

## **Pictorial-Based Learning Model for Remote Vocabulary Learning: A Systematic Review**

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### **Abstract**

This systematic review was conducted to provide inspiration on the development of a learning model for vocabulary learning via the use of pictorials, as well as the omissions and gaps in the synthesized literature on the topic, especially with regards to the use of such a model for remote learning. The significance of this particular study lies in the affirmation of whether this pictorial-based vocabulary learning model is a viable solution for the necessity of remote learning. There are a total of three research questions, which are (1) What are the benefits of developing a pictorial-based vocabulary model for learning vocabulary? (2) What are the challenges in the integration and application of digital technology for remote learning and learning enhancement? and (3) How effective is using pictorial elements in enhancing students' learning of vocabulary? Two main databases – ResearchGate and Scopus – were explored for data collection. A total of 16 studies of relevance to the topic of investigation were retained for further analysis out of more than 50 studies after the strict process of removing duplicates and scrutinizing the abstracts for a suitable level of relevance. To account for the derivation of the various themes under this review, the method of a thematic analysis was preferred. The emerging themes being analyzed are: (1) The Development of a Pictorial-Based Learning Model for Vocabulary Learning (2) The Integration and Application of Digital Technology for Remote Learning and Learning Enhancement (3) The Effectiveness of Using Pictorial Elements on Enhancing Students' Learning of Vocabulary.

**Keywords:** Digital technology, learning model, pictorial-based, remote learning, systematic review, vocabulary learning

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## Introduction

The comprehension of words is vital for all of us to be able to communicate, regardless of language. We are required to be capable of comprehending sentences, which are an orderly arrangement of words that we know as vocabulary. As such, one of the cornerstones of English Language teaching is the teaching of vocabulary to ensure comprehensible communication and the accurate transfer of meaning and information. Due to this, Shokrpour, Mirshekari, and Moslehi (2019) suggest the need to develop effective pedagogical methods to teach English vocabulary to be one of the immediate concerns of English language teaching.

There are a total of three objectives here, which concern three important aspects that the researcher has taken into consideration in the development of this pictorial-based vocabulary model. These three objectives are as showcased here:

1. To investigate the benefits of developing a pictorial-based vocabulary model for learning vocabulary.
2. To identify the challenges in the integration and application of digital technology for remote learning and learning enhancement.
3. To explore the effectiveness of using pictorial elements to enhance students' learning of vocabulary.

In response to the research objectives above, three research questions have also been formulated to provide a clear direction for this research so that its aims can be achieved. The research questions are as observed here:

1. What are the benefits of developing a pictorial-based vocabulary model for learning vocabulary?
2. What are the challenges in the integration and application of digital technology for remote learning and learning enhancement?
3. How effective is using pictorial elements in enhancing students' learning of vocabulary?

## Literature Review

The main reason for the development of a pictorial-based learning model for vocabulary learning is to allow for students to be able to learn their vocabulary remotely. This is caused by the sudden advent and worsening of the Covid-19 pandemic which has derailed the traditional, classroom-based pedagogy into that which favors long-distance or remote teaching and learning. This new shift in pedagogical direction has placed emphasis on the utilization of online platforms and resources to achieve.

Therefore, the traditional learning methods for English vocabulary are not viable (for the time being) as educators and students now face the unprecedented challenge of navigating Open Distance Learning (ODL) (Garcia & Weiss, 2020).

This inevitable shift in vocabulary teaching from the traditional face-to-face approach to remote teaching via online platforms has paved the way for further utilization, application, and a deeper integration of technological or digital-based tools in learning vocabulary. The integration of digital-based tools has greatly improved the learning of vocabulary by students, especially with regards to vocabulary acquisition (Shokrpour, Mirshekari, & Moslehi, 2019). However, this improvement does not merely stop at vocabulary acquisition, but is also observed in the long term retention of the vocabulary items learned by the students in their memory as well as the students themselves displaying a greater degree of positive motivation towards vocabulary learning, particularly by younger learners. All of these observations are the results of fairly recent research conducted by Leong, Abidin and Saibon (2019).

However, the studies conducted using digital-based tools and applications such as PowerPoint slides, computer games (Jhon, 2016), online games (Kayaalti, 2018), YouTube Videos (Arndt & Woore, 2018) and English language learning software, such as ‘Tell Me More’ (Enayati & Gilakjani, 2020) and ‘Duolingo’ (Ajisoko, 2020) for vocabulary learning, has highlighted the gaps that this systematic review seeks to address.

There are a total of four such gaps, the first of which being that while these digital tools, applications, games, videos or models can be used to learn English, it was not their original purpose, and vocabulary was indirectly learned. Secondly, while there are tools, applications and models made expressly for English language learning, it is not explicitly designed for vocabulary learning. Thirdly, to the best of the researchers’ knowledge, studies on these two matters in the Malaysian context which use the word list suggested by the SBELC are almost second to none; there is a clear need for such studies, as indicated by Mahzan, Alias, and Ismail (2020). Finally, all the studies were not done in the context of education during the pandemic era. Such studies are important as it could provide an insight on how the pandemic could impact English vocabulary learning especially in Malaysia.

## **Method**

### ***Research Design***

The research design used for this paper is systematic review. According to Ranganathan (2020), systematic reviews are a popular method utilized to reduce bias by collating supportive, relevant and up-to-date evidence from various studies in accordance to pre-set criteria to ensure the relevance of the contents which aims to answer a particular research question using systematic, explicit methods, hence the name. The researcher has combined the information compiled from various published journals that have been thoroughly reviewed (numbering 16 in this case) to ensure that they are both relevant and updated in terms of their content.

### ***Resources***

Many of the research papers and publications that are utilized here were mainly sourced from two main sources, which are ResearchGate and the Education Resources Information Center (ERIC), whereas a bare minimum of them were sourced from various other databases such as the Web of Science, Google Scholar or private research article collections.

### ***Data Collection Instruments***

Subsets of instruments (as in Abdullah & Osman, 2018) were adapted for use in all three categories – quantitative, qualitative, and mixed methods. The subcategories of the quantitative methods were surveys, content-based analysis, mixed instruments (i.e., using a combination of two or more instruments) and others, while the subcategories for qualitative methods were textual or discourse analysis, interviews, mixed instruments and other. The mixed-methods studies were coded under both headings, quantitative and qualitative.

Table 1. *Instrument list*

Research	Instrument	Method	Design
1.	Pre-Test, Post-Test, Observation, Questionnaire, Interview	Mixed-Method	Quasi-Experimental
2.	Pre-Test, Post-Test	Quantitative	Quasi-Experimental
3.	Keyword-Based Screening, Back-Searching (Past 5 years)	Search and Filter Strategy	Review Paper
4.	Blended Learning Model, Observation	Research and Development	Not Mentioned
5.	Pre-Test Quiz, Post-Test Quiz, Feedback Form	Mixed-Method	Mixed Method Research Study
6.	Observation, Questionnaires	Qualitative Method	Not Mentioned
7.	Keyword-Based Screening	Meta-Analytic Approach, Search and Filter Strategy	Not Mentioned
8.	Not Mentioned	Search and Filter	Not Mentioned
9.	Workshop Materials, Q&A Session	This is an active workshop, not a research study.	Not Mentioned
10.	SAMR Model (Learning Model) Lesson Plans and Materials, Observation	Qualitative	Not Mentioned
11.	Questionnaire	Mixed-Method	Not Mentioned
12.	Keyword-Based Screening	Search and Filter Strategy	Review Paper
13.	Pre-Test, Post-Test	Quantitative Methodology	Diagnostic/Experimental Study
14.	Survey questionnaires	Survey Method (Quantitative)	Fully quantitative research design using the descriptive approach
15.	-	Not Mentioned	Not Mentioned
16.	Document analysis and close-ended questionnaire.	Mixed-method	Design-based research (DBR)

## **Review Process**

### *Identification*

#### *Web Search Strategy*

For our web search strategy, we have decided to scour for articles and research papers whose titles and content contain the key terms (including any combination of these terms) of this research such as “vocabulary learning”, “model development”, “open-distance learning”, “pictorials”, “pictorial-based learning”, “vocabulary learning strategies”, “the use of social media as an instructional medium for learning” as well as “remote learning” as an example as the initial phase of our search strategy.

To ensure that we proceed with the search in an orderly fashion while making sure to sift through every resource carefully, the main approach was to first consider the title, followed by the key terms and the abstract (Tamilchelvan & Rashid, 2017). These were because the title, key terms and the abstract would be useful to give us knowledge on the direction of a research paper that might prove useful, that could be set aside for further consideration with minimal waste of time. This procedure has proven to be both useful and effective in sorting out various publications whose contents were within the scope of our research regarding the development of a Malaysian-based

pictorial learning model for secondary school students that is both sustainable and viable for open-distance learning.

### *Screening*

This systematic review will consist of only published research studies that are selectively based on the following attributes: having English as the main publishing language, or at least having an abstract in English; providing data sourced from previous research and studies based on English language learning model development, pictorial learning methods for vocabulary and the integration of digital technology in vocabulary learning for the purpose of developing a pictorial learning model; analyzing quantitative and qualitative data that illustrates at least one of the facets of English vocabulary model development, pictorial methods of vocabulary teaching and on the use, application and integration of technology in the development of a vocabulary learning model; and research studies published after 2014 were to be included and those published before 2014 are excluded, so that this review would include only the most recent insights and research of relevance with regards to the learning model's development.

### *Observation Protocol*

Regardless of where they are currently sourced from, all these articles have been through a meticulous sorting process starting from their titles all the way to their abstracts, thus having been scrutinized and deemed both adequate and relevant to the research at hand. It was only when insufficient information was derived from the abstract that the full publication would be carefully read and screened to determine the validity and relevance of its contents to this study based on the inclusion criteria of the research.

Out of the 16 publications that we have sourced, ResearchGate and the ERIC provided 12 publications, whereas Google Scholar and the Web of Science yielded the remaining four. A cross-search has been conducted across all of the 16 publications mentioned above so that duplicated publications can be identified and removed. During this process, 4 of the 16 publications had their contents subjected to a full length scrutiny. This was done to ascertain that the contents of these publications are relevant to the study, and that they are up-to-date for inclusion.

### *Analytical Process*

The process of which these articles and publications are reviewed are conducted by employing a two-step analysis proposed by Ahmed and Matthes (2017) This produces a detailed quantitative analysis which allows research trends and comparisons to be made. It also formed the basis of the subsequent qualitative analysis by drawing the major themes from the literature using thematic analysis. This procedure will sort out the various articles and publications under a specific thematic umbrella which would produce the answers required to build up the basis for current research purposes by verifying and affirming the relevance of the results of each theme based on the keywords utilized in the initial stage of our Web Search Strategy. This is done by going through each of the major themes from all the literature we have garnered before analysis and interpretation is conducted to obtain the relevant results.

This thematic analysis is qualitative in nature, and functions to identify and combine the major themes to create a picture that best exemplifies the nature of the vocabulary learning model that we seek to develop through this literature review.

### *Qualitative Analysis Phase*

For the first step of this thematic analysis procedure, all publications will be sorted into 5 categories as provided below.

- (1) **Publication year and journal.**
- (2) **The geographical areas focused on in the research.**
- (3) **First author's affiliated country at the time of publication.**
- (4) **Research method used in each study.**
- (5) **Theoretical lens**

Each study was examined to identify the theoretical lens it used. Theoretical lens here refers to grand or middle range theory rather than a substantive theory. In its broadest sense, grand theory refers to a general framework of looking at the world which may hold true over different social cultural contexts and different periods of times. Psychoanalytic theory and Cognitive theory are examples of grand theory. Middle range theory refers to a set of propositions aimed at explaining a given phenomenon. Social Shaping of Technology (SST) and Intergroup Contact theory are examples of middle range theories. Some studies employ more than one theory (e.g., Awan, 2016a, 2016b; Campbell, 2010) and were coded 'Theory employed' in line with the above rationale.

Each publication and research study here has been categorized with full accordance to its overall themes. However, as there were several overarching themes that hindered the categorization, a discussion with an intercoder was integral in identifying the various overlaps in the themes of the various studies, which allowed us to identify the main points and then add on to them, thus ensuring greater accuracy.

## Findings

The objectives of this systematic review of literature are to organize information, data and results obtained from research on the various themes of our research to further the development of our learning model, while also identifying any gaps and areas that are often under-represented in this field. Due to our focus on development, there is much greater emphasis on methodology and on the findings of various types of relevant research in order to form the basis for our model development.

Table 2. *Country (author's university affiliation)*

Country	Number of Research
USA	3
Indonesia	2
UK	1
Turkey	1
East Java	1
Costa Rica	1
Palembang	1
Czech Republic	1
New Zealand	1
Russia	1
Malaysia	2
Hawaii	1



Table 2. displays the countries that each of the author’s universities are affiliated with. The percentage of affiliation is also provided for much clearer visual clarity, and is therefore showcased in the chart that is seen below (Figure 1).

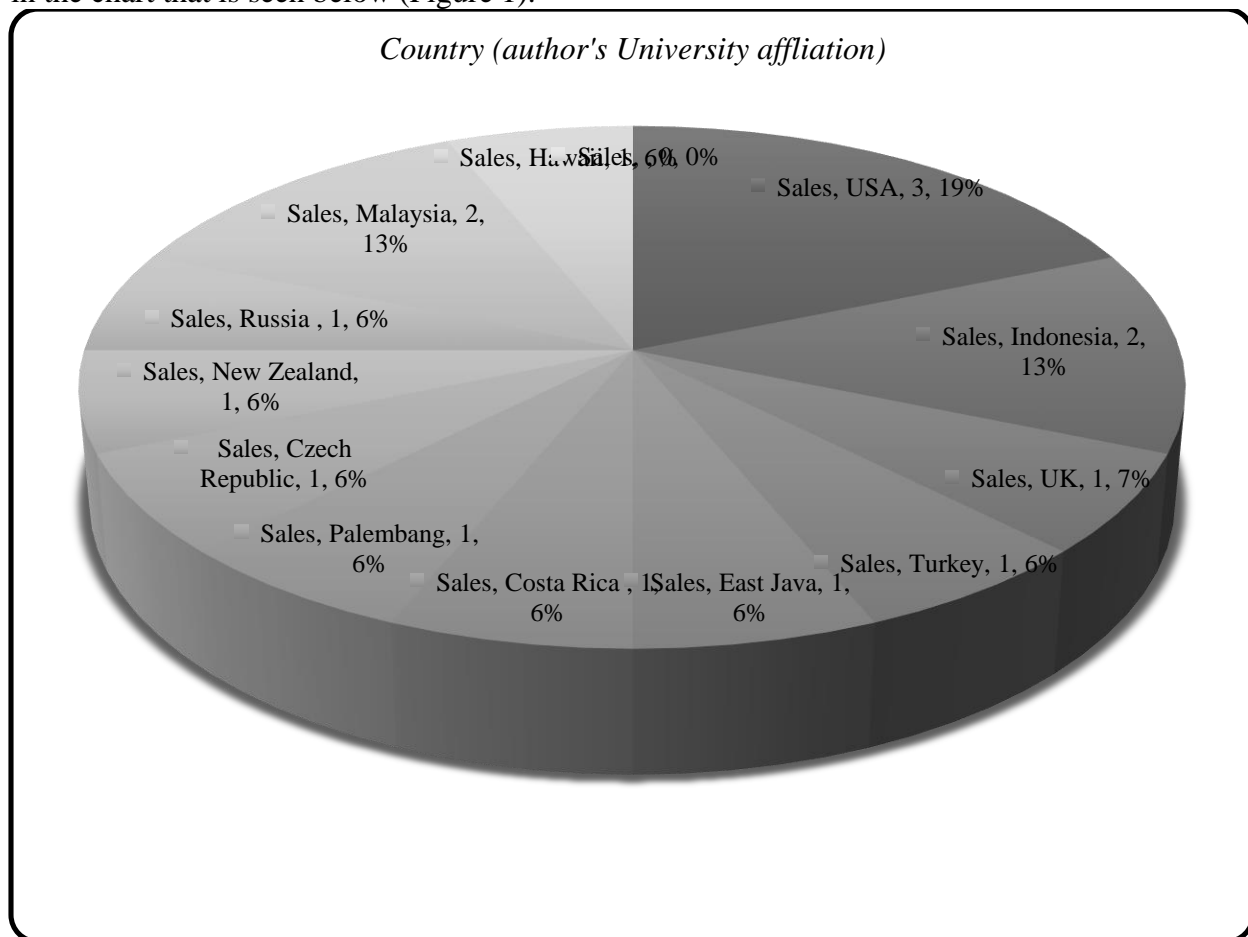


Figure 1. Country (author’s university affiliation)

Prior to a deeper analysis of the data above, the researcher would like to clarify two main details:

1. In the case where there are two or more authors for a study, only the country of the first author’s university affiliation will be taken into consideration.
2. The focus will be on the acknowledgement of the country which produced the research, and as such, its internal geographical regions will not be taken into consideration.

In line with the above clarifications, we can see that the largest majority of the research utilized originates from the United States of America with three research studies, thus allowing it to possess 19% of the total research studies that are used here, which is nearly a fifth of whole, with the second largest majority coming from Indonesia and Malaysia respectively with 2 research studies each, making up for a total of 26% of the whole together. Every other country has contributed 1 relevant research study to this study, contributing 6% to the total whole. As such, we can conclude that the higher concentration of such studies is from the US, due to the US having suffered a critical blow from the pandemic while having the technological resources to overcome the various inconveniences that came with it such as remote learning.

Table 3. *Distribution (2014–2021) and journals*

Year	Number of Research
2014	2
2015	0
2016	1
2017	1
2018	2
2019	2
2020	3
2021	5

Table 3, which is seen above displays the distribution of research journals published in the span of seven years, ranging from 2014 to 2021. The trend of this distribution can be viewed graphically for further clarity in the form of a line graph, as observed in Figure 2 below.

Distribution (2014-2021) & Journals

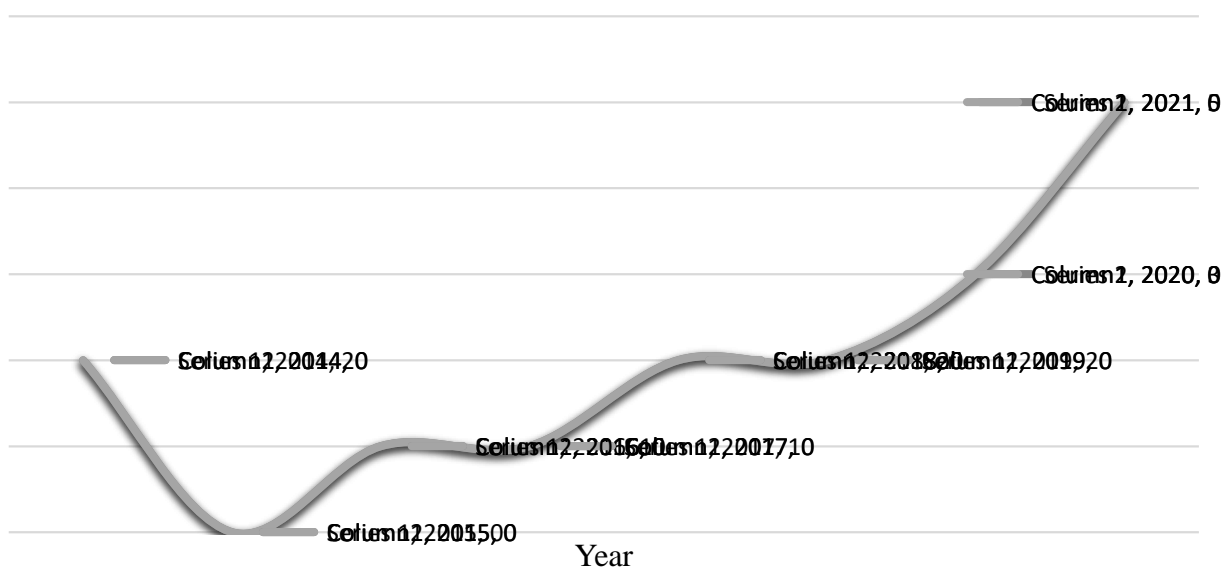


Figure 2. Distribution (2014–2021) and journals

As seen from the distribution of studies over the period of 7 years in Figure 2, it can be observed that the trend of research being conducted that is relevant to this current study rises sharply starting from the years 2019 to 2021. The research being conducted during this period of time mainly pertains to those concerning the use and integration of technology in classes, online teaching methods and materials as well as remote learning. The step increase in this nature of research is due to the advent and increasing seriousness of the Covid-19 pandemic, in which the various protocols taken to curb the spread of the disease has resulted in pedagogy being conducted from home through remote learning.

In the years prior to 2019, the research trend concerning the above areas has either seen a significant decline (2014 – 2015), a steady increase (2015 – 2016), holding stable (2016 – 2017)



or seeing a lazy increase (2017 -2018). After this, it stabilizes once more from 2018 to 2019 before seeing a significant increase, in which the only difference in the circumstances of the time period being the fact that the Covid-19 pandemic has entered its most critical state, forcing a nationwide lockdown of schools and other educational institutes. As such, the trend of the studies conducted over these seven years alludes to the severity of the impact that the Covid-19 pandemic has caused as well as the importance of the various fields of research that has improved the means of which we cope with the circumstances it has forced on us, at least with regards to matters of pedagogy and education.

Table 4. *Types of methodologies*

Types of Methodologies	Number (16)
Qualitative	2
Quantitative	3
Mixed	4
Keyword-Based Filtration	4
Research and Development	1
Unstated	2

As can be seen from Table 4 above pertaining to the types of methodologies employed in the research studies that we have found, the most popular methods used are mixed methods as well as Keyword-Based Filtration methods, coming in at four papers each. All research studies that utilize the latter method were shown to be meta-analysis papers as well as review papers on pre-existing research and studies. The second most popular research methodology would be quantitative research, which is often utilized by research studies that employ a diagnostic/experimental and semi-experimental research design, in which there are a total of three studies in which it is used. Qualitative research methods are the third most popular research method, with it being used in two research studies. However, there are two research papers in which the research methods are not stated, or more accurately, not included. The least popular research method seems to involve a Research and Development process rather than an actual method, for it was focused on the development of a teaching material rather than being a research study. However, it is still relevant to the current research.

Table 5. *Types of research designs*

Types of Research Designs	Number (16)
Experimental	1
Semi-Experimental	2
Quantitative	1
Qualitative	-
Mixed Method	1
Design-based	1
Not Mentioned	8
Review	2

As can be seen from Table 5 which is seen above, out of the 16 research studies utilized for the current research, half of them do not mention the research design on which their research is conducted. As such, out of the remaining eight research studies, the two most popular research designs are reviews and semi-experimental research designs, with two studies contributing to each design. The reason for this is that a significant part of the remaining studies are reviews on pre-existing literature, as well as research that focus on the use of control and experimental groups,

which explains why semi-experimental methods are utilized. Experimental, Design-Based and Quantitative research designs come in at one research paper each, with the least popular research design being the Qualitative research design, which is not employed by any research studies.

## Discussion

The purpose of conducting this particular literature review is for the purpose of developing a Malaysian-Based Pictorial Vocabulary Learning Model for Secondary School Students for Sustainable, Open-Distance Learning, with the vocabulary items sourced from the School-Based English Language Curriculum. To fulfill this aim, the answers for all three research questions have been provided in the form of three themes under which the various publications have been analyzed and interpreted towards the verification of its results to justify the need to develop such a model as well as to identify and consolidate its potential use and effectiveness of purpose. The three research questions of RQ1, RQ2 and RQ3 and the corresponding answers in the form of the Themes 1, 2 and 3 respectively are as seen below:

### ***Research Question 1: What are the benefits of developing a pictorial-based vocabulary model for learning vocabulary?***

#### ***Theme 1: The Development of a Pictorial-Based Learning Model for Vocabulary Learning***

This theme represents the main aspect of this research, which is on the development of a pictorial-based learning model for the sole purpose of vocabulary learning. However, we have found that publications and articles with regards to a pictorial-learning model often refer to a known model known as the Picture Word Inductive Model or PWIM for short, with no other pictorial models for the purpose of vocabulary learning being found, nor the development of any new learning models for this purpose.

Based on research conducted by Jiang (2014) on the vocabulary learning of students via the employment of PWIM, he noted that while the students who participated in his research said that they felt that PWIM had a positive influence on their learning of vocabulary, qualitative data indicated otherwise, showing that there was, in fact, no particularly significant differences on the effects of employing PWIM between both the experimental and control groups of the same grade levels. The data was obtained from four contextual aspects of the lessons conducted, which are:

##### *(a) time constraints on the implementation of PWIM in the classroom*

According to Jiang (2014), he noted that upon observing a teacher implementing PWIM in the classroom, the teacher “spent a large amount of time on class management, emphasizing discipline and criticizing misbehaved students”, and thus there was not much spent on teaching, much less the utilization of PWIM in the classroom.

Furthermore, he also noticed that the teacher in question did not follow in the presentation steps according to PWIM. Some examples of this that he had noted was that due to time constraints, the teacher would combine categorization and writing stages together and even write the answers next to the picture without even waiting for students to contribute.

##### *(b) resistance of teachers towards implementing PWIM*

According to Jiang (2014), he states that due to a lack of logic class in public education in this modern age nor have any existing philosophy classes, Chinese teachers have been prevented from thinking inductively. This translates into an inherent resistance towards the use of PWIM in their

teaching of vocabulary, seeing as how inductive thinking is a key component of PWIM. Research by Wang, Lin, and Spalding (2008) has also reflected the fact that Chinese English teachers have a lack of cognitive readiness with regards to PWIM.

That aside, he also believes that only a small portion of native-English speaking foreign teachers are qualified English teachers (Crystal, 2008), and for the rest of which who lack both a background and notable skill in language education, PWIM will not be familiar to them due to its nature as a recent instructional approach.

*(c) usage of PWIM in conducting lessons*

Based on his observation, Jiang (2004) concluded that the teacher still followed the “teacher-centered textbook-analysis-based Grammar-Translation Method” (Yang, 2000). Not only that, the lack of two-way communication in the classroom, absence of promoting communicative interactions in classes, the preferential use of close-ended questions rather than open-ended questions which did nothing for the cultivation of creative thinking or communicative interaction, both of which being aspects that PWIM sought to promote, showed that she was barely, if at all adhering to PWIM.

*(d) the implementation of PWIM in a classroom of over 55 students*

According to Jiang (2014), he said that the classroom was overly crowded and that students rarely got any attention from the teacher during the lesson.

All these four reasons play a major reason as to why the results of the research for both the control group and the experimental group displayed no significant changes. Had PIWM been well and truly implemented, given ample time and expert execution, the results might have seen a much more positive change. All the elements that affect the results of his research will be considered in the development and future execution of the pictorial vocabulary learning model that is to be developed in this research.

We also have research by Vasbievaa, Klimovab, Agibalovac, Karzhanovad, and Bírovée (2016), one that involves the use of the blended learning approach to teach English vocabulary to ESL learners, the results of which yielded positive results, showing that the use of the blended learning strategy greatly improved the vocabulary achievement of the students.

The encouraging achievements of their research would lead to Marita (2020) taking it to the next level by aiming to develop an English language learning model based on blended learning, with the aim being to motivate and enhance students’ learning of the English language. Their research proved quite fruitful, seeing as how the model that they developed showed a positive outcome with regards to the improvement of student motivation, understanding of lesson content as well as the fulfillment of their learning needs. However, it was somewhat lacking in the fact that it did not involve the use of pictorials, but the stages and steps that led to its gradual development into a learning model was still relevant to our own efforts to develop a model.

Yet another digital model saw development that year by research conducted by Dazzeo and Rao (2020). Their purpose of developing their model was to act as a support for the purpose of vocabulary acquisition. Their model is known as the Frayer Model, and it proved to be a successful model in helping students to complete their graphic organizer as well as increasing their engagement in learning new words via technological incorporation. This model also provides vocabulary instruction that makes it more accessible to students that have learning disabilities, thus improving their engagement, knowledge of many new words as well as access to texts.

Research conducted by Mahzan, Alias, and Ismail (2020) also proved to be of immense help in the development of our pictorial learning model, thanks to their work on investigating the necessary development of digital vocabulary learning materials for Malaysian indigenous learners. This covers the aspects involving the development of digital materials as well as developing materials within the constraints of the Malaysian context to benefit the indigenous community. This research seeks to further affirm the effects of these materials on the vocabulary learning of the indigenous learners of Malaysia. Their research yielded positive results, showing that the development and use of these materials revealed the indigenous learners' high level of awareness towards the potential uses of English, which in turn translates into them being aware of their needs, thus giving them a sense of readiness to embrace other means of learning that are currently unavailable to them, such as digital game-based learning. Its most significant contribution to our purpose, however, will be that it has helped us to make informed decisions with regards to the needs of learners and teachers so that we can design, develop, and successfully deliver contextualized, practical, and effective instruction to enhance the learning of vocabulary by our learners.

The answer to Research Question 1 based on the above information is that the benefits of developing a pictorial-based learning model for vocabulary learning include:

1. improved student engagement during vocabulary lessons,
2. improved knowledge and application of learned vocabulary,
3. improving the academic achievements of students with regards to their vocabulary, and
4. develop and deliver instructions that cater to learners that will enhance their vocabulary learning.

***Research Question 2: What are the challenges in the integration and application of digital technology for remote learning and learning enhancement?***

***Theme 2: The Integration and Application of Digital Technology for Remote Learning and Learning Enhancement***

*Remote Learning*

While research into the integration and application of digital technology for the purpose of enhancing learning has been conducted frequently over several years, there is not much research conducted into the application of digital technology for the purpose of remote/distance learning.

However, since the advent of the Covid-19 pandemic came about, the closure of many public facilities such as schools forced classes to be conducted from the comfort of one's home, a phenomenon which led to a recent increase in research pertaining to the use of technology to facilitate distance learning. A very recent paper published by Klubal, Gybas, and Kostolanyiiova (2021) that utilized a participant pool of 854 students and 73 students spanning four schools focused on analyzing the individual stages of the SAMR Model, which are the Substitution, Augmentation, Modification and Redefinition stages respectively, regarding the use of technology by pupils and teachers to facilitate distance learning.

This research of theirs allowed for the classification of web applications from the perspective of teacher-student interaction, making the categorization of these various applications more clearly applicable to pedagogy. It also unveiled the possibility of working with different types of digital devices, given the availability of a wide range of mobile applications in the various stages of the SAMR Model, as well as the sheer versatility of the model itself that can easily accommodate various digital devices and technologies.

Their research yielded positive results, showing that the gradual digitization and use of technology for pedagogical purposes that, while partially caused by the circumstances of the ongoing pandemic as well as the acceptance and application of the SAMR Model amongst students and teachers, have caused a significantly higher proportion of them to use technology, with students preferring mobile devices and with teachers favoring desktop devices.

### *Learning Enhancement*

A paper published by Elgort (2018) took to identifying methodological practices in research pertaining to technology Mediated Vocabulary Development (TMVD) in a second language, a paper that is highly relevant to that of our current research. This is because this article presents a synthesis of learning and instructional approaches to TMVD in the context of a second language, along with the various aspects of vocabulary knowledge that is being investigated, as well as the measures of vocabulary development that were utilized. Her research yielded positive results, having achieved a degree of methodological maturity while simultaneously bringing to light several issues which include: the practice of comparing technology-mediated instruction with “traditional” instruction without technology, insufficient reporting of participants’ second language proficiency, and a lack of treatments targeting fluency development. As such, our current research employs both a control and an experimental group, while also having four different “modes” of which our participants are exposed to, all of these taking the initiative to overcome the issues that have been mentioned here.

The applications and integration of digital technology as well as the use of social media for educational purposes also serves the aspect of enhancing the learning of the students, which in this case, is with regards to language learning. According to Booton, Hodgkiss, and Murphy (2021), there are various features of mobile apps, such as inbuilt narration and real time conversation prompts that are incredibly useful and supportive of some aspects of language learning, be it in terms of learning pronunciation as well as providing conversational support, making it highly practical should the need arise. This is useful for fostering the speaking and communicative skills of students. Other aspects such as augmented reality have a highly effective though limited role such as boosting student motivation and interest to learn a language.

The use of technology also highly benefits learners who utilize technology assisted Second Language (L2) vocabulary learning. Yu and Trainin (2021) discovered that the use of incidental instruction is greater than intentional instruction when it comes to technology assisted L2 vocabulary learning, and that this manner of learning is far more effective when the target language (English, in this case) is close to the learner’s First Language (L1). Their research also displayed solid proof that mobile assisted L2 vocabulary learning is more effective than its computer-assisted counterpart.

With the advent of the Covid-19 pandemic, the use of digital technology as a teaching tool, a teaching aid, is no longer sufficient. It must now be a medium through which teaching and learning is conducted, a conduit for pedagogy, its role being that of a virtual classroom. This has caused an upsurge in research articles and publications with regards to the integration of digital technology in education, with the most popular research topic being the potential applications of the Substitution Augmentation Modification Redefinition (SAMR) Model for pedagogy, which saw quite the resurgence.

The SAMR Model has been around for quite some time and has seen growing popularity. Research conducted by Romrell, Kidder, and Wood (2014) with regards to the use of the SAMR



Model as an evaluative framework of mobile learning is a good start. The results of this research are positive, being able to be of help in decision making in evaluating potential designs of instruction that utilize mobile technologies. However, while the contributions made by the lower levels of this model (substitution and augmentation) towards the learning gains may not be worth the hassle that technological, pedagogical and management obstacles may cause, the higher levels of modification and redefinition may become integral enough to the design of the activity to waive away the potential problems that may arise.

Five years later, the SAMR Model was once again under research for its potential application for the innovative use of technology in the EFL classroom. This research that was conducted by Mejías (2019) showed that the model had a positive effect on the enhancement of the students' learning process. There are several reasons for this, the first being that the SAMR Model does not have a specific focus on a particular technological device or tool, and therefore has the adaptability and versatility to appropriate itself to a variety of circumstances, thus ensuring its viability in the long term as well as its relevance in allowing a clear and efficient way for ICT to be introduced into the classroom. This allows the teacher to conduct various activities that employ technology, thus exposing students to these tasks. This will have the twofold effect of boosting student learning to the maximum while honing their technological skills. The success of his research is affirmed by that conducted by Suryani, Setiawan, and Sulaiman (2019). Their research results showed that the SAMR Model has seen effective application by teachers through the integration of ICT in facilitating student learning in the classroom.

To answer Research Question 2, the challenges of integrating and applying digital technology for remote learning and learning enhancement would include several factors such as:

1. willingness and acceptance of teachers,
2. expertise and experience of teachers,
3. lack of prior research and experimentation on integrating and applying digital technology for \ remote learning purposes,
4. insufficient reporting of participants' second language proficiency, and
5. a lack of treatments targeting the proficiency development of students.

***Research Question 3: How effective is using pictorial elements in enhancing students' learning of vocabulary?***

***Theme 3: The Effectiveness of Using Pictorial Elements on Enhancing Students' Learning of Vocabulary***

According to prior research conducted by Jatmiko and Jauhari (2018), they concluded that students in the experimental group who were taught using pictures as a medium of instruction fared far better in their classes and showed significantly improved performance in their post-test results compared to the control group which were exposed to conventional teaching methods. Their investigation also revealed that their success in using pictures to enhance student performance in learning vocabulary could also be attributed to the fact that they followed a specific procedure of first specifying the topic of the topic and defining it beforehand. However, their research was conducted on elementary school students and as such the results, while encouraging, only slightly indicated the results we could expect from secondary students. What is significant about their research, however, was that the vocabulary they taught concerned countable and uncountable nouns, the latter of which consisted of quite a few abstract words. As such, it proved that the use



of pictures did indeed improve the students' ability to comprehend abstractions and concepts as shown in the results of the experiment.

Setting aside the above, we also have research conducted on the use of memes for the purpose of establishing an enjoyable learning environment. This research, conducted by Kayali, Karadeniz, and Altuntaş (2021) is to help students revise the vocabulary that they have learnt. Not only that, the trendy and entertaining nature of memes will also help to draw out the students' feelings and creativity, allowing them to become more willing to participate in the lesson.

The effects of the research stated above emphasized the aspect of vocabulary recall, rather than learning new vocabulary items. The results of the research using a pre-test and post-test quiz clearly showed that the use of memes had a positive influence on the vocabulary recall of the students. The use of a feedback form for qualitative data analysis also unveiled promising results on the use of memes. The students answered positively to the following question categories:

1. *What is your opinion about using memes in the classroom?*

“The students found the memes in the classroom useful, good, fun, interesting, enjoyable, beneficial, and efficient. They expressed that it has so many benefits. They stated that they enjoyed the activity. They said it was an enjoyable activity and it helped them to learn how to use some words.”

This answer implies that the use of memes helped the students in the application and use of the vocabulary items they have learned.

2. *Have memes helped you to remember words better?*

“Most of the students stated that using photo images and colorful cards to write their memes on made them more memorable, that forming sentences with the given words helped them to remember those words more easily, and that before the memes, it was difficult for them to remember the vocabulary items. Still, after doing the memes activity, they learned the words.”

This answer proves that the students find their ability to retain and recall the vocabulary items that they have learned to have improved quite significantly compared to when they did not utilize memes to aid them in their learning of vocabulary.

Yet another research regarding the use of memes in language teaching was also conducted by Purnama in 2017, with the focus of the research being the improvement of student participation in the lesson. This research seeks to achieve this by leveraging the three main advantages of memes, with the first being that meme creation proposes a learning process is easily adoptable by students due to its attention-grabbing nature. The second advantage is the fact that most students have access to various mobile image editing software using smartphones and computers, and therefore making memes widely accessible, modifiable, and easy to create. The third advantage it affords is that it allows students to gain a better understanding of topics and the English language in general. The use and creation of memes makes for a fun and inclusive environment that can easily foster student enthusiasm and heighten their willingness to participate in lessons.

After all, memes are defined as “an idea” or a fragment of “contextual culture” shared amongst us. It wields immense influence over others using ideas that are induced through the form of appealing packages, catchy tunes, or phrases (Brodie, 2009). As such, the value of memes lies in three values, which are intrinsic values, integrative values, and instrumental values. Memes are extremely popular due to their abilities in influencing and spreading thoughts, which lies in the fact that its nature is current and highly trendy, while being highly accessible via social media and

media devices such as smartphones. Students find the meme culture highly entertaining and therefore, when they feel this way, they will not feel that learning English is an obligation should memes be made a content of the lessons. Coupled with the fact that our students are highly sensitive and up to date with anything hype, memes see widespread use amongst them for all manner of purposes. This adds intrinsic value to memes. As for when students come together to create new memes, their collaboration reveals the integrative value of memes that brings people to pool their ideas together to create an ideal meme. When a meme that has been created is enjoyed, posted on social media, and “liked” by others, it causes an indirect rise in the social position of its creators and posters, which causes them to view memes as having an instrumental value, thus agreeing with studies which reveals the three values of memes and its value in education (Dörnyei, 2001). As such, the research by Purnama (2017) shows positive results in that students show significantly greater willingness to take part of the lesson when memes are utilized as part of the lesson’s content. When the above aspect that is “students’ willingness to participate in the lesson increases when pictorial tools such as memes are involved in the lesson” are combined with the two other main aspects of vocabulary learning that are improved vocabulary recall and improved understanding of lesson content using pictorials tools based on the findings and results of alternative research into the use of memes as a pictorial tool, a relevant answer to Research Question 3 has been achieved.

The above information has successfully managed to answer Research Question 3 on how effective the use of pictorial elements can be in terms of enhancing the students’ learning of vocabulary. First of all, this effectiveness took the form of a positive influence/improvement that can be observed in terms of the students’ comprehension of abstract and conceptual vocabulary, their willingness and enthusiasm to participate in vocabulary lessons, their ability to retain and recall the vocabulary they have learned in the long-term from memory. Secondly, the degree of this “effectiveness” is quite significant, seeing as how the results compiled by reviewing various published journals have clearly concluded a significant improvement in all three of the aforementioned aspects in the students’ vocabulary learning through the use of pictorial tools such as memes and pictures.

## Conclusion

The main aim of this systematic review conducted on the study on developing a pictorial-based learning model for remote vocabulary learning is to identify, appraise and put together the results and findings derived from published works, articles, journals and individual studies of relevance to the topic to provide an accurate and solid interpretation of the research findings. The findings of this study are in the form of three themes, with each of the three themes answering each research question, all of which are based on the articles and journals that have been systematically reviewed. The first theme emphasized the development of such a model, which involved various works and publications on developing digital models for vocabulary learning, pictorial models and approaches to language and vocabulary learning such as the Picture-Word Inductive Model, as well as models based on the blended learning approach, which served to identify the turning point in developing a technology-based model to facilitate vocabulary learning using pictorial elements. It has also considered the development of contextually relevant digital materials for vocabulary learning purposes. The second theme on the other hand was more focused on the integration and applications of digital technology in the model, whose purposes are categorized under the sub themes of remote learning or distance learning and learning

enhancement respectively. This theme is heavily influenced by the circumstances caused by the ongoing Covid-19 pandemic, which necessitated the widespread and deeper utilization of digital technology in pedagogy and learning to overcome the shift from traditional pedagogy to remote teaching and learning. As for the final theme, it is with regards to the effectiveness of the use of pictorials to enhance vocabulary learning, be it with regards to student participation and motivation, the learning of new words, improving students' understanding of lesson content, and that of vocabulary recall. Furthermore, this study also identified the gaps in these research papers, such as the lack of papers detailing learning model development for Theme one, as most of the publications we found were on the application of pre-existing models rather than the creation of a new model. With regards to Theme two, the obvious gap was a stunning lack of any digital or mobile applications that cater specifically for English language vocabulary learning, and even if there were, there were no papers or articles that researched it.

### Recommendations for Further Research

Research is a never-ending phenomenon in search of greater knowledge, and thus, the need to further research for validation, justification purposes is just as great as that to break new grounds in various fields. The key recommendations for further research in this field would be to identify the lacking aspects and flaws of pre-existing learning models, as well as subsequent research to study the improvements made to the model to account for various circumstances. Further studies should also probe the attitudes and views of the teachers with regards to using and applying these models in their teaching, for their perspective will also indicate their willingness to utilize these models and to utilize them well rather than simply isolating the aspects that they feel are useful. It is quite one-sided to simply focus on the perspective and opinions of the learners alone.

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