Research Journal in Translation, Literature, Linguistics, and Education (RJTLLE)
https://scientific-board.com/rjtlle Volume 2, Issue 1, 2026
https://doi.org/10.64120/qbn8a274

RESEARCH ARTICLE **Section:** *Education & Applied Pedagogy*

Developing smartphone-based learning application to support students' autonomous learning for junior high school level

Sofiani[1]*, Afrianto Daud[1] & Jismulatif[1]
[1]Universitas Riau, Indonesia
https://orcid.org/0000-0001-9660-5001
Corresponding author: *sofianisofiani708@gmail.com*

Published by **Scientific-Board LLC** in the Research Journal in Translation, Literature, Linguistics, and Education (RJTLLE). **Volume 2, Issue 2, 2026**.

ISSN: *3067-6290 (Online)*
3068-8450 (Print)

Article Details
Received: 18 March 2026
Revised: 01 April 2026
Accepted: 27 April 2026
Published: 11 June 2026

Conflict of Interest: The author/s declared no conflict of interest.

Abstract
In today's digital era, the integration of mobile technology into English learning has become an essential learning medium for EFL students. Therefore, the study is intended to develop a smartphone-based learning application to support students' autonomous learning for junior high school level. The study employs research & development (R & D) with the steps: need analysis and problem identification, designing and implementing products, and product evaluation. The data was collected through interviews for need analysis, expert validation, and questionnaires from 3 English lecturers and 28 seventh-grade students for field testing. Data were gathered following the ADDIE Model steps. The research findings showed that the implementation of a smartphone-based learning application proved effective and valid. The average ratings for the feasibility assessment by media and material specialists were 4.73 and 4.77, respectively, and were both classified as very feasible. The average practicality score was 4.10. This suggests that the application is viable. Students' answers also demonstrate that the activities help them understand descriptive passages, the content is presented effectively, and the application is visually appealing. Therefore, the developed application is effective as a learning tool for supporting autonomous learning of descriptive text material and is practicable in terms of content, media, and practicality. The English teachers are recommended to use this app in the learning process to support the students' autonomous learning in the classroom.

Keywords: autonomous learning, developing, smartphone-based learning application, junior high school level

How to Cite:
Sofiani, Daud, A., & Jismulatif, J. (2026). Developing smartphone-based learning application to support students' autonomous learning for junior high school level. Research Journal in Translation, Literature, Linguistics, and Education, 2(2), 19-40. https://doi.org/10.64120/qbn8a274

1. Research Background

In a highly digitized world today, information and communication technology have become part of education. The adoption of mobile technology in the learning space has introduced some beneficial

shifts in the way students learn and work with the subject matter. It has been perceived as a beneficial phenomenon as smartphones are viewed as useful tools that improve learning experiences, give access to diverse educational content to pursue a highly personalised learning process, and enhance classroom experiences with a familiar technology (Chindia & Wawire, 2024). Mobile learning is able to increase behavioural, social, cognitive, and emotional interaction, providing the environment with greater interaction than traditional methods (Yu et al., 2022), and can positively impact the critical thinking of English learners by motivating them to analyse and reason (Tang, 2024). Introducing mobile technology also encourages personalization, collaboration, reality, inquiry-based learning, real-time feedback, and flexibility, expanding the possibilities to facilitate accessibility and flexible learning of junior high students (Becker et al., 2020).

Nevertheless, even with the possibility of smartphones in learning, several students are yet to learn and comprehend descriptive writing in the English language due to the dull and traditional approach to teaching and the scarcity of teaching tools and resources (Sari, 2024). The conventional method is characterized by an emphasis on lectures and little exposure to a wide range of written materials, which makes it difficult to create an understanding of difficult texts and lose interest in reading in the long term (Fang, 2020). Monotony and the absence of variation in the methods lower the interest and engagement of the students (King and Frondozo, 2022; Baraibar-Diez et al., 2024). Teaching instruction based on the needs of students, which coincides with the new reform and personalized learning, is therefore essential to enhance reading and literacy (Vaughn, 2019). Autonomous learning is also anticipated further by the Indonesian National Curriculum, which prioritizes student choice and autonomy with the help of differentiated learning and flexible assessment (Halil et al., 2024; Cullen & Oppenheimer, 2024; Pratiwi & Waluyo, 2023). Autonomous learning should contribute to motivation and positive social interactions, and mobile apps may contribute to the feeling of control and being able to interact with the materials independently in students (David & Weinstein, 2024; Jeno et al., 2019).

Even though there have been previous studies that created apps to teach descriptive texts (Handayani et al., 2022; Ridwandha et al., 2022; Sintayani et al., 2022), the selected study design focuses on the role of a smartphone application in designing descriptive texts as an autonomous learning process. To meet these requirements, the researchers will create a learning application, Fun English, on his smartphone, with an emphasis on descriptive texts about animals (Mutiaraningrum & Nugroho, 2021). The app is autonomous and can be used in the classroom to enhance the learning process by supplementing traditional methods with interaction, offline access, automated scoring of practice questions, and digital content. By using Articulate Storyline 3 (Lestarani et al., 2023) and web2apk (Nursalam et al., 2023), this project is expected to investigate how the application can assist in helping junior high students in gaining autonomous knowledge of descriptive texts.

Based on the preliminary study, the researchers found that the students are not yet autonomous in learning and still need to develop autonomous learning skills. The school uses monotonous conventional learning methods, which are considered less interesting for students. The teacher further suggests to have need special learning tool for the subject matter of descriptive text, which still does not support learning, and implementing innovative learning tools, such as the use of technology, that can improve the quality of learning (Muhfiyanti, et al., 2021). From the previous observation, the researchers aimed to formulate the design to develop and test the effectiveness of a smartphone-based learning application on facilitating autonomous learning in teaching descriptive text at SMP Negeri in Timpeh, Indonesia.

1.1 Research Questions

a. How Smartphone-Based learning application can be developed to support the students' autonomous learning for junior high school level?
b. How effective is the developed model of Smartphone-Based learning application in supporting the students' autonomous learning for junior high school level?

2. Review of Related Studies

2.1. Conceptual Studies

2.1.1. Autonomous learning

Autonomous learning is an active and evolving process in which learners take charge of their education, especially in language learning by actively using the new language, building their abilities, and incorporating these skills into their self-concept, thereby fostering a greater sense of control and accountability for their learning, leading to higher engagement and effectiveness in their studies (Little, 2022). Autonomous learning is characterized by self-regulation, where learners set goals, monitor progress, and adjust strategies as needed; independence, fostered through structured and open-ended tasks that allow for content creation and exploration; adaptability, enabling learners to respond to external stimuli and reorganize internal knowledge; and is shaped by emotional intelligence, self-determination, sociocultural influences, and investment in learning (Reinders, 2020). Furthermore, it is also characterized by self-direction, choice, the use of metacognitive strategies, critical thinking, and an understanding of personal learning processes, a vital aspect of effective language learning and education in general (Oszwa, & Knopik, 2023).

The main components of autonomous learning involve self-regulation, where students set their own goals, monitor progress, and use metacognitive strategies to adapt as needed; motivation, which sustains their commitment to learning; and decision-making, all within specific cultural and educational contexts that shape their approach, including collaborative learning for social engagement and satisfying psychological needs. Autonomous learning requires involvement, freedom of choice, and responsibility, supporting critical thinking and self-evaluation, along with a combination of individual and cooperative work to acquire meta-knowledge and deepen self-awareness (Anca, 2023a). Self-directed learning, grounded in a constructivist approach, relies on motivation and effective strategies, self-monitoring, and collaborative learning, while the teacher's role is to facilitate this process, encouraging students to take ownership of their learning journey through both self and peer assessment (Jumaah, 2024).

2.1.2. Smartphone-Based Learning Application

The Smartphone-Based Learning Application is one type of Mobile-Assisted Language Learning (MALL), which consists of a variety of methods and tools to facilitate language learning. Mobile-assisted language learning (MALL) refers to the use of mobile devices, such as smartphones and tablets, to facilitate language learning (Deng & Wu, 2024). It leverages the portability, connectivity, and multimedia capabilities of these devices to provide learners with flexible and accessible language learning opportunities (Metruk, 2024). With the advent of mobile devices in the 1990s, the concept of mobile-assisted learning emerged to offer learner-centred instruction accessible anytime and anywhere, and with their greater portability and accessibility compared to computers, mobile devices enabled adaptable, personalized instruction and individualized learning opportunities both inside and outside the classroom (Persson & Nouri, 2018).

The Smartphone-Based Learning Application is a teaching medium designed for smartphones to enhance the learning process. This application contains content and features that facilitate understanding and skill development (Kedthawon et al., 2024). In these digital eras, Smartphone-Based Learning Applications offers many benefits in language learning, especially in English language learning (Liu, 2022). Smartphone-Based Learning Applications have been used to enhance student engagement, particularly in grammar, speaking, reading, and vocabulary (Annamalai et al., 2022). Because of its ease of use and accessibility, this innovation can serve as a solution for teachers to address various teaching challenges related to limited media resources (Syamsir, 2023). These methods have already been used in several studies, such as in Daud (2019). Students are encouraged to bring their own laptops, iPads, or smartphones to class. They use Google Apps for Education, making the writing class more flexible and interactive (Kayra, 2024). Students and teachers can communicate easily, provide quick feedback, and collaborate on writing projects. This modern approach makes learning more engaging and helps students improve their writing skills effectively.

3. Methodology

3.1. Research Design

The research applied Research and Development (R&D) design using the ADDIE model, Analysis, Design, Development, Implementation, and Evaluation, to design and test a smartphone-based learning application named Fun English to help students learn descriptive texts on their own. The study took place between February and November 2025 at SMP Negeri 1 Timpeh, Indonesia, and used seventh-grade students and 3 English teachers as the participants, a purposive sampling method was used, and the sample included one class consists of 28 students. During the analysis stage, needs analysis questionnaires were used to gather data from the students and teachers to determine the learning issues and instructional requirements. The Design stage entailed the reading of learning objectives, learning materials, and storyboard designs in line with the curriculum requirements. In the Development stage, the application was developed with Articulate Storyline 3 and Web2APK, and then it underwent an expert review of material and media specialists to validate the application. Implementation phase involved a restricted trial run to gauge the viability and efficiency of the application by way of student response questionnaires and an independent-student learning tool. The last phase was the Evaluation phase that included revising the product on the basis of the professional comments and the data analysis on the Likert-scale calculation and the descriptive classification based on the statistical data to identify the validity, practicality, and efficiency of the developed application.

3.2. Participants and Sampling

The purposive sampling technique was used to define the participants as the sample of this research. The determination of the required sample was based on Kelly's statement (Campbell et al., 2020). The researchers considered to select 20% of the population as the sample, which is 28 students. In addition, the researchers chose 3 English teachers who teach the seventh-grade class.

3.3. Development and Procedures

The researchers used the ADDIE model in this study based on several considerations, such as related studies that also conducted research on the development of learning media. The researcher chose ADDIE as a model, a systematic model that was suitable for developing Smartphone Based Learning Application, which helped the researcher in developing this study based on the systematic principles of ADDIE (Dilaines et al., 2024). The researcher modified this model according to the needs of the study. The goal of this research is to explore the process of development of learning media and to obtain results such as validation from material experts, media experts, the level of practicality based on smartphone application trials, and how this smartphone-based learning application facilitates students' autonomous learning of descriptive text understanding. The framework of development of procedures can be seen as follows;

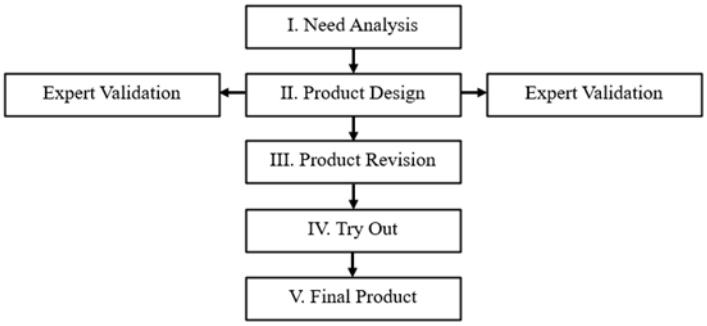

Figure 3.1 Development Procedures

3.4. Steps for Collecting Data

Data were gathered following the ADDIE Model steps used in this Research and Development design. The researchers used needs analysis questionnaires on students and English teachers to investigate the issues regarding descriptive text learning and identify the needs of students regarding independent learning and smartphone usage. Second, during the design stage, the researchers made the instructional materials, learning goals, and draft storyboards according to the findings of the needs analysis and curriculum needs. Third, the smartphone-based application was created during the development phase using Articulate Storyline 3, Web2APK, and thereafter validation sheets were handed to material and media experts to achieve qualitative feedback and a quantitative validity rating. Fourth, in the implementation phase, the tested product was put to test in a single course of 28 students; at this stage, data were gathered using a student response questionnaire to evaluate usefulness and an independent learning questionnaire to evaluate efficacy. Lastly, during the evaluation stage, all the gathered data, i. e., needs analysis and expert validation scores, student feedback, and autonomous learning questionnaire results, were evaluated with the help of Likert-scale instruments and descriptive statistical classification to identify the validity, practicality, and effectiveness of the developed application.

3.5. Instrument

The researcher used a development research questionnaire to get the information related to the feedback from media experts, material experts, teacher and students about learning products. The questionnaire used a scale from 1 to 5 to gather responses. Here's how the answers were set up: SS (Strongly Agree) is 5, S (Agree) is 4, N (Neutral) is 3, TS (Disagree) is 2, and STS (Strongly Disagree) is 1. There are no negative questions included since this survey focuses on evaluating the effectiveness of learning media.

3.5. Validity and Practicality Measures

Both qualitative and quantitative data were used. The critique and recommendations of material specialists, media experts, English language teachers, and students were used to collectqualitative data. The majority of the information in the study is quantitative and comes in the form of readability questionnaire results from students, as well as feasibility assessment data on learning media from material experts, media experts, and English learning practitioners.

Validation of learning materials was done by experts and practitioners in the field. The expert validator has a master's degree in English education, while the criteria of the field practitioner are an expert teacher in English. Validation of the learning media was done by the validator who is an expert in learning media, at least graduated from master's degree and has experience in designing and creating learning media

3.6. Analyse Data Method

First stage is analysis, analysis is the main activity at this stage. The objective of the phase is to identify the problem and learning requirements. According to Creswell & Creswell (2023), the analysis stage is an important stage in determining what should be developed and taught to students. The analysis stage in this research consists of two things, namely needs analysis and materials stages.

3.6.1. *Needs Analysis Questionnaire*

This questionnaire was designed to identify students' needs, preferences, and expectations related to the use of electronic learning materials in their learning process. The results will help in developing or improving electronic learning materials tailored to student needs. This questionnaire is used to suit the

context of electronic learning material of smartphone-based learning application.

A. *Students' Need Analysis*

Table 1: Students' Needs Analysis Questionnaire

Aspect	Item Number	Number of Items
Present Situation Analysis	1-9	9
Learning Needs	10, 11	2
Mult media Needs	12,13	2
Total		13

B. *Teacher Need Analysis*

The teacher needs analysis was an in-depth process to identify and thoroughly understand what teachers need in developing effective teaching materials. The purpose of conducting this analysis is to ensure that the materials produced can meet the learning needs of students and facilitate the teacher's task in delivering the material. Several basic aspects need to be considered, including:

Table 2: Aspect of Teachers' Need Analysis Questionnaire

No	Aspect	Item Number	Number of Items
1	Teaching Aspect	1-4	4
2	Instructional Material Aspect	5-10	6
Total			10

3.6.2. Development

The manufacture of the product uses Articulate Storyline 3, combining all the materials that have been made, starting from the design, materials, and practice questions. The finished product was then validated by media experts and material experts (contents and language). The teacher enters the material expert because the teacher knows whether the material is appropriate or not to be applied.

3.6.3. Stage of Revision

After the validation process, the product is revised based on comments, suggestions, and input from media experts to make it more interesting, and correcting material errors from material experts. Both qualitative and quantitative data are employed in this study. The opinions and suggestions of media experts and material experts.

3.6.4. Implementation

The product was tested on one group of 28 students from one of the Junior High Schools at SMPN 1 Timpeh. At this stage, students received a questionnaire to assess and determine student perceptions/ responses about the products that was created.

3.6.5. Qualitative Data Analysis

An analysis of qualitative data was conducted through the collection of recommendations and feedback provided by various stakeholders, including media experts, subject matter experts, educators specializing in English language instruction, and students.

3.6.6. Quantitative Data of Analysing Student's and Teacher's need Analysis Questionnaire

The researcher applied the Likert theory to the analysis of the students' needs questionnaire. The Likert scale, as it is commonly known, is a method used in social and psychological research to assess a person's attitude, opinion, or perception of a statement or object. The Likert scale can use four points, which is known as an even-point scale.

3.6.7. Quantitative Data of Media and Material

Quantitative data was obtained from a product quality assessment questionnaire given to media experts, material experts, English learning practitioners (teachers) and students. The application quality data is in the form of qualitative data. To obtain an assessment of media quality, the qualitative data is converted into quantitative data with the following scoring conditions using Likert's scale.

3.6.8. The Quantitative Data of Autonomous Learning

The Likert scale interpretation put forward by Pimentel (2019) served as the basis for the classification of students' learning autonomy in this study. The range of mean scores, which separates the degree of autonomy into four categories: very autonomous, autonomous, less autonomous, and not autonomous, was used to determine the classification. In educational research, this kind of categorization is frequently used to quantitatively examine students' answers. The following data analysis technique was employed to examine students' learning autonomy.

Table 3: Classification of Students' English Learning Autonomy

No	Formula	Categories
1	3,5 < Va 4	Very Autonomous
2	2,5 < Va 3,5	Autonomous
3	1,5 < Va 2,5	Less Autonomous
4	1 < Va 1,5	Not Autonomous

4. Findings

4.1 Students' Need Analysis

The needs analysis conducted in this study focuses on the needs of both students and teachers. The needs analysis intends to acquire information on the needs of students and teachers for the development of a Smartphone Based Learning application of descriptive text for seventh-grade students of junior high school in Timpeh. Student needs were assessed by the distribution of questionnaires.

Table 4: Students' Need Analysis

Aspect	No	Statements	SA	A	D	SD	Total	Mean Score	Category	Level	Students
Present Situation Analysis	1	*The students proficiency is at the beginner level*	37	32	39	36	362	2.51	Needed	high	144
			37	64	117	144					
	2	*I find it difficult to understand English material*	35	33	41	35	364	2.53	Needed	high	144
			35	66	123	140					
	3	*I think Descriptive text is difficult to understand*	33	36	40	35	365	2.53	Needed	high	144
			33	72	120	140					
	4	*Media that often used is textbook from government*	35	33	41	35	364	2.53	Needed	high	144
			35	66	123	140					
	5	*The textbook used can motivate the students to learn because the book is attractive*	45	38	36	35	406	2.82	Needed	high	144
			180	114	72	40					
	6	*I find it difficulties in learning descriptive text using a school textbook on my own*	38	34	33	39	361	2.51	Needed	high	144
			38	68	99	156					
	7	*I cannot learn autonomously because the amount of government textbooks is not sufficient for all of the students*	30	33	45	36	375	2.60	Needed	high	144
			30	66	135	144					
	8	*The teacher uses the media in teaching Descriptive text*	45	33	36	30	381	2.65	Needed	high	144
			180	99	72	30					
	9	*The class has always monotonous teaching and learning activity*	38	33	38	35	421	2.92	Needed	high	144
			38	99	144	140					
		Total					**3399**	**2.62**	**Needed**	**high**	

With an overall mean score of 2.62, the present scenario analysis reveals that pupils generally have a low level of English proficiency. This indicates that learning support is clearly required, and the level of need among students was high because present learning resources—mostly government-issued textbooks—are not sufficiently engaging or accessible, with many students expressing a lack of enthusiasm and difficulty using them.

Additionally, the majority of classroom teaching strategies are still teacher-centered and mostly rely on training and explanations from textbooks. student's varied learning needs are not adequately met by these methods, especially when it comes to understanding descriptive texts. These results highlight the urgent need for more innovative, interactive, and student-focused teaching resources, like a smartphone based-learning application. The learning process can be enhanced by a smartphone based-learning application with interactive exercises, multimedia capabilities, and adaptable information access. Furthermore, it can surpass the constraints of conventional textbooks and enhance students' understanding of descriptive literature in a more dynamic and captivating manner.

Consequently, the creation of a smartphone based-learning application for instructing descriptive text is both pertinent and essential to address the current educational requirements of students and enhance their English learning results.

4.2. The Results of Validation

Based on the findings of the need analysis, the Android-based learning media product was created, examined, and then validated using material expert validation, expert of media validation, and product try-out.

a) *The Result of Validation by Material Expert*

Material expert validation is used to assess content that has been assembled in smartphone-based learning materials on Descriptive Text about Animals. When evaluating the information, factors including its applicability, completeness, breadth, and depth, as well as the language and terminology used in the application, are all taken into account.

The two material experts are Mrs. A., a lecturer of the English Education Department at Darussalam University, and Mrs. B., an English subject teacher where the study was carried out. Teachers and lecturers are chosen as subject area experts based on their understanding of English-language content, specifically descriptive text.

The survey used a Likert scale with five possible answers: strongly agree, agree, neutral, disagree, and strongly disagree. Table 8 shows the average outcomes of the material experts' validation.

Table 5: Material Expert Validation Result

No	**Aspect**	**Total** ($\sum x$)	**Average** (X)	Category
1	Material	58	4.83	Very Feasible
2	Exercise	47	4.70	Very Feasible
3	Language	48	4.80	Very Feasible
Overall Average (*X*)		153	4.77	Very Feasible

The assessment results for the material aspect averaged 4.77 and fell into the "very feasible" category, the exercise aspect averaged 4.83 and fell into the "very feasible" category, and the language aspect averaged 4.70 and fell into the "very feasible" category, according to the above table. The subject matter experts' overall grade was 4.77. The results of the assessment are included in the range of values X > 4.20 with the Very Feasible category. According to subject-matter experts' validation, the degree of viability of Smartphone-based learning materials is classified as Very Feasible.

b) The Result of Media Expert Validation

Media experts' validation work was used to assess the practicality of the Smartphone – Based Learning Application product in descriptive text about animals. Among these are features of software and visual communication. One of the media specialists used in the media validation procedure was Mr. A, an Information Technology and Computer lecturer at one of the universities, Indonesia. When selecting the validator, the lecturer's knowledge and experience in the field of learning media are taken into consideration.

The survey used a Likert scale with five possible answers: strongly agree, agree, neutral, disagree, and strongly disagree. The following are the usual results of media experts' validation:

Table 6: Media Expert Validation Result

No	**Aspect**	**Total** ($\sum x$)	**Average** (X)	Category
1	Sofware	33	4.71	Very Feasible
2	Communication	38	4.75	Very Feasible
Overall Average (*X*)		71	4.73	Very Feasible

The evaluation's program produced results with an average score of 4.71, placing it in the Very Feasible

category, according to the data shown in the above table. The visual communication component was then evaluated and received a score of 4.75, which put it in the Very Feasible category. The findings of the visual communication assessment and the software both fall into the X > 4.20 range, making them Very Eligible. The media expert's overall average score was 4.73. The degree of viability of this Smartphone – Base Learning application in descriptive text about animals is assessed as Very Feasible since the evaluation of the two elements falls within the range of values X > 4.20. Thus, it can be said that the medium is the best option for making it easier for students to learn about descriptive texts.

c.) *The Result of Product Implementation*

Twenty-eight students participated in the school's seventh-grade tryout phase. Students are instructed to install the program by following the URL https://bit.ly/InstalasiFunEnglish on their own smartphones before using the material. The instructor teaches the students how to use Smartphone–Based Learning Application in animal-related descriptive texts. Following the presentation, students were asked to complete a questionnaire with their opinions and assessments of the media used. The try-out method is used to assess the feasibility of utilizing Smartphone – Based Learning Application materials in classrooms. The average outcomes of student try outs are summarized as follows.

No	Aspect	Total (Σx)	Average (X)	Categories
1	Software	442	3.95	Feasible
2	Learning Design	931	4.16	Feasible
3	Visual Communication	703	4.18	Feasible
Overall Average ($\boldsymbol{X}$)		2076	4.10	Feasible

Tabel 7: Result of Students' Try-out

4.3. Analysis of the Effectiveness of English Learning Media Utilizing Smartphone Applications

a.) *Results of Data Analysis from the Students' Autonomous Learning Questionnaires*

Following the class, the student English autonomous learning questionnaires were given out. Ten positive remarks and ten negative statements made up the twenty items in the questionnaire. The following table provides a summary of the student English autonomous learning questionnaire:

Tabel 8: The Effectiveness of Smartphone Applications

NO	STATEMENTS					TOTAL	AVERAGE	TOTAL AVERAGE
		SDA	DA	A	SA			
1	I pay attention to the teacher when they are explaining the material in class.				28	112	4	3,7
2	I do not read the material before the teacher explains it in class.	26	2			110	3,93	
3	I create a self-study schedule at home.			3	25	109	3,89	
4	I am reluctant to visit the library to find relevant books.	18	10			102	3,64	
5	I extend my study time at home to review material that I haven't understood.			2	26	110	3,93	
6	When I face difficulties, I feel embarrassed to ask questions.	18	10			109	3,64	
7	When I don't achieve satisfactory results, I give up and lose motivation to practice.	26	2			110	3,93	
8	I consistently study diligently because I believe what I am learning now will not be in vain.			4	24	108	3,85	
9	When the teacher is absent, I feel too lazy to study on my own in class, even though many of my friends are playing.	24	4			108	3,85	

10	I don't like reviewing the material independently.	27	1			111	3,96	
11	I study English because it is a required subject in school.	27	1			111	3,96	
12	To support my learning, I have many learning resources.			28		84	4	
13	I enjoy studying using the "Fun English" application.			1	27	111	3,96	
14	The "Fun application does not motivate me to study English.	28				112	4	
15	The material presented in the "Fun English" application is displayed in an engaging and enjoyable way.			2	26	110	3,92	
16	The "Fun English" application makes it harder for me to learn English, especially on the topic of Descriptive Text.	27	1			111	3,96	
17	The material presented is easy to understand.			4	24	108	3,85	
18	The " Fun English" application is easy to use.			2	26	110	3,93	
19	The material presented in the "Fun English" application is not interesting.	26	2			110	3,93	
20	I can use the "Fun English" application independently.				28	112	4	

It is evident from the above table that the first statement's average score for students' independence in learning mathematics is Four. It is 3.93 for the second assertion. It is 3.83 for the third assertion. It is 3.67 for the fourth assertion. It is 3.9 for the fifth statement. It is 3.63 for the sixth assertion. It is 3.93 for the seventh assertion. It is 3.87 for the eighth assertion. It is 3.8 for the ninth statement. It is 3.97 for the tenth assertion. It is 3.9 for the eleventh statement. It is 4 for the twelfth statement. It is 3.97 for the thirteenth assertion. It is 4 for the fourteenth statement. It is 3.93 for the sixteenth assertion. It is 3.97 for the sixteenth assertion. It is 3.87 for the seventeenth statement. It is 3.93 for the eighteenth assertion. It is 3.93 for the nineteenth assertion.

b.) *Results of the Learning Effectiveness Analysis Based on Student Responses*

Tabel 9: The Effectiveness Analysis Based on Student Responses

Statement Item	Students Respond	
	Yes	No
This Fun English application is fascinating.	25	3
I appreciate learning with this application,	27	1
This application encourages me to study more.	27	1
The appearance of this application is appealing	28	0
The material presented is simple to understand.	27	1
The exercises supplied help me learn Descriptive Text better	26	2
The pictures offered help me grasp the Descriptive Text material	25	3

The writing size is acceptable, making it easy for me to read the material	26	2
The language employed is communicative and participatory	25	3
The videos in the application help me comprehend the Descriptive Text material better	28	0
Total	**264**	**16**
Average Score	**26,4**	**1.6**
Percentage	**94,3%**	**5,3%**

The degree of students' interest in, enjoyment of, and ease of understanding of the smartphone application-based English learning materials was evaluated using student response data. The student response questionnaire comprised items that may be scored with positive (yes) and negative (no) responses. It is evident from the findings of the student response questionnaire analysis in the above table that 5.3% of students gave negative replies, whilst 94.6% of students gave positive answers. More than 80% of students responded favourably to the smartphone application-based learning media that was created, so if these results are compared to the criteria established in the previous chapter, it can be concluded that the student response to the learning media is "positive".

B. Discussion

1. The Validity of Smartphone – Based Learning Application of Descriptive Text

Based on the validation results obtained from learning media experts as well as English material experts, learning materials based on the Smartphone application produced can suit the learning goal of the topic of descriptive text. This is consistent with Luo and Watt (2025) which states that one of the criteria for media that should be chosen is media that is harmonious and relevant to learning needs. The media is appropriate for use, provided it supports the learning material's content. Therefore, the media is acceptable if it is analytically consistent with the information and aspects expressed. A similar sentiment was conveyed by the findings of Annamalai's research et al. (2020), which indicated that the generated learning media are of high quality and worthy of use, provided it meets the validity of the content and constructs reviewed by the validators. As a result, the developed English learning media based on the Smartphone application meets the legitimate criteria.

Furthermore, the validity of smartphone-based learning applications for teaching descriptive text can be investigated using the theoretical framework of Mobile-Assisted Language Learning (MALL). MALL views mobility, personalization, contextualization, and multimodal engagement as essential educational benefits of mobile technology (Nasution et al., 2023). When combined with genre-based education, these affordances provide a theoretically sound foundation for using smartphone applications to help students build descriptive text competence (Sariani et al., 2022). Smartphones allow learning to occur outside of the traditional classroom, providing ubiquitous access to instructional materials. Mobile devices serve as personal learning environments, allowing for flexible, learner-centered engagement with language input and output (Dewi et al., 20204). In the context of descriptive text learning, this flexibility enables students to access sample texts, vocabulary banks, audio descriptions, and visual prompts whenever and wherever they need them. Multimodal exposure promotes vocabulary enrichment and genre awareness, both of which are necessary components of descriptive writing (Sartika & Nurdin, 2019).

However, the validity of smartphone-based applications is determined not only by technological novelty but also by pedagogical alignment with learning goals. MALL deployment necessitates strong instructional design and adequate assessment tools (Sakkir & Syamsudin, 2023). To ensure measurable improvement in students' descriptive competence, a smartphone-based learning application for descriptive text should include genre-based scaffolding, explicit instruction on linguistic features (e.g., adjectives, simple present tense, sensory expressions), and structured writing practice.

2. Practicality of the Developed Smartphone Application-Based English Learning Media

Based on the experts' (validators') assessment results, all validators concluded that the medium was suitable for usage (Valid). Similarly, the practicality test questionnaire issued to students and teachers during the trials suggested that the media employed was practical. As a result, it was possible to conclude that the English learning medium developed fits all of the practicality criteria because it facilitates learning organization, particularly on the topic of descriptive text. Student questionnaires revealed that the medium was useful, simple to use, and entertaining. The study's findings indicate that MALL-based resources are legitimate, practical, and successful for teaching descriptive text. These findings were also similar to the research conducted by Wahyuni and Rachmawati (2021). Their investigation found that the created smartphone-based learning application was suitable for classroom use. Both teachers and students said the tool was easy to use, accessible, and helpful during the instructional process. Additionally, practical instructional materials are those that teachers and students may easily implement without requiring a lot of time, resources, or technical knowledge (Suryani & Jaya, 2023). Practical media lowers cognitive and procedural obstacles, allowing students to concentrate on content understanding rather than navigating complex systems.

3. Measuring the Effectiveness of Educational Interventions Beyond Experimental Pre-Test and Post-Test Scores

Evaluating the effectiveness of educational interventions, particularly smartphone-based learning applications aimed to promote autonomous learning, necessitates a more comprehensive conceptual framework than simple comparisons of pre-test and post-test scores (Alamer & Al Khateeb, 2021). When the primary goal is to enhance learning processes rather than immediately boost performance scores, typical test-based evaluation may present an incomplete or even deceptive image of success. Contemporary educational theorists and assessment experts advocate for multidimensional approaches that consider learner engagement, autonomy development, usability, and learning processes (Hu & Zhang, 2017).

a) Limitations of Solely Relying on Pre-Test and Post-Test Scores

Pre-test and post-test scores are frequently compared in traditional experimental designs to determine efficacy. Although this method works well for evaluating knowledge acquisition, it might not fully capture process-oriented outcomes like motivation, autonomy, engagement, or self-control (Creswell & Creswell, 2023). Assessment should not only measure results but also aid in the learning process. Evaluation must take into account improvements in learner accountability, self-monitoring, and strategic involvement in addition to material mastery if the intervention's goal is to promote autonomous learning habits (Shvaikina, 2024) . In a similar vein, Kirkpatrick and Kirkpatrick (2006) stressed that learning outcomes are only one aspect of educational effectiveness; other aspects include learner reactions, behavioral changes, and long-term transfer. Even if short-term test results are consistent, a smartphone-based learning tool designed to promote autonomy may demonstrate success through improved autonomous study habits.

b) Design-Based Research and Educational Product Evaluation

Effectiveness in educational technology research is frequently assessed using factors more than just statistical improvements, such as validity, practicality, and prospective influence. Educational interventions ought to be evaluated according to their viability, usability, and ability to facilitate the desired learning processes in real-world settings (Tinoca et al., 2022). According to this viewpoint, an application for a smartphone can be deemed successful if it is useful and simple to use, promotes ongoing student involvement, encourages self-directed learning habits, and fits the objectives of the curriculum. With this methodology, the emphasis is shifted from specific score gains to more extensive teaching impact.

c) Autonomy and Self-Regulated Learning as Indicators of Effectiveness

An intervention's efficacy must be assessed in terms of autonomy development when its objective is to support autonomous learning. Autonomy is the capacity of the learner to accept accountability for their choices regarding their education (Panadero et al., 2022). It entails having command over cognitive functions, learning content, and learning management (Nguyen, 2023).

Goal-setting, self-monitoring, and self-reflection are all components of self-regulated learning. These activities may not result in an increase in test scores right away, but they are essential for long-term academic growth (Delos & Torio, 2021). As a result, gauging improvements in autonomous practice, learner confidence, and strategic involvement may provide a more accurate picture of a smartphone-based autonomous learning tool's effectiveness (Ardito & Czerkawski, 2021).

d) Technology Acceptance and Engagement as Measures of Effectiveness

Scholars of educational technology stress that usability and learner engagement are essential elements of efficacy. Perceived utility and simplicity of use have a big impact on whether or not students use technology in a meaningful way, according to Davis (1989). Students' autonomous use of the program on a regular basis is proof of its functional efficacy.

Effective multimedia learning environments also lessen unnecessary cognitive strain and encourage deeper processing (Aini et al., 2024). Therefore, even in the absence of significant initial score gains, a smartphone-based application serves its facilitative aim if it improves clarity, accessibility, and sustained engagement.

e) Broader Perspectives on Learning Outcomes

Educational transformation should be evaluated not only based on student accomplishment data, but also on changes in instructional practices and learner behaviours. In autonomous interventions, long-term learning habits may be more essential than short-term performance measurements (Gutierrez et al., 2022). Similarly, it emphasizes that 21st-century learning outcomes include self-regulation, adaptability, and digital literacy competencies that go beyond standardized testing. When a smartphone-based learning application promotes autonomous study habits and digital learning skills, it contributes to overall educational efficacy.

4. The Effectiveness of the Developed Smartphone – Based Learning Application's Function

Functional effectiveness, which refers to the degree to which the product works as intended to support autonomous learning rather than to enhance or quantify learning outcomes through experimental testing, is the definition of the efficacy of the smartphone-based learning application created in this study. Effectiveness in the context of developing educational products is directly tied to the product's usability, relevance, and pedagogical assistance for students rather than being restricted to statistical increases in success (Luo and Watt, 2022). This viewpoint is consistent that the contention of the main question in development-oriented research is whether a product effectively facilitates learning processes in real-world settings (Al-Shboul et al., 2023). Thus, the ability of the created application to facilitate self-directed learning activities, offer organized learning materials, and let students interact with course material on their own is used to assess its efficacy.

5. Learning effectiveness based on the practicality of the product

The developed smartphone-based learning application was evaluated using practicability, which refers to the ease, effectiveness, and appropriateness with which students can use the product to aid in independent learning; since practicability measures implement ability in actual classroom contexts but not direct learning improvements, it is an important criterion with which to judge a development study. The software element scored 3.95 (feasible) on average, meaning that the application is reliable and

there are no significant technical barriers to navigation or to the completion of tasks, and thus supports self-directed access to learning resources. The visual score was 4.18 (feasible): layout, readability, and presentation are designed effectively to enable independent learning by the learners, and this was in line with the recommendation that effective visual design lowers extra cognitive load and increases media effectiveness (Sakkir & Syamsudin, 2023). Having a total practicality average of 4.10, the product exhibits a moderate level of both technical functionality and visual usability-factors identifies as the ones to enable a learning product to be realistically effective in real life. The application, with Little and his concept of the learner autonomy, is scaffolded and enables the students to control their own learning pace and activities; hence, the product deserves its merits in its practical applicability and usefulness in real-life learning settings and not experimental learning benefits.

6. Learning Effectiveness Analysis Based on Students' Autonomous Learning of Descriptive Text Using the Developed Smartphone-Based Learning Application

The study's findings showed that students' autonomous learning in descriptive text strengthened notably after using smartphone application-based English learning media. Questionnaire results revealed that students demonstrated a high level of learning autonomy, as seen by their higher average scores. These findings indicated that the developed application not only improved access to learning materials but also assisted students in regulating their own learning processes. The favourable and considerable impact observed in both students' independent learning behaviours and learning results demonstrates that technology-enhanced education can effectively foster learner autonomy in English language learning settings.

Similarly, Putri and Refnaldi (2020) found that mobile-assisted language learning applications improved students' motivation and autonomous learning behaviors in Indonesian EFL situations. In addition, digital learning platforms promoted flexibility and self-management skills in secondary students. These findings are closely related to the current research, supporting the conclusion that smartphone-based applications can successfully enhance autonomous English learning.

From a theoretical standpoint, these findings are highly supported by Constructivist learning theory, which holds that learners actively construct knowledge through interaction and meaningful engagement with learning materials. Constructivism believes that learning is most effective when students actively explore, reflect, and apply knowledge rather than passively accepting it (Huanmin, 2023). The smartphone-based learning application adheres to this structure by offering interactive activities, opportunities for repeated practice, and rapid feedback, allowing students to develop their understanding of descriptive text freely. According to Vygotsky (1978), learning is best when learners interact in their zone of proximal development with adequate scaffolding; digital applications can serve as scaffolding tools, guiding pupils while eventually cultivating autonomy (Wibobo et al., 2025).

According to the self-determination theory (Guay, 2022), intrinsic motivation arises when the three fundamental psychological demands of relatedness, competence, and autonomy are met. Having control over one's learning decisions is known as autonomy; feeling competent means having the ability to finish tasks successfully; and feeling linked and supported in a social setting is known as relatedness. Stronger involvement and perseverance are typically fostered in educational settings that offer meaningful choices, constructive criticism, and supportive connections. Digital tools can build competency through instant feedback, foster relatedness through interactive features, and support autonomy through self-paced access in environments where technology is strengthened. As a result, SDT provides a solid framework for comprehending how self-directed, sustained learning can be promoted by digital learning applications.

7. Response of Learners as an Indicator of Functional Effectiveness

In the evaluation of the student response questionnaire, 94.6 percent of students responded positively,

and just 5.3 percent responded negatively towards the learning media in the form of smartphone applications. The fact that over 80% of students were positive about the learning media developed shows that the learning media constructed was popular and addressed the criteria set forth to gauge its effectiveness. Students felt that the application was helpful, easy to use, and fit to independent learning (Putri, 2021). User responses form the basis of functional effectiveness in development research due to their capacity to capture how acceptable and viable the product can be in practice during real learning settings. Similarly, Clark and Mayer (2016) say that the most effective instructional media are those that users perceive as useful and simple to operate, enabling students to concentrate on the learning objectives instead of technical problems. The results indicate that students at SMPN 1 Timpeh were eager and engaged in using the application, which resonates with the tenets of connectivism (Fakir et al., 2024), according to which, in the digital age, learning takes place within networks and interaction, which is supported by technology (Sari et al., 2019).

Moreover, smartphone-based learning applications were shown to facilitate English language acquisition among students, especially vocabulary acquisition, sentence formation, and reading descriptive texts. These results align with the existing research reports that demonstrate that mobile-assisted language learning enhances student motivation, reading comprehension, and autonomous learning practices (Putri & Renaldi, 2020). The findings also indicate that the use of smartphone apps in classroom instruction can supplement traditional teaching methods by affording flexible access to learning resources, interactive lessons, and autonomous learning opportunities (Jayanti, 2019). Nonetheless, even with the advantages of smartphone-based learning, parental and teacher supervision is necessary to ensure that smartphones are utilized in productive ways (Mohamed, & Al-Jadaan, 2024). The creation of a safe and supportive digital learning environment requires active guidance and communication between parents, teachers, and students.

5. Conclusion

The study and discussion findings indicate that the learning materials for descriptive text created with the ADDIE paradigm up to the implementation stage are viable and appropriate for use in English language instruction. The average ratings for the feasibility assessment by media and material specialists were 4.73 and 4.77, were both classified as Very Feasible. 28 seventh-grade students participated in the product try-out, and the average practicality score was 4.10.

This suggests that the application is viable for both autonomy and classroom use. Students' answers also demonstrate that the activities help them understand descriptive passages, the content is presented effectively, and the application is visually appealing. Furthermore, the findings of autonomous learning show that students can use the "Fun English" program on their own because every student firmly agreed that it can be utilized independently. Therefore, the developed application is effective as a learning tool for supporting autonomous learning of descriptive text material and is practicable in terms of content, media, and practicality.

References

Aini, N., Kurniarahman, I., Widiati, U., Cahyono, B. Y., & Basthomi, Y. (2024). Indonesian university students' perspectives on integrating AIEd into English language learning. *Issues in Educational Research, 34*(3), 803-824. https://www.iier.org.au/iier34/aini-abs.html

Alamer, A., & Al Khateeb, A. (2021). Effects of using the WhatsApp application on language learners motivation: A controlled investigation using structural equation modelling. *Computer Assisted Language Learning*, *36*, 149–175. https://doi.org/10.1080/09588221.2021.1903042

Al-Shboul, O. K., Rababah, L. M., Banikalef, A. E. A., & Mehawesh, M. I. (2023). Role of learner autonomy in intrinsic motivation in EFL writing. *International Journal of English Language and Literature Studies*, *12*(2), 107–116. https://doi.org/10.55493/5019.v12i2.4756

AlSubie, M. N., & Bahri, O. Ben. (2022). Educational platform based on Smartphone to increase students' interaction in classroom. *International Journal of Advanced Computer Science and Applications*, *13*(10), 664–668. https://doi.org/10.14569/IJACSA.2022.0131078

Anca, M. I. (2023a). Autonomous learning - A theoretical approach. In *Journal Plus Education* (Vol. 33, Special Issue, pp. 301–309). https://doi.org/10.24250/jpe/si/2023/mia/

Annamalai, N., Kabilan, M. K., & Soundrarajan, D. (2022). Smartphone apps as a motivating tool in English language learning. *Indonesian Journal of Applied Linguistics*, *12*(1), 209–219. https://doi.org/10.17509/ijal.v12i1.46544

Ardito, G., & Czerkawski, B. (2021). The development of autonomous student learning networks: Patterns of interactions in an open world learning environment for teachers exploring teaching with and through computer science. *Sustainability (Switzerland)*, *13*(16). 8696. https://doi.org/10.3390/su13168696

Baraibar-Diez, E., Odriozola, M. D., & Llorente, I. (2024). Exploring learning congruence and the availability of diverse educational resources: A study conducted in the field of management education. *International Journal of Management Education*, *22*(2), 100985. https://doi.org/10.1016/j.ijme.2024.100985

Becker, S., Klein, P., Gößling, A., & Kuhn, J. (2020). Using mobile devices to enhance inquiry-based learning processes. *Learning and Instruction*, *69*, 101350. https://doi.org/10.1016/j.learninstruc.2020.101350

Campbell, S., Greenwood, M., Prior, S., Walkem, K., Young, S., & Bywaters, D. (2020). Purposive sampling : complex or simple ? Research case examples. *Journal of Research in Nursing*. *25*(8), 652-661. https://doi.org/10.1177/1744987120927206

Chindia, B., & Wawire, S. N. (2024). Student attitudes towards smartphone use in a pre-service teacher tech course. *Advances in Mobile Learning Educational Research*, *4*(1), 994–1006. https://doi.org/10.25082/amler.2024.01.011

Clark, R. C., & Mayer, R. E. (2016). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning (Ruth Colvin Clark & R. E. Mayer, Eds.; 4th ed.). John Wiley & Sons. https://doi.org/10.1002/9781119239086

Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sixth Edition. Sage Publications.

Cullen, S., & Oppenheimer, D. (2024). Choosing to learn: The importance of student autonomy in higher education. *Science Advances*, *10*(29), 1–10. https://doi.org/10.1126/sciadv.ado6759

Daud, A. (2019). Teaching writing using Google Apps For Education (GAFE). *Indonesian Journal of Economics, Social, and Humanities*, *1*(1), 17–24. https://doi.org/10.31258/ijesh.1.1.2

David, L., & Weinstein, N. (2024). Using technology to make learning fun: Technology use is best made fun and challenging to optimize intrinsic motivation and engagement. *European Journal of Psychology of Education*, *39*(2), 1441–1463. https://doi.org/10.1007/s10212-023-00734-0

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information

technology. *MIS Quarterly, 13*(3), 319–340. http://doi.org/10.2307/249008

Delos Reyes, R. D. G., & Torio, V. A. G. (2021). The relationship of expert teacher–learner rapport and learner autonomy in the CVIF-dynamic learning program. *Asia-Pacific Education Researchers*, *30*(5), 471–481. https://doi.org/10.1007/s40299-020-00532-y

Deng, Y., & Wu, C. (2024). Research on the construction of mobile terminal assisted language learning model based on artificial intelligence technology. *Journal of Intelligence and Knowledge Engineering*, *2*(1), 134-None. https://doi.org/10.62517/jike.202404120

Dewi, P. Y. A., L., Nirmayani, H., Ardiawan, I.K., & Yudaparmita, A. (2024). Development of teaching modules based on multicultural values in school-based management (MBS) courses in primary school teacher education study programs. *International Journal of Sustainable Social Science (IJSSS)*, *2*(4), 213–226. https://doi.org/10.59890/ijsss.v2i4.2401

Dilaines, L. E., Astuti, E., & Yusdita, E. E. (2024). Improving student learning outcomes through accurate online modules with the ADDIE Model. *Journal of Education Technology, 8*(2), 275–286. https://doi.org/10.23887/jet.v8i2.67576

Fakir, M. S. Bin, Azman, H. A. B., & Zahid, A. Z. B. M (2024). Exploring online group work through connectivism theory. *International Journal of Academic Research in Business and Social Sciences*, *14*(8), 2556–2569. https://doi.org/10.6007/ijarbss/v14-i8/21945

Fang, Z. (2020). Toward a linguistically informed, responsive and embedded pedagogy in secondary literacy instruction. *Journal of World Languages*, *6*(1–2), 70–91. https://doi.org/10.1080/21698252.2020.1720161

Guay, F. (2022). Applying self-determination theory to education: Regulations types, psychological needs, and autonomy supporting behaviors. *Canadian Journal of School Psychology, 37*(1), 75-92. https://doi.org/10.1177/08295735211055355

Gutierrez-Bucheli, L., Kidman, G., & Reid, A. (2022). Sustainability in engineering education: A review of learning outcomes. *Journal of Cleaner Production, 330*, 129734. https://doi.org/10.1016/j.jclepro.2021.129734

Halil, N. I., Yawan, H., Hasanah, A. N., Syam, H., Andas, N. H., & Marhamah. (2024). A new program to foster inclusion: Unraveling language teachers' pedagogical practices to differentiated instruction. *International Journal of Language Education*, *8*(2), 370–383. https://doi.org/10.26858/ijole.v8i2.64997

Handayani, S., Martiyani, F. A., Hapsari, A. M. S., & Widhoyoko, Y. P. (2022). Design and build android-based English learning media on descriptive text material. *Formosa Journal of Computer and Information Science*, *1*(2), 99–116. https://doi.org/10.55927/fjcis.v1i2.1151

Hu, P., & Zhang, J. (2017). A pathway to learner autonomy: a self-determination theory perspective. *Asia Pacific Education Review*, *18*(1), 147–157. https://doi.org/10.1007/s12564-016-9468-z

Huanmin, Z. (2023). An empirical study of college English major students' mobile-based listening autonomous learning. *Frontiers in Educational Research*, *6*(5), 51–55. https://doi.org/10.25236/fer.2023.060510

Jayanti, A. D. (2019). Students' writing ability on English descriptive text at grade VIII in SMPN 33 Padang. *ENGLISH FRANCA: Academic Journal of English Language and Education, 3*(1), 71–94. https://doi.org/10.29240/ef.v3i01.843

Jeno, L. M., Adachi, P. J. C., Grytnes, J. A., Vandvik, V., & Deci, E. L. (2019). The effects of m-learning on motivation, achievement and well-being: A Self-Determination Theory approach. *British Journal of Educational Technology*, *50*(2), 669–683. https://doi.org/10.1111/bjet.12657

Jumaah, F. M. (2024). Exploring constructivist learning theory and its applications in teaching English. *The American Journal of Social Science and Education Innovations*, *6*(8), 7–19. https://doi.org/10.37547/tajssei/volume06issue08-02

Kayra, Z. (2024). Enhancing English vocabulary learning through mobile Apps: A new paradigm in

educational technology. *Research Studies in English Language Teaching and Learning*, *2*(2), 87–95. https://doi.org/10.62583/rseltl.v2i2.41

Kedthawon, S., Saengngam, S., & Kerdthaworn, P. (2024). Development of learning media applications using a smartphone. *Interdisciplinary Academic and Research Journal*, *4*(4), 391–408. https://doi.org/10.60027/iarj.2024.276522

King, R. B., & Frondozo, C. E. (2022). Variety is the spice of life: How emotional diversity is associated with better student engagement and achievement. *British Journal of Educational Psychology*, *92*(1), 19–36. https://doi.org/10.1111/bjep.12436

Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). Evaluating training programs: The four levels (3rd ed.). Berrett-Koehler.

Lestarani, D., Lalang, A. C., & Manggi, I. (2023). Development of articulate storyline 3-based digital teaching materials on the subject of atomic structure and periodic elements system for SMA/MA students in class X. *Orbital*, *15*(2), 127–132. https://doi.org/10.17807/orbital.v15i2.17959

Little, D. (2022). Language learner autonomy: Rethinking language teaching. *Language Teaching*, *55*(1), 64–73. https://doi.org/10.1017/S0261444820000488

Liu, X. (2022). A study on college English mobile learning teaching strategies based on smart-phone applications. *Education Theory: Teaching and Learning*, *1*(1), 1–6. https://doi.org/10.55571/ettl/2022.11001

Luo, Y., & Watts, M. (2025). Exploring smartphone-assisted learning in the third space: students' smartphone identity formation and lived experiences. *The Language Learning Journal*, 1-21. https://doi.org/10.1080/09571736.2025.2547603

Metruk, R. (2024). Mobile-assisted language learning and pronunciation instruction: A systematic literature review. *Education and Information Technologies*, *29*(13), 16255–16282. https://doi.org/10.1007/s10639-024-12453-0

Mohamed, O. I., & Al-Jadaan, O. (2024). Online and Mobile-Assisted Language Learning. In T. Guzsvinecz (Ed.), *Level Up! Exploring Gamification: Impact on Research and Innovation*. IntechOpen. https://doi.org/10.5772/intechopen.1003054

Muhfiyanti, S., Mulyadi, D., & Aimah, S. (2021). Android-based mobile learning media in teaching reading of report text. *English Education Journal, 11*(1), 101–112. https://doi.org/10.15294/eej.v11i1.43343

Mutiaraningrum, I., & Nugroho, A. (2021). Smartphone-based mobile assisted language learning application in higher vocational education in Indonesia. *JEES (Journal of English Educators Society)*, *6*(1). https://doi.org/10.21070/jees.v6i1.793

Nasution, U. A., Dewi, U., & Daulay, S. H. (2023, July). *Students' perception of using mobile assisted language learning (MALL) as a media for learning English*. In Conference on English Language Teaching (pp. 951-958). https://proceedings.uinsaizu.ac.id/index.php/celti/article/view/564

Nguyen, T. L. (2023). Promoting learner autonomy in learning English listening skills through mobile-assisted applications. *AsiaCALL Online Journal*, *14*(2), 118–139. https://doi.org/10.54855/acoj.231428

Nursalam, N., Muhajir, M., Wibowo, S. A., & Suardi, S. (2023). The Effectiveness of Articulate Storyline 3 Application-Based Interactive Learning Media in Social Studies Learning for Elementary School. *AL-ISHLAH: Jurnal Pendidikan*, *15*(4), 5724–5732. https://doi.org/10.35445/alishlah.v15i4.3061

Oszwa, U., & Knopik, T. (2023). *Self-Determination Theory SDT as educational and upbringing inspiration*. *4*(4), 165–179. https://doi.org/10.5604/01.3001.0054.1202

Panadero, E., Jonsson, A., Pinedo, L., & Fernández-Castilla, B. (2023). Effects of rubrics on academic performance, self-regulated learning, and self-efficacy: A meta-analytic review. *Educational Psychology Review, 35*(4), 113. https://doi.org/10.1007/s10648-023-09823-4

Persson, V., & Nouri, J. (2018). A systematic review of second language learning with mobile technologies. *International Journal of Emerging Technologies in Learning*, *13*(2), 188–210. https://doi.org/10.3991/ijet.v13i02.8094

Pimentel, J. L. (2019). Some biases in Likert scaling usage and its correction. *International Journal of Science: Basic and Applied Research 45*(1), 183-191. https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/9874

Pratiwi, D. I., & Waluyo, B. (2023). Autonomous learning and the use of digital technologies in online English classrooms in higher education. *Contemporary Educational Technology*, *15*(2). https://doi.org/10.30935/cedtech/13094

Putri, N. S., & Refnaldi. (2020). The use of mobile-assisted language learning in improving students' English vocabulary. *Journal of English Language Teaching, 9*(4), 889–897. https://doi.org/10.33394/jollt.v12i3.11041

Reinders, H. (2020). Fostering autonomy: Helping learners take control. *English Teaching (South Korea)*, *75*(2), 135–147. https://doi.org/10.15858/engtea.75.2.202006.135

Ridwandha, Eka, Syahputra; Wahidah; Mauloeddin, A. (2022). Interactive multimedia for teaching writing descriptive text to junior high school students. *ITQAN: Jurnal Ilmu-Ilmu Kependidikan*, *13*(2), 183–198. https://doi.org/10.47766/itqan.v13i2.635

Sakkir, G., & Syamsuddin, N. A. (2023). Students' perceptions of Duolingo mobile assisted language learning (MALL) in learning English vocabulary. *EduLine: Journal of Education and Learning Innovation, 3*(3), 381-388. https://doi.org/10.35877/454RI.eduline1970

Sari, A. I., Suryani, N., Rochsantiningsih, D., & Suharno. (2019). The development of android-based smartphone learning application on teaching reading comprehension. *AIP Conference Proceedings, 2194*(1), 020110. https://doi.org/10.1063/1.5139842

Sari, C. C. (2024). Mobile-Assisted language learning via WhatsApp group: Interaction patterns and teacher perspectives. *Journal of English Language Teaching, 11*(1), 23-35. https://doi.org/10.33394/jo-elt.v11i1.11287

Sariani, Miladiyenti, F., Rozi, F., Haslina, W., & Marzuki, D. (2022). Incorporating mobile-based artificial intelligence to English pronunciation learning in tertiary-level students: Developing Autonomous Learning. *International Journal of Advanced Science Computing and Engineering*, *4*(3), 220–232. https://doi.org/10.62527/ijasce.4.3.92

Sartika, N., & Nurdin, M. (2019). Students' Ability in writing descriptive text based on its generic structure at the tenth grade student of vocational high school. *Professional Journal of English Education)*, *2*(4), 436. https://doi.org/10.22460/project.v2i4.p436-44 1

Shvaikina, N. S., Popel, A. A., & Volova, V. M. (2024). The role of autonomous learning in the study of grammar by economics and foreign language students (pedagogical profile with two areas of training). *Vestnik of Samara State Technical University Psychological and Pedagogical Sciences*, *21*(1), 87–98. https://doi.org/10.17673/vsgtu-pps.2024.1.8

Sintayani, N. L., Padmadewi, N. N., & Budiarta, L. G. R. (2022). Developing ICT-based learning media using Powtoon for teaching descriptive text. *The Art of Teaching English as a Foreign Language*, *3*(2), 127–137. https://doi.org/10.36663/tatefl.v3i2.430

Suryani, N. Y., & Jaya, A. (2025, July). *Enhancing English language acquisition through Mobile-assisted language learning (MALL): AI-driven strategies*. In Conference on English Language Teaching (pp. 255-276). https://doi.org/10.24090/celti.2025.1318

Syamsir. (2023). Students of autonomous learning using mobile assisted language learning (MALL) at senior high school. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, *10*(2), 1953–1963. https://doi.org/10.24256/ideas.v10i2.3398

Tang, F. (2024). Understanding the role of digital immersive technology in educating the students of

english language: does it promote critical thinking and self-directed learning for achieving sustainability in education with the help of teamwork? *BMC Psychology*, *12*(1), 1–14. https://doi.org/10.1186/s40359-024-01636-6

Tinoca, L., Piedade, J., Santos, S., Pedro, A., & Gomes, S. (2022). Design-based research in the educational field: A systematic literature review. *Education Sciences, 12*(6), 410. https://doi.org/10.3390/educsci12060410

Vaughn, M. (2019). Adaptive teaching during reading instruction: A multi-case study. *Reading Psychology*, *40*(1), 1–33. https://doi.org/10.1080/02702711.2018.1481478

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Wahyuni, S., & Rachmawati, D. (2021). Developing an android-based English learning application to improve junior high school students' writing skills. *Journal of English Language Teaching and Linguistics, 6*(2), 215–228. https://doi.org/10.21462/jeltl.v6i2.540

Waruwu, S. W. (2023). Students' difficulties in writing descriptive text at the eleventh grade of SMA Negeri 1 Onohazumba. *Jurnal Ilmiah Mahasiswa Keguruan*, *2*(2). 136-147. https://doi.org/10.57094/faguru.v2i2.1056

Wibowo, S., Wangid, M. N., & Firdaus, F. M. (2025). The relevance of Vygotsky's constructivism learning theory with the differentiated learning primary schools. *Journal of education and learning (EduLearn), 19*(1), 431-440. https://doi.org/10.11591/edulearn.v19i1.21197

Yu, Z., Yu, L., Xu, Q., Xu, W., & Wu, P. (2022). Effects of mobile learning technologies and social media tools on student engagement and learning outcomes of English learning. *Technology, Pedagogy and Education*, *31*(3), 381–398. https://doi.org/10.1080/1475939X.2022.2045215