

## Development of Differentiated English Language Learning Multimedia

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### ABSTRACT

*This research and development aims to determine the feasibility and effectiveness of differentiated learning multimedia using Smart Apps Creator (SAC) in improving English learning outcomes for class VIII students at UTP SPF SMP Negeri 2 Sunggal. The type of research is research and development (R&D) using the ADDIE model, with stages: analysis, design, development, implementation, and evaluation. The research was conducted at UPT SPF SMP Negeri 2 Sunggal, class VIII students, consisting of 64 students, with 32 students in the experimental class taught using SAC multimedia and 32 students in the control class not using SAC multimedia. The research results show: (1) validation by material experts (94.44% of very feasible criteria), by media experts (94.17% of very feasible criteria), and by learning design experts (93.61% of very feasible criteria). The results of individual trials were 76.67% feasible criteria, small group trials were 88.33% very feasible criteria, and field trial results were 91.04% very feasible criteria. (2) There are differences in student learning outcomes between the experimental and control classes. The experimental class had an average learning outcome of 82.75; the control class had an average learning outcome of 61.63. Hypothesis testing using an independent t-test on the post-test scores of the experimental class and control class obtained a significance result (2-tailed) of 0.000, which means <math><0.05</math>. It can be concluded that there are significant differences between classes that are taught using differentiated learning multimedia and classes that are not taught using multimedia. The development of differentiated learning multimedia using SAC for class VIII SMP students is effective in improving English learning outcomes.*

### KEYWORDS

*Multimedia; differentiated learning; smart apps creator; English*

### INTRODUCTION

The development of science and technology (IPTEK) continues to develop and influence the development of human life. One form of progress in the development of science and technology is the development of information and communication technology (ICT). The increasingly rapid development of ICT should be able to support the learning process and go hand in hand with developments in the world of education. The use of ICT in learning is an integral part of the nature of the times. ICT media can improve the quality of education because it offers more and more interesting new resources, so that learning is much more interesting for students (Hammoumi et al., 2021). However, the use of ICT media by schools and teachers in Indonesia still has many obstacles, including limited ICT facilities in schools and the low digital skills of teachers (technology failure), so that ICT learning

media is still rarely used in learning (Dwi, 2020). This cannot be allowed to continue because it concerns the quality of national education. Wartomo (Effendi and Wahidy, 2019) states that teacher competence must be oriented towards the development of ICT and digital society. So, low teacher ICT competency will also have an impact on the low quality of education in Indonesia.

The achievement of students' reading literacy scores on the AKM (in Indonesian) can also be used as an illustration of the achievements of students' reading comprehension skills in English subjects. Based on the Decree of the Head of BSKAP No. 8 of 2022 concerning Learning Achievements in PAUD, Primary Education, and Secondary Education in the Independent Curriculum, the reading comprehension skills of phase D students (grades 7-9 of junior high school) include the ability to understand, use, and reflect on texts according to their goals and interests. Reading comprehension skills in English texts must, of course, be supported by students' ability to transfer meaning into their mother language, namely Indonesian. So, if students' reading comprehension abilities in Indonesian are still low, then students' reading comprehension abilities in English will definitely also be low, and vice versa. This AKM score achievement is in line with the average score achieved by students in the previous two academic years, namely 2021/2022 and 2022/2023, which is still not satisfactory, with the percentage of students who have not reached the school's Minimum Completeness Criteria (KKM) still quite large. Less than 50% of students reach the KKM in class VIII of junior high school.

One of the questions that measures students' reading comprehension, which most students do not complete, is recount text, which is a type of text that retells events in the past. The fundamental factor that often becomes an obstacle for students in understanding the content of the text is the lack of vocabulary that they have. Meanwhile, recount text is packaged in past-tense form. This means that the vocabulary contained in this type of text is from the past. Mastery of linguistic elements in the past form is a prerequisite for understanding recount texts. This is what makes it difficult for students to understand or capture the meaning of recount text. This condition must be a separate note that needs to be corrected by the teacher.

English plays an important role because this international language is used in global communication in various fields, including technology and business. English language skills are becoming increasingly important because many resources and information in technology, business, and science are delivered in English (Mampuono, 2022). To be able to understand various resources and information in English, of course, students must have reading comprehension skills.

Learning outcomes are a form of knowledge or ability attainment obtained by someone after following a learning or educational process. Learning outcomes can be an understanding of a concept, new abilities, improvements in thinking abilities, or changes in behavior. Robert F. Mager (Magdalena et al., 2023) suggests that learning outcomes are behaviors that students want to achieve or can do under certain conditions and levels of competence. Kemp and David E. Kapel (Magdalena et al., 2023) state a similar definition: learning outcomes are a specific statement expressed in behavior or appearance that is to be achieved or managed in written form to describe the expected learning outcomes.

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learning outcomes are a specific statement expressed in behavior or appearance that is to be achieved or managed in written form to describe the expected learning outcomes.

One important aspect of implementing the Independent Curriculum that meets the rights and learning needs of all students is differentiated learning, namely learning that focuses on students' individual differences and provides learning experiences that suit their diverse needs and interests. Differentiated learning is a learning process where students can study teaching material according to their abilities and readiness, what they like, and their individual needs so that they do not feel like they have failed or become stressed in their learning experience (Tomlinson, 2017; Khristiani et al., 2021). Student learning needs that need to be considered in designing differentiated learning include learning readiness, interests, and learning profile or style. For this reason, teachers must pay attention to content, processes, products, and learning environments that are adapted to the conditions of students' learning needs (Purba et al., 2021).

In the Merdeka Curriculum, language learning, including English, includes six elements of ability, namely listening-speaking ability, reading-viewing ability, and writing-presenting ability. So, the ability to understand reading (reading comprehension) is included in the ability to read and watch.

The use of ICT can be integrated into differentiated learning. The student's learning process will become more interesting because this medium is able to stimulate the learner's thoughts, feelings, attention, and abilities so that it can encourage a learning process that has a positive impact on academic performance in the form of learning motivation and student learning outcomes (Ferlianti, 2022). One form of media that can be developed using ICT is multimedia learning. Multimedia learning is a combination of several media elements, such as text, images, graphics, animation, audio, and video, as well as interactive and contextual delivery methods that can create a learning experience for students like the real life around them (Bardi and Jailani, 2015; Dwiqi, 2020).

The Association for Supervision and Curriculum Development (Purba, 2021) adapts Tomlinson's differentiated learning characteristics as follows:

**Table 1.** Characteristics of Differentiated Learning

<b>Characteristic features</b>	<b>Explanation of characteristics</b>
Be proactive	Teachers proactively anticipate from the start the classes they will teach by planning lessons for different students. So it's not about adapting learning to students as a reaction to evaluations about the failure of
Emphasize Quality over Quantity	In differentiated learning, the quality of assignments is more tailored to student needs. So it doesn't mean that a clever child, after completing his assignment, will be given the same additional assignment, but he will be given other assignments that can increase his abilities.
Rooted in Assessment	Teachers always assess students in various ways to find out their situation in each lesson so that, based on the results of the assessment, the teacher can adjust the learning to their needs.
Providing Various Approaches in Content, Learning Process, Products Produced, and Also Learning	In differentiated learning, there are four elements that can be adjusted to students' level of readiness to study the material, their interests, and learning styles. The four elements that are adjusted are content (what is learned), process (how to learn it), product (what results after learning it), and learning environment (learning climate).

<b>Characteristic features</b>	<b>Explanation of characteristics</b>
Student Oriented	Assignments are given based on the student's initial level of knowledge of the material to be taught so that the teacher designs learning according to the level of student needs.
It is a mixture of individual and classical learning Individu and Klasikal	Teachers provide opportunities for students to sometimes study together classically and can also study individually.
Alive	Teachers collaborate with students continuously, including to develop class and individual goals for students. The teacher monitors how the lesson fits the students and how it is adjusted.

*Source: (ASCD, 2011)*

Purwanto and Gita (2023) research on Android-based differentiated mathematics learning multimedia shows that students learn happily and comfortably. However, this multimedia application can only be used online, and students feel limited when they don't have an internet quota or WiFi network. It can only be installed on Android devices. Other research by Leonardus (2023) regarding the use of Google Sites in developing differentiated learning multimedia for biology subjects shows the effectiveness of multimedia in improving student learning outcomes. However, because this multimedia is web-based, its use is limited to an internet connection, which can be an obstacle for students who do not have an internet quota or network access.

Smart Apps Creator (SAC). SAC is an application for creating smartphone (Android) or iOS applications without programming code. The SAC application allows creating applications in HTML5, Android package (apk.), and executable (.exe) formats, which can be accessed on various devices, such as computers, laptops, tablets, and smartphones.

Research by Rauf (2022) regarding the development of Smart Apps Creator (SAC) learning multimedia for crafts subjects at SMPN 12 Bulukumba shows that the media developed has gone through validation and trials in small groups and limited fields and was declared practical. Meanwhile, research by Ferlianti et al. (2022) regarding SAC interactive learning multimedia on hydrostatic pressure material shows that this medium is suitable for use and implementation. The results of the questionnaire showed high support from students and teachers. Apart from that, there is an increase in student learning outcomes after using this multimedia. Another study by Jaiz et al. (2022) on Islamic science learning multimedia based on Smart Apps Creator (SAC) integrated with Islam for fourth grade students at SDN Pekan Baru City shows that the media is valid, practical, and effective. N-Gain's validity, practicality, and results show a good level.

Furthermore, research conducted by Rizki et al. (2022) on the development of learning media using Smart Apps Creator (SAC) for introducing oneself and others showed an increase in students' English learning outcomes from pretest to posttest. SAC media can be used effectively in learning.

The formulation of the problem in this research includes: (1) How to develop differentiated English language learning multimedia for class VIII SMP using Smart Apps Creator (SAC)? (2) Is differentiated English learning multimedia using Smart Apps Creator (SAC) feasible for improving the reading comprehension skills of class VIII SMP

Negeri 2 Sunggal students on recount text material? And (3) is differentiated English learning multimedia using Smart Apps Creator (SAC) effective for improving.

### RESEARCH METHODS

Research and development aims to produce new products through the development process. Research and development products in the education sector can be models, media, equipment, books, modules, evaluation tools, and learning tools such as curriculum and school policies. Research and development products in the education sector can take the form of models, media/multimedia, equipment, books, modules, evaluation tools, and learning tools such as curriculum and school policies. The product produced in this research is differentiated learning multimedia using the Smart Apps Creator software in class VIII SMP English subject Recount Text.

This research uses qualitative and quantitative research methods with the ADDIE model, with the steps of analysis, design, development, implementation, and evaluation. The research subjects in the development of differentiated learning multimedia using Smart Apps Creator (SAC) are oriented towards the learning outcomes of class VIII Recount Text material, namely class VIII students at SMP Negeri 2 Sunggal, taking one class as a control class and another class as an experimental class randomly. (random).

The type of data used in this research is mixed-methods research, namely a method used to analyze and combine data from quantitative and qualitative research in order to present research data with the aim of understanding the problem being researched. Qualitative data was obtained through criticism, suggestions, and input from validation experts, including material experts, media experts, and learning design experts. Individual trial evaluations, small group trial evaluations, and field trial evaluations were carried out to determine the feasibility of the English language learning multimedia product. Test student learning outcomes (post-test) on the effectiveness of the English language learning products developed.

This learning outcomes test is useful for finding out whether the differentiated learning multimedia will be effective or not by looking at the learning scores obtained by students in English subjects after being given the product treatment that was tested (post-test). The form of learning outcomes test used is a multiple-choice test, which includes C1 (remembering), C2 (understanding), C3 (application), C4 (analysis), C5 (evaluation), and C6 (creating). The grid of question items can be seen in Table 2 below:

**Table 2.** Question Item Grid

No	Learning objectives	Realm						Amount
		C1	C2	C3	C4	C5	C6	
1	Determine the main idea/topic/social function of the recount text	1	2	3		2		8
2	Determine the structure of recount text	1	1	2	4			8
3	Determine the linguistic elements of recount text			5		2		7
4	Evaluate written/implied information from recount text				3	4	2	9
5	Summarize/infer written/implied information from recount text			2	7	4	5	18
	<b>Total</b>							<b>50</b>

**Table 3.** Teacher and Student Needs Analysis Instrument Grid

No.	Aspect	Assessment Indicators
1.	Needs and Interests	Students' needs and interests in using learning multimedia
2.	Benefits	Student enthusiasm and interaction in using learning multimedia
		Multimedia learning can create an interesting and enjoyable learning environment
3.	Effective and Practical	Can improve English learning outcomes
4.	Student independence in learning	Make students more independent in learning and understanding English material

Source: (adapted from Sohaya, 2021)

**Table 4.** Multimedia Assessment Instrument Grid by Material Experts

No.	Aspect	Indicator
1.	Learning Guide and Information	Description and multimedia guide
		Clarity of learning outcomes and learning objectives
2.	Material Quality	Conformity of objectives with the learning curriculum
		Suitability of material coverage with learning objectives
		Up-to-date material
		Description of a concept or theory
		Correctness of material, sequence (syntax), depth of material
		Suitability of examples or illustrations to the material
		Providing a summary and time duration
3.	Evaluation	Presentation spelling and grammar
		Evaluation instructions
		Coverage of questions with learning objectives
		Question difficulty level
		Work Duration
		Turn over (review) the practice questions

Source: (adapted from Sriadhi, 2019)

**Table 5.** Multimedia Assessment Instrument Grid by Media Experts

No	Aspect	Indicator
1.	Systematics	Media display (screen) layout
		Menu facilities in media
		Acceleration of letters, numbers and symbols
2.	Aesthetics	Quality of graphics or images and color choices
		Accelerate text, visuals, audio and animation
3.	Multimedia Quality	Narration and audio quality
		Object/video/animation quality
		Multimedia display speed
		Consistency of multimedia operational quality

Source: (adapted from Sriadhi, 2019)

**Table 6.** Multimedia Assessment Instrument Grid by Learning Design Experts

No	Aspect	Indicator
1.	Learning Objectives	Suitability of the formulation of learning objectives
2.	Learning Activities	Suitability of learning objectives at the learning activity stages (Introduction, core and conclusion)
3.	Learning Methods	Suitability of methods to learning objectives
		Suitability of learning methods with learning activities (introduction, core and conclusion)
		Suitability of the methods to the characteristics of students
		The effectiveness of learning methods in learning activities

4.	Learning Media	Suitability of media to learning objectives
		Suitability of learning media with learning activities
		Suitability of media to learning methods
		Suitability of media to students characteristics
5.	Time	Accuracy of time allocation for each stage of learning activities
		Suitability of time to learning methods
6.	Test	Suitability of tests to learning objectives

Source: (adapted from Mariliana, 2020)

**Table 7. Multimedia User Acceptance Instrument Grid**

No	Aspect	Indicator
1.	Information	Clarity of description of learning outcomes and learning objectives
2.	Material Quality	Suitability of the material to the topic of discussion, learning objectives, concepts or theories and scope of the material
		Arrangement of material sequentially (hierarchical) and orderly (systematic)
3.	Design and media quality	Learning multimedia is easy to understand
		Learning multimedia can be used without damage
		Quality of design display, multimedia, audio, images, backsound (background sound)
		Multimedia display speed and narrator/audio voice
4.	Language and Typography	Needs and interests and benefits of learning multimedia
5.	Pedagogical effects	Needs and interests and benefits of learning multimedia
6.	Evaluation	Practice questions, level of difficulty and feedback (review) of practice questions

Source: (adapted from Sriadhi, 2019)

### **Feasibility Test Data Analysis Techniques**

Input obtained from the results of multimedia assessments by experts is then analyzed using the following formula (Sriadhi, 2018): (1) Tabulate the answer scores for each instrument item in each aspect. (2) Find the average answer score for each aspect using the formula:

$$\bar{x} = \frac{\sum X}{n}$$

Information:

$\bar{x}$  : Average score

$\sum X$  : Total score of statement items

$n$  : Amount of data (number of statement items)

To assess the suitability of the media as a whole, this is done by involving all item scores in the three assessment aspects and calculating the average value using the formula:

$$\bar{x}_t = \frac{\sum X_i}{N}$$

Information:

$\bar{x}_t$  : Average score

$\sum X_i$  : Total score from the three assessment aspects

$N$  : Total data for the three assessment aspects

To determine feasibility, the results obtained from this calculation are interpreted as in Table 8 below:

**Table 8.** Interpretation of Product Quality Assessment

No	Interval Mean Score	Interpretation
1.	1,00 - 2,49	not feasible
2.	2,50 - 3,32	not worthy
3.	3,33 - 4,16	worthy
4.	4,17 - 5,00	very worthy

*Source: (Adapted from Sriadhi, 2019)*

### **Effectiveness Test Data Analysis Techniques**

Data collection techniques using post-tests in control and experimental classes were carried out to determine the effectiveness of Smart Apps Creator-based teaching and multimedia modules with the results of the Recount Text material test on students. Next, the data generated from the test will be tested for effectiveness.

Before carrying out an effectiveness test with the t-test, there are requirements that must be met, namely carrying out a normality test and a homogeneity test. The normality test aims to determine whether a respondent's data has a normal distribution or not. Meanwhile, the homogeneity test is used to test whether the variances of two or more distributions are the same or not. After both are fulfilled, the independent sample t-test can be carried out on the research data.

### **Average value**

The following formula is used to obtain the average value for Sugiyono (2019):

$$\bar{x} = \frac{\sum X_i}{n}$$

$\bar{x}$  : Mean (Average)

$\sum X_i$  : the number of x values from I to n

$n$  : Number of individuals

### **Standard deviation (Standard Deviation)**

$$s = \sqrt{\frac{\sum (X_i - \bar{X})^2}{(n - 1)}}$$

Information:

$s$  : sample standard deviation

$X_i$  : value of x 1 to n

$\bar{x}$  : average

$(n - 1)$  : degrees of freedom

$n$  : Number of samples

The normality test is carried out to determine whether the research data is normally distributed or not. This means that the distribution of data in the population is normal or not. Testing the normality of this data uses the Chi Square formula as follows:

$$x^2 = \sum \left( \frac{(F_0 - F_h)^2}{F_h} \right)$$

Information:

$x^2$  = Chi Square

$F_0$  = Frequency obtained from the sample

$F_h$  = Expected frequency of the sample



According to Arikunto (2014), the Chi Square value used is with a significance level of 5% and degrees of freedom equal to the number of frequency classes - 1 ( $dk=K-1$ ). If  $\chi^2_{count} \leq \chi^2_{table}$ , then it can be concluded that the data is normally distributed.

The homogeneity test is carried out to determine whether the distribution of data in the population is homogeneous. According to Sudjana (2005: 249), the variance homogeneity test can be calculated using the Barlett test, namely:

$$F = \frac{s_1^2}{s_2^2}$$

### **Hypothesis test**

The research hypothesis needs to be tested for truth, in this research the statistical technique used to test the hypothesis is the t-test (independent test). The requirements that must be met in t-test data analysis are the presence of post-test results in the sample group. The hypothesis of the effectiveness test that will be tested is as follows:

$$\begin{aligned} H_0 & : \mu_1 = \mu_2 \\ H_a & : \mu_1 \neq \mu_2 \end{aligned}$$

Information:

$\mu_1$  : average student learning outcomes using the developed differentiated learning multimedia

$\mu_2$  : average student learning outcomes using other learning media, in the form of videos or presentation slides (undifferentiated)

$H_a$  : There is a significant difference in learning outcomes between classes that study using Smart Apps Creator differentiated learning multimedia and classes that study using other learning media, in the form of videos or presentation slides (not differentiated)

$H_0$  : There is no significant difference between classes taught using Smart Apps Creator differentiated learning multimedia and classes taught using other learning media, in the form of videos or presentation slides (not differentiated)

To test the hypothesis, the two-party test formula is used:

$$t_{count} = \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where S is the root of the combined variance calculated by the formula:

$$S^2 = \frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2} \quad \text{where } S = \sqrt{S^2}$$

Information:

$\bar{x}_1$  : average experimental class score

$\bar{x}_2$  : average control class score

$n_1$  : number of experimental class samples

$n_2$  : number of control class samples

$S_1^2$  : variance in the experimental class

$S_2^2$  : variance in the control class

S : combined variance

t : calculation price

with  $db = n_1 + n_2 - 2$

The correlation criteria obtained are said to be significant (the hypothesis is accepted) if the  $t_{count} > t_{table}$  for a significance level of 5%.

## RESULTS AND DISCUSSION

### Results

At the development stage, the necessary materials are collected and created in the form of images, learning material modules, animated videos and audio (music) recordings, which are then compiled into complete learning multimedia using the Smart Apps Creator device. Next, a description of the differentiated English language learning multimedia display that has been developed in this research is described as follows:

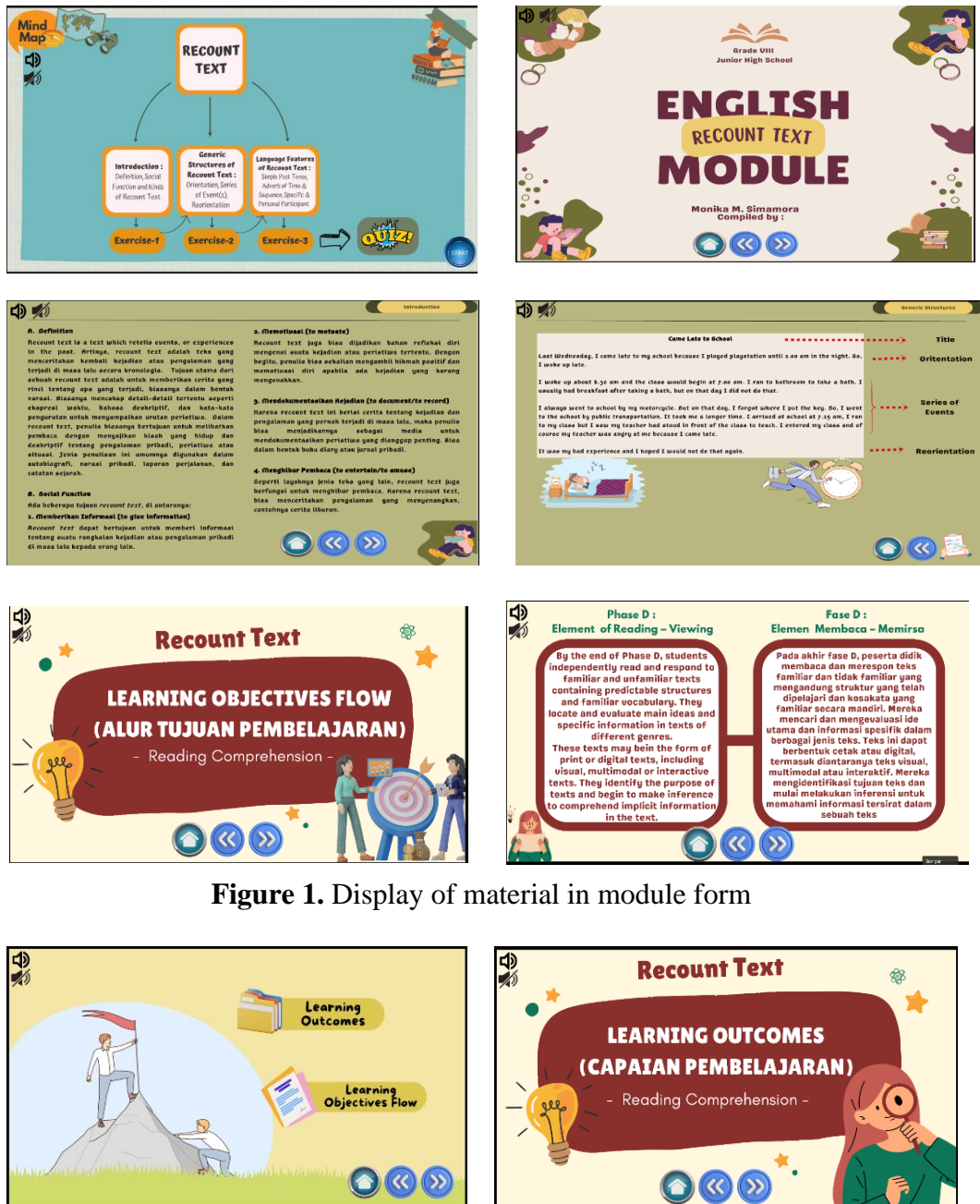


Figure 1. Display of material in module form

Figure 2. Learning Outcomes and Learning Objectives Flow

The feasibility test for this differentiated English language learning multimedia product was carried out by a material expert, namely an English lecturer at Medan State University

who mastered reading comprehension of recount text material.

**Table 9.** Validation Results by Material Experts

No.	Assessment Aspects	Average	Percentage	Criteria
1	Study Guides and Information	5.00	100.00%	Very Eligible
2	Material quality	4.67	93.33%	Very Eligible
3	Evaluation	4.50	90.00%	Very Eligible
	<b>Average</b>	<b>4.72</b>	<b>94.44%</b>	<b>Very Eligible</b>

**Table 10.** Validation Results by Media Experts

No.	Assessment Aspects	Average	Percentage	Criteria
1	Systematics	4.67	93.33%	Very Eligible
2	Aesthetics	4.75	95.00%	Very Eligible
3	Multimedia Quality	4.58	91.67%	Very Eligible
	<b>Average</b>	<b>4.71</b>	<b>94.17%</b>	<b>Very Eligible</b>

**Table 11.** Validation Results by Learning Design Experts

No	Assessment Aspects	Average	Percentage	Criteria
1	Learning objective	5.00	100.00%	Very Eligible
2	Learning activities	5.00	100.00%	Very Eligible
3	Learning method	4.33	86.67%	Very Eligible
4	Learning media	4.75	95.00%	Very Eligible
5	Time	4.00	80.00%	Very Eligible
6	Tests (Evaluation)	5.00	100.00%	Very Eligible
	<b>Average</b>	<b>4.68</b>	<b>93.61%</b>	<b>Very Eligible</b>

Individual trials at UPT SPF SMP Negeri 2 Sunggal were carried out on 3 class VIII students taken at random, consisting of 1 student with high achievement, 1 student with medium ability and 1 student with low ability. The purpose of this individual trial is to identify deficiencies or weaknesses that still exist in the differentiated English language learning multimedia that has been created. The results of this trial become a reference for making revisions to improve media quality.

**Table 12.** Individual Trial Results

No	Assessment Aspects	Average	Percentage	Criteria
1.	Learning information	3.67	73.33%	Inadequate
2.	Material quality	4.00	80.00%	Eligible
3.	Design and media quality	3.67	73.33%	Inadequate
4.	Language and typography	4.00	80.00%	Eligible
5.	Pedagogical effec	3.67	73.33%	Inadequate
6.	Evaluation	4.00	80.00%	Eligible
	<b>Average</b>	<b>3.83</b>	<b>76.67%</b>	<b>Eligible</b>

small group trial on 8 students at UPT SPF SMP Negeri 2 Sunggal, consisting of 2 students with high learning achievement (ability), 3 students with medium ability and 3 students with low ability. This small group trial aims to identify weaknesses and obstacles found in the wider use of English language learning multimedia.

**Table 13.** Results of Small Group Trials

No	Assessment Aspects	Average	Percentage	Criteria
1	Learning information	4.13	82.50%	Eligible
2	Material quality	4.25	85.00%	Very Eligible
3	Design and media quality	4.38	87.50%	Very Eligible

4	Language and typography	4.63	92.50%	Very Eligible
5	Pedagogical effect	4.63	92.50%	Very Eligible
6	Evaluation	4.75	95.00%	Very Eligible
	<b>Average</b>	<b>4.46</b>	<b>88.33%</b>	<b>Very Eligible</b>

The field trial was carried out involving 32 class VIII students at UPT SPF SMP Negeri 2 Sunggal. The product (output) of this differentiated English language learning multimedia can be in the form of an application (APK) on Android.

**Table 14.** Field Trial Results

No	Assessment Aspects	Average	Percentage	Criteria
1	Learning information	4.69	93.75%	Very Eligible
2	Material quality	4.44	88.75%	Very Eligible
3	Design and media quality	4.42	88.33%	Very Eligible
4	Language and typography	4.69	93.75%	Very Eligible
5	Pedagogical effect	4.63	92.50%	Very Eligible
6	Evaluation	4.84	96.88%	Very Eligible
	<b>Average</b>	<b>4.55</b>	<b>91.04%</b>	<b>Very Eligible</b>

The results of research in the experimental class showed that the student's lowest score was 68 and the highest score was 96. Meanwhile, the average score obtained was 82.75 with a mode of 76 and 80, and a standard deviation of 8.466. Furthermore, the frequency distribution of learning outcomes (post-test) for classes taught with differentiated English language learning multimedia can be seen in Table 15. below:

**Table 15.** Frequency Distribution of Learning Results (Post-test) Experimental Class

No	Class Intervals	Edge of Class	Frequency	Relative Frequency
1	68-72	67.5-72.5	6	19%
2	73-77	72.5-77.5	5	16%
3	78-82	77.5-82.5	5	16%
4	83-87	82.5-87.5	4	13%
5	88-92	87.5-92.5	8	25%
6	93-97	92.5-97.5	4	13%

Learning outcomes of students who study using Power Point learning media. Based on the results of research in the control class, the lowest student score was 48 and the highest score was 80. Meanwhile the average score (mean) was 61.63 with a mode of 64 and a standard deviation of 8.613. Furthermore, the frequency distribution of learning outcomes (post-test) for classes taught using video/slide presentations can be seen in Table 16 below:

**Table 16.** Frequency Distribution of Learning Results (Post-test) Control Class

No	Class Intervals	Edge of Class	Frequency	Relative Frequency
1	48-53	47.5-53.5	6	19%
2	54-59	53.5-59.5	5	16%
3	60-65	59.5-65.5	10	31%
4	66-71	65.5-71.5	5	16%
5	72-77	71.5-77.5	5	16%
6	78-83	77.5-83.5	1	3%

Before carrying out the independent sample t-test, there are several requirements that must be met, namely the normality test and homogeneity test.

**Tabel 17.** Tests of Normality

Recount Text Learning Results	Class	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
	Experimental Class	0.131	32	0.175	0.935	32	0.053
	Control Class	0.114	32	0.200*	0.945	32	0.103

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

After obtaining the results of the normality test analysis, the significance values are then compared. If the significance value is smaller than 0.05, it can be concluded that the data is not normally distributed. Conversely, if the significance value is greater than 0.05, it can be concluded that the data is normally distributed. From the table of normality test results above, it can be seen that the significance value obtained was 0.053 for the experimental class and 0.103 for the control class (Shapiro-Wilk). Based on the criteria used, it can be concluded that the data used in this study is normally distributed ( $> 0.05$ ).

The homogeneity test provides important information in evaluating the homogeneity of variance between the groups being compared.

**Tabel 18.** Test of Homogeneity of Variances

Recount Text Learning Results			
Levene Statistic	df1	df2	Sig.
0.013	1	62	0.910

Based on Table 18 of the homogeneity test results above, a significance value of 0.910 was obtained. Based on the criteria used, it can be concluded that the research data is homogeneous ( $> 0.05$ ).

### *Submission of Hypothesis*

After the normality and homogeneity tests fulfill the significance requirements, the hypothesis test is then carried out using the independent sample t-test. Independent samples t-test was used to identify differences between two unpaired groups. This test is included in parametric statistics, which means that the assumption of normality of the data must be met, or in other words, the data must be normally distributed. The hypothesis in this research is as follows:

Ha : There is a significant difference in learning outcomes between classes that study using differentiated English language learning multimedia using Smart Apps Creator (SAC) and classes that do not use English language learning multimedia using Smart Apps Creator (SAC).

Ho : There is no significant difference in learning outcomes between classes that study using differentiated English language learning multimedia using Smart Apps Creator (SAC) and classes that do not use English language learning multimedia using Smart Apps Creator (SAC).

In the independent sample t-test there are two criteria, namely if the significance value (2-tailed) is smaller than 0.05 then it is said that there is a significant difference. Meanwhile, if the significance value (2-tailed) is greater than 0.05, it can be concluded that there is no significant difference. Table 19 below shows the results of the independent sample t-test:

**Tabel 19.** Table of Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Learning Results Recount Text	Equal variances assumed	0.013	0.910	9.895	62	0.000	21.1250	2.13494	16.85732	25.39268
	Equal variances not assumed			9.895	61.982	0.000	21.1250	2.13494	16.85729	25.39271

From Table 19 above, it can be seen that the significance value (2-tailed) is 0.000, which means the value is less than 0.05. Based on these results, it can be concluded that there is a significant difference between classes that use differentiated English learning multimedia using Smart Apps Creator (SAC) and classes that do not use it.

### **Discussion**

Multimedia development products for differentiated English learning using Smart Apps Creator (SAC) are carried out according to the stages in the ADDIE procedure, starting with an analysis of teacher and student needs, an analysis of the curriculum and learning materials, and an analysis of student characteristics. The development results are then carried out with a feasibility test or validation by three predetermined experts, namely learning materials experts, media experts, and learning design experts. Based on the results of the validation that has been carried out, the learning media product developed is declared suitable to be continued in the trial phase, which includes individual trials, small group trials, and field trials.

This development research is directed at producing a product in the form of differentiated English language learning multimedia for class VIII students at UPT SPF SMP Negeri 2 Sunggal, so that it can facilitate the diversity of students' learning needs and improve their learning outcomes, especially in reading comprehension abilities.

The benefits of developing differentiated English language learning multimedia using Smart Apps Creator (SAC) include: (1) This multimedia can facilitate differentiated learning that can meet the diversity of students' learning needs (learning readiness, interests, and learning styles). Students can enjoy and explore their understanding of learning material at the same time in class according to their learning needs, so that the learning process is not only fun for students but also more effective and efficient. (2) This multimedia product can facilitate student learning at home because it is packaged in the form of an APK that can be installed on Android. Apart from that, learning in multimedia is structured based on the stages of learning procedures so that students can learn independently without teacher guidance; (3) this learning in multimedia can also provide opportunities for students to learn at their own pace because they can repeat the material presented; (4) the use of multimedia can answer students' boredom in monotonous learning because digital technology is integrated according to the nature of the times.

Based on the results of validation by experts, the development product in the form of differentiated English language learning multimedia using Smart Apps Creator (SAC) was

declared suitable to continue in the trial phase. From the summary of the results of the validation instruments by learning material experts, an average of 94.44% was obtained; the assessment by learning media experts obtained an average of 94.17%; and the assessment by learning design experts obtained an average of 93.61%. By looking at the guidelines and assessment criteria, it can be concluded that the data above proves that the differentiated English language learning multimedia developed is very suitable for use by class VIII junior high school students in English subjects.

Based on the results of the research data processing carried out, there is a significant difference in English learning outcomes between students who learn using multimedia, differentiated English learning using SAC, and students who are taught using video or slide presentations, especially in the reading comprehension ability of recount text material. Students who study using differentiated English language learning multimedia using SAC get a higher average score compared to the class that studies using video/slide presentations. This is in line with the opinion of Simbolon et al. (2021), which states that the use of multimedia in learning greatly influences learning outcomes, competencies, and learning objectives to be achieved.

The results of the independent t-test in the experimental class and control class showed that there were significant differences in the learning outcomes of the two classes. Students who were taught using differentiated English learning multimedia using SAC got an average score of 82.75, while students who were taught using video or slide presentations got an average score of 61.63. This means that the multimedia product developed has very good suitability criteria and is effective for use in learning, especially in English subjects with recount text material. This finding is in line with research conducted by Leonardus (2023) regarding the use of differentiated learning multimedia, as well as research conducted by Rauf (2022), Ferlianti (2022), and Jaiz et al. (2022) regarding the use of SAC multimedia. The results of these studies show the feasibility and practicality of the multimedia used and can help improve student learning outcomes.

Mursid, R. et al. (2022) stated that improving learning outcomes is very helpful in achieving quality science and knowledge in the field, problem solving, developing interests and talents, as well as the application of technology in the 21st century and the application of multimedia learning in creative thinking skills through the application of holistic event learning strategies. and Effective. By developing learning media using various digital applications as done by the author and combining them with various learning models, it is hoped that it can create support for interesting, active, innovative, and meaningful learning for students.

This finding is in accordance with existing theory that the increasing use of multimedia learning can build knowledge that is meaningful and easy to understand by users (Mayer, 2001). This means that interesting multimedia learning can help increase student learning motivation, making it easier for students to understand and remember the learning material presented.

## **CONCLUSION**

Based on the formulation, objectives, results, and discussion of the development of differentiated English language learning multimedia using Smart Apps Creator (SAC), it can be concluded that:

1. Differentiated English learning multimedia using Smart Apps Creator (SAC), which was developed, is very suitable for use in improving students' reading comprehension skills in recount text material.

2. Differentiated English language learning multimedia using Smart Apps Creator (SAC), which was developed to be effectively used in improving students' reading comprehension skills in recount text material.

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