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The implementation of AI-based image recognition application in slang translation to develop a project-based learning model

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ABSTRACT

The advent of AI-powered machine translation technology, particularly text-capture tools such as Google Lens, necessitates that younger generations develop competency in utilizing these applications. This study explores the integration of such technology into translation pedagogy through a digital project-based learning (PjBL) model, designed to enhance translation skills within an interactive educational framework. Translation performance was evaluated using a rubric assessing three key criteria: accuracy, acceptability, and readability. The research objectives were twofold: (1) to evaluate the quality of slang translation produced by students using Google Lens, and (2) to assess students' understanding and application of this AI tool within a PjBL framework. A mixed-methods approach was employed, following a define-design-develop-disseminate (4D) model. Data were collected through validated tests administered to 75 English education students, organized into five groups. The findings indicate that the overall translation quality of slang terms was poor, with six out of ten target words receiving low scores. A moderate quality level was achieved for two words, and good quality for another two. Conversely, students demonstrated a strong operational understanding of the AI application, reporting familiarity and proficiency in its use for text capture and translation. This discrepancy highlights a gap between technical tool mastery and the critical

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application required for producing contextually appropriate translations, particularly of informal language like slang.

Keywords: *Artificial intelligence; Cross-cultural; Google lens; Interlingual Translation; Project-based learning*

1. Introduction

Interlingual translation learning activities across different languages (interculturally) using dictionaries are starting to be abandoned because of the presence of internet-based translation systems. In this case, a popular translation engine is Google Translate with advantages such as instant, free, the ability to translate entire web pages and uploaded files, a choice of language variations, and the option of translation using the camera lens on gadgets, both Android and iOS-based smartphones, known as Google Lens (Alsalem, 2019; Devi & Gaurav, 2018; Halimah, 2018; Kane, 2020; Medvedev, 2016; Meetei et al., 2023; Nasution, 2022; Taira et al., 2021). Google Lens translation is useful to assist students in translating by taking photos via smartphones of words, sentences, and even paragraphs between languages cross-culturally. However, in developing translation learning models there are still shortcomings that must be addressed, namely the level of translation quality that is not yet accurate, acceptable and readable. Therefore, the direct active role of students is needed to be able to improve the quality of interlingual translation via Google Lens (Aiken & Balan, 2011; Borodina et al., 2021; Kaliyadan et al., 2021; Krisdayanti et al., 2022; Nguyen, 2021). With the great benefits of AI-based photo system translation for project-based learning (PjBL) learning models, it is necessary to empower students to be able to apply the use of Google Lens in model development (Goodianti & Fitrianingsih, 2023).

The PjBL model is a technology design process that is appropriate for authentic problems because it has three advantages that link the role of students with the role of teachers: student competency development, collaboration between teachers and students, and professional development of teachers to present learning products based on real-life experiences to produce quality translation products or services in terms of accuracy, acceptability, and readability for students, thereby enhancing critical thinking skills (Arianto et al., 2023; Muam, 2017; Munkova et al., 2021; Nababan et al, 2012).

The implementation of the PjBL model aligns with Indonesia's primary goals in education in the learning process related to interlingual translation. Students are faced with constructing knowledge digitally, with machine translation increasingly being used by students. Research pf Kusrini (2023) found that all students used Google's machine translation in the PjBL model to compare the quality of translation results via the application with manual translation, but the weakness was the ambiguous translation results. Similarly, research of Retnaningsih (2023) found that although the implementation of the PjBL model can improve students' translation skills, it still fails to describe students' perspectives on the strengths and weaknesses of the PjBL model in

translation learning. Therefore, as a solution to the problems associated with implementing the PjBL model for interlingual translation, a learning model design is needed that aims to improve students' critical thinking skills (Birgili, 2015).

The implementation of PjBL learning is intended for slang translation project activities by students because slang is currently experiencing a trend that is used in a limited way and is mostly among young people where students are in this phase so they better understand the development of slang. The implementation of slang translation by students uses the help of a text shooting application which is a feature of Google Lens to translate based on artificial intelligence in real time using a smartphone connected to the internet. Based on the explanation above, the research questions are formulated as follows:

1. How is the quality of slang translation through Google Lens for students?
2. What are the students' understanding of applying Google Lens to the PjBL learning?

2. Literature review

The review related to traditional text translation in PjBL learning is still relevant but seems not to follow the current developments in the digital era so that the activities carried out for students feel not dynamic which makes the development of this knowledge carried out monotonously in terms of translation technology. Thus, the presence of translation technology development by using a text shooting system from a smartphone camera by students is a potential solution where AI is commonplace and must be known by today's students so that the challenges of AI-based devices can be understood and synthesized by students as the ultimate test case to overcome weaknesses in following the trend of PjBL learning in schools to achieve knowledge up-to-date. However, the challenge of using AI-based applications in translation occurs in determining the target language related to slang because limited understanding of the true meaning of slang can be limited in certain circles. Therefore, it is hoped that the implementation of PjBL learning using text shooting to translate through Google Lens will contribute to developing student interest and potential as well as the development of AI system updates on Google Lens to be able to translate slang by system developers.

2.1. Translation app based on text capture via AI

Cross-language communication, from laypeople to professionals, is commonplace in everyday life, and machine translation (MT) has penetrated the lives of the general public, requiring multilingual communication. Neural Machine Translation (NMT) is the latest methodology in machine learning that can assist translation activities with a high level of idiomaticity and fluency (Vieira et al., 2020). Machine-assisted translation technology has entered a more mature era by using Neural network technologies with a myriad of benefits to support translation science as a part of connecting global cultures and languages (Liu & Zhu, 2023). Machine translation has benefits in the literary realm, enhancing language learning for students from cognitive, linguistic, and affective

perspectives. Cognitively, machine translation, which excels in assisting translation on computers and smartphones, can reduce cognitive load during initial translation and promote independence in learning. Linguistically, machine translation has advantages because it supports lexico-grammatical knowledge and encourages language learning through reading and writing comprehension. Finally, from an affective perspective, it is beneficial in minimizing language anxiety, increasing motivation and self-confidence, and creating a comfortable learning environment (Lee, 2019).

Machine translation has been around since the 1950s, but its development has expanded with the help of the internet due to the need for global distribution of various languages online. One of the coolest applications related to machine translation today is Google Translate, launched in 2006. It is a product of the giant Google company and is used daily by 500 million people in more than 100 types of languages. Its translation method is based on neural machine translation, which contains algorithms based on statistical analysis but not based on specific grammatical rules. By scanning millions of online documents to identify relevant texts so that it can decide on the best and most human-oriented translation (Terantino, 2022). With the widespread use of machine translation to facilitate translation, such as the use of Google Translate in learning environments, a serious effort is needed to understand how machine translation is closely tied to young learners, learners' attitudes towards machine translation, the level of machine translation efficiency, the accuracy produced by machine translation, and how to detect plagiarism in translations using machine translation. This is because almost all learners in the last decade have known, used, and are tied to the use of machine translation to assist translation activities in educational environments (Organ, 2022). In continuous development, translation engines continue to expand with translation capabilities with the help of text photography known as Google Lens.

Google Lens is a recognition application that has the ability to recognize images from Google's development with the presentation of web pages on the internet into discussions of various languages to produce the emergence of relevant visual analysis information in the form of photos directly from the gadget camera which then identifies the text taken for translation if it is intended in the realm of implementing translation activities without the need to open Google Translate. The advantage of Google Lens as an artificial intelligence-based application by photographing text no longer requires users to bother typing the text to be translated. Furthermore, the results of the translation from this AI-based text photograph can be saved as a text file or forwarded via chat (Nasrullah & Nafiah, 2025). The sophistication of Google Lens is very spectacular because it has a text translation feature through camera direction from the gadget in the source language to the target language visually in real-time and even allows translators to hear the translated speech when tapping the word, get the definition of the text, know examples of the use of translated words, and get a multifaceted learning experience so that it is useful for improving vocabulary mastery in an interactive and immersive manner (Rahmawati et al., 2024).

2.2. Translation in project-based learning model

Project-Based Learning (PjBL) was introduced by American philosopher John Dewey in the early 1900s. This learning approach focuses on emphasizing interaction or hands-on experience for students to collaborate and solve real-world problems, which helps develop practical skills from conceptual understanding (Astartia et al., 2024). PjBL is not only a conservative teaching method where the source of knowledge is solely focused on the teacher in building an interesting teaching and learning environment (Siahaan & Siahaan, 2023).

Translation through the project-based learning model is a form of teaching that is actively centered on students by prioritizing an independent curriculum that has implications for the application of the affective, cognitive, and psychomotor domains to focus on translation learning which contributes to supporting the vision of a place to gain knowledge (Husna et al., 2025). The relationship between translation work in project-based learning (PjBL) has gained recognition as an effective translation education approach to provide opportunities for students to apply theory and practice authentically in the orientation of learning experiences in the form of real tasks or simulations that imitate the challenges faced by professional translators who can develop critical and collaborative skills. The application of PjBL in translation education rules through this project can be in the form of activities translating documents in the form of books, journals or websites in groups to several teams starting from the source text analysis stage, editing to obtaining the target text results (Tambunan et al., 2024). In carrying out translation projects through PjBL, students are given the opportunity to create conducive conditions naturally like project handling situations carried out by professionals in developing translation competencies under the guidance of teachers to supervise the project. The activities in this PjBL model are the same as other project learning models which require students to work in groups with members of four to six people who act as translators, editors, and project managers (Hariyanto et al., 2024).

The advantages of implementing Project based learning (PjBL) in translation activities for students in developing talents because PjBL not only develops student competencies in the form of developing self-dependence and fostering responsibility for students when completing projects and triggering the development of social competencies for students but also relates to collaboration between teachers and students to be able to foster closeness during guidance and project completion which fosters satisfaction between the two during coaching as well as developing teacher professionalism which triggers the giving of meaningful and relevant tasks both to the practical material assigned to students so as to foster satisfaction for teachers (Muam, 2017). In fact, there is a further benefit in using PjBL in translation learning where students get authentic translation projects directly which are sourced from real client requests and then read by real target language recipients, which indicates that this approach can improve competence as a translator who does not only acquire translation competence (Moghaddas &

Khoshsaligheh, 2019). Thus, the positive impact of implementing PjBL shows that students' academic achievement is better than direct instruction did (Guo et al., 2020).

2.3. Translation of slang related to cultural elements

Slang is a phenomenon of relaxed and familiar language which is a social variation used in certain circles, is limited, is specific, and is difficult for people outside the group to understand (Masdita & Sawardi, 2023). Slang is not considered formal language, either spoken or written, because it is considered humorous, shocking, rude, and intended for fun, usually by young people. Slang formation is a morphological process of calquing and reduplication. The meaning of slang words is manipulated through pejoration, generalization, and particularization (Aboh & Okpo, 2022). Slang is frequently used on social media by young people. While slang makes communication seem more efficient, it also reduces the accuracy and clarity of meaning during interactions (Xursanovna, 2025). The reason slang is used for communication is because it represents the identity of a particular social group, is considered cool, and is considered a trending and popular trend, but is also easily forgotten (Nuraeni & Pahamzah, 2023).

Slang translation is a form of recontextualization that contains cultural elements and elements of different social reality contexts (Groce & Hoodkinson, 2019). Slang is an exclusive form based on culture, race and social conditions of society that expresses group and cultural identity (Alawiyah et al., 2021). Slang is related to the culture in which the language was created so that readers of slang translations or non-native speakers are not used to and have difficulty dealing with slang that does not originate from their place (Mahmood & Delil, 2024). Translating slang requires a very complex act where it is necessary to navigate cultural differences that affect the acceptability of certain words or expressions so that sometimes the translation results can accidentally offend or make the reader uncomfortable depending on the cultural background and sensitivity of the reader (Tambekova et al., 2025). With the discussion above, it is clear that slang is a study that can be the ultimate test of Google Lens in PjBL learning to find potential solutions in updating students' understanding in the realm of AI-based translation according to the digital era +that has dominated globally.

3. Method

3.1. Research design

This study employed a mixed methods design that analyzed quantitative and qualitative data using the 4D model approach: define, design, develop, and disseminate (Thiagarajan, 1974). The purpose of this study was to apply Google Lens to interlingual translation using the Project-Based Learning (PjBL) model, resulting in a high-quality translation product in terms of accuracy, acceptability, and readability (Nababan et al., 2012). The instrument used in implementing this PjBL model was a machine translation test (Bania & Faridy, 2023; Hendra, 2020) administered to 75 English Education Department of Samudra University students in Aceh province, Langsa City. The

intervention of this project is more realistically a text translation activity from slang language by students who are pursuing translation and interpreting courses using the latest technology that is trending among translators because of the ability to translate in real time through text shooting on smartphones by 75 students who work in groups in 5 groups consisting of 15 students for each group so that it does not conflict with the implementation of PjBL when testing the use of Google Lens in translating 10 slang words. However, when filling out the questionnaire it is true that it is not filled out in groups but per individual to obtain data related to the understanding of the use of Google Lens but filling out this questionnaire does not conflict with the test activities in the PjBL class. So, there is a different purpose of procuring tests carried out in groups to share insights and determine the quality of translation with filling out questionnaires individually to determine students' understanding of Google Lens. The implementation of the test and filling out the questionnaire was carried out for 6 days on September 8 to September 13, 2025. The stages of the research comprise of: Define phase, design phase, development phase, and dissemination phase.

3.1.1. Define phase

The define phase aims to determine learning needs to align with learning objectives. This phase begins with a problem analysis, identifying the challenges posed by the PjBL model for students in translating interlingual sentences from English to Indonesian using Google Lens, thereby enhancing critical thinking skills, potentially resulting in high-quality translations in terms of accuracy, acceptability, and readability. This was followed by a needs analysis of 75 students in 5 groups, who participated in this interlingual translation project using Google Lens in the PjBL model, enhancing critical thinking skills related to the roles of educators and students. A concept analysis was then conducted for implementing the interlingual translation project from English to Indonesian using Google Lens, capturing text with Android and iOS smartphones, to assess students' critical thinking performance in research. The next phase involved analyzing the tasks obtained from the PjBL model project on interlingual translation material via Google Lens, in accordance with the relevance to the basic competency requirements in the curriculum.

3.1.2. Design phase

In this phase, the research is in the planning stage, providing an explanation of the translation product design process through several stages. First, the goal is to determine the PjBL model via Google Lens, where translation quality is based on accuracy, acceptability, and readability. This is followed by the development of a critical thinking skills test related to interlingual translation via Google Lens. An analytical study of interlingual translation via Google Lens was then conducted on 75 students in 5 groups, based on the specified learning outcomes. Finally, the instrument and accompanying framework were developed to produce a draft PjBL model framework.

3.1.3. Development phase

This phase aims to develop an initial prototype of the research project by developing a model, learning objectives, and teaching modules for PjBL learning for interlingual translation materials from English to Indonesian via Google Lens. The draft teaching module requires validation from translation lecturers and English language education teachers. After the draft validation is complete, the product will be assessed and recommended for testing with students.

3.1.4. Dissemination phase

This phase involves the implementation of instrument revisions by experts and practitioners in the PjBL model for interlingual translation via Google Lens. Two types of instruments were used: an in-class instrument, where revisions were directly provided by experts and practitioners, and a test instrument, where revisions were based on the results of a pilot test with 75 students in 5 groups.

3.1.5. Trial subjects

The interlingual translation project, using English as the source language and Indonesian as the target language, via Google Lens, was piloted in this study on high school students in Langsa City, Nagan Raya City, and Banda Aceh, the provincial capital, using a purposive sampling method. A sample of 75 students in 5 groups was selected to develop critical thinking skills.

3.2. Data collection techniques and instruments

This study employed two types of data to obtain results from the application of the PjBL model to interlingual translation via Google Lens. These data included expert validation data, namely data on the feasibility of the PjBL learning model as a result of the development of a digital interlingual translation trial from English to Indonesian using Google Lens. Furthermore, response data from the trial results were obtained after the trial implementation of interlingual translation via Google Lens within the PjBL learning model for an assignment on the topic of "Slang." This study involved three sequential stages: validation testing, reliability testing, and finally, the implementation of the interlingual translation project via Google Lens through the PjBL learning model. The data were taken from 10 slang sentences listed in the book "Dictionary of Slang Kamus Slang America (US) British (UK) Australia (AUS)" by Luthan (2007). The 10 slang sentences in this book have been translated bilingually through the book publishing editor where the quality of the translation has gone through adequate stages which will then be compared with the translation results via the text shooting application on Google Lens to determine the quality of translation by students through the application of PjBL learning.

3.3. Data analysis techniques

The data analysis technique in this study employed a mixed methods technique, combining qualitative and quantitative methods. Data from the implementation of the PjBL model project for interlingual translation from English to Indonesian via Google Lens in tests with comedy genre texts will be analyzed based on the level of translation quality with aspects of accuracy, namely the suitability of the translation according to the dictionary between the source language and the target language, aspects of acceptability, namely the translation results must be in accordance with the target language culture and not conflict with the values and norms of the target language, namely Indonesian, and aspects of readability where the translation results via Google Lens can be read fluently as if it were not a translation but like reading the original text (Nababan et al., 2012).

4. Findings and discussion

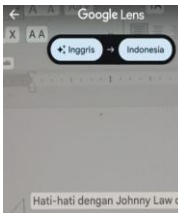
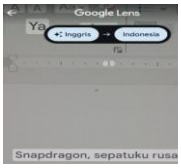
The PjBL activity in implementing slang language translation using the help of Google Lens was carried out at the beginning by introducing the text shooting technology from Google Lens to students through presentations, discussions and questions and answers to students. It was followed by student guidance in using google lens according to the corridor in carrying out translation activities. The division of translation groups was divided into 5 groups, each consisting of 15 students. The groups were guided to understand slang in English used by three different countries, namely America, Britain, and Australia according to the source book used. Students' critical thinking occurred in the realm of discussions and questions and answers related to Google Lens and slang from the three countries plus in the real implementation of the translation test of 10 slang languages using Google Lens. Then, the problem that occurred was the target language generated by the system opened a sheet of critical questions for students when faced with understanding the quality of translation in the aspects of accuracy, acceptability, and readability. Thus, the latest PjBL activities using the latest technology have opened potential insights for students to be able to gain knowledge as provisions to become translators in the digital era.

4.1. The quality of translation in slang translation via Google Lens in PjBL learning

The following is a comparison of the translation of sentences with slang words between the translation results via Google Lens which uses text photography technology and the translation results in a bilingual source book that has gone through the editorial stage for publication.

Table 1

The quality of translation via Google lens in PjBL learning.

No	Source Language	Bilingual Translation of Books	Translation Via Google Lens	Accuracy	Acceptability	Readability
1	Yo, lemme holla at cha! (UK)	Yo, kemarilah saya ingin bicara!		1	1	1
2	Watch out for johnny law over there (UK)	Berhati-hatilah dengan polisi disana itu.		1	1	1
3	Snapdragon, I broke my shoe (UK)	Sialan, saya merusak sepatu saya		1	1	1
4	It's a tit bit nipply today (UK)	Sangat dingin sekali hari ini		2	2	2
5	Everything is just tickety-boo right now (US)	Segala sesuatunya baik sekarang		3	3	3
6	Whoa, this new album is rado! (US)	Whoa, album baru ini sangat luar biasa!		3	3	3
7	That house is monggo expensive (US)	Rumah itu sangat mahal		1	1	1
8	Stop talking jive turkish! (UK)	Hentikan omong kosong itu!		2	2	2

9	That design on that shirt is really far out! (US)	Rancangan kaos itu sangat bagus sekali!		1	1	1
10	That movie is really far out (AUS)	Film itu sangat tak enak		1	1	1

4.1.1. Poor quality slang translation results

In the first translation result of "Yo, lemme holla at cha!" to “Yo, biar aku panggil kamu!” via a text-based translation application or we can translated in english as "Yo, let me call you!", a score of 1 was obtained in the aspects of accuracy, acceptability and readability because this translation felt odd and unusual as if the speaker in the sentence told the interlocutor that he would call the interlocutor who was actually speaking, which indicated that the quality of the translation via artificial intelligence was poor on the first question which was very inversely proportional to the translation in the source book that had undergone the editorial stages for publication, namely " Yo, kemarilah saya ingin bicara!" where this sentence wanted to be conveyed to the interlocutor in the sentence to come to the speaker because there was something he wanted to convey verbally. This problem can be reduced with a solution according to Widyastuti et al. (2024) that human translator assistance is needed to convey the meaning at the final stage so that the results of the machine translation made by Google as a translation instrument are closer to the source text. Therefore, Castro et al. (2018) stated that human translation (written) and simultaneous interpretation (oral) still cannot be replaced by computer-generated translation, even though translation with advanced and innovative technology has increased rapidly.

In the second question where the source sentence is 'Watch out for johnny law over there' translated using Google Lens which has AI-based translation technology using text photography as “hati-hati dengan Johny law disana" produces a score of 1 for each aspect of translation quality from accuracy, acceptability, and readability because the slang word contained in the sentence, namely "johny law" is not translated into Indonesian but remains even though "johny law" is translated as "polisi" or ‘police” in english. However, for the bilingual translation stated in the source textbook, it gets accuracy, acceptability, and readability with a score of 3 because " Berhati-hatilah dengan polisi disana itu " has good translation quality because the slang word is translated. In relation to the ability of Google Lens in Lucia et al. (2021) to perform visual analysis through image recognition technology that uses the internet as well as the ability to copy and paste words from the real world to smartphones so that users can search and explore sentence translations using neural machine translation (NMT) algorithms to maintain

proper language and diction. However, in the case of translating slang words within sentences, this does not necessarily result in good translation quality due to limitations that require technological upgrades.

Likewise, for the third question, the slang word “snapdragon” was not translated into Indonesian via an artificial intelligence-based translation application with text capture, so the translation quality was poor, where every aspect of accuracy, acceptability, and readability all scored 1. Even though the appropriate translation for the slang word “snapdragon” is “sialan” in Indonesian, as translated in the source book which has bilingual content in it. The difficulty in translating slang words in Obukhova &Nikulina (2025) noted that slang words are characterized by language units with variability and fragility due to the dynamic nature of the development of slang language as well as the loss of functional and pragmatic content in the communication process and because slang is related to cultural characteristics, semantic richness, and its own unique emotional expression.

The next poor translation quality is found in the translation results via Google Lens, which is a text-taking application for translating question number seven, where the slang word "monggo" is still not translated into the word "sangat" in Indonesian as stated in the answer key in the translation results of the source book with bilingual content in it. Therefore, the three aspects of accuracy, acceptability, and readability are scored 1. Mozaheb et al. (2024) translation using machine translation such as text capture applications to translate on the Google Lens feature has the potential for inefficiency in translating slang, which can be caused by the risk of misunderstanding word-for-word translation, differences in sentence construction, and misunderstanding of the text. This is natural because the tendency of machine translation is more based on meaning that is close to the formal language form, while slang has a unique nature that is very different from the meaning in the dictionary or literally where there is a hidden meaning of slang that is only understood by certain groups of people in various subcultures where most literal translations fail to convey the message in slang words to the target language.

For questions number nine and number ten, both have the slang word "far out" in their sentences, but number nine is the American (US) version of "far out" and number ten is the Australian (AUS) version of 'far out'. Although the slang in both numbers is the same "far out" but it is translated with conflicting meanings in both the US and AUS versions where the US version translates "far out" as "very good" or “bagus sekali” in Indonesian while the AUS version translates "far out" as "not good" or “tidak enak” in Indonesian. Eleison et al. (2022) the complexity of translating slang or non-standard informal language lies in the understanding that is only known in certain social circles and is mostly used by teenagers who modify everyday language into slang so that there is a lot of noise that hinders the translation process that is not recognized by the machine translation database.

Question number nine has poor quality because "far out" in the US version according to the instructions of the bilingual source book is translated as *"bagus sekali"*

which indicates a positive meaning context but is translated as *"benar-benar aneh"* in Indonesian according to the AUS version which indicates that the context conveyed is not good or negative. Meanwhile, in question number ten, the AUS version of "far out" should be interpreted as *"tidak enak"* but instead it is interpreted as *"sangat jauh"* in Indonesian or "very far" in English where the sentence translated by Google Lens is "*film itu sangat jauh*" which feels inaccurate, unacceptable, and difficult to read in the target language culture. Machine translation, including applications developed by Google, requires evaluation regarding comparisons between translation machines, comparisons between machine translation and human translation, and even the relationship with professional perceptions regarding post-editing strategies for machine translation. Although machine translation has advanced, most recently in the form of neural machine translation, Google's translation engine, text translation remains inadequate in the literary field, and the application of user feedback remains questionable. Furthermore, even after corrections have been implemented, errors persist and continue to occur in machine translation, possibly due to an inadequate understanding of the original text or an inability to understand the resulting text (Abdelhalim et al., 2025).

4.1.2. Medium quality slang translation results

Question number four scored 2 for all aspects of translation quality such as accuracy, acceptability, and readability, indicating that the quality is medium because the translation of the slang "tit bit nipply" was translated partially correctly and partially incorrectly, which should indicate that something is very cold, not rather cold. However, the text capture application from the Google Lens feature translated it as *"agak dingin"* in Indonesian, while the answer key guide from the bilingual source book stated that the slang was translated as *"dingin sekali"*. Therefore, the slang "tit bit nipply" was translated correctly via the application related to "cool" or *"dingin"* in Indonesian but misunderstood the meaning of very cold to rather cold or in the translation *"agak dingin"* should be *"dingin sekali"*. Ramos and Guzman's (2024) translation workflows require embedding revision and post-editing in translation software that has unclear limitations on the source text or segments unknown to the translator or reviser where ensuring translation quality is strengthened at a crucial impact when there are many translation corrections that are missing, redundant or even justified. Ramos (2024) responding to the rapid growth of translation technology, including the advent of machine translation and artificial intelligence, requires adequate translation competency. Common high-impact skills include knowledge of punctuation, target-language spelling, source-language knowledge, and the ability to effectively utilize computers for recycled content, such as text output from translation memory software and concordance searches.

Another question that achieved a medium translation quality was question number eight, where the slang "jive turkish" in the sentence "Stop talking jive turkish!" was translated too long into *"Berhentilah bicara omong kosong ala turki*! in Indonesian by Google Lens. The slang "jive turkish" should simply be translated as *"omong kosong"* in

Indonesian without adding the Turkish embellishment to the translation into "*omong kosong ala Turki*" which makes the translation unusual and less understandable. The medium translation quality was achieved because the slang "jive turkish" should have been correctly translated as "*omong kosong*" but instead the Turkish embellishment was added in the translation to become "*omong kosong ala Turki*". Yang et al. (2023) in order to convey a message accurately in translation, cultural and linguistic elements need to be taken into account to meet the background and preferences of the readers of the translated text. Mahadin et al. (2025) translation via machine translation or artificial intelligence has challenges in cultural sensitivity, data security, ethical issues, consistency and accuracy so that professionals in translation are prioritized to improve the quality of translation through word searches, sentence restatements, summaries, and identification of contextual meaning.

4.1.3. High quality slang translation results

For, the high quality of translation in the research is found in question number 5 with the slang "tickety-boo" in the complete sentence "Everything is just tickety-boo right now" which is translated via an AI-based translation application in the form of text photography to *"semuanya baik-baik saja sekarang"* in Indonesian. The translation via this application has a meaning that matches the answer key from the bilingual source book *"segala sesuatunya baik sekarang"*. The slang "tickety-boo" is translated as *"baik"* in Indonesian via the app and via the bilingual source book. Although there is a slight difference in the sequence of words in the sentence from the translation via the application with the translation in the source book, the aspects of accuracy, acceptability, and readability get a score of 3 because from the accuracy it is in accordance with the dictionary and the message is conveyed well, from acceptability it is in accordance with the target culture and common translation, from readability it can be read fluently. This is in accordance with Wang et al. (2024) that intelligent-based translation systems show the potential to increase students' interest and independence in translation competence through increasing written English vocabulary. Furthermore, Strandvik (2025) emphasizes the discussion on how translation tools can produce high-quality output. Evaluation of translation quality is crucial in developing tools where validity, reliability, and practicality are prioritized from the perspective of translation tool users to ensure that evaluations are carried out efficiently so that translation tool specifications can be key at all stages of a translation project that produces quality translations.

Lastly, on question number six, the sentence "Whoa, this new album is rado!" with the slang word "rado" can be translated well via a translation application to *"keren banget"* which is a translation with a strong sense of Indonesian youth language in the complete sentence *"Wah, album baru ini keren banget!"*. Although there is a slight difference in word choice in the slang translation of "rado" in the application to *"keren banget"* and in the bilingual source book to *"luar biasa"* but the message to be conveyed can be conveyed well because the meaning of both is the same which functions to indicate

something very great so that the accuracy aspect is in accordance with the dictionary and the message is in accordance with the target language, acceptability feels normal and in accordance with the culture of the target language, readability can be read easily to understand so the quality of the translation gets a score of 3 for each aspect and is high quality. In terms of good translation quality, Gong (2025) highlights the artificial neural network algorithm in machine translation technology related to translation has the potential to have consistency and transparency, reduction of inherent subjectivity that revolutionizes translation quality assessment where the encouragement of cross-cultural knowledge exchange is significantly implied in the evaluation of translation quality, thus achieving higher scores such as in terms of accuracy and precision indicates superiority in translation quality evaluation. Likewise, automatic translation based on artificial neural networks applied by deep learning in neural machine translation is also included as a service feature provided by Google-on-Google Lens which uses an application with text photography which is considered promising because it combines the context of training data, source text and target text where the results obtained are words with the right context. However, because this machine translation system needs to be constantly upgraded, thus human review is still needed so that the possibility of high-quality, fully automated translation will be more comprehensive and increasingly common in the future (Shilov, 2019).

4.2. Students' understanding of slang translation learning using the PjBL method

The following are the results of the understanding of 75 students who translated via Google Lens (AI-based text-photographing translation application) regarding 10 slang translation questions about PjBL learning.

Table 2
Students' understanding of slang translation via Google Lens in PjBL learning.

No.	Questionnaires	Understanding	
		Yes	No
1	Do you agree that PjBL learning is suitable for translating slang via Google Lens?	62 Students	13 Students
2	Do you agree that slang translation via Google Lens in PjBL learning is effective?	64 Students	11 Students
3	Do you agree that slang translation via Google Lens in PjBL learning is efficient?	70 Students	5 Students

4	Do you understand how to use Google Lens?	75 Students	0 Students
5	Do you understand PjBL Learning?	73 Students	2 Students

In the first questionnaire related to students' understanding regarding the application of the PjBL method to translate slang via Google Lens, the results showed that 62 students (82.7%) agreed that this was suitable, but 13 students (17.3%) refused to agree that this activity was suitable. The majority of participants' understanding of suitable PjBL for this translation is in accordance with Retnaningsih (2023) that PjBL is an alternative method that is worth considering in teaching translation because it adds valuable insights and improves translation skills. The connection between technology in teaching translation in PjBL, Li et al. (2015) stated that PjBL has a very important strategic role related to its relationship to developing technology so that students are encouraged to make full use of technological devices during investigations and even when presenting findings.

For students' understanding regarding slang translation via Google Lens in PjBL learning is effective, the results are 64 students (85.3%) admit that this is effective but 11 students (14.7%) reject it. The effectiveness here is in accordance with Kiet (2019) evaluation of the application of project-based learning to students' practical experiences yielded positive results because students were able to develop collaborative skills, problem solving and increased learning independence.

Regarding efficient slang translation via Google Lens in PjBL learning, 70 students (93.3%) answered yes and 5 students (6.7%) answered no. This project-based learning, if directed practically in accordance with the learning flow for critical and creative thinking, can help students improve their work ethic, cognition, and interpersonal skills so that it is seen as efficient (Permatasari & Agustine, 2023).

In the fourth question, it was found that all participants, totalling 75 students (100%), understood the use of Google Lens to translate with the help of a smartphone by using text capture via artificial intelligence. The understanding of the majority of students in translating using text photography via Google Lens is in accordance with Albtoush and Almahasees (2024) that Google Lens is a useful tool for users that can be used to translate via text photography.

The understanding of PjBL learning in this translation project was answered by 73 students (97.3%) that they understood, while there were 2 students (2.7%) who answered that they did not understand. Based on the majority of students' understanding of PjBL, Chi and Dieu (2021) state that extraordinary efforts by students who switched from conventional classes to project-based learning succeeded in becoming an alternative for foreign language teaching that is worth understanding by students through creative team learning experiences through meaningful projects to stimulate thinking and

communication and collaboration skills where students feel exposure to real-life situations.

In the context of the effectiveness of the PjBL model according to table 2, it has provided information that students' understanding related to text translation using text photography from smartphones is adequate so that it becomes a potential solution for students to work as translators with the help of digital technology in the future where English language education students in Langsa are not left behind from other developed countries regarding AI-based translation.

5. Conclusion

PjBL learning is an appropriate method for improving students' competency in collaborative slang translation projects. It is generally understood by students to experience a professional-like experience when completing projects. When PjBL learning for slang translation projects was combined with the use of an AI-based text capture application for translation, a feature of Google Lens, there were still challenges. The translation quality of six slang words out of ten questions received a score of 1 for accuracy, acceptability, and readability. This indicates poor slang translation due to the strong cultural influence of slang, which requires an upgrade to the Google Lens system to improve translation. Furthermore, two slang words out of ten questions received a moderate translation quality, and two slang words out of ten questions received a high translation quality. It is hoped that further research can deepen the use of Google Lens to be able to translate slang better and can use other trending translation application systems.

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