible for one writing to contribute in their blog. The benefit of putting the students in a group was that the students have the opportunity to discuss with their friends give valuable inputs to each other for the betterment of their blog.

Meanwhile, in the control group the students were treated using conventional writing strategy where the students work on descriptive persuasive writing all by themselves and counted only on the teacher's feedback. In the conventional strategy, the students were not exposed to the use of ICT especially blog. They did not deal with a particular project; they only have to write what the teacher asked them to write.

Therefore, the main reason that causes a significant difference was the nature of the ICT assisted project where the students have different excitement when dealing with something new, something close to their life and related to their work-life later on. Being able to design their own project based on what they want to have, motivated the students to be actively involved in their own learning. This affects their interest in accomplishing their writing to meet their desire.

This result is supported by research done by Yassin et al. (2011:384) which was conducted in The University Kebangsaan Malaysia. Yassin and his colleagues integrated PBL with ICT for students of diploma in Education in an action research study. The research concluded that ICT with PBL has helped the students to update themselves with the new knowledge, strategy and technique that can be transferred to the students in a practical way. The students were asked to present the proposal at the end of the cycle. The theme for the

project was “The integration of technology in teaching and learning”. This project was to ensure that the students applied the knowledge and skills learned from the course.

Additionally, a research done by Erdogan et al (2008) to the e-MBA degree figure out the factors affecting the students’ achievement in a web based media. In the conclusion they pointed out that web based education have positive impacts on the improvement of academic achievement. This is due to the nature of project based learning which basically gives many benefits for the students (Railsback, 2002:8) because this strategy allows students to select topics of their interest. Furthermore, she stated that 20 years of research suggested that the engagement in a project, motivation and feedback, leads to a better achievement. Furthermore, research on the long term effect of early childhood suggested that project based learning should be incorporated starting from early childhood.

The other particular benefits of project based learning stated by Railsback, (2002:9) were that project based learning helps preparing children for the work place, increasing motivation, connecting learning school with reality, providing collaborative opportunities to construct knowledge, increasing social and communicating skills, increasing problem solving skill, enabling students to make and see connections between disciplines, increasing self-esteem, allowing students to use their individual strengths, and providing a real world way to learn to use technology.

The second question was to reveal whether there is a significant interaction between ICT based PBL and self-direction in learning. From the analysis using two-way ANOVA it was found that the F value for the interaction was 39.10 which was way higher than the F_{cv} 3.99. with the significant value of 0.00 it can be concluded that there was a significant interaction between ICT based PBL and self-direction. It means that that both ICT based PBL and self-direction in learning contribute significantly to students’ writing competency.

This result is supported by a research done by Erdogan et al (2008:33) who suggested that in order students to be success in a web based or ICT based environment, depends mainly on learners’ attitude, because they determine the programs for learning environment, learning and teaching method as well as students and teacher role. Fail to setting up all those requirements lead to a failure in a greater scale of learning though an ICT based environment.

The result above indicates that the learners’ independency in fulfilling their learning needs contributes to the success of ICT assisted project based learning. This result is also

strengthen by a research from Derrick et al (2005:70) who had investigated learners' autonomy in an online and face to face meeting. It was found out that an online environment trigger the learners' autonomy in accomplishing the doctoral degree. However, one thing that must be kept in mind is that, this will only work only if the learners are capable of managing their own learning to achieve the goal that they set up themselves. The success of students working in an online environment has also determined by the degree of their self-direction in learning; how they perceive learning process in a way to support their learning needs.

After seeing the main effect of ICT based PBL toward writing competency, then another factor was being considered in this research. Self-direction in learning was taken into account to see whether ICT based PBL affect equally to students having high self-direction in learning and low self-direction in learning.

Based on the calculation done using both two-way ANOVA and Tukey test, it was found that students with high self-direction in learning when taught using ICT based PBL shown a higher score in writing competency with the mean score 50.03 compared to students having high self-direction in learning taught using conventional teaching with mean score 46.19. This difference was also proven to be significant with the result of Tukey test Q_{ob} 8.30 definitely higher than the Q_{cv} 2.96. The main reason that causes this result was the characteristics of students having high self-direction in learning.

Students with high self-direction in learning possess a quality to manage their own learning. They are able to set their own learning goal, formulating their learning needs, making use of all available resources to help them in learning, choosing appropriate learning strategy, and also evaluating their learning outcome. Having those abilities, students easily fit in the demand of project based learning. They have to design their own project, formulating what they need and actively search for information to complete their project. Then, they also have to evaluate their own learning outcome as well as deciding another learning strategy whenever they find their strategy was not successful. That was why students with high self-direction in learning able to perform at their best in a project based learning environment.

This result was supported by a research from Abdur Rouf (2011) which was conducted to see the effect of assessment by self-direction in learning using online test toward students' mastery of Applied Science in the Australian Catholic University. The self-direction in learning material provided by him was designed to promote students centered independent learning in furthering the knowledge of the students and leading to the development of life-

long learning skills. His project in accomplishing the self-direction in learning materials lasted for 10 weeks. The students were requested to answer online quizzes which they can complete or change the answer along with the process of learning. The objective of the research was to evaluate the impact of new comprehensive self-direction in learning online test in promoting students deep approach engagement leading to an increase in students' achievement and retention of knowledge related to the topics being learnt.

On the other hand, students with low self-direction in learning given the treatment of ICT based PBL yield a lower result in writing competency with mean score of 36.65 compared to students taught conventionally with mean score of 37.50. The post-hoc test using Tukey test proven that this difference is significant with $Q_{ob} = 4.14$. while, the value of $Q_{cv} = 2.96$. Based on the result of the analysis it was found that students with low self-direction in learning when given treatment of project based learning assisted with ICT the students did not perform well, compared to students treated with conventional strategy. Students with low self-direction in learning did not know what they really need to do to meet their learning goals. They were hardly able to seek for information to do their project. Therefore, the students could not show the best they got in writing with the exposure of project and blog as a medium. They were not active in finding out the next step needed to accomplish their project. They seemed passive and only waiting for the next instruction or only see what their friends are doing.

Students with low self-direction in learning possess a low capability in determining their own goal for learning. They are mostly students, who love to be told what to do instead of finding out by themselves what they need to do or to learn. Blumenfeld et al, (1994:377) stated that self-direction in learning requires considerable cognitive and sophistication in metacognition. Even though the students were treated with sophisticated strategy, if they would not invest the effort necessary to acquire information, generate, test solution, and evaluate their findings then any kind of strategy will be useless (Blumenfeld et at, 1994:375). This also happen in the case of low self-direction in learner treated with ICT based PBL. No matter how interesting and contextual the design of the project, if the learners are unwilling to explore the information then the result achieved will not be maximum.

Conclusion

Based on the results of data analysis and discussion, it can be drawn several conclusions that can be presented as follows:

1. There is a significant difference in writing competency between the students taught by using ICT based PBL and conventional teaching. The mean score of the students' writing competency taught by using ICT based PBL was 36.87 and those assessed by using conventional assessment was 30.76
2. There is a significant interactional effect between ICT based PBL and self-direction in learning on students' writing competency. This means that ICT based PBL and self-direction in learning simultaneously influence the students' writing competency.
3. There is a significant difference between the writing competency of the students with high self-direction in learning when they were taught by using ICT based PBL and conventional assessment. The mean score of the students' writing competency taught by using ICT based PBL was 50.031 higher than those taught by using conventional teaching which was 46.188
4. There is a significant difference between the students' writing competency of the students with low self-direction in learning when they were taught using ICT based PBL and conventional teaching. The mean score of the students' writing competency taught by using ICT based PBL 35.56 was slightly lower than those taught by conventional assessment which was 37.50.

Based on the research findings, the discussion, and the conclusion, several recommendations are proposed. They can be stated as follows:

It is recommended for the English teacher of the sophomore students and other grades of students to use ICT based PBL as an alternative teaching strategy in writing class, particularly, for students with high self-direction in learning. For the English teachers and students who have limited amount of time for writing class, it is suggested to apply the ICT based learning since it can be applied both in the classroom and outside of the classroom. Besides that, implementing ICT based PBL in the class writing project can save their time in correcting students' writing product and giving feedbacks.

Since self-direction in learning has significant role in contributing students' writing competency, the English teachers are expected to know the characteristic of their students; whether they are a high self-direction in learner or students with low self-direction in learning. This will influence the type of assignment and ways of teaching that would be given to the students

The other researchers are expected to research the effect of ICT based PBL and self-direction in learning toward other language skills (speaking, listening, and reading) or even to the other types of functional text. For other researchers who want to conduct research to improve the quality of writing competency, it is recommended to do further research with different writing approach, assessment technique, and characteristics of students. Moreover, it is recommended to research other variables, such as: the location of the school (in city or in village), socio-economic background of the students' parents, etc.

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