IDEAS

Innovative Grammar Teaching: The Integration of Problem-Based Learning (PBL) and ESLVideo.com in Vocational School Context

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Abstract

Students typically consider grammar to be a complex skill to master, particularly when they being spoon-fed information that is not engaging. This study sought to enhance the grammar skills of grade 11 students of automotive engineering at SMKN 2 Depok Yogyakarta by integrating Problem-Based Learning (PBL) with ESLVideo.com, and also to find out the implementation issues encountered. This study was designed as Classroom Action Research (CAR) and conducted in two cycles. It involved a sample of 36 students who were purposefully identified as struggling with grammar, having low motivation, and few technological resources. Quantitative data was collected through administering pre-test and post-test, while qualitative data was obtained through observations, field notes, and interviews. Quantitative results, examined through paired-sample t-tests, revealed that students' mastery of grammar significantly improved, average scores increasing from 71.3 to 83.2. Qualitative results demonstrated that students' understanding and reasoning for grammar enhanced when they could frame it in context of their disciplines. Initial difficulties included the PBL model and vocabulary limitations that made understanding the videos impossible, but targeted steps and iterative refinements allowed these challenges to be overcome. These findings indicate that blending PBL with ESLVideo.com narrowed the divide between language instruction and vocational education relevance, providing students with critical 21st century communication skills needed in the workplace. Instructors are recommended to implement context-based, technology-enhanced instruction in order to increase learner engagement and achievement in grammar learning.

Keywords: *Grammar1; PBL2; ESLVideo.com3; Vocational school4*

Introduction

Any form of communication is impossible to achieve without a language's grammar structure acting as a skeleton. In the context of second language English teaching, students learning English need to have a firm understanding of grammar as it impacts their ability to speak and comprehend the language (Aguion et al., 2021). Despite its importance, grammar teaching is often mired in problems of methodology and student motivation. Conventional teaching methods based on memorization and non-contextualized activities rarely motivate learners and do not consider the applicability of grammar in real life (Tesfaye, 2024).

Regarding lower vocational schools such as SMK N 2 Depok Yogyakarta, the focal point within the curriculum tends to be the development of specific professional competencies and general employability skills rather than adequate coverage of language teaching (Rahman, 2018). In regard to the eleventh graders specializing in Automotive Engineering, exposure to English is necessary for them to be able to function effectively in a globalized work environment (Ayu et al., 2021). However, these students display recurring problems with grammar, as demonstrated through error patterns in verb tenses, syntax, and overall coherence of their writings, including exposition texts.

Observations and interview results show that these problems arise from the absence of inspired interactive aids, uninspired teaching, and lack of technology application in a language class are issues of great importance. Most instructors still employ the traditional "talk and chalk" method of teaching and have not incorporated other methods, thus further diminishing students' opportunities to participate in interesting learning activities (Pambayun & Haryana, 2022).

For automotive engineering students, grammar difficulties primarily arose from their inaccurate use of verb tenses when describing sequential technical processes, a limited understanding of sentence structures capable of formulating cause and effect explanations, and frequent errors with modals and the passive voice—grammatical features essential to writing expository texts. These issues reinforce the notion that there is a gap between the taught grammatical content and the actual communicative needs of the students' vocational field. Moreover, the absence of suitable authentic materials prevents learners from understanding the usefulness of grammar which subsequently lowers their motivation and engagement in the learning activities (Elbarbary & Lima, 2024).

Modern issues of pedagogy suggest the use of Information Technology and active methods of teaching for the purpose of teaching a foreign language (Nikitina & Pigoreva, 2023). Problem-Based Learning (PBL) has been credited for its innovative teaching style of engaging students in authentic tasks. It is a constructivist approach that combines problem-solving and collaborative learning (Jaganathan, 2024). PBL actively involves learners, triggering higher order thinking skills while allowing them to achieve a better grasp of what they learn (Loyens et

al., 2015). With the aid of multimedia such as interactive videos, PBL can be more interesting and effective in teaching grammar (Yousef et al., 2014).

While research shows that both PBL and video-based instruction (VBI) facilitate grammar teaching and learning in ESL contexts, the investigation of their use together has been lacking, particularly in relation to vocational education. For instance, Chiou (2019) showed that PBL could improve motivational and grammatical proficiency within the lower-skilled cohort, while Van My (2021), Menggo et al. (2022), and Perdani (2022) have documented the impacts of VBI on grammar comprehension, learner autonomy, and engagement.

Still, no studies have been conducted on the context-appropriate grammar skill training for vocational learners through the blended utilization of VBI and PBL. Also, utilizing ESLVideo.com for the blended instruction of grammar aimed at developing expository text writing skills is still a gap. This is the gap the current study aims to fill: determining the extent to which the integration of PBL and VBI fosters mastery of grammar in vocational high school students through problem-based learning which is situated in their vocational contexts.

The objectives of this study are twofold: first, to evaluate the effectiveness of PBL and ESLVideo.com in enhancing grammar mastery; and second, to identify the challenges and limitations of this approach to inform future instructional practices. These objectives align with broader educational goals of leveraging technology and innovative teaching models to improve learning outcomes in diverse contexts. The proposed approach attempts to enhance the relevance of grammar instruction to vocational contexts in order to increase proficiency and motivation. This study attempts to answer that question by investigating the effects of integrating PBL with the interactive platform ESLVideo.com on grammar mastery of eleventh grade automotive engineering students of SMKN 2 Depok Yogyakarta. The research addresses the following research questions:

1) How does the implementation of PBL facilitated by ESLVideo.com improve grammar mastery of automotive engineering students?
2) What challenges do the students face when learning grammar using PBL facilitated by ESLVideo.com?

The objectives of this study are twofold: first, to evaluate the effectiveness of PBL and ESLVideo.com in enhancing grammar mastery; and second, to identify the challenges and limitations of this approach to inform future instructional practices. These objectives align with broader educational goals of leveraging technology and innovative teaching models to improve learning outcomes in diverse contexts. The proposed approach attempts to enhance the relevance of grammar instruction to vocational contexts in order to increase proficiency and motivation.

The importance of this research is wide-ranging. It has particular relevance to the existing literature on the use of technology and active learning in language teaching. It moves the literature forward by looking at the combination of PBL and

video-based instruction, which pedagogy for teaching grammar—perhaps the most neglected part of communicative language teaching (Perdani, 2022). Theoretically, this study gives practitioners a framework that can be easily adopted to teach grammar in English in vocational and secondary schools and may improve educational outcomes (Menggo et al., 2019).

The model helps students in the realization of their professional goals and thus, facilitates the integration of language skills with their intended professional practice (Song et al., 2024).The novelty of this study is its integration of Problem Based Learning (PBL) and Video-Based Instruction (VBI) with the aim of improving students' mastery of grammar within the scope of vocational education, where the teaching of grammar is often neglected. Other studies have separately analyzed the effectiveness of PBL in elevating grammatical proficiency (Chiou, 2019) and the benefits of VBI in fostering comprehension and motivation for grammar (Van My, 2021; Perdani, 2022), but not much research has been done on the combined use of these methods.

Furthermore, most studies are general and do not focus the English learners on vocational terms, whereas this study intends to do so by providing instruction to subordinate the teaching of grammar to practice in real life industry situations of the students who are vocational high school learners and need the course ESLVideo.com. This approach is useful for vocational students who have to acquire language skills that are relevant and useful to their field of study (Wahyudin et al., 2024).

This investigation helps to fill in the previous studies by looking at the interaction of PBL and VBI focusing on their integration and its effects on grammar mastery and students' participation. This also answers the call of concern of the use of technology on the teaching and learning of a foreign language that seeks to explain how interactive and problem-solving video content could be designed to make the teaching and learning of grammar more meaningful, interesting and functional (Menggo et al., 2022). In doing so, this study closes an important gap in research and provides a model for combining PBL and VBI in an EFL context of grammar instruction which is the teaching of English as a foreign language in vocational education.

Method

This study seeks to improve the grammar skills of the eleventh-semester Automotive Engineering students of SMKN 2 Depok Yogyakarta through the implementation of Problem Based Learning (PBL) combined with ESLVideo.com. This Classroom Action Research (CAR) was conducted from September 26 October 31, 2024, in six-week cycles, following the Kemmis and McTaggart (1988) model. This method enabled the researcher to improve PBL pedagogical strategies in actual classes through iterative cycles of planning, action, observation, and

reflection.

A purposive sampling strategy was employed to select 36 students from Class XI TKR B, as it was known that for this group, grammar—particularly its application in vocational writing, like exposition texts—was a challenge. Utilizing purposive sampling was appropriate as it guaranteed that the researched participants were most relevant to the study focus and availed an opportunity to assess the impact of the intervention (Palinkas et al., 2015). The researcher selected the eleventh graders of SMKN 2 Depok Yogyakarta, namely from the Automotive Engineering class B, which included 36 students as a source for data collection for the academic year 2024/2025.

After consulting with the English teacher and getting consent from the headmaster, automotive engineering students were chosen by the researcher to participate in this study due to their vocational emphasis that provided an exceptional opportunity to investigate how grammar instruction can be made practical within technical and professional contexts. In order to read accurately technical manuals, write reports or interact at a work where English is widely spoken future automobile industry workers need knowledge of English grammar.

This is because these students had problems with grammar learning since they have not been exposed to interesting contextualized teaching materials. The conventional pedagogical approaches often failed to establish connections between grammatical principles learnt and vocational subjects making it abstract and irrelevant. To fill this void, therefore, grammatical training was integrated into contexts relevant for automotive engineering learners such as producing instructions or explaining mechanical procedures (researcher).

Consequently, this approach fostered both a more relevant kind of grammar education and one that catered for different linguistic needs in a given student population. Furthermore, the students of automotive engineering at SMKN 2 Depok are the kind of vocational learners who benefit from practical and contextualized teaching that qualifies them as appropriate subjects for assessing how effective problem-based learning (PBL) provided by ESLVideo.com is.

In order to make grammar more practical, automotive contexts were used to teach the lessons. For instance, while learning the passive voice, students had to rewrite technical instructions describing the process of "The technician replaces the spark plug." It required them to do the following: "The spark plug is replaced by the technician." Such changes integrated with their professional training.

ESLVideo.com was used as a media resource to help with PBL. The researcher designed and assembled quizzes based on videos that dealt with automotive topics like the engine's maintenance or other mechanical processes. Students formed small groups to watch the discussed videos, analyse the technical issues, and create exposition texts employing the grammar aspects in focus. There was also the possibility of examining certain ESLVideo.com activities that were designed to

facilitate active participation through comprehension questions and grammar reinforcement tasks.

The study took place over two CAR cycles. Each cycle consisted of three meetings. Data gathering was a combination of quantitative (pre-test, progress test, post-test) and qualitative methods (observational checklist, field notes, interviews, document analysis). There was a set of 25 grammatical items to be tested, which included 20 multiple-choice questions and 5 completion questions, systematically validated for content accuracy.

The analysis involved the integration of both quantitative and qualitative research approaches. The grammar tests were quantitatively analyzed via descriptive statistics to find the mean, minimum, maximum, and standard deviation of the test scores. To assess the changes from the pre-test to post-test scores, paired-samples t-tests were conducted to determine their differences. The t-tests were executed with the help of the SPSS software. Normality and homogeneity of variances were established prior to executing the t-tests to validate the use of the statistical methods.

The observations, interview responses, and document reviews were analyzed through descriptive analysis as proposed by Miles et al. (2014). This included three steps: data reduction, data display, and conclusion drawing/verification. First, the data, which include field notes and interview transcripts, were chosen, narrowed down, simplified, abstracted, and transformed by the researcher. The data was subsequently sorted, refined, focused, and organized by the researcher to arrive at the ultimate result. The researcher then arranged the information to draw conclusions and take appropriate action. Ultimately, she deduced from the data presentation how the implementation was going and confirmed it.

In order to make sure that the study is valid and reliable, different measures were taken. Experts reviewed the instruments to make sure that the test items and observation checklists matched the grammar concepts and skills being evaluated. Thus, construct validity was accomplished by the instruments being modified in accordance to the theoretical framework with the objectives of the research so that the measurement was precisely targeted at what the study sought to measure. To improve credibility of the findings, triangulation was used. Data triangulation is relating to the application of a mix of data types, test score results, observations, interviews, and document analyses, which is used to cross-validate the results. The researcher and the English teacher were both involved in the collection and reflection of data, enabling investigator triangulation and providing more than one angle while minimizing chances of bias.

All ethical considerations were met. Prior to commencing data collection, the researcher received authorization from the school's principal and the English teacher. Each participant was made aware of the rights, and appropriate consents were gathered. By using pseudonyms, the identities of students were concealed in

reports, and all data was held securely. Participants were informed that they could withdraw at any given period without incurring any consequences. Moreover, the intervention was intended to supplement the standard instructional activities, not impede them.

In order to assist in delineating the research framework, the subsequent table outlines the steps:

Table 1. Research timeline and structure

Cycle	Phase	Activities	Data Collection Methods
Cycle 1	Planning	Design PBL tasks using ESLVideo.com; align with syllabus and automotive context	Lesson plans, video quiz design
	Acting	Implement grammar lessons with ESLVideo.com videos and PBL tasks	Classroom implementation
	Observing	Observe student participation and group work	Observation checklists, field notes
	Reflecting	Analyse data to adjust activities for Cycle 2	Interviews with students and teacher
Cycle 2	Planning	Revise task roles, ensure better internet access, adapt video difficulty	Updated lesson plans
	Acting	Run improved lessons using revised video quizzes and collaborative writing	Implementation
	Observing	Monitor student performance and engagement	Field notes, observation
	Reflecting	Evaluate improvement and identify remaining challenges	Post-tests, interviews, student outputs

Results

The Results of the Implementation of Problem-Based Learning (PBL) and ESLVideo.com on Enhancing Students' Grammar Mastery

Based on the problems found in automotive engineering students of eleventh grade class B at SMKN 2 Depok Yogyakarta, some actions and reflections were implemented in two cycles. Implementing the PBL and ESLVideo.com, presenting engaging video, giving engaging grammar quiz, giving grammar test, providing feedback, encouraging constructive feedback successfully enhanced the students' grammar mastery. The findings could be deduced from the teacher's and students'
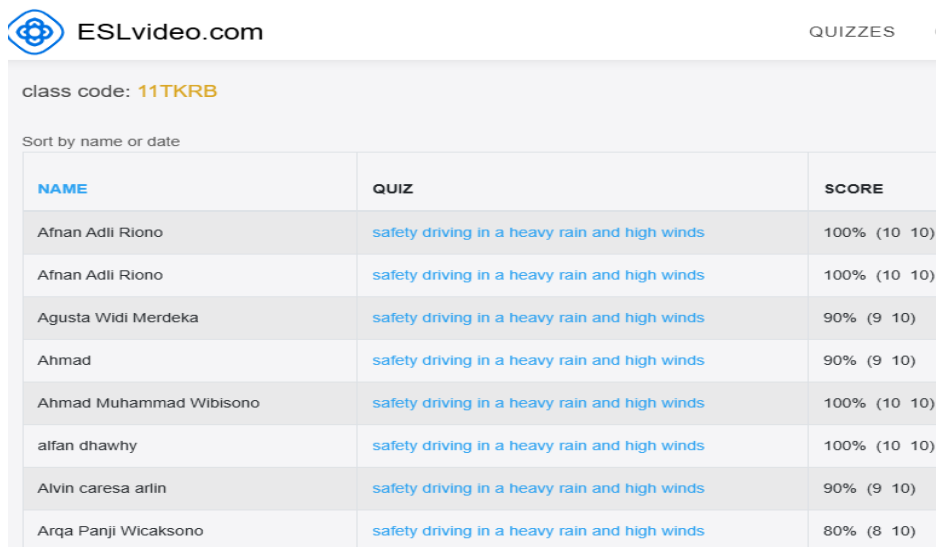
interview, and the observations during the learning sessions. These are the findings of the actions in Cycle 1 and Cycle 2.

The PBL tasks were set within the context of the students' vocational field. For instance, during Cycle 1, students solved a case study stemming from the video scenario "safety driving in a heavy rain and high winds" where they had to write exposition texts in the passive voice and modal verbs. Within Cycle 2, the problem scenario was based on the routine maintenance of a motor vehicle. Students watched the instructional video "Routine Car Maintenance Steps" and were required to prepare technical passages containing correct grammatical structures, including the simple present tense as well as conjunctions, phrases such as "You ought to inspect the brake fluid every month since it has an impact on safety."

Along with the writing activities, students' work with ESLVideo.com showed notable improvement in progress metrics, especially in Cycle 1 Meeting 3. During this webinar, learners were required to watch a particular video and complete an interactive quiz focused on testing their comprehension of relevant grammar points. At this stage, students had grown accustomed to the platform and did not need help with entering class codes or navigating through the quiz interface. Through repeated exposure and without needing active instruction, students' grammar feature recognition proficiency improved, along with their performance on numerous quizzes.

This was evident from the ESLVideo.com quizzes where a large number of students registered nearly 100% scores. The results suggest learners had knowledge of the grammatical constructs and were confident with the technical aspects of the system. It means that the incorporation of the ESLVideo.com platform greatly enhanced instruction by providing a user-friendly medium for grammar practice within contextual frameworks.

Figure 1. Quiz Scores on ESLVideo.com

The following table outlines the key actions, their impacts, and the challenges encountered across both cycles.

Table 2. The Changes before and after the Implementation of PBL and ESLVideo.com in cycle 1 and 2

Actions	Impacts	Challenges
Implementing Problem-Based Learning (PBL)	-Improved students' grammar mastery in context -increased students' confidence and participation -enhanced the effective collaboration, critical thinking, and problem-solving skills. -promoted autonomous learning	-Initial lack of familiarity with PBL -due to the limited language proficiency of the students, making them difficult to express their ideas in full English. -Unequal participation in group work
Implementing ESLVideo.com	-improved students' engagement and motivation through visual content -provided instant feedback -helped students to understand the grammar material better -helped students to illustrate the scenario given	-Difficulty of comprehending video content due to limited of vocabulary -There were students who could not join the quiz due to the access of the school Wi-Fi.

Based on the table above, here are some explanations to answer the research questions:

This section of the findings is related to the first research question: How does the implementation of PBL facilitated by ESLVideo.com improve students' grammar mastery? The results of the data analysis gave evidence that the PBL and ESLVideo.com enhanced students' grammar mastery. At the end of each cycle, the researcher assessed students' grammar mastery by providing a grammar test. The improvement of students' grammar mastery can be proven by a pre-test given at the beginning of cycle 1, a progress test at the end of cycle 1, and post-test at the end of cycle 2. The following table is the mean score before and after the implementation of PBL and ESLVideo.com.

Table 3. Mean Score, Min. Score, Max. Score, and % Achieving Mastery (≥80) of Pre-test, Progress Test, and Post-test

Test Type	Mean Score	Min. Score	Max. Score	% Achieving Mastery (≥80)
Pre-test	71.3	52	84	19.44%
Progress test	76.6	60	88	41.67%
Post-test	83.2	72	92	80.56%

The results from the three tests (Pre-test, Progress-test, and Post-test) reveal a considerable change regarding the level of students' mastery of grammar during the course of the intervention. The average score improved progressively from 71.33 in the Pre-test to 76.64 in the Progress-test, then increased further to 83.22 in the Post-test. In the same way, the proportion of students who attained mastery, which was operationalized as scoring 80 or higher, increased tremendously from 19.44% in the Pre-test to 41.67% in the Progress-test and peaked at 80.56% in the Post-test.

The lowest score also improved, growing from 52 in the Pre-test to 60 in the Progress-test, then rising to 72 in the Post-test. This suggests that even the most poorly performing students made progress. The lowest maximum scores remained high through all the tests and increased slightly from 84 in the Pre-test to 92 in the Post-test. These findings indicate that the use of Problem Based Learning (PBL) with the assistance of ESLVideo.com was successful in improving students' grammar skills since by the end of the intervention, most students had exceeded the minimum mastery benchmark of 80. The sustained increase in scores shows the effectiveness of the method used in teaching in closing the gaps in grammar that was identified earlier.

An in-depth analysis of the students' grammar performance over the two cycles showed improvement in all four target areas: simple present tense, modal verbs, conjunctions, and passive voice. Among these, the greatest improvement was noted in the area of passive voice. For example, many students wrote active voice statements even when describing mechanical procedures. By Cycle 2 most students were able to correctly form passive sentences and stated, "The battery is checked by the technician." Their average score on passive voice tasks rose from 58.6% to 80.2% post-test, a 21.6% improvement.

Strong improvements were also noted in modal verbs and simple present, such as "You must inspect the tire pressure" and "The fan belt rotates continuously." The weakest gains—12.8%—were observed in the area of conjunctions which, while still showing progress, suggest further instructional

support is needed to assist students in the accurate application of linking words in complex sentences.

The results also indicated that the students' participation was directly correlated with their grammar skills. From the engagement, interactions, and collaboration metrics captured during group tasks as well as discussions with the observation checklists, students were classified into high, medium, and low participation levels. High participation students had an average grammar score increase of 22.3 points compared to 14.8 points for the medium group and 6.5 points for the low group. Students who actively contributed to the discussions, fielded questions, and actively spearheaded the arguments for the PBL tasks did significantly better on the following grammar tests. This suggests that the fundamental problem communicative exercises fostered was the learning of the grammatical constructions in a manner which was much more integrative.

In addition, student interviews post application of Problem-Based Learning (PBL) facilitated with the aid of ESLVideo.com revealed profound changes in their grammar mastery. Most respondents stated that mastering grammar was less of a challenge due to the interactive group-work strategies. Students also reported improvement in the use of grammar in real-life situations. They were able to use the language in context during case study discussions and group presentations, which enabled them to master the application of the grammar rules.

The students were influenced in a positive way to participate in the collaborative practice of grammar, which made them understand the grammar concepts better and increased their confidence. In addition, the motivation and engagement derived from other forms of instruction, such as ESLVideo.com, was also noted. They said that ESLVideo.com was more user friendly and that they liked using it, and this showed that the digital tool removed obstacles to learning grammar. Group work also enabled students to assist one another in overcoming challenges, which fostered a positive learning atmosphere that contributed to their grammar mastery. The interview transcript is presented below. R is for the researcher; S is for the students.

> "*I want to ask, what do you think about learning grammar by working in groups, solving cases, and presentations like yesterday?*" **—R**
>
> "*I understand better, if I don't know, we can help each other, it's more interesting.*" **— S1**
>
> "*How was it when we first used ESLVideo.com yesterday.*" **—R**
>
> "*It is simpler. It is easier and more fun to do it like that.*" **—S2**
>
> "*Did learning with the method improve your grammar?*" **—R**
>
> "*Yes miss, I understand now.*" **—S2**

Furthermore, referring to the convention of quantitative research, the mean difference can be tested statistically. The researcher used statistics for Paired Sample Test to measure the mean scores of students in cycles 1 and 2 as presented below.

Table 4. Result of Paired Samples T-test

| | | | Paired Differences | | | | | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | |
				Lower	Upper			
Pair 1 Pretest – Posttest	-11.889	8.155	1.359	-14.648	-9.130	-8.747	35	.000

The table shows the result of a paired samples t-test. This test checks whether the mean values from two related groups, in this case, the pre-test and post-test scores, are different. The significance value (2-tailed) was found to be 0.000, which is below the 0.05 mark ($p = 0.000 < 0.05$). Thus, indicating the data has a statistically significant value in the change observed in students' grammar performance after the intervention. This supports prior research conducted by (Gliner et al., 2003) where, as a significance value under 0.05 indicates, a meaningful change did occur.

Beyond statistical significance, the effect size which was calculated using Cohen's d was found to be 2.66, categorizing under a very large effect. This means that not only was the improvement statistically significant but practically significant as well. The intervention, PBL coupled with instruction from ESLVideo.com, had strong effects on the students' grammar mastery. This is furthered by the fact that by the end of Cycle 2, 80.56% of the students had met or even exceeded the school's Minimum Mastery Criteria (KKM) set at 80. These findings strongly support the argument that employing contextualized problem-solving activities alongside interactive videos markedly improves outcomes in grammar learning, especially in vocational contexts for English as a Second Language (ESL) learners.

The Challenges of Students in Learning Grammar Using PBL and ESLVideo.com

While the integration of Problem-Based Learning (PBL), Prezi technology, and ESLVideo.com into a video report project on grammar instruction was successful, there were some problems that affected students learning experience. These issues seemed to come from a combination of students' inexperience with PBL, low English skills, non-uniform contribution to group work, and other technological problems.

Not being familiar with PBL was one of the biggest barriers for a lot of the students. A large percentage of pupils have never known anything beyond ordinary, rote learning. Hence the scenario-or activity-based approach PBL is notoriously difficult for many learners. A typical problem-solving approach would lead many students to abandon the problem-solving analysis completely and ignore the relevant staff features, which is how many learners deal with complex problems. Even basic needs such as engaging in discussion or presentation seem to be organized internally. The following is an excerpt taken from the interview transcript provided.

> "*What do you think about learning with PBL, solving cases in groups and then presenting them?*" **—R**
>
> "*At first, I was a bit confused, Miss. I was still confused about the assignment because previously I only listened to the teacher teaching and did the worksheets on my own. I was also made into a group but was not asked to solve a case like that.*" **—S2**

Students were cautious and refrained from actively participating because they were not very familiar with the activity, and they needed a lot of teacher instructions. Some students did not want to participate during the first group task because they were waiting for the teacher to initiate. Over a period of time, however, as students grew accustomed to the PBL model, their levels of confidence and participation regulars increased. In another setting, a previously passive pupil was noted to be actively participating during discussions and asking questions related to grammar and providing answers during group discussions. Such behaviors showed the effects of the teacher's relentless effort which, although revealed, highlight that the change depended on time and constant assistance.

Of particular concern were limited vocabulary and listening skills, especially when students were assigned the task of understanding video clips on ESLVideo.com. Some students, especially those with poor listening abilities and lacking vocabulary, could not keep pace with the fast and technical language of the videos. In the interview, one student described his experience. The transcript follows.

> "*Do you have any challenges in using ESLVideo.com for the first time?*" **—R**
>
> "*As for me, Miss. There are some words that I don't understand because sometimes I hear the people (in the video) talking fast so it was hard to keep up.*" **—S5**

Despite the engaging content, the videos often featured technical language or idiomatic expressions that many students were not familiar with. To address this challenge, the teacher provided transcripts and re-explained key points, ensuring that the students had access to the material in multiple formats. However, some students still struggled to fully grasp the content. It was presented in the vignette below.

> "A group of students watched a video with subtitles, but several of them paused frequently to ask questions about vocabulary. One student asked, "*Apa maksudnya 'Windy'?* (*What does windy mean?*) I don't understand."

The aids offered by the teacher were valuable, however, they did not fully address how the students needed additional scaffolding and vocabulary-building exercises to comprehend the videos. This also highlighted the issue of broader strategies aiming at listening skills and vocabulary retention needing to be reinforced.

Apart from this, another challenge was the participation inequality in groups. As part of the PBL approach, class discussions should have been held, but many times, implementation was ineffective because some learners were active and others were not. This situation kept most learners from using and, thus, improving their grammatical skills. One of the students described this in the excerpt from the interview above.

> "*If you do assignments with a group, what are the challenges for you?*" **—R**
> "*I sometimes can't talk much, Miss, because other friends have already answered everything. I don't think I can explain my answer because the time is up.*" **—S4**

The concern pertaining to disproportionate involvement was apparent during group work, with several students controlling the discussion while others were reluctant to speak up owing to low self-esteem and fear of making errors. As a response, the teacher decided to appoint specific tasks to each group, such as managing time, taking notes, and leading the discussion, to guarantee that every learner had an allocated duty. Furthermore, the teacher tried to elicit responses from mute students by asking them questions to get them to speak. It was illustrated in the vignette below.

> "The teacher was observed calling on a quieter student, asking them to explain their understanding of the grammar task. The student responded with some hesitation, *"Saya malu ngomongnya, Miss. Takut salah grammarnya.* (*I am shy to speak, Miss. I am afraid of making grammar errors*.)"

These results highlighted for me the necessity of designing more specific activities in which each child could participate more equitably. Although the teacher's work was somewhat helpful, achieving full participation remained a persistent problem that needed constant attention and action.

Two other students seemed to have difficulty with other more sophisticated grammatical form such as the passive voice and the use of modal verbs. A lot of students had a hard time forming passive sentences, and as a result, they usually ended up using the active voice instead whenever they had written assignments.

One student noted from his perspective.

> *"In your opinion, what grammar feature is difficult while studying with me?"* —**R**
> **"***I have difficulty with passive material, Miss. Sometimes I have difficulty changing from active to passive."* —**S1**
> *"I think it's modal, Miss. I'm confused, for example, when to use should or must."* —**S2**

The instructor noticed that these particular grammar items posed problems in written and oral speech. In a vignette observation, a student was sitting in one of the groups trying to change a sentence into passive voice and she did it with some degree of anger. This provided evidence that further practice needed to be done and better teaching offered in these tricky areas of grammar. The educator observed that there was a need for more guided instruction and practice with the passive voice and the use of modal verbs to enable the learners to digest the grammar more adequately.

Technological integration had issues of a logistical and technical nature. The use of ESLVideo.com was at times not possible because the internet did not work which caused interruptions to online quizzes and video watching. One student described it in the interview below.

> *"What are the difficulties for you in using ESLVideo.com?"* —**R**
> *"My difficulty is sometimes with the internet, Miss. Because the school Wi-Fi is not very stable so I can't finish the quiz on time."* —**S4**

Connectivity problems were most bothersome during the online assessment sessions, which students regarded as crucial for measuring their learning outcomes. Moreover, some students experienced difficulties with the navigation of the platform at the earlier sessions. A student explained it during the interview.

> *"At first, I didn't know how to use it, like I didn't know I had to give the name and class code at the end, but after Miss explained it to me, I could do it."* —**S3**

The initial sessions, but problems with the technology remained across the cycles. In one vignette, the teacher was seen supporting a student who could not locate the appropriate video and quiz, which illustrates the degree of the need for further technical assistance and changes in the approach to the constraints of the technology. These challenges loomed larger than the varying degrees of difficulty and made clear the necessity for planning and preemptive action where technological difficulties were concerned.

In the students' discussions after the cycles, their comments on the challenges revealed their encounters of these issues. Most students conceded that it is difficult to adapt to the PBL approach and indicated a strong need for more consistency in using English during group interactions. One student reported in the interview.

"What difficulties do you have when presenting in English?" —**R**

"Sometimes I don't want to speak English because I'm afraid of making mistakes, Miss.
I want to speak fluently but I'm afraid of making mistakes." —**S4**

This demonstrated that a number of learners were hesitant to take part in discussions due to their worry of making grammatical mistakes or not being comprehended. Also, students wanted more active and participative sessions other than the grammar exercises which at times, they found boring. As one student mentioned during the interview.

"What do you think about doing grammar assignments at the end of every class? Is it
difficult?"—**R**

"That's fine, Miss, but it seems a bit boring, Miss. It's more fun to do it in quiz form."
—**S2**

This response allowed me to understand that the students appreciated the interactive nature of PBL, but still required more attention with interest capturing and feature practicing grammar items in other different ways. These thoughts were helpful in understanding the students' attitudes towards the implemented approaches and in considering further changes to the PBL strategy and integration of ESLVideo.com in teaching grammar.

Discussion

This research sought to investigate the impact of Problem Based Learning (PBL) on grammar mastery among the eleventh-grade students of "Automotive Engineering" at SMKN 2 Depok Yogyakarta using content from ESLVideo.com. The findings showed marked enhancement of students' grammar skills as well as participant self-motivation and self-motivation, which is consistent with contemporary educational theories that support the adoption of student-centered learning and teaching paradigms.

The quantitative data analysis suggested that there was a marked improvement in grammar scores, with the average score increasing from pre-test 71.3 to post-test 83.2. Furthermore, the mastery level (scores ≥ 80) increased from 19.44% to 80.56%. This study demonstrates the effectiveness of video instruction coupled with PBL in fostering grammar learning. It supports prior research on PBL's benefits for language development through active use of knowledge— participating, attending, and engaging in learning (Chiang & Lee, 2016).

The incorporation of ESLVideo.com in the curriculum has significantly enhanced the students' grammar skills and retention. The multimedia content provided an interactive and contextualized learning experience which adheres to

Mayer's Multimedia Learning Theory (2009), that suggests combining verbal and visual aids enhances learning. Through ESLVideo.com, students were able to learn the application of the theories they had learned by doing them in real-world settings (Sharma et al., 2020). Moreover, PBL made it possible for students to actively work on problems that were authentic to their fields of interest and thus, fostered greater appreciation of grammar as it applies to their future careers, especially in automotive engineering. Hyland (2022) argues that contextualized language teaching is far more effective in vocational education because it sharpens learners' motivation and their connection to the work.

Within this educational case study, we illustrated how grammar instruction can be tailored to fit the needs of the students in automotive engineering. Through PBL with ESLVideo.com, students learned how to use the passive voice, modal verbs, and present tense in automotive contexts like describing vehicle maintenance or explaining mechanical operations. For example, they formulated "The oil filter is replaced every 10,000 kilometres" and "You must check the brake fluid prior to operation," which capture genuine workplace interactions.

Such situational learning resolves the conflict between academic English and vocational English, where grammar ceases to be a school subject but rather a means of practical proficient technical communication. These results, alongside Hyland's (2022) rationale on the need for tailored, discipline- and profession-based language instruction for the vocational pedagogy, support the claim made by Celce-Murcia and Larsen-Freeman (1999) that grammar instruction is most productive when embedded in authentic communicative contexts.

Observations and interviews conducted out of class confirm that the intervention greatly improved students' engagement and motivation. As noted in earlier studies, many students lacked interest in grammar lessons because it was taught as a theoretical concept devoid of context (Aguion, 2021). The implementation of PBL alongside ESLVideo.com changed the classroom to an active, student-cantered one in which students reported that the videos and problem-solving activities made learning grammar enjoyable rather than tedious, which aligns with Hennebry-Leung & Lamb's (2024) claim on the significance of engaging materials and activities for student engagement. PBL's design helps students foster a shared identity as part of a community, which aligns with social constructivism that explains cognitive development as a socially situated process (Nithideechaiwarachok & Chano, 2024).

Although the intervention achieved its intended outcome, some issues were encountered during implementation. The most pressing concern was the students' lack of experience with the PBL method. For a certain period, a number of students appeared rather passive and disengaged from the learning activities, which aligns with the findings of Fang et al. (2023) regarding hesitance towards active learning environments. To improve the situation, the teacher scaffolded the introduction of the PBL process and provided detailed explanations. This approach helped bolster

the students' confidence and, subsequently, their participation.

Another challenge was the students' limited proficiency in English, which complicated their comprehension of the videos, specifically the jargon used in automotive engineering. To address this, prior instruction of key vocabulary, alongside video transcripts, enhanced understanding while supporting Webb and Nation's (2017) recommendation to teach vocabulary before instruction to enhance language acquisition.

Some students had difficulty with certain grammatical structures, particularly the passive forms of some verbs and the use of modals. These issues are consistent with Celce-Murcia and Larsen-Freeman's (1999) claim that complex grammar often entails intricate sentences and requires considerable practice along with precise instruction. This study attempted to resolve these problems through the creation of PBL adi tailored instructional PBL exercises aimed at these specific objectives. Providing real life context for these structures enabled students to appreciate their relevance and practicality, as Aguion et al. (2021) propose.

Even though the PBL approach was successful overall, the study identified several limitations. One major problem was the lack of equal participation during group interaction activities. The collaborative norms of PBL were impaired because some students were overly vocal while their peers remained passive. This concern is in line with Romanyshyn et al's (2023) suggestion for more structured group work to promote engagement. For this purpose, group roles such as facilitator, note-taker, and presenter helped sustain balanced participation and fostered more cooperative learning within the groups.

Moreover, some ESLVideo.com sessions were interrupted because of technical issues like poor internet connectivity and limited access to devices. Inadequate technological infrastructure remains a substantial barrier to the integration of technology into teaching and learning as Ertmer and Ottenbreit-Leftwich (2010) suggest. Negotiations with school administrators to improve connectivity and alternative offline access to video materials resolved a number of these issues.

The change from conventional approaches to teaching grammar to one focused on PBL and videos created a pedagogical shift. With PBL, rather than mindless grammar drills and grammar memorization, students participated in meaningful activities that required contextualized learning. Rather than completing repetitive exercises, students solved authentic problems in the automotive field, constructed exposition texts, and applied grammar in real-world scenarios. Grammar became a tool to solve real-world communicative problems instead of an abstract set of rules. Such student-cantered, function-focused teaching as described by Ellis (2006) is far more engaging and retention-friendly

than the mundane rote, instructor-driven instruction.

This study's findings are encouraging in the context of combining PBL within video instruction to improve grammar teaching in vocational education. Teachers can foster motivation and understanding by situating the tasks associated with grammar instruction within real-world employment activities. Furthermore, the collaborative aspects of PBL foster peer learning, which is advantageous for vocational contexts that emphasize teamwork and communication skills (Freeman et al., 2014). On the other hand, the study also points to gaps such as the need for adequate digital reliability, as well as professional development focusing on PBL frameworks and technology integration for teachers (Ertmer & Ottenbreit-Leftwich, 2010; Hsu, 2016).

The research outcomes integrate with the wider body of educational theories such as constructivism that learning occurs through social interaction and personal experiences (Vygotsky, 1978). PBL's collaborative format enabled students to actively grasp the concepts of grammar relative to motor industry applications. In addition to social constructivism (Bruner, 1996) that focuses on the interaction aspect of learning, this fosters collaboration among peers, which assists in cognitive processing.

Furthermore, the multimedia approach adopted in this research is consistent with Mayer's Multimedia Learning Theory (2009) which states the integration of words and pictures enhances learning for students. Students understand more of the grammar involved when they see it used in real-life situations, which helps them link the abstract concepts with their vocational training.

Ultimately, this research shows that the combination of PBL approach with ESLVideo.com can enhance the mastery of grammar in vocational education settings. Contextualization of grammar instruction, alongside modern attempts to capture students' attention, is critical to 21st-century pedagogy. While results were mostly favourable, there remains an important gap in the study of the long-term effects of PBL and technology on grammar learning and how broadly applicable this approach is across other vocational subjects. Furthermore, the professional development of trainers needs to actively incorporate the use of PBL and technology into vocational classrooms so that the impact and longevity of these teaching strategies can be fully realized.

Conclusion

The objective of this research was to determine the effectiveness of using an integrated PBL method with ESLVideo.com on the grammar skills of the eleventh-grade students of SMKN 2 Depok Yogyakarta. The analysis reveals that students had significantly improved in grammar skills because of the increase in average scores, as well as the greater percentage of students who had met the mastery criteria during the post-test. Such results add to the literature on the application of PBL with videos integration to grammar instruction in mid and senior vocational

schools, which was lacking before.

The combination of ESLVideo.com with PBL facilitated a change to more student-centered lessons that increased students' interest and participation while helping to master grammar. The use of such techniques was not only motivational for students but made the content more practical and relevant to students which is beneficial to teaching grammar. This provides one of the most important and difficult problems of vocational education – the interdependence between teaching language and using the language in the real field practice. The study brings to bear that advanced technology, particularly interactive ones, can give students in vocational schools, more essence to their educational experiences.

Using suitable materials, technology can enhance the learning process and skills development. Furthermore, the research highlighted the usefulness of PBL in fostering important critical thinking, problem-solving, and collaboration skills in the 21st century. This particular analysis serves as a guide in integrating ESLVideo.com into a PBL design for the grammar teaching in a vocational school. It illustrates for which purposes this combination can be used for and gives recommendations for further research to be done in order to solve the challenges that were faced and analyze deeper the outcomes over the duration of the study.

Acknowledgement

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