



Online (e-ISSN): e-ISSN 2715-0437 || Printed (p-ISSN): p-ISSN 2715-7601  
2023, Volume V, No 1, pp.1-13

## Enhancing Engineering Students' Skill through Project-Based Learning in ESP Class

Tri Kristianti, Fx. Hevie Dwi Novianto & Muhammad Mujtaba Asad

### To cite this article:

Kristanti, T., Novianto F., H., D., Asad., M., M (2023). Enhancing Engineering Students' Skill through Project-Based Learning in ESP Class. *Jurnal Pendidikan Teknik Sipil*, 5 (1), 1-13.  
DOI: <https://doi.org/10.21831/jpts.v5i1.59689>

### To link to this article:

<https://doi.org/10.21831/jpts.v5i1.59689>





Research paper

## Enhancing Engineering Students' Skill through Project-Based Learning in ESP Class

Tri Kristianti<sup>a\*</sup>, Fx. Hevie Dwi Novianto<sup>b</sup> and Muhammad Mujtaba Asad<sup>c</sup>

<sup>a</sup>Universitas Wisnuwardhana Malang, Department of Electrical Engineering, Faculty of Engineering, Indonesia

<sup>b</sup>Universitas Wisnuwardhana Malang, Department of Civil Engineering, Faculty of Engineering, Indonesia

<sup>c</sup>Sukkur IBA University, Department of Education, Faculty of Education, Pakistan

\*Corresponding Author: [trikristianti@wisnuwardhana.ac.id](mailto:trikristianti@wisnuwardhana.ac.id)

### ARTICLE INFO

#### Article History:

Received: March 30, 2023

Accepted: June 20, 2023

Published: June 22, 2023

#### Keywords:

Action research, Engineering, ESP, Oral Performance, Project-Based Learning

#### How To Cite:

Kristanti, T., Novianto F., H., D., Asad., M., M (2023). Enhancing Engineering Students' Skill through Project-Based Learning in ESP Class. *Jurnal Pendidikan Teknik Sipil*, 5 (1), 1-13. DOI: <https://doi.org/10.21831/jpts.v5i1.59689>

### ABSTRACT

**Background:** English for Specific Purpose (ESP) plays a significant role in developing the student's English language skills in writing, reading, speaking, and listening. In Indonesia, English has been learned since the students were in early education to a higher level, however, they are found less confident in using English for communicating especially in ESP class

**Methods:** This research is conducted to find a suitable method to increase the student's self-confidence and enhance their language skills through the appropriate approach called Project Based Learning (PBL). This PBL focuses on the student's oral performance during the Final Test project, which employs technology to reach its purpose and it is conducted online during the pandemic. This study used Kurt Lewin's Classroom Action Research (CAR) as the research methodology consisting of planning, acting, observing, and reflecting. The subjects of this study were 30 Civil Engineering students in semester 2 of the 2020/2021 academic year. Classroom observation, interview, and teacher evaluation using the National Council Teacher of English (NCTE) Oral presentation rubric are used as the data collection

**Results:** The finding shows that students' confidence increased therefore it enhanced their language skills ability through this PBL activity along with the teacher's support and motivation during the whole semester.

**Conclusion:** Project Based-Learning significantly affects the student's language development, including building their confidence and improving their motivation in using English contextually and creatively without fear of making mistakes. Moreover, Project Based-Learning helps the students feel relaxed and comfortable in ESP class, yet they found it challenging simultaneously.

## INTRODUCTION

English is the most spoken foreign language in Indonesia that has been learned since the early education level. Even though students have learned English for years, they found difficulties in using English for communication due to their lack of confidence. Since the pandemic of COVID 19, most educational institutions are required to shut their institutions and have online teaching, instead. This circumstance made the learning process, particularly English as Specific Purpose (ESP), difficult to handle. In this case, ESP takes a role in supporting students and teachers in the form of professional development courses that offer training on teaching and learning strategies and enhance teacher cognition (Borg, 2003). According to Räsänen and FortanetGómez (2008).

*The main distinction of ESP is that the English taught caters to the needs of learners in specific disciplines other than the arts and languages. ESP teaching uses the methodologies and activities of the various disciplines it is designed to serve, and it focuses on the language, lexis, grammar, discourses, and genres, of those disciplines rather than using the general grammar, learners' dictionaries, and public genres and discourses. These absolute characteristics are broad and distinguish ESP from general English courses in that ESP students are already assumed to possess some general knowledge of English. Learning the language means communicating within a specific academic, occupational, or professional domain.*

In engineering academics, English is an essential part used to bridge the knowledge between science and language of the engineering terms. Pritchard & Nasr (2004) further emphasize that “English is of particular importance for engineering and science students because it is the principal international language of science and is looked upon as an effective means for enabling those students to become familiar with professional texts written in English.” In this case, Wang (2022) carried out first investigation on the use of English in the workplace to adopt a long-term perspective rather than looking at professionals' use of English at a single point in time.

Furthermore, it was also underlined that research on the interplay between language education and emotions has piqued much interest of language practitioners and researchers, culminating in tremendous growth (Hua, 2021). It has been further corroborated that while positive emotions facilitate language education, negative emotions debilitate the process of language learning. Pons (2001) further added that an instructor who is aware of the educational needs of his learners is in a better position to devise effective instructional material. In this case, the selective teaching method and strategy are essential to increase the student's performance during the teaching-learning process. There are some factors that influence the students' achievement in ESP class, particularly, Civil Engineering such as the student's language ability

background, the student's subject knowledge related to terms, and the teaching method applied by the teacher. Among the language skills including reading, writing, listening, and speaking, it is found that speaking skill becomes the most difficult language skill. Obviously, oral performance needs certain abilities besides the language skill itself, where it needs courage, confidence, and other supportive factors to make the process run smoothly. Hasan (2014) declares that both foreign language teachers and learners find speaking the most difficult language skill; therefore, this skill is frequently neglected or poorly practiced in the English language classroom. In addition, Pathan (2013) affirms that effective oral communication skills help students improve their academic performance, increase their employment options; enhance their subsequent professional competence; and improve their personal effectiveness.

Kristianti (2023) mentioned that in ESP class, students are required to learn about several terms related to their major interest in the university to enrich their vocabulary. Besides, they also learn about grammatical rules which are interactively studied in four basic skills: listening; reading; writing; and speaking. Along with Kristianti (2023) statement, Badawi, A. M., & Abdullah (2021) agree to expand the literature on interdisciplinary design education, offering an alternative model for collaborative teaching, mainly in the architecture department, and with the involvement of related engineering departments, i.e., structural, electrical, and mechanical engineering departments

Communication skills, as stated by Gruba and Sùndergaard (2001), are obtained only through active engagement with the subject matter. Due to this circumstance, it is important to choose the best approach for Engineering students, which is involving their Engineering knowledge that is applicable and supports the language during the oral performance. Related to this matter, Project Based Learning (PBL) is known as an approach that integrates all language skills into one performance with a certain subject matter. PBL involves selecting, deciding, designing, and presenting the chosen theme or learning area and then making it into an effective learning process. Furthermore, Stroller (2001) emphasizes that the implementation of PBL is oriented to both process and product. Brunetti (2003) added that in PBL classroom activities, students have chances to implement several skills such as problem-solving, creativity, teamwork, as well as language at different work phases, so the students' work and skills are developed.

Additionally, Kershaw (2002) stated that projects are extended tasks that usually integrated language skills by means of several activities. These activities combine in working towards an agreed goal and may include the following: planning; the collection of information through reading, listening, interviewing, and observing; group discussion of the information;

problem-solving; oral and written reporting; and display. Moyer (2013) further defined PBL as an instructional method that can be very useful in teaching almost any subject. It focuses on general concepts, thoughts, and principles of discipline. It includes students' duties as searching, achieving information, and creating a product by integrating this information in a meaningful way for the problem solution. It lets students work in their unique ways and build their own knowledge. Some researchers indicated that PBL promotes student-centered learning, as well as flexible thinking and problem-solving. PBL indeed helps students improve their communication and collaboration skills. It also utilizes communicative approach in which students use language to engage in meaningful tasks (Chamness, 2011). Heick (2013) states that PBL is generating many activities in the world of education. In a PBL classroom, teachers present problems that students must solve together in groups. Teachers also provide resources to students or how to conduct survey on the materials they need to study the concepts and apply them in a practical form.

The primary characteristics of PBL are further summarized by Berkel (2010). First, PBL focuses on content learning through language learning. Second, it is student-centered with the teacher playing a role in offering support and guidance throughout the process. Third, it is more cooperative rather than competitive; students can work on their own, work in small groups, or as a class to complete a project. Fourth, it leads to the authentic integration of skills and processing of information from varied sources and mirroring real-life tasks. Fifth, it culminates in a product that can be shared with others. Finally, it is potentially motivating, stimulating, empowering, and challenging; students can build up confidence, self-esteem, and autonomy as well as improve their language skills, content learning, and cognitive abilities. In addition, Simpson (2011) points out that PBL has a significant effect on the development of the low and medium-ability groups of students.

PBL is considered a particular type of inquiry-based learning where the context of learning is provided through authentic questions and problems within real-world practices (Al-Balushi, et al, 2014) that lead to meaningful learning experiences (Wurdinger, et al, 2007). Modern digital technology is a major enabler for students to comfortably engage with the process of designing and developing their projects as they can document the whole process and easily share their creations in a digital format (Patton, 2012). Effective use of technology as an integrated part of the pedagogical processes has been found to help both weakly and strongly performing students construct knowledge in the project-based learning environment (Räisänen, 2008). It allows students to develop logical thinking, creative practice, and collaboration skills. (Wang, 2023)

Furthermore, PBL is suitable for the students-centered point of view since it empowers, motivates, and challenges the students, so that they become more confident and have good self-esteem and autonomy to improve their language skills, content learning, and cognitive abilities. Based on the literature review above, it is confirmed that PBL becomes one of the most effective teaching methods to enhance the students' confidence and give them opportunity in exploring their ability. Based on the literature review above, it is confirmed that PBL becomes one of the most effective teaching methods to enhance the students' confidence and give them opportunity in exploring their ability. Through PBL activities, the students have plenty of time to sharpen their skill both in language and the major they study, especially to understand the Engineering terms. These circumstances provide a better learning atmosphere in ESP class since the students are required to be autonomous and self-motivated learners during the teaching learning process. Therefore, it is essential to conduct PBL research in ESP class as a consideration to measure the student's perspectives and enhance their confidence.

## METHODS

In this study, the researcher used Classroom Action Research (CAR) as the research method due to its effectiveness to gain data based on the research purposes. Action Research is a method of systematic inquiry that teachers undertake as researchers of their own practice. The inquiry involved in Action Research is a process involving the following key steps (McNiff, 2013). Action research is particularly applicable to teachers and administrators in education because they are the ones who are directly involved and interested in solving problems associated with the education system. In this case, Johnson (2012) and Koshy (2005) stated that action research is especially encouraged for teachers because they can identify, solve, and reflect the solutions within their comfort zones in the classroom. Lesha (2014) further noted that action research is suitable for any person, group, or organize who wish to improve their performance. Aided by Swales' three-move CARS model, both "bottom-up" and "top-down" approaches to manually identify the moves and steps, and annotate the attitudinal meanings were used in previous research by Du, J., Yuan, H., & Li (2023). The work of Kurt Lewin, a social psychologist, and educator is often described as a significant landmark in the development of action research as a methodology in the 1940s in the United States (Koshy, 2010; Ferrance, 2000).

In this research, the researcher adapted Kurt Lewin's Classroom Action Research (CAR) model that consists of four phases namely, planning, acting, observing, and reflecting. In the first phase of planning, the researcher analyzed the need of students for the learning materials,

in this case, focusing on oral performance using Civil Engineering terms. The classroom atmosphere and students' characters play important roles in deciding the most suitable activity to gain the best class achievement. In the second phase of acting, the researcher started to apply appropriate learning activity for the students based on the learning aims. PBL was chosen due to its effectiveness in building the students' interest, motivation, and confidence at the same time. In PBL, students have adequate opportunities to design, decide, and collaborate with their friends to achieve the goal of learning. In the third phase of observation, the researcher examined the process of students' work in the application of PBL. Students are required to collect data as much as possible before deciding to design their project.

In this study, the researchers asked the students to think about simple miniature constructions using green materials around them. The students work together in a group of five to discuss, gather the idea, and realize it into a simple miniature construction. Since the research was conducted during the pandemic, the students were required to conduct the presentation online and record it then send their work on the Google Classroom platform. In the fourth phase of reflection, the researcher evaluated the learning activity using the National Council Teacher of English (NCTE) Oral presentation rubric to draw a conclusion about the effectiveness of PBL as a learning strategy. NCTE Oral Presentation rubrics were also used as the measurement tool for the success criteria of PBL activity.

This research is conducted in the Engineering Faculty with 30 Civil Engineering students of the 2020/2021 academic year in the second semester as the research subjects. In this case, the students were chosen using random sampling since each member of the population has an equal chance of being selected. The researcher randomly selected a subset of participants from a population and took 30 students as the sample. The students of Engineering were chosen due to their ability to think of concepts critically and skilfully. Engineering students are confident, satisfied with themselves and their surroundings, sociable, optimistic, and cheerful. However, their level of anxiety tends to be higher compared to non-Engineering students in ESP context. Therefore, they are the most suitable sample of this research.

NCTE Oral Performance rubric is considered applicable in this research due to its effectiveness in measuring the students' spoken ability that focuses on three assessment areas, namely, traits or nonverbal skills, verbal skills, and contents. In the first area of assessment, traits, or nonverbal skills, it consists of eye contact, body language, and poise; while in the second area of assessment, verbal skills; it consists of enthusiasm and elocution. The third area of assessment; content; it consists of subject knowledge, organization, and mechanics. Totally, this rubric assesses eight traits of spoken performance with four levels of achievement.

## RESULTS AND DISCUSSION

### 1. Classroom Observation

Classroom observation was conducted as the first instrument to analyze the classroom atmosphere related to the student's characteristics, the student's language ability background, and the students' cultural habits. Based on the classroom observation, it was found that most of the students of Civil Engineering come from certain different areas around Eastern Indonesia, particularly East Nusa Tenggara. Those students tend to use their mother language in communicating with other students who come from the same area and sometimes they use it while having conversations with other Javanese friends. This situation caused a language gap between the speakers and listeners due to the lack of language meaning. In addition, they also found have difficulties in using their first language, Bahasa Indonesia which makes the situation more complex. Since they have low confidence in using Bahasa Indonesia, they were also less confident in using English, especially in ESP which involved Engineering terms. However, the learning aims at building the student's interest, motivation, and confidence in using English. Therefore, in order to cope with this circumstance, the researcher divided the students into certain groups which consist of multiple ethnic groups with various language abilities. The result shows that during the process of planning as the first phase of CAR, the students have good attitudes toward diversity. At this phase, the researcher shared task instructions and showed a video example of making simple inventions using green materials around them. Then each student in their group agreed to have a different role and responsibility to gather the idea and realize it for their Final Test Project. Some students collected information, while others prepared the PowerPoint for Presentation and others volunteered to present their work in front of the class. Class observation is considered necessary to map the students' needs, the student's difficulties, and the student's strengths during ESP class.

### 2. Class Interview

As part of an essential instrument, the class interview is conducted to gather valid data about the students' understanding of learning using the PBL strategy. The CAR phases that have been implemented in this stage were action and observation. After the students had a group discussion in the planning phase, they started to actualize their idea in the action phase and then prepared themselves for a presentation in the phase of observing. In Faculty of Engineering, English is offered twice namely Bahasa Inggris I which was conducted in the odd semester, and Bahasa Inggris II which was held in the even semester. Those courses related to each other, and the students were allowed to take Bahasa Inggris II if they have passed Bahasa Inggris I. The learning materials in Bahasa Inggris I and Bahasa Inggris II integrated each other. In Bahasa



Ingggris I, the students mostly learned about Engineering terms through four language skills, those are reading, writing, speaking, and listening, while in Bahasa Ingggris II, the students must practice and apply their knowledge through class discussion, debate, and presentation. This research was conducted in the second semester of 2020/2021 academic year due to some considerations; the Engineering students in this semester are expected to understand the language better than those in the first semester, and they are also believed to be more concise in having presentation since they have learned about Engineering terms for two semesters. A class interview was conducted to draw the students' understanding of their group task work using the PBL strategy. The questions and result of the students' interview are described as follows.

**Table 1.**  
The questionnaire

No	Questions	Response (In percentage)		
		Yes	Partly	No
1	Do you enjoy joining this ESP class?	90	10	0
2	Do you think English is difficult?	50	30	20
3	Do you think learning English for Engineering is essential for your future career?	80	20	0
4	Do you think this learning strategy (PBL) is suitable for you to collect and use information in a new and different way rather than the old method (lecturing, etc.)?	70	30	0
5	Do you think this method (PBL) gives you the flexibility to arrange your own schedule and decide the best project based on your competence?	70	30	0
6	Do you think having group work, presentation, and recording then submitting it to Google Classroom platform is considered a challenging process of PBL?	0	10	90
7	Do you feel more motivated and confident and not afraid to make mistakes using this PBL learning strategy?	60	30	10
8	Do you think this strategy of PBL is applicable to other courses?	30	40	30

Based on the result of the class interview above, it is concluded that PBL is a suitable strategy for teaching Civil Engineering students in ESP Class. The first question obtaining an answer of 90% of the students chose yes, indicating that the students enjoy the ESP class while 10% of students chose partly showing that they had problems learning English. For the second question, the answer of 90% of the students chose yes, 10% of students chose partly and no one chose no indicating that mostly they think English is quite challenging. The fourth to eighth questions are related to the PBL strategy which obviously was successful and effective for teaching Civil Engineering students in ESP class. The seventh question about students' motivation and self-confidence indicated that most of the students, about 70% were found PBL effective to increase their self-confidence. Therefore, this result answered the research problem due to the students' perspective of PBL for building their motivation and self-confidence during

the teaching and learning process in ESP Class.

### **3. Teacher evaluation using NCTE Rubrics**

The next instrument that has been employed in this research is the teacher's evaluation using National Council Teacher of English (NCTE) Oral performance rubrics. In this research, as part of the PBL strategy, the researchers required the students to have a group presentation about their project. The presentation was conducted in one meeting of 110 minutes during the Final Test session, where each group had 15 minutes time allocation to present their work. Since totally the Civil Engineering students were 30 participants, there were five groups of six students as the presenters. The first group presented a simple miniature bridge using scrap wood as the green material. The second group presented a simple miniature harbor using scrap wood, art thick paper, and scrap boxes as green materials. The third group presented a simple miniature bypass using concrete and wires as green materials. The fourth group presented a simple miniature dam construction using wires, PVC fomex board, and cement as green materials. Furthermore, the fifth group presented a simple miniature house using scrap paper as green material and completed with plastic decorations and lamps.

While the students were having a presentation, the researchers prepared the NCTE rubric to evaluate the student's performance. The NCTE Oral Performance rubric was chosen due to its appropriateness for measuring the students' ability in spoken skills. It consists of three areas of assessment: traits or nonverbal skills, verbal skills, and content. Each area has some points for measurements such as nonverbal skills consisting of eye contact, body language, and poise, for verbal skills consisting of enthusiasm and elocution, and for content consisting of subject knowledge, organization, and mechanics. The level of student achievement consists of four levels which imply a low point for number one to a high point for number four. Each group member was advised to have a chance to present or give any additional information and answer the audience's questions, so they had to help each other to reach a holistic learning achievement. The description of teacher evaluation results using the NCTE rubric is described below.

#### **a. Traits or nonverbal skills**

##### **1) Eye contact**

All presenters showed that mostly they made good eye contact with the audience and rarely looked at notes. Therefore, they had level four as the highest score on this point.

##### **2) Body language**

The first presenters showed that they made movements or gestures that enhance articulation. Therefore, they had level three for this point. The second presenter showed

better than the first presenter since their movements were fluid and helped the audience to visualize therefore, they had level four for this point. The third presenter had the same score as the second presenter that showed movements or gestures that enhance articulation and had level three for this point. The fourth and fifth presenters showed very few movements and descriptive gestures which placed them on level two for this point.

### 3) Poise

For this point, all presenters showed that they displayed a relaxed, self-confident nature and no mistakes in doing the presentation. Therefore, they had level four for this point as the highest score.

## **b. Verbal skills**

### 1) Enthusiasm

All presenters showed a strong demonstration of positive feelings about the topic during the entire presentation, the description which placed them on level four for this point.

### 2) Elocution

Most of the presenters' voices are clear, and the audience was able to hear and understand their presentation. However, the researcher found that almost all presenters mispronounced some Engineering terms or words which placed them on level three. The highest score for this part was the first presenter who pronounced most words correctly and got level four.

## **c. Content**

### 1) Subject knowledge

At this point, the student's understanding of their presentation topic was assessed by answering some questions from the audience. They should demonstrate full knowledge with clear explanation and elaboration to each level four. Although presenters one to five had some difficulties explaining their point of view about the presentation topic, they had done their best by answering the audience's questions without elaboration. Therefore, they had level three.

### 2) Organization

All presenters presented information in a logical and interesting sequence so that the audience can follow and understand the point of the presentation. Presenters one to five had level four which is considered the highest score.

### 3) Mechanics

This point assessed the students' language ability related to oral skills, including

misspelling and grammar errors during the presentation. All the presenters made common misspellings and grammar errors related to tenses and word order. Presenters one, two, and three had scores of three which indicated that they made mistakes with more than two misspellings or grammar errors. Meanwhile presenters four and five produced more than three misspellings and/ or grammatical errors, placing them on level two for this point.

The result of students' performance using The NCTE Oral Performance above is used as the reflection phase of CAR which is aimed at the analysis of the PBL method in ESP Class. In traits or nonverbal skills such as eye contact, body language, and poise, the students showed that mostly they have good confidence in expressing themselves during the presentation. Mostly, they created good eye contact to capture and maintain the audience's interest in the topic they have presented. For body language, only some students showed their anxiety during the presentation, those students who categorized as nervous, moved their feet slowly while explaining the topic. And to calm themselves, they tend to avoid eye contact and prefer to look at the ceiling or windows. For the poise part, all students were able to control themselves, making them feel comfortable while giving a presentation.

In the verbal skills, the students showed a good understanding of the topic they have chosen and presented. They showed great enthusiasm and willingness to give their best by using the appropriate expression for presentation. For the elocution part, the students showed their interest in learning new Engineering terminology, however, some of them mispronounced certain words. Therefore, they need to practice how to pronounce certain words correctly before the presentation begins.

In the content part, all students reached their understanding in terms of subject knowledge, organization, and mechanics. They showed their deep understanding of the topic that they presented and were able to answer the questions both from the audience and the lecturer. They were also well organized and well prepared. Mostly, presented their topic in a good order, clear and concise. Dealt with the mechanical part, almost all students made errors in grammar and pronunciation. Some of them declared that they were nervous and made mistakes spontaneously, yet others have limited knowledge in grammar and vocabulary.

## CONCLUSION

The result analysis above has supported that Project Based Learning effectively affects teaching English to Engineering students. Project Based-Learning significantly affects the student's language development, including building their confidence and improving their

motivation in using English contextually and creatively without fear of making mistakes. Moreover, Project Based-Learning helps the students feel relaxed and comfortable in ESP class, yet they found it challenging simultaneously.

Based on the research result above, the researchers suggested to the teacher of ESP aware of grouping the students that come from different ethnic groups in Indonesia. They must consider the students' habits, language ability, and character so that the teaching-learning process runs smoothly. Project Based Learning is applicable for any student level with various language abilities due to its opportunities to explore and develop meaningful learning based on their subject matter.

## DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

## REFERENCES

- Al-Balushi, S. M.-A. (2014). No Title. *The Effect of Environmental Science Projects on Students' Environmental Knowledge and Science Attitudes.*, 23,((3)), 213-227.
- Badawi, A. M., & Abdullah, M. R. (2021). Interdisciplinary design education: Development of an elective course in architecture and engineering departments. *Journal of Engineering and Applied Science*, 68(1), 1–13.
- Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, 36((2)), 81– 109.
- Brunetti,A., Petrell, R. and Sawada, B. (2003). Team project-based learningenhances awareness of sustainability at the University of British Columbia. *Canada, International Journal of Sustainability in Higher Education*, 4((3)).
- Du, J., Yuan, H., & Li, Q. (2023). Read between the lines: Evaluative patterns and paces in engineering research article introductions. *English for Specific Purposes*, 71, 1-18.
- Erstad, O. (n.d.). Norwegian students using digital artifacts in project-based learning. *Journal of Computer Assisted Learning*, 18((4)), 427–437.
- Ferrance, E. (n.d.). *Themes in Education: Action research*. Brown University.
- Gruba, P. (2001). A constructivist approach to communication skills instruction in computer science. *Computer Science Education*, 203-219.
- Hua, Wang. (2021). Book Review:Language Education and Emotions:Research Into Emotions andLanguage Learners. *LanguageTeachers and Educational Processes.Front. Psychol.*, 12(:735403).
- Hasan, A. (2014). No Title. *The Effect of Using Task-Based Learning in Teaching English on the Oral Performance of the Secondary School Students.*, 250–264.
- Hedge, T. (2002). *Teaching and Learning in the Language Classroom*. Shanghai Foreign Language Education Press.

- Ke, L. (2022). Project-based College English: An Approach to Teaching Non-English Majors. *Chinese Journal of Applied Linguistics*, 33((44):), 99–112.
- Kershaw, G. (2022). Teaching and Learning in the Language Classroom. T. Hedge. *ELT Journal*, 56(3), 337–341. <https://doi.org/10.1093/elt/56.3.337>
- Koshy, V. (2022). *Action research for improving practice: a practical guide*. PaulChapman.
- Lesha, J. (2014). Action Research in Education. *Elsevier: English for Specific Purposes*.
- Mikulec, E., & Miller, P. C. (2011). Using Project-Based Instruction to Meet Foreign Language Standards. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 84(3), 81–86. <https://doi.org/10.1080/00098655.2010.516779>
- Pathan, A. (2013). Major linguistic barriers of oral communication in English as perceived by the tertiary level ESL students. *Language in India*, 395–406.
- Pritchard, M. (2004). Improving reading performance among Egyptian engineering students: principles and practices. *Elsevier: English for Specific Purposes*, 23, 425–445.
- Räisänen, C. &.-G. (2008). The state of ESP teaching and learning in Western European higher education after Bologna. In I. Fortanet-Gómez & C. Räisänen . *In I. Fortanet-Gómez & C. Räisänen . ESP in European Higher Education*, 11-51.
- Simpson, J. (2011). *Integrating project-based learning in an English languagetourism classroom in a Thai university institution*. AustralianCatholic University.
- Stroller, S. F. . (2001). *Project work: A means to promote language and content*. In J.C. Richards, & W.A. Renandya (Eds.), *Methodology in language teaching: An anthology of current practice*. CambridgeUniversity Press.
- Kristianti, & Seputro YP, H. (2023). The Effectiveness of Project-Based Learning (PBL) for Engineering Students in ESP Class. *Journal of Educational Learning and Innovation (ELIa)*, 3((1)), 146-154. <https://doi.org/https://doi.org/10.46229/elia.v3i1.619>
- Wang, Y. (2022.). *The role of computer supported project-based learning in students' computational thinking and engagement in robotics courses*. 48, 101269.
- Wang, Y. (2023). The role of computer supported project-based learning in students' computational thinking and engagement in robotics courses. *Thinking Skills and Creativity*, 48, 101269. <https://doi.org/https://doi.org/10.1016/j.tsc.2023.101269>