

## IMPLEMENTATION OF CLASSROOM MANAGEMENT IN STUDENTS' PERCEPTIONS USING GOOGLE TRANSLATE IN WRITING SCIENTIFIC ARTICLES

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**Abstrak:** Penggunaan Google Translate dalam pembelajaran bahasa Inggris masih memiliki beberapa masalah, seperti plagiarisme, mengurangi kemampuan menulis siswa, dan kualitas terjemahannya. Namun, menurut penelitian sebelumnya, siswa masih menggunakan Google Translate dalam pembelajaran bahasa Inggris. Bahkan mereka berpotensi menggunakannya dalam menulis artikel ilmiah. Oleh karena itu, penelitian ini bertujuan untuk mengungkap bukti empiris tentang persepsi mahasiswa secara keseluruhan tentang penggunaan Google Translate dalam menulis artikel ilmiah. Seratus mahasiswa Pendidikan Bahasa Inggris berpartisipasi dalam penelitian. Penelitian ini menggunakan metode survei dengan membagikan kuesioner yang dimodifikasi berdasarkan Technology Acceptance Model (TAM). Data yang dikumpulkan dianalisis dengan menggunakan metode kualitatif deskriptif. Temuan penelitian mengungkapkan bahwa mahasiswa memiliki persepsi positif terhadap penggunaan Google Translate dalam menulis artikel ilmiah. Persepsi positif ini diprediksi melalui variabel persepsi kegunaan, persepsi kemudahan penggunaan, sikap, dan niat perilaku. Temuan ini juga mengungkapkan bahwa mahasiswa cukup mahir dalam menggunakan Google Translate untuk menulis artikel ilmiah. Namun demikian, peneliti menyarankan agar para mahasiswa mengembangkan kemampuan menulis mereka karena hal ini juga dapat berguna untuk memaksimalkan hasil penggunaan Google Translate.  
Kata kunci: Persepsi Mahasiswa, Terjemahan Google, TAM

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**Abstract:** Using Google Translate in English learning still has some issues, such as plagiarism, reducing students' writing skills, and its translation quality. However, according to previous research, students still use Google Translate in their English learning. Even they potentially use it in writing scientific articles. Therefore, this research aims to uncover the empirical evidence of students' overall perceptions of using Google Translate in writing scientific articles. One hundred English Education students participated in this research. This research uses a survey method and shares the instrument questionnaire modified based on Technology Acceptance Model (TAM). The data collected were analyzed using a descriptive qualitative method. The research findings reveal that students positively perceived using Google Translate in writing scientific articles. This positive perception is predicted through the perceived usefulness, perceived ease of use, attitude, and behavioral intention variable. The findings also reveal that students are proficient enough in using Google Translate to write scientific articles. Nevertheless, the researcher suggested that the students develop their writing skills since it can also be useful in maximizing the result of Google Translate use.  
Keywords: Students' Perception, Google Translate, TAM

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### Introduction

The development of technology has never stopped, with no exception in the field of education (Singh, 2021). In the past, notebooks, textbooks, pens, etcetera were the leading equipment for teachers and students to conduct the class. However, laptops, tablets, smartphones, etcetera are the top equipment for today's teachers and students, while books and pens are only complementing. Software for the learning process is also produced to make the

learning process more effective and efficient. In line with Stošić (2015), he argued that technology in the educational field is addressed to optimize the result and increase the efficiency of the learning process. In the second language (L2) learning environment, one of the most useful and popular software is machine translation, used by students or teachers to translate text. In addition, to our knowledge, one of the best-known machine translations is Google Translate.

Google Translate is the most prominent free-access machine translation, and since 2018, it has been reported to have been used by 200 million daily users worldwide (Prates, Avelar, & Lamb, 2020). According to Noviarini (2021), Google Translate is provided by Google LLC as a service that can translate short and long texts and web pages from one first language to another. Google Translate was first released in April 2006 and continued to be developed. At first, Google Translate was notorious for being unreliable due to its inaccuracies in translating (Ducar & Schocket, 2018). However, at the end of 2016, the quality of its translation had improved significantly due to Google Neural Machine Translation (GNMT) systems. In addition, it implements Example-Based Machine Translation (EBMT), picks up pieces of information from plentiful stored examples, and encodes sentence semantics to improve the translation quality (S. C. Tsai, 2019). To date, Google Translate can simultaneously translate speech in more than 100 languages. In other words, Google Translate is one of the most powerful MT at the moment.

Many studies have been conducted regarding the translation quality of Google Translate. For example, Noviarini (2021) examined Google Translate's quality by comparing the translated storybook published with the one translated using Google Translate. The research reported that Google Translate has limitations in recognizing the context and the culture inside a text. In addition, the advantage of using Google Translate is that it can quickly translate text. Hence, it is better to only use Google Translate as a tool that can assist translators in translating text faster. In other words, skilled translators are still needed to translate appropriately. Another research about Google Translate's translation quality was conducted by Tsai (2019), comparing 124 students' self-written Chinese-English translations with Google Translate's translation results. The research uncovered that Google Translate's translation results are better than students' self-written translations. Furthermore, it was reported that Google Translate has lower spelling and grammar mistakes and has more advanced-level words. However, due to its translation quality, taking advantage of Google Translate in the L2 learning environment still generates some issues.

One of the issues is plagiarism, possibly due to the use of Google Translate in producing text for L2 academic writing. According to Groves & Mundt (2015), an argument exists for using machine translation. Whether an English text translated from another language using a machine translation can still be considered a student's accomplishment in L2 learning. In other words, whether it can be categorized as an academic offense is still questionable. Indeed, there is no official institutional regulation towards using Google Translate in the L2 learning environment. Another issue is related to the reduction of students' L2 writing skills. Unconfident students rely too much on Google Translate and do not double-check the result. Besides getting poor translation quality, this behavior also lowers their L2 writing skills until they get adequate guidance in using Google Translate (Chompurach, 2021; S. M. Lee, 2020).

So, based on those previous findings, Google Translate has advantages and issues. However, not a few students still use it to help them in L2 learning. Furthermore, for example, at the University of Muhammadiyah, Prof. Dr. Hamka, there is no official institutional regulation prohibiting using Google Translate. The students potentially use it in L2 learning. In addition, they could use Google Translate to practice their L2 skills, do homework, or even write L2 scientific articles for their final task. Regarding using Google Translate in writing L2 scientific articles, Google Translate seems unreliable, which still has some issues that have been explained above. Therefore, this research attempts to uncover the empirical evidence of students' perception of using Google Translate in writing scientific articles. The focus is on variables among TAM constructs significantly influencing the students' perceptions of using Google Translate in writing scientific articles.

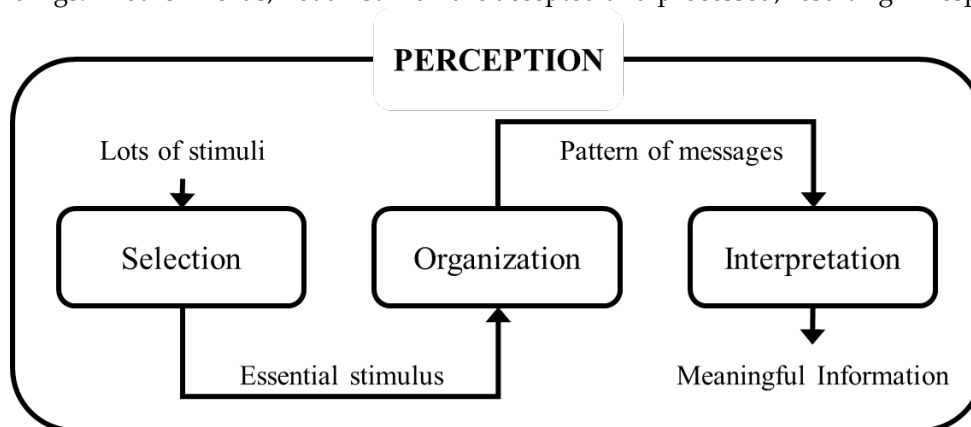
### **The Concept of Perception**

Perception is a common word that is often used by people worldwide. This word is used to deal with how someone perceives something. As cited in Lindsay & Norman (1977), perception is an impression of objects and individuals that someone has processed using his senses, such as eyes, ears, nose, skin, and tongue. A similar understanding was also stated by Rogers (2017) that perception involves seeing, hearing, smelling, touching, and tasting in its process. Moreover, Rogers (2017) explained that perception is a process of understanding information that reaches someone's sense organs. From that explanation, perception is something that deals with one's psychology. Therefore, since the human brain is a complex object, experts define perception differently.

For example, according to Sobur (2016), perception is a stimulation process that produces physical responses to stimuli. In other words, perception is the overall process that results in responses after someone is stimulated. Whereas Cali (2017) proposed another explanation: perception needs non-sensory elements, such as basic understanding and inferential action, to understand the meaning of the stimulus. Moreover, this statement

aligns with Paul Rookes; Jane Willson (2000), which involves acknowledgment and interpretation in the perception. Thus, it can be concluded that all of the explanations have similarities, even if they state them differently.

In addition, Huffman (2009) explained that perception occurs when the brain receives information from the sense organs and then gives meaning to it. Furthermore, the process involves stages; selection, organization, and stimulus interpretation into useful information (Figure 1). Moreover, the selection process filters the stimulus and only allows the essential one to be processed. The next stage is the organization which classifies the stimulus into patterns using someone's basic understanding. Then, the patterns help the brain assess and define the information from one's surroundings. In other words, not all stimuli are accepted and processed, resulting in responses.



*Figure 1. The stages of the process of perception*

Based on those explanations, it can be inferred that perception is a psychological process in which the brain interprets stimuli received through sensory organs. Moreover, the process is complex since the brain needs to select and organize important messages before interpreting them. Nevertheless, research about perception still needs to be conducted despite the complex process. Hagan, Amoaddai, Lawer, & Atteh (2020) support this statement by reporting that students' perception is vital in enhancing students learning performance. Furthermore, in student perception research, the researchers use students' interpretations to enhance the students' learning performances. Moreover, It is because students' perception research covers many beneficial research areas. Some of the areas include pedagogy, psychology, information and technology advancement.

An example of research about pedagogy is by Hawa, Suryani, Susiani, Dauyah, & Majid (2021), which investigated students' perceptions of using their mother tongue in an EFL classroom. The research found that using the mother tongue in EFL classes has positive and negative impacts depending on the student's proficiency level in English. Further, an example of research on students' psychology is by Bergmann, Muth, & Loerbroks (2019), which investigated students' perceptions of stress due to academic studies and their life matters. The research found that academic studies and life matters lead to stress and reduce students' health. Last, an example of research about information and technological advancement is by You (2019), which investigated students' perceptions about learning using Massive Open Online Courses (MOOC). The research found that MOOC is useful and easy to use. It also influences students' learning strategies and cognitive assessment. In conclusion, student perception research is important to be conducted to explore many areas that will benefit students and education in general.

### **Technology Acceptance Model (TAM) to Explore Students' Perception**

Many studies have explored the field of students' perception of various technology. In addition, they employed Technology Acceptance Model (TAM) as a model in their studies. TAM predicts individuals' acceptance of new technology (Jang et al., 2021). The TAM was developed by Davis (1989) and developed from the Theory of Reasoned Action (TRA), which is used to explain computer usage behavior. Further, Yang & Wang (2019) acknowledged TAM as a reliable model to predict user acceptance and new technology usage.

According to Alfadda & Mahdi (2021), the TAM consists of four constructs: perceived ease of use, perceived usefulness, attitude, and behavioral intention (Table 1). However, there have been many modifications to TAM since it was used in research. The modifications appear on the variables that will influence the acceptance. Researchers modified it by adding some relevant variables or eliminating the irrelevant ones to their research. An example is Yang & Wang (2019), which eliminates the variable attitude, which is considered to have less influence on other variables. At the same time, they add experience and motivation as external variables that will influence and be influenced by other main variables. However, in perception research, applying the four primary constructs, perceived ease of use, perceived usefulness, attitude, and behavioral intention, is as good as the modified one. Many

experts have used and tested those four constructs and have contributed to countless research (Siregar, Panah, Jaafar, & Adisaputera, 2021).

*Table 1. The Technology Acceptance Model constructs*

Labels	Constructs	Definitions
PU	Perceived Usefulness	The belief that implementing a particular technology will improve job performance
PEOU	Perceived Ease of Use	The belief that there will be no effort in using the new technology
A	Attitude	An appraisal of how an individual uses technology
BI	Behavioral Intention	An individual's intention to use technology

### The Concept of Google Translate

According to Noviarini (2021), Google Translate is provided by Google LLC as a service that can translate short and long texts and web pages from one first language to another. Google Translate was first released in April 2006 and continued to be developed. At first, Google Translate was notorious for being unreliable due to its inaccuracies in translation (Ducar & Schocket, 2018). However, at the end of 2016, the quality of its translation had improved significantly due to Google Neural Machine Translation (GNMT) systems. In addition, it implements Example-Based Machine Translation (EBMT), picks up pieces of information from plentiful stored examples, and encodes sentence semantics to improve the translation quality (S. C. Tsai, 2019). To date, Google Translate can simultaneously translate speech in more than 100 languages. In other words, Google Translate is one of the most potent machine translations nowadays.

### Google Translate in Writing Scientific Articles

Taking advantage of Google Translate in academic writing is convenient and appealing. Moreover, effectiveness, efficiency, and accuracy continue to increase along with technology development (Chandra & Yuyun, 2018). Furthermore, the latest (S.-C. Tsai, 2020) research reported that with the help of Google Translate, non-English majors could compete for writing performance with English majors in producing EFL writing. Even though writing skill is challenging to master, having proper guidance in using Google Translate will make it a potential tool to help someone in writing (Chandra & Yuyun, 2018). There is no exception to academic writing; instead of perceiving Google Translate as a threat to learning a second language writing skills, students better embrace it as an assistive tool that helps them write academic writing.

One type of academic writing is a scientific article. A scientific article consists of research findings when the researcher finally answers a problem question. In a university, a scientific article is required to accomplish the study. Therefore, it can be assumed that a scientific article is a tool to assess students' skills in solving problems scientifically. Hence, writing assistive tools usage, such as Google Translate, should not be a problem.

In contrast, it should be a problem if the assessment assesses their writing quality. Because Google Translate potentially influences their writing quality since its performance continues to improve. There are two pieces of evidence from previous research that support this statement. First, S.-M. Lee & Briggs (2021) reported that machine translation could significantly reduce errors made by students in academic writing. Second, S.-C. Tsai (2020) reported that Google Translate gives students better writing quality. Students also feel satisfied with Google Translate's performance. Those two pieces of evidence show us how helpful Google Translate is in writing second language writings, especially for students. Thus, Stapleton & Leung Ka Kin (2019) suggested that teachers need to investigate machine translation as it can significantly affect the future teaching and learning of a second language.

Since student perception and Google Translate have many benefits in many educational areas. There might exist some differences and similarities from the current research. For example, Khotimah, Wahyudin, & Rohbiah (2021) have researched students' perceptions of Google Translate in online English learning. The objective is to uncover the students' perceptions of Google Translate as a learning tool in online learning. The findings reported a positive perception of Google Translate as a translation tool for learning English. In addition, the research also claimed that Google Translate is an excellent tool for enriching students' vocabularies. Lastly, the research still encourages students to be used to translating without Google Translate though it is considered helpful. The similarities between this previous research and the current research appear in the techniques used, which are both previous and current studies used a questionnaire to gather the data from English Education students. Moreover, they also used interviews to enrich the data collected from the questionnaire. The difference can be seen that the current research used a questionnaire adapted from the TAM, which the previous research did not.

Another example, Al-Marouf, Salloum, AlHamadand, & Shaalan (2020) conducted research exploring Google Translate acceptance in United Arab Emirates (UAE). The research reveals that perceived usefulness,

perceived ease of use, and motivation impact behavioral intention to use Google Translate. Furthermore, perceived usefulness and motivation significantly influenced perceived ease of use. In addition, perceived usefulness is influenced by experience. Additionally, the findings are valuable for translation researchers, teachers, and machine translation system developers. As the current researcher identified this previous research, some similarities exist between this previous and current research. They used quantitative research and adapted their questionnaire based on the Technology Acceptance Model, the same as the current research. However, the differences can be seen in that the previous research eliminated the attitude variable and added the motivation and experience variable, which the current research does not.

Another example by Siregar et al. (2021) explores students' perceptions of Google Translate. However, the participants are purposefully selected; they must be pre-service teachers. The participants are similar to the current research, University students. The research aims to understand pre-service teachers' perception of Google Translate as a language learning assistive tool. The research findings show that Google Translate is useful and easy to use, and students positively perceive the accuracy of its translation. The similarity between this previous and the current research exists in the method used, which deploys a survey method through an instrument. The instrument is also similar in that it is adapted from previous research based on the TAM. The difference to the current research is that this previous research only used two main variables of TAM, perceived usefulness and ease of use, and eliminated attitude and behavioral intention variables. In addition, it added accuracy as its variable. Moreover, the previous research does not enrich its data using an interview.

There is also previous research by S.-C. Tsai (2020) investigated students' perceptions of Google Translate related to EFL writing. This previous research investigates the effectiveness of using Google Translate as an assistive tool in EFL writing. It reported that Google Translate enhances students' performance in producing EFL writing by giving fewer errors and more advanced vocabulary. In addition, it agreed that students have a positive attitude toward Google Translate. As a result of further identification, this previous research is similar to the current research in that both investigate using Google Translate in EFL writing. In addition, there are more similarities. The previous research is mixed-method research, similar to this current research. However, the previous one deploys a case study and questionnaire to collect data. In contrast, the current research uses a questionnaire adapted from previous research to collect the data and adds an interview to give more detailed information. Another difference is that the current research participants are English Education students, while the previous research allows non-English students as participants.

Generally the university uses a scientific article to measure their students' scientific problem-solving skills. In order to present their findings, students must have good writing quality so the readers can easily understand the findings. In addition, any assistive writing tool usage should not be a problem. It is based on the reason that the student's writing skills are not the primary thing to be measured. Furthermore, one of the tools that can help students write scientific articles is Google Translate. Moreover, since Google Translate's performance continues to improve, it can give students better-writing quality. However, it still depends on how well the students use Google Translate. Because currently, Google Translate still has some writing quality and plagiarism issues. The more proficient students use Google Translate, the better their writing quality. Nevertheless, many students have already used Google Translate to help them write academic writing, specifically scientific articles, potentially carelessly using it without knowing the issues that come along. In other words, there are differences in students' perceptions of using Google Translate to help them write scientific articles.

Based on the TAM, the differences in perception might be because of four variables: perceived usefulness, perceived ease of use, attitude, and behavioral intention (Figure 2). They potentially predict students' perception of technology. Although, many potential variables can also predict students' perceptions. Those four constructs of TAM have been widely used in research and empirically reported that those constructs can predict students' perceptions.

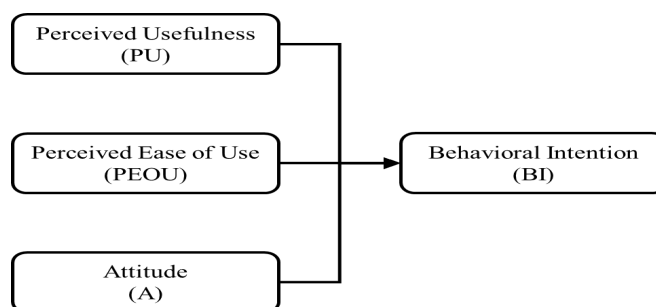


Figure 2. The TAM constructs

## Method

In order to complete the objective of this research, precise, robust, and transparent evidence is needed. Therefore, this research purposely needed quantitative and qualitative data because this research investigated the students' perceptions among constructs of TAM, and it also needs to be explained. Furthermore, the research instruments were a survey and an interview. The survey instrument was a close-ended questionnaire shared through social media. One hundred students participated in the online survey. In addition, ten interview participants were selected from those students. The researcher believed that the online survey gives more benefits, such as consuming less time and money and reaching distant respondents (Alharbi & Drew, 2014). In addition, the interview was conducted directly with the respondent and by personal online chat to give the respondents an easiness. The interview was purposed to give more information regarding the students' perceptions.

### Data Collecting

The research used a survey method through an online questionnaire and an interview. In addition, the questionnaire and interview questions were adapted, modified, and translated from previous studies to match the current research context (Alfadda & Mahdi, 2021; Alharbi & Drew, 2014; Davis, 1989; Yang & Wang, 2019; Zhong, Oh, & Moon, 2021). The original questionnaire was in English and then translated into Indonesian to avoid respondents' misunderstanding. The questionnaire adopted the TAM that predicts the acceptance of technology to collect empirical data on students' perceptions of using Google Translate in writing scientific articles. The questionnaire consists of two sections. The first section asked about the respondents' demographic data, and the second section asked about four constructs of TAM. In addition, the demographic data consists of gender, age, and recent respondents' writing conditions. Whereas the four constructs consist of perceived ease of use (6 items), perceived usefulness (6 items), attitude (4 items), and behavioral intention (4 items). Moreover, all the questionnaire items are displayed in (Table 2).

*Table 2. Items of the Questionnaire*

No.	Variables	Items
1	PERCEIVED EASE OF USE	It is easy for me to learn to operate Google Translate
2		It is easy for me to use the features in Google Translate properly
3		I can use Google Translate anywhere and anytime with access to the Internet
4		Google Translate translation results do not have to be rechecked
5		It is easy for me to become proficient at using Google Translate
6		I find Google Translate easy to use
7	PERCEIVED USEFULNESS	Using Google Translate makes my job easier
8		Using Google Translate improves my writing performance
9		Using Google Translate allows me to write scientific articles faster
10		Using Google Translate improves the quality of my scientific articles
11		Using Google Translate increases my effectiveness in writing scientific articles
12		I feel that Google Translate is useful for writing scientific articles
13	ATTITUDE	Using Google Translate in writing scientific articles is a good idea
14		Using Google Translate in writing scientific articles is a positive idea
15		I feel like using Google Translate in writing scientific articles
16		I feel comfortable using Google Translate to improve the quality of my scientific articles
17	BEHAVIORAL INTENTION	I will choose Google Translate as my main machine translation
18		I use Google Translate to help me complete my scientific articles
19		I plan to use Google Translate in the future
20		I will suggest my friends use Google Translate to write scientific articles

### Reliability Test

In order to understand the reliability of the questionnaire, a reliability test using Cronbach's alpha was used in this research. According to Zulaiha & Mulyono (2020), reliability refers to a questionnaire's ability to give the same quality of data collected from respondents. In addition, the research conducted a reliability test through SPSS

version 25. The result revealed that the questionnaire has an alpha value of 0.916. Based on Khan, Vivek, Nabi, Khojah, & Tahir (2021), Cronbach’s alpha value between ± 0.41 to ± 0.70 is qualified as moderate reliability, whereas ≥ 0.70 is considered high reliability. Therefore, the questionnaire is highly reliable since this research holds an alpha value of 0.916, which exceeds the minimum high-reliability level.

**Table 3. Reliability test result**

Reliability Statistics		
Cronbach’s Alpha	Cronbach’s Alpha Based on Standardized Items	N of Items
.916	.917	20

**Validity Test**

The study also measures the questionnaire validity using Pearson Product-Moment Correlation. Questionnaire validity refers to the degree to which it measures what it is supposed to measure (Christensen, Golino, & Silvia, 2020). In addition, the validity test was also conducted using SPSS version 25. The questionnaire is valid when the significance (2-tailed) is < 0.05 or Pearson Correlation r-count is > r-table. The result reveals that all the items are valid and can be used to gather the data. It is concluded from the output of SPSS that all the items have a significance of 0.000, which is < 0.05. Moreover, the lowest founded r-count is 0.346, the highest is 0.897, and the r-table is 0.194. Thus, all the r-count is > r-table, so the questionnaire passed the validity test. Furthermore, the open-ended interview questions were formulated based on the questionnaire that adopted four variables of TAM. Each variable, perceived ease of use, perceived usefulness, attitude, and behavioral intention, was presented through a question derived from the questionnaire that needed more explanation. The result of the interview enriched the data collection and provided the current research with a clear understanding.

**Data Analysis Technique**

As the data questionnaire was in the form of a five-point Likert scale, “1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree”, the data were tabulated to analyze efficiently. The researcher combined “Strongly Agree” and “Agree” to produce a single positive response. While “Disagree” and “Strongly Disagree” were combined to produce a single negative response. Still, the “Neutral” response does not get any changes. The researcher used SPSS version 25 to do the statistics to find the data’s frequency. The researcher also employed a percentage formula to find the percentages of the response frequencies. The percentage formula was adopted in Wasilah (2012) (Table 4). The research conducted descriptive quantitative to interpret the data’s frequency and percentages. This process is needed to know the participants’ central tendencies from the questionnaire. It also decides students’ perception of using Google Translate in writing scientific articles.

**Table 4. The percentage formula**

Percentage Formula	
Percentage	$\% = \frac{n \text{ (number of frequency obtained)}}{N \text{ (total number of sample)}} \times 100\%$

The interview data were analyzed to support the findings of the questionnaire. The researcher did five steps before finally analyzing the data. First, the data were organized by transcribing since it is in the form of audio files. Second, the researcher reviewed and examined the data for repeated ideas that appeared. Third, the researcher made some categories based on the data that has been reviewed. Fourth, the repeated ideas were assigned to their categories. In the last step, the researcher connected the categories and created cohesive themes. After performing those steps, the researcher finally analyzed the content and described the conclusion based on the findings.

**Findings and Discussion**

To understand how students perceive the use of Google Translate in writing scientific articles, the researcher collects the data using a questionnaire adapted and modified to fit the current research context. The researcher has processed and analyzed the data accurately, resulting in finding that will be used to answer the research problem. The data consist of students’ perceived usefulness (PU), perceived ease of use (PEOU), attitude (A), and behavioral intention (BI) toward using Google Translate. Moreover, the demography of respondents was also collected through the questionnaire. Furthermore, the questionnaire was designed on a five-point Likert scale. However, since the need to present the data clearly and understandable, “Strongly Agree” and “Agree” were combined to produce a single positive response. While “Disagree” and “Strongly Disagree” were combined to produce a single negative response. Still, the “Neutral” response does not get any changes. These are the tabulation data that the researcher found from the questionnaire.

**Table 5. Participants’ gender**

Genders	Responses	Percentages
Male	80	80,00%

Female	20	20,00%
<b>Total</b>		<b>100,00%</b>

*Table 6. Participants' age*

Ages	Responses	Percentages
<19 y.o	0	0,00%
20-23 y.o	99	99,00%
>24 y.o	1	1,00%
<b>Total</b>		<b>100,00%</b>

*Table 7. Participants writing conditions*

Conditions	Responses	Percentages
Currently writing a scientific article	70	70,00%
Has finished writing a scientific article	30	30,00%
<b>Total</b>		<b>100,00%</b>

Based on Table 5, Table 6, and Table 7 above, it can be concluded that 80 male and 20 female participants filled out the questionnaire. Moreover, 99 participants from 20 to 23 years old filled out the questionnaire; one person was under the age of >24, and no one was under the age of <19. Moreover, 70 participants are in the condition that they are currently writing a scientific article, and 30 participants have finished writing a scientific article. Then Table 8 below shows the result of the questionnaire collected responses on TAM constructs.

*Table 8. The result of the questionnaire*

No.	Variables	Agree	(Agree %)	Neutral	(Neutral %)	Disagree	(Disagree %)
1	PEU1	98	98%	2	2%	0	0%
2	PEU2	96	96%	4	4%	0	0%
3	PEU3	98	98%	2	2%	0	0%
4	PEU4	5	5%	22	22%	73	73%
5	PEU5	52	52%	37	37%	11	11%
6	PEU6	95	95%	5	5%	0	0%
7	PU1	94	94%	6	6%	0	0%
8	PU2	68	68%	27	27%	5	5%
9	PU3	72	72%	21	21%	7	7%
10	PU4	39	39%	49	49%	12	12%
11	PU5	70	70%	23	23%	7	7%
12	PU6	79	79%	20	20%	1	1%
13	A1	62	62%	31	31%	7	7%
14	A2	69	69%	26	26%	5	5%
15	A3	75	75%	20	20%	5	5%
16	A4	51	51%	39	39%	10	10%
17	BI1	56	56%	28	28%	16	16%
18	BI2	79	79%	18	18%	3	3%
19	BI3	71	71%	25	25%	4	4%
20	BI4	53	53%	37	37%	10	10%

*Table 9. Total percentage of all variables*

Variables	Percentages			(Total %)
	Agree	Neutral	Disagree	
Perceived Usefulness	74,00%	12,00%	14,00%	100,00%
Perceived Ease of Use	70,33%	24,33%	5,33%	100,00%
Attitude	64,25%	29,00%	6,75%	100,00%
Behavioral Intention	64,75%	27,00%	8,25%	100,00%

Based on Table 8, the research summarized the percentages of each research variable, which can be seen in

Table 9. Therefore, the researcher can present the data in clear narration. According to Table 9, it can be seen that there is a positive response to perceived usefulness that gained 74,00% of students' responses. Moreover, 12,00% of students are neutral, and 14,00% tend to respond negatively. The following variable, perceived ease of use, gained 70,33% positive responses from the students, and 24,33% were uncertain whether Google Translate is easy to use. However, 5,33% of students responded negatively regarding perceived ease of use. Another variable, the attitude variable, obtained 64,25% of students that positively responded to using Google Translate in writing scientific articles. Moreover, 29,00% of students responded on the neutral side. In comparison, 6,75% of students negatively respond to the attitude variable. The last variable, the behavioral intention variable, obtained 64,75% of students responded positively to behavioral intention. At the same time, 27,00% of students fell neutral to behavioral intention in using Google Translate in writing scientific articles. While 8,25% of students negatively respond to it.

The interview results aimed to support and enrich the information from the questionnaire. The questions consist of four questions that represent TAM's four variables: perceived ease of use, perceived usefulness, attitude, and behavioral intention. The interview was conducted directly with the respondent and online through a personal online chat application. In addition, the responses were collected in the form of text and audio records. Thus, the researcher transcribed the audio records before they were analyzed. Moreover, the interview findings are presented below and delivered by their categories.

### Perceived Ease of Use

In the first question, the researcher wanted to understand students' understanding of Google Translate's translation quality. The question focuses on the practicality of whether the translation result needs further checking. The answers were reported as follows:

*Table 10. The answers of the first interview question*

<b>Respondents</b>	<b>Answers</b>
First respondent	It needs to be rechecked because there are some conditions where Google Translate cannot translate text into the intended condition. One example is when we want to use the past perfect tense, etcetera. Sometimes Google Translate translates it into a simple present tense.
Second respondent	If it is for scientific article writing purposes, the translation result needs to be rechecked because there are still errors in its grammatical.
Third respondent	The result of using Google Translate in translating word or sentence still need a rechecking. Sometimes, when translating long sentences, the grammatical is inappropriate. In conclusion, the translation result needs to be rechecked.
Fourth respondent	The translation result of Google Translate needs to be rechecked. It is because the grammatical of the result is still incorrect. Google Translate cannot understand the intended detail of the sentence.
Fifth respondent	The translation result still needs to be rechecked. The grammatical of the sentence is inappropriate.
Sixth respondent	The translation result of Google Translate needs to be rechecked to ensure whether there is an error in its grammatical. Since Google Translate only translates word by word.
Seventh respondent	Sometimes, the translation result is not matched the context topic. Other tools are sometimes needed to support or improve Google Translate results.
Eight respondent	The Google Translate translation results need to be rechecked because sometimes there are inappropriate results. Thus, it can be concluded that Google Translate results must be rechecked to get the correct results.
Ninth respondent	The result of Google Translate is no more than a result of current technology. Therefore, there are for sure some errors regarding the grammatical and words chosen. Thus, the translation of Google Translate needs to be rechecked.
Tenth respondent	The Google Translate translation results need to be rechecked, especially in terms of grammatical. Sometimes, Google Translate translates sentences only word by word based on the output language. The vocabulary used also does not match the context of the sentence. Thus, there is a need to change the word with its synonym manually

Based on students' answers to the first question, 10 out of 10 stated that Google Translate results still need to be rechecked. In addition, almost all students explained that Google Translate results have some errors regarding

grammar and the ability to understand the context of a sentence. As stated by the first respondent, Google Translate sometimes only translates sentences into a simple present tense form, whereas it should be appropriate in the form of other tenses. The ninth and tenth respondents also mentioned that the vocabulary chosen does not match the context of a sentence, so it needs to be replaced with its synonym manually. In conclusion, from the first interview question regarding practicality or ease of use, Google Translate has less practicality since it still has some errors that need to be rechecked and reviewed manually.

### Perceived Usefulness

In the second question, the researcher wanted to understand students' opinions of Google Translate's usefulness. The question focuses on Google Translate's ability to benefit students in writing scientific articles. The answers were reported as follows:

*Table 11. The answers of the second interview question*

<b>Respondents</b>	<b>Answers</b>
First respondent	Google Translate helps to remember some forgotten vocabulary.
Second respondent	Google Translate is helpful since it can instantly help in translating text. Moreover, the translation quality keeps improving.
Third respondent	Google Translate helps to remember some forgotten vocabulary when writing a scientific article. It can be used to search for Indonesian or English Translation.
Fourth respondent	Google Translate is helpful because it can help translate sentences instantly, though it still needs rechecking.
Fifth respondent	Using Google Translate will make it easier to share ideas or thoughts that were previously difficult to convey when directly using the intended language.
Sixth respondent	Google Translate is helpful though the translation result does not always 100% correct. However, it can be said that it helps write a scientific article.
Seventh respondent	Google Translate is helpful. The time spent compiling the language flow of scientific work is quite tricky, so translating (retrieving learned English vocabulary) feels quite tiring. Google Translate helps to maximize time efficiency when writing.
Eight respondent	Google Translate helps write scientific articles, especially for people lacking vocabulary. Although, knowledge of the writer regarding context and content is also essential to get a more organized result. So it does not entirely rely on Google Translate to produce sentences for scientific articles
Ninth respondent	Google Translate is helpful even though the translation result has to be rechecked. Google Translate is helpful when writing in a foreign language, not only in scientific articles.
Tenth respondent	Google Translate is very useful. Google Translate can be used to translate unknown vocabulary. Even though Google Translate is quite well-known and reliable for translating, it still requires the use of other applications that can improve Google Translate's translation results. So that writer can get the best translation results for scientific articles.

Based on students' answers to the second question, Google Translate is useful and gives some benefits. As stated by the eighth and tenth respondents, Google Translate helps writers with a lack of vocabulary or can be used to translate unknown vocabulary. In addition, the seventh respondent also stated that Google Translate helps to maximize time efficiency while translating or retrieving learned English vocabulary when writing scientific articles. In other words, it helps the writer to convey their ideas. To sum up, Google Translate is useful since it helps writers translate sentences for scientific articles.

### Attitude

In the third question, the researcher wanted to understand students' attitudes about using Google Translate. The question focuses on whether using Google Translate in writing scientific articles is a positive idea. The answers were reported as follows:

*Table 12. The answers of the third interview question*

<b>Respondents</b>	<b>Answers</b>
First respondent	The use of Google Translate is a positive idea. Google Translate can help to remember forgotten vocabulary.
Second respondent	Using Google Translate in writing scientific articles is a positive idea. However, the writer must recheck the grammatical of Google Translate translation using a grammatical checker application.

Third respondent	Using Google Translate is a positive idea because it can make someone easily find unfamiliar vocabulary they do not hear often. Thus, writing scientific articles is easier to do. However, the Google Translate translation results, especially the grammar, must be rechecked.
Fourth respondent	Using Google Translate in writing a scientific article is a neutral idea. There are positive and negative things that come along with it. The positive thing is that it makes it easier for a writer to translate words for words. The negative thing is that the translation results are not necessarily grammatically correct.
Fifth respondent	Using Google Translate in writing a scientific article is a positive idea. Google Translate makes it easier to finish writing an article, though the translation results have to be rechecked.
Sixth respondent	Using Google Translate in writing a scientific article is a positive idea when used correctly and appropriately. Because the function of Google Translate itself is to help translate words and even sentences into other languages. So, there is nothing wrong with using Google Translate to write scientific articles.
Seventh respondent	Using Google Translate in writing a scientific article is a positive idea. It maximizes the efficiency of time in writing a scientific article. However, It cannot be denied that many writers still use Google Translate without re-sorting the translation results, resulting in conceptual errors. Thus, it becomes the negative side itself.
Eight respondent	Using Google Translate is a positive idea because it is useful and makes writing a scientific article in foreign languages easier. Writers only have to enter sentences in the original language and do not have to master the desired language fully.
Ninth respondent	Using Google Translate is a positive idea. Google Translate is quite helpful in translating foreign language text. So it is a positive thing.
Tenth respondent	Using Google Translate in writing scientific articles is a positive idea. Google Translate can help understand scientific articles in foreign languages. Google Translate also increases the effectiveness and efficiency of performance in finding written references and when writing scientific articles. Nevertheless, it must be remembered that the translation results still need to be rechecked.

As we look at students' answers to the third question, almost all students approved that using Google Translate in writing scientific articles is a positive idea. On the other hand, only the fourth respondent chose to be neutral since it sometimes still has some errors. The sixth respondent stated that using Google Translate becomes a positive idea if used correctly and appropriately. Moreover, the seventh respondent explained that it becomes negative if the writer does not recheck the result, which is potentially incorrect. Nevertheless, Google Translate gives other benefits. As stated by the tenth respondent, it helps writers increase effectiveness and efficiency in finding foreign language scientific articles as a reference to writing. It also improves writers' writing performance. Even though using Google Translate in writing scientific articles is a positive idea, almost all students emphasized that the translation result still needs to be rechecked; otherwise, it becomes a negative idea.

#### **Behavioral Intention**

In the fourth question, the researcher wanted to understand students' intentions about using Google Translate. The question focuses on whether students using Google Translate in the future for their academic needs. The answers were reported as follows:

*Table 13. The answers of the fourth interview question*

<b>Respondents</b>	<b>Answers</b>
First respondent	I will use Google Translate when I forget the translation of the vocabulary I will use.
Second respondent	I will use Google Translate in the future because as time goes on, Google Translate's translation results are getting better. Thus, the results of the Google Translate translation are more ready to be used for writing scientific articles.
Third respondent	I will use Google Translate for academic purposes. Because apart from being easy to reach and use, the features are straightforward to understand, and the language used is quite right on target. Google Translate is useful for translating rarely-heard vocabulary, even though the grammar is messy.
Fourth respondent	I plan to use Google Translate in the future because it can help me with translation.
Fifth respondent	I plan to use Google Translate in the future. Even though I have to recheck the translation results, Google Translate is quite helpful for me in academic life.

Sixth respondent	Even though there are many translation websites or applications, I do not rule out the possibility that I will continue using Google Translate to help with my academic needs.
Seventh respondent	I will still use Google Translate. Usually, after seeing the results of the translation from Google Translate, I get even more varied writing ideas. I can also maximize my writing time because it has been translated through the website. So its use in the academic realm is quite profitable, so there is no reason for me not to use it again.
Eight respondent	I will still use Google Translate for academic purposes in the future. Google Translate has long been one of the most helpful translation tools. Google Translate makes it easy to write scientific articles and other work. I will use it in the future.
Ninth respondent	I will still use Google Translate even if my foreign language skills have improved. The reason is that humans often forget something. Therefore, I will use Google Translate in the future to remember the foreign language of a word.
Tenth respondent	I will use Google Translate for my academic purposes in the future. The reason is that I only master a few languages and cannot master all of them. So a basic, easy-to-use, easy-to-access translation tool like Google Translate will be very helpful when encountering foreign language sentences unexpectedly.

The students' answers in Table 13 regarding the fourth question are identical. They will use Google Translate for their academic needs in the future. The reasons students explain are varied. For example, the first and ninth respondents said they would use Google Translate to remember forgotten, unknown, or rarely heard vocabulary. For another reason, the third and tenth respondents stated that Google Translate is easy to use and access and will be helpful when encountering foreign language text unexpectedly. In addition, the seventh respondent added that Google Translate results give even more varied writing ideas to be developed. Lastly, the second respondent stated that he would use Google Translate in the future since he believes that the results quality of Google Translate will also improve.

## Discussion

After collecting and analyzing the data, a discussion section of the findings is needed to reach a conclusion that answers the research question. This research question is how students perceive Google Translate in writing scientific articles. The research findings generally reveal that students positively perceived using Google Translate to write scientific articles. In other words, Google Translate is considered helpful for them. This assertion is supported by Stapleton & Leung Ka Kin (2019), who suggested further investigating machine translation such as Google Translate. It is based on the reason that such machines will be helpful in teaching and language learning.

In order to make the explanation even more precise, the researcher will discuss the findings one variable at a time. Based on the findings, students positively perceived Google Translate as a tool that is easy to use. They feel they can use it and utilize the features of Google Translate. Moreover, it can be concluded from the questionnaire and interview results that most students know that Google Translate still has some issues. They understand that they need to recheck the result of Google Translate. It becomes a good point since Khotimah et al. (2021) also suggested that students must be used to translating without Google Translate though it is helpful. Lastly, almost all students emphasized in the questionnaire that Google Translate is easy to use. Thus, this variable contributed to overall students' positive perceptions.

Based on the findings, Google Translate has proven helpful for students writing scientific articles. It can be seen that the findings presented high percentages in Table 9, meaning students feel it is easier to finish their writing with the help of Google Translate. The interview result also reveals some benefits of using Google Translate, such as helping writers lacking vocabulary, translating unknown vocabulary, and improving efficiency, effectiveness, and writing performance. It is supported by previous research explaining that Google Translate offers students practical and efficient writing performance. In other words, it also improves the quality of their writing (S.-C. Tsai, 2020). The previous research supports this statement by (S.-M. Lee & Briggs, 2021). It is said that the improvement in writing quality is mainly because of reduced errors. However, Tumbal, Liando, & Olii (2018) claimed that Google Translate would be less helpful if the students do not understand how to use it appropriately, such as rechecking the translation result before using it.

Moreover, concerning the attitude variable, the finding reveals that students have a positive attitude toward using Google Translate in writing scientific articles. The findings uncovered that the students perceived Google Translate as a good and positive tool for writing scientific articles. Research supports this assertion by Alhaisoni & Alhaysony (2017). They reported that students had positive attitudes toward Google Translate since it helps them to write and produce second-language sentences. Even though students feel they like using Google Translate to

write scientific articles. Almost half of the participants feel uncomfortable using it to improve their writing quality. Students have understood that Google Translate still has some issues, as stated in (Baihaqi & Mulyana, 2021; Chompurach, 2021; Groves & Mundt, 2015). Nevertheless, this condition is a good thing to consider. If students can utilize Google Translate appropriately, it can significantly help them when they need a powerful assistive writing tool.

The last variable is the behavioral intention variable. Even though Google Translate can be a powerful assistive writing tool, it tends to be useless if the students do not intend to use it. However, the findings reveal encouraging results—79% of students approved of using Google Translate to help them finish their scientific articles. While looking at Table 7, the demographical data shows that 30 students have finished their scientific articles. It shows how helpful Google Translate is if we estimate that those students finished their scientific articles with its help. However, the findings also reveal that almost half of the respondents do not intend to recommend it to their friends to finish writing scientific articles. It was contrary to the previous findings that revealed that up to 70% of students use Google Translate to finish their writing. It also becomes contrary since the findings show that up to 70% of students planned to use Google Translate in the future. There might be some reasons why students do not intend to recommend it to their associates. Therefore, Stapleton & Leung Ka Kin (2019) suggested a further investigation into this research field since there are still many things that are not known.

## Conclusion

This research discussed Students' Perceptions of Using Google Translate in Writing Scientific Articles. Based on the result that has been discussed, there are several points that can be concluded. Firstly, English Education positively perceive using Google Translate in writing scientific articles. This assertion is based on the finding that all variables predicted students' perceptions gained more than 50,00% of the students' positive responses. Secondly, the students' perceived usefulness variable highly influences the positive perception, reaching 74,00% of students' positive responses. These results were followed by the perceived ease of use variable with 70,33%, the behavioral intention variable with 64,75%, and the attitude variable with 64,25% of students' positive responses. Then, English Education students are proficient in using Google Translate. It is based on the finding that the students do a rechecking process since the Google Translate result still has some issues. They carefully and appropriately utilize Google Translate to write scientific articles. And the last, the Technology Acceptance Model used in the current research successfully investigated students' perceptions of using Google Translate in writing scientific articles.

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