ICT BASED PROJECT IN LEARNING BASIC AIRPLANE COMPONENTS

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Abstrak

Pada era ini, mempersiapkan peserta didik untuk menghadapi abad 21 merupakan salah satu tuntutan di dunia pendidikan terutama dalam penggunaan TIK dalam kegiatan pembelajaran. Dengan segala keterampilan yang dibutuhkan, para mahasiswa diharapkan mereka mampu bersaing di dunia global pada masa depan. Bekerja dalam tim juga penting untuk dilatih bagi para siswa di era ini. Penelitian ini difokuskan pada penggunaan project berbasis TIK dalam kegiatan mengajar khususnya pada pembelajaran komponen pesawat. Penelitian ini melibatkan 40 siswa pada dua kelas di angkatan tahun 2019. Penelitian ini akan menjawab dua pertanyaan penelitian yaitu (1) Bagaimana persepsi siswa tentang manfaat penerapan TIK yang didukung PBL terhadap pengembangan keterampilan berbahasa? dan (2) Bagaimana persepsi siswa tentang manfaat penerapan PBL yang didukung TIK untuk pengembangan diri? Penelitian ini akan menerapkan studi kasus. Instrumen yang digunakan untuk mendukung penelitian ini adalah peneliti sebagai instrumen utama, angket dan laporan siswa. Penerapan TIK menghadirkan lingkungan belajar yang positif dimana siswa berpartisipasi untuk mengembangkan pengetahuan dan proses keterampilannya.

Kata kunci: TIK, PBL, komponen pesawat terbang, jurusan Airframe Powerplant

Abstract

In this era, preparing the students for the 21st century is one of the demands in education which is using ICT in the learning activity. With all the skills that are required, the students are expected to be able to compete in the global marketplace in the future. Working in a team is also important thing to train for the students in this era. This research focuses on using ICT based project in teaching activity especially in learning basic airplane components. The research involved 40 students with two classes of the year 2019. This research will answer two research questions which are (1) What are the students' perception of the benefits on the implementation of ICT supported PBL to the language skill development? and (2) What are the students' perceptions of the benefits on implementation of ICT supported PBL to the self-development? This research applied a case study. The instruments used to support this research were the researcher as the main instrument, a questionnaire and the students reports. The implementation of ICT brings the positive learning environment where the students participate to develop their knowledge and skill process.

Keywords: ICT, project-based learning, basic airplane component, airframe powerplant department

INTRODUCTION

Information Communication Technology (ICT) is being one of the concerns in Indonesia's education nowadays. English education also applies ICT as a learning framework with the purpose to encourage the student's autonomy in learning. The current educational demands are to prepare students for this Century. The skills required in this era are integrated into learning experiences which are called 4Cs (collaboration, communication, creativity, and

critical thinking). With all four skills, the students are demanded to be able to survive in the global working life in the future.

Nowadays, the need of mastering information technology or ICT literacy is a major requirement to the learners. The learners are demanded to be more creative and innovative in the 21st century (Magana & Frenkel, 2009). It is also supported by Ivankovica et al. (2013) that ICT is a major thing to maintain the socialization and professional career. In addition, education plays an important role in the social development aligned with the ICT literacy. That's way in this 21st century, learners are needed to master ICT because it is one of the competences and requirements in this era. Kareluik (2013) divides the competences in 21st century into three which are foundational knowledge (to know), meta knowledge (to act) and humanistic knowledge (to value). The important is that ICT literacy is one of the aspects in the foundational knowledge.

Based on the need evaluation of English for airframe powerplant department, the students need with a view to use English to help their getting to know in maintenance and manufacture. While, all the students are not from vocational school of aviation background. In truth, recognize the basic components of airplane is a should for the first year in airframe powerplant department. One of the methods to help the students in understanding the material is with the aid of elaborating ICT. It is going to help the students to be aware of the airplane components and to present the students projects.

Elaborating ICT and project are ideal for airframe powerplant department. It is because they are engineer candidates. In the real work, they will face the project and work in a team. By using the technology and working in a group, it is expected that the students will enjoy and will be motivated in the learning activity. In addition, train the students to engage working in a team is also important.

The important of English has tried many academic institutions and teachers in Indonesia to discover the best methods in teaching English as a foreign language. In addition, many schools are encouraged to set up such an effective English program to broaden the students' English competencies. Furthermore, the education and culture ministry have assigned to schools starting from primary school to lead the students being able to have strong academic abilities, critical thinking, teamwork skill, and also the ability using technology. Those abilities are required inside the 21st century learning in hope that the students can employ their learning to apply knowledge in their daily life.

With the purpose to be able to achieve that goal, the government has proposed scientific approach in teaching and learning any subjects, including English, in all levels. One of the

scientific approaches that the government cautioned is Project Based Learning (PBL). Considerably, the basic concept of PBL is students learn by doing through the process of exploring, scaffolding, interpreting, negotiating, and creating. In like manner, studying with PBL does not focus on learning about something but it focuses on doing something for the reason that PBL is action orientated (Moursund, 2003). Scientific approach emphasizes the students be able to observe, ask, explore, associate and communicate inside the desire that the students will increase their sense of inquiry similarly with the anticipated outcome in the 21st century learning.

The learning model frequently used to facilitate the learning ICT is a project-based learning (PBL). Blumenfeld et al. (1991) state that the project-based learning is an ideal model to teach and learn. By having a project-based learning, a teacher can design something to the students depends to the classroom condition while facing the real problem to be carried in the research. Krauss and Boss (2013) say that PBL discusses real world problems and gets to basic understandings. It is personalized in which the students choose the bureaucratic process they are researching, mostly based on issues they face in their own lives. The positive effect a project-based learning done by the students is the project makes the students more actively participate in the learning activity and students can produce something with cooperation of others (Bagheri & Abdullah 2013). Moreover, the students' knowledge and skills in problem solving and investigation will be developed by having project-based learning.

The university under this research is airframe powerplant department in Institut Teknologi Dirgantara Adisutjipto (ITDA). ITDA is one of private universities in Yogyakarta under air force foundation. There were 2 classes which consist of 40 students who were involved in this research. The students in airframe powerplant department have to deal with some projects during the semester which mainly ICT based. The lecturer makes use of the ICT as a part of doing the projects. Most of the tasks were finished in and outside classroom in most cases with the involvement of ICT. Thereupon, they have been allowed to use any devices in the English study class to help their studying as well as the usage of university's Wi-Fi. Correspondingly, the lecturer tried to help and interact with the students not only in class but also outside the classroom through WhatsApp group. The students at the university under this research did the projects on making infographic and video. ICT in the English class is not only used as an aid to carrying out the work in the project but also it is a part of the content of the project.

Related research has been done by Khoimah (2018). She wrote a research study entitled Video Project in ESP Classroom: A Way to Promote Autonomous Learning in a Big Class. She

conducted the research because she dealt with teaching English for specific purposes in a big class. She thought that it was really challenging to teach ESP class because the students are not from English Department and the students need to be more autonomous in learning English. The researcher did a case study and the results show that video project can be used as a media to promote the students' autonomous learning. The students also gave positive respond in learning English using a video project because they experienced in improving their pronunciation, vocabulary, grammar and writing.

Based on the background, this research proposed two problem formulations which are what are the students' perception of the benefits on the implementation of ICT supported PBL to the language skill development? And what are the students' perceptions of the benefits on implementation of ICT supported PBL to the self-development?

METHOD

This research is a case study which involve 40 students from 2 classes. They were taught English for specific purpose and assign to make an infographic and video about part of an airplane and people in the airport. As stated by Neale, Thapa and Boyce (2006) a case study is story about unique, special, or interesting stories. It provides the result of the story by recording what happening in the learning process. Moreover, it can be a good idea to bring a success project in the learning process or to bring attention to a particular challenge or difficulty in a project. A case study is suitable to apply in this research because the researcher has a purpose to know the students' perceptions of the implementation of ICT using PBL in the English class.

The study was conducted in airframe powerplant department, Institut Teknologi Dirgantara Adisutjipto, Yogyakarta. It involved two classes of 2019 year graders, consists about 40 students. The study engaged two classes of the students taking Bahasa Inggris Teknik I subject in which it belongs to the main subject package in Semester 1. The students consist of 40 students from 2019 grade. The research was executed in Semester 1 of academic year 2019/2020.

Three instruments were applied in this research. First, the researcher as the main instrument who had knowledge with the theories to the topic of the research. Based on the theories and the researcher's knowledge, the researcher made the statements which are used in the questionnaire in order to analyze the findings. The second instrument was a questionnaire. The students answered the questionnaire anonymously to make them comfortable and free to answer. There were fourteen statements in the questionnaire and were designed in line with the PBL theories. The students had to state their opinions with Likert Scale, which were Strongly Agree (SA), Agree (A), Not Sure (NS), Disagree (D), Strongly Disagree (SD). The third

instrument was students reports. The students' reports were submitted by students at the end of the project. The students' reports were the verbal data on the students' responses on the implementation of ICT in the project. There were four parts in the students reports which are narrative report, team evaluation, my contribution and reflective report. The following is the student report form which is submitted in the last day of the project:

STUDENT REPORT

PROJECT   :
NAME   :
STUDENT NUMBER:

NARRATIVE REPORT:

1. What is the project about?

2. Who is/are involved in the project?

3. Where do you do the project?

4. How is the step by step of the project from start to finish?

TEAM EVALUATION:

1. Name:

2. Job description:

3. Responsibility:

MY CONTRIBUTION:

1. What is/are your contribution to your group?

2. What is/are the significance of your contribution to your group?

REFLECTIVE REPORT:

1. What do you like about the project?

2. What do you dislike about the project?

3. What do you learn from the project?

4. Do you have any suggestions and critiques? If yes, what are they?

Figure 1. The student report form

The first part was narrative report. The students were asked to answer (1) what the project was about, (2) who involved in the project, (3) where the students did the project, (4) how the step by step of the project was done from the start to finish. The second part was team evaluation. The students had to answer (1) the name of the members, (2) the job description of each

member, (3) the responsibility of each member. In this part, the students had to evaluate their friends in a team. While the third part is my contribution. The students had to explain their contribution to their group and their significance of their contribution to their group. In the third part, the students had to evaluate themselves. The last part was a reflective report. In this part, the students had to answer (1) the things they like from the project, (2) the things they dislike from the project, (3) the things they learn from the project, (4) the suggestions and critiques of the project.

Firstly, the data analysis was done by analyzed the results of the questionnaire. It was based on the statements on Likert Scale. The students who gave their answer through the questionnaire would be counted and put in the form of percentage. Secondly, the data was analyzed by the students reports from one project which was making a video project about parts of an airplane and people in the airport. The classification was based on the common answer by the students. After that, the data were summarized into two, namely: (1) self-development and (2) language skills.

FINDINGS AND DISCUSSION

In order to know (1) the students' perception of the benefits on the implementation of ICT supported PBL to the language skill development and (2) the students' perceptions of the benefits on implementation of ICT supported PBL to the self-development, the researcher distributed fourteen questions in a form of questionnaire to the 40 students in two classes. The students were asked to give their opinions by giving the response to the statements through Likert Scale, which are Strongly Agree (SA), Agree (A), Not Sure (NS), Disagree (D) and Strongly Disagree (SD). After that, the researcher analyzed the students' opinion whether the opinions on the statements were positive or negative. Afterwards, the student reports which were collected at the end of the project read by the researcher. The researcher read all the students' comments and classified into (1) language skill development and (2) self-development.

In order to answer the first research questions, based on the result of the questionnaire the students' perceptions of the benefits on the implementation of ICT supported PBL to the language skill are positive. The students think that the implementation of ICT supported PBL in learning activity help them to improve their language skills (listening, speaking, reading and writing). It is because they improve those skills when they did the project. On the other hand, the results of the questionnaire show that the students think that the grammar knowledge was neglected while doing the project. It can be seen as follows:

Table 1. The students' questionnaire on the language skills development

Statement	Likert Scale				
	SA	A	NS	D	SD
Language skills					
1. Project work helps me to improve my listening skills.	16%	57%	21%	6%	0%
2. Project work helps me to improve my reading skills.	26%	58%	4%	11%	1%
3. Project work helps me to improve my speaking skills.	42%	51%	5%	1%	1%
4. Project work helps me to learn more English words.	42%	54%	3%	1%	0%
5. Project work helps me to improve my writing skills	22%	57%	5%	10%	6%
6. I learn grammar knowledge while doing project work.	2%	23%	9%	62%	4%

In order to support and check the results of the questionnaire, the researcher also analyzed the students' comments on the questionnaire box, as follows: (1) It is fun to learn English through project because we can directly apply the knowledge, (2) We can implement English in our daily life through PBL, (3) We can improve our speaking skill especially when doing the presentation because we have to present our project. In addition, it was shown in the students' report that the students are asked to make a report and implement the language skills (listening, speaking, reading and writing) to accomplish the project. The listening and speaking skill were implemented when the students did the interview to gather the data need for the project. They have to ask the questions and listen to the answers. The reading skill was developed by reading the materials given by the lecturer to prepare the project. In addition, they learned new vocabularies by reading the materials. During the project, the students were helped to improve their writing skill. They had to consult the script for the video and the lecturer gave the feedback. At the beginning of the project, the lecturer asked the students to write the road map of the project step by step. While at the end of the project, the students were asked to write the report. The student report really helped students to write fluently because they wrote something factual and what they felt.

Nevertheless, the results show that most of the students felt by having the project, they did not improve their grammar knowledge. Some of them said that they felt apart from learning grammar. It can be seen in the students report, they wrote the student report fluently but they

did some grammatical errors. One of the students wrote that there was no grammar explanation from the lecturer.

The positive response is also shown in the second research question which is the implementation of PBL supported ICT has helped the students' self-development. The significance results related to the self-development show that the students improve their motivation, creativity, team work skill, responsibility, active learner and independency. The results of the questionnaire on the students' self-development are as follows:

Table 2. The students' questionnaire on the self-development

Statement	Likert Scale				
	SA	A	NS	D	SD
Self-development					
7. The projects increase my interest in learning English.	33%	55%	14%	9%	9%
8. I can relate the project with real life problems.	30%	52%	7%	9%	2%
9. Doing projects in the classroom brings enjoyment.	48%	36%	11%	2%	2%
10. The projects require me to think creatively.	27%	50%	23%	0%	0%
11. Project-based learning enhances my team work skill.	23%	36%	7%	7%	7%
12. Project work helps me to enhance the sense of responsibility.	43%	50%	5%	2%	0%
13. Project work helps me to be a more active learner.	16%	52%	32%	0%	0%
14. Project work helps me to be a more independent learner.	47%	16%	30%	7%	0%

The students' motivation was shown in two factors which were (1) the interesting and fun activity, (2) enjoyable classroom. The students felt that the project did not make them bored because it was related to teenager. They said that such as recording the video and editing the video were really fun to do. They said that they gained so many benefits of it. They experienced something different in English class because they did not find paper exercises but they created an interesting project. In line with those statements, most students felt that the project given by the lecturer was fun. These are the comments from the students reports: (1) I like editing the picture and making into infographic in this project, making a video is also new

experience for me. I can learn more how to make a video because I am not really good at editing video, (2) I like this project because I can improve my skill using technology especially using Canva and Kinemaster, (3) The thing I really like from this project is I can learn how to make a video using video editor and create infographic using Canva.

Furthermore, the project develops the students' creativity. Most of the students agreed that students' creativity was really needed in this project. They had to make use their imagination to do the project. These are the common comments from the students reports related to the creativity: (1) The thing that I like most from this project is I can make use my own imagination, (2) The thing that I like from this project is I can create thing depends on my own creativity, (3) I like doing this project because I can enhance my creativity.

In addition, the students agreed that by doing the project, they developed their responsibility. In this project, the students were given a deadline. And it made students had to make a good time management since they not only did one activity but they had to do some activities to finish the project. When they were not responsible with the time frame, the project did not accomplish in time. These are the common comments related to the responsibility: (1) I learn how to respect others and to be a responsible leader for my team, (2) I learn to be more responsible for my job, (3) I learn how to have a good team work and how to manage time so that I can accomplish all the tasks in time with satisfying result.

It shows that the students develop their responsibility through the deadline and project workload. Tried to obey the deadline makes them being responsible with the learning process. In a team, the students also learn about responsibility by sharing their team goal. They have to share their job in order to achieve the same goal. It makes them to be responsible for their job. If one of the members is not responsible, the team is in a trouble and cannot achieve the goal.

The project also improves the students' team work skill. It is shown in the questionnaire results that the statements on the collaborative skill were high in percentage. Since the lecturer chose the group member randomly, the students had to enhance their team work skill well. They cannot choose their group member as they want. With this treatment, the students were expected to learn how to work in team. These are the common comments related to team work skill: (1) What I learn from this project is team work. A team work takes an important role because if you do the project by yourself, you cannot finish the project on time. With the group members, we can share the jobs and help each other, (2) I learn how to manage my time and work in a team, (3) I learn how to build a good team work and how to manage my time so that I can finish the project on time with satisfying result.

It was confirmed that there were three factors which led students to have a positive response to PBL supported ICT in learning English. They were (1) authentic learning situation, (2) student center activity, (3) the involvement of ICT. The project assigned to the students promotes to learn authentically as shown in item 8 and 11 which were high percentage. The authentic activity refers to the designed activity to develop the students thinking and problem skill which are important in and out of school context in order to support the learning process (Brown, 2000). There are some indicators why this class under the research categorized as authentic learning.

First, the project topic has a real-world relevance which give the students to understand and apply English as their communication tool specially to prepare for their job. PBL gives an experience for students to relate between what happen in the classroom and the opportunity in the real life. They do not learn something that they do not really know but they learn something that they have done in the classroom and they can face in the real life. It means that PBL fosters students to relate English in the classroom to the real-life situation. On the contrary, the conventional learning process will spend most of the time doing the textbook.

Furthermore, it also supports the students' creativity. By doing the project, the students can enhance their creativity because there is no true and false answer. The reason is that the purpose of the project is to let the students to produce the different and unique result. The lecturer gives the students' freedom to create the project. For example, the students were asked to make a video about components of the airplane. Some of the groups visited Dirgantara Museum to record the video and picture, some of them draw by themselves. The project makes the students think creatively with combining their experience and knowledge to produce the idea. They were free to explore when doing the project.

Second, the students used English as the target language to accomplish the project. It helps the students in a situation which needs the authentic language (Moss and Van Duzer, 1998). The project supports the students to develop the four skills (listening, speaking, reading, and grammar). Moreover, PBL can promote student's development in listening, speaking, reading and writing. Not only the language skills will be developed, but also the vocabulary skill will be improved.

However, according to the questionnaire and students reports, the students were not satisfied with the grammar learning process. They felt that the grammar knowledge was neglected. As shown in the questionnaire result, the number for either strongly agree or agree was small for grammar part. In addition, the students report shows that the students can write the report fluently but it has grammatical errors. In PBL process, students focus on learning by

experiencing English in the real life on the topics rather than memorizing the patterns. According Kloppenburg and Baucus (2004), a project learning focuses on content learning rather than the target language. It is in line with Lee (2002) as cited in Roza (2011) that the purpose of English learning using PBL is to create lifelong learners.

Third, collaborative work leads authentic learning. The collaboration is seen as authentic learning because when the students have graduated, they have to work together with others. The project is like a simulation when later they are in the working life, they have to share the ideas and solve the problems with their team to do the project. Student centered activity is the second factor which leads the students have the positive perception. There are tree indicators why this English class has applied student centered activity. The collaboration when doing the project creates the classroom willl be student centered activity. By working in a team, students are supported to discuss and share their ideas in the project. They not only work in a team to achieve the goal but they learn how to communicate dan respect each other. In addition, by interacting in a team, they develop their skills such as brainstorming, planning, problem solving, and evaluation.

Team work skill involves the combination of interactive, interpersonal, problem solving and communication skills needed by a group of people who cooperate sharing the same goal (Crebert et. Al, 2011). The characteristic of PBL requires a collaborative work which helps students to develop their team work skill. Since they have to share the ideas and respect the other opinions. By collaborative work, students' responsible is also developed. As stated in the student report, when doing the project, they have to share the job in a team. If one of the members is not responsible with his job, all of the members will get the problem. So that, the project helps students to build their responsibility. Every member in PBL takes an important role in accomplishing the project. Like stated by Fried-Booth (2002), students who are involved in PBL gain more responsible than students in conventional classroom activities.

Next indicator for PBL is less domination for a lecturer. A lecturer does not involve too much to finish the project. As stated in the student report, the lecturer helps the students but he does not dictate them. The lecturer only guides and gives the suggestions. The students have a freedom to explore and the lecturer only facilitates and help them if needed. PBL gives students a chance to find their interest and talent. In addition, students' activeness is also the indicator for PBL. While doing the project, students are expected to solve their problem faced. Most of students said that they faced many obstacles during the project and they struggle to face the problems by trial-and-error process. It means that every member is expected to be active to share their ideas to solve the problem.

The involvement of ICT is the third positive response of students do PBL. The involvement of ICT in the learning process supports the students to be more meaningful since technology has been spread and students especially teenager cannot separate with the technology. In English class, the lecturer lets the students to access mobile phone and laptop to support the learning activity. Jonassen, et al (1999) applied a constructivist perspective in using technology in schools to create the activities-based technology which support the meaningful learning process.

Nowadays, ICT takes an important role in every element such as business, politic, industry and education. Thus, the lecturer equips the students with the soft skills related to ICT. In English class, ICT has been used in learning process. Since ICT is supported the implementation of PBL. Most of the students will use technology to do the project such as making an infographic and a video. Moursund (2003) mentions that ICT usage has three dimensions which are (1) ICT helps to carry out the work such as presentation, performance and project, (2) ICT is a part of content project, (3) ICT is a tool to help lecturer creating teaching and learning environment.

In this research, ICT has been in those dimensions and helps students to develop their creativity. They said that when doing the project, they used technology a lot. They learned more things that they have not known before. By doing the project, they developed their soft skill in computer dan technology skill. As stated in the student report, they learned how to edit the photos and video. They felt happy dan enjoyed learning how to make an infographic using Canva and edit the video. The involvement of technology makes students can create an interesting project using the software such as Canva and Kinemaster. Nowadays, students are demanded to master not only the knowledge in their field but also the technology skill. Since they have to deal with technology when they work.

CONCLUSION

The implementation of ICT supported PBL in the nowadays context brings the positive learning environment where the students participate to develop their knowledge and skill process. There are three factors caused the students have positive perceptions to ICT supported PBL in learning English. First, the authentic learning environment. Second, implement the student-centered activity. Third, the ICT involvement make them have positive perceptions through the implementation of ICT supported PBL. Recently, students use technology in the daily life. Few of the students felt that they only had limited time to finish the project since they also had other tasks from other courses. In addition, some students said that they did not learn grammar when doing the project.

Meanwhile, there are two suggestions based on the result of this research. First, the lecturer has to consider the grammar knowledge in the learning activity although the focus is to develop the communication skills. Since some of the students felt that grammar was neglected in the English class. Second, the learning process is complex since there are some factors involved. There are some perspectives can be used to investigate the PBL effectiveness. Thus, it needs to conduct more researches on the effectiveness of PBL. Moreover, it needs to investigate the effect using technology for students. It is about how technology used and the effects for the students.

REFERENCES

Basturkmen, H. (2006). *Ideas and options in English for specific purposes*. New Jersey: Lawrence Erlbaum Associates.

Blumenfeld, P. C., Soloway, E. & Marx, R. W. (1991). *Motivating Project-Based Learning Sustaining The Doing Supporting The Learning.* Michigan: Law- rence Erbauw Associated, Inc.

Brown, D. H. (2000). Principles of language learning & teaching. (4th ed.). New York: Longman. (pp. 49-58)

Crebert, G, Patrick, C-J, Cragnolini, V, Smith, C, Worsfold, K & Webb, F (2011), Teamwork skills toolkit. http://www.griffith.edu.au/gihe/resources-support/graduateattributes (accessed 30 May, 2016).

Fried-Booth, D.L. (2002). Project Work, Oxford: Oxford University Press.

Hafifah, G. N. (2020). Teachers Perspectives of ICT Integration in English Language Teaching: A Review of Literature. *JEES (Journal of English Educators Society)*, *5*(1), 9–15. https://doi.org/10.21070/jees.v5i1.205

Hidayati, T. (2016). Integrating Ict in English Language Teaching and Learning in Indonesia. *JEELS (Journal of English Education and Linguistics Studies)*, *3*(1), 38–62. https://doi.org/10.30762/jeels.v3i1.173

Ivankovica, A. Š. (2013). ICT literacy among the students of the Faculty of Philosophy, University of Mostar. *Procedia Social and Behavioral Sciences , 93*(1), 684-688.

Jonassen, D. H. (1999). Learning with technology: A constructivist perspective. Upper Saddle River, NJ: Prentice Hall.

Kareluik. (2013). What Knowledge Is of Most Worth: Teacher Knowledge for 21st Century Learning. *Journal of Digital Learning in Teacher Education*, *3*(1), 127-140.

Khotimah, K. (2018) Video Project in ESP Classroom: A Way to Promote Autonomous Learning in a Big Class. *The Asian ESP Journal*, 14 (5), 53-58.

Kloppenborg, T.J., & Baucus , M.S. (2004). Project management in local nonprofit organizations: Engaging students in problembased learning . Journal of Management Education, 28, 610-630.

Krauss, J. Suzie, B. (2013). *Thinking through project-based Learning Guiding Deeper Inquiry*. California: Corwin Sage Company.

Kusumaningrum, Maria Asumpta Deny; Pertiwi, D. R. (2020). Improving Students' Vocabulary Mastery Using Plickers for Electrical Avionic Department. *Jurnal Inovasi Penelitian*, *1*(6), 1095–1106.

Laur, D. (2013). Authentic Learning Experience A Real-World Approach to Project-Based Learning. In *Eye On Education Routledge Taylor & Francis Group New York London* (Vol. 53).

Magana, S., & Frenkel, P. (2009). Transforming Teaching and Learning for the 21st Century. *Pro- methean*, *1*(1), 32-41.

Moursund, David. (2003). Project Based Learning using Information Technology. International Society for Technology in Education. Eugene. Oregano.

Moss, D., & Van Duzer, C. (1998). *Project-Based Learning for Adult English Language Learners*.

Roza, A. (2011). Project-Based Learning in the Algerian Secondary School Syllabuses and textbooks (Unpublished Dissertation). Memmeri University of Tizi-Ouzou. Alegarian.

Stake, R. E. (n.d.). Retrieved 28 09, 2020, from https://www.sfu.ca/~palys/Stake2003-CaseStudies.pdf

Tan, Joseph C. L. & Chapman, A. (2016). *Project-Based Learning for Academically-Able Students* (Vol. 4). Rotterdam: Sense Publishers.

Pertiwi, D. R. (2019). HOTS based project in mechanical engineering department. *JELE (Journal of English Language and Education)*, *5*(1), 45. https://doi.org/10.26486/jele.v5i1.862

Widiatmoko, P., & Winardi, A. (2018). Qualifying Teachers' of English for Specific Purposes to Meet the Global Challenges. *Ahmad Dahlan Journal of English Studies*, *5*(1), 20. https://doi.org/10.26555/adjes.v5i1.8892