



The Influence of M-Learning on Students' Japanese Learning Outcomes

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Abstract. This study aims to determine the influence of *M-Learning* learning media on the learning outcomes of Japanese students at SLA Tompasso. This research uses quantitative research methods with experimental approach methods. The research design used is one group pre-test design, with the research instrument being the test. The total population taken was 210 students studying Japanese and a sample of 35 students. Basic contribution as a reference in the field of Japanese language education. This research is an important thing that Japanese language learners must know, in order to know the influence of the use of *M-Learning* on Japanese learning outcomes. This research will produce Japanese language learning software that is made accessible to Japanese language students in particular and can also be used for Japanese language lovers, both in other high schools and other agencies. This research is to add to national literature and as material for international publications. The main contribution to science is the field of education, especially Japanese language education. By using M-Learning-based media, it affects and improves student learning outcomes from an initial average score of 34.07% (pretest) rising to 74.11% (posttest). The use of M-Learning is very effectively used as a learning medium for students both as the main medium in learning and as a supporting medium that can be done both at school and at home, because it is effective and efficient in saving time costs and energy.

Keywords: M-Learning · Learning Media · Japanese

1 Introduction

Problems in the learning process also sometimes arise because they are affected by the internal problems of the students themselves, how their interest in learning. However, internal problems that sometimes arise are also influenced by students' external problems in learning. Reference [1, 2] points out, the teacher must direct the external process in such a way that it can affect the external process in such a way that it can affect the internal process. In other words, external processes participate in increasing students' interest in learning. Models, methods, approaches, media and even the way of teaching the teacher are also included as external processes for students to influence their internal processes. There are 10 skills necessary to teach successfully, one of which is the use of

media, props or other means [3, 4]. The use of a medium is used to be able to bridge the teacher to clarify the material to be given.

One strategy to achieve higher standards of learning is to include the usage of media into the teaching and learning process. A better quality of education is the goal of incorporating media into the classroom, as stated in reference [5]. T-Learning, E-Learning, and M-Learning are all examples of technology-based learning media that have emerged as a result of the fast growth of today's technology and the updating of numerous tools to aid in everyday operations.

M-learning is a wireless technology that uses communication networks and the internet in facilitating, supporting, improving and expanding the reach of teaching and learning [6, 7, 8]. Smartphones, tablet PCs, laptops, notebooks and other mobile electronic devices can be categorized as M-Learning. Using M-learning includes many lesson material guides accompanied by exercises and tests that can test the level of student ability through internet access, websites or android-based applications on smartphones.

SLA Tompasso is one of the private schools in Tompasso with the number of students in the 2021/2022 school year data taken through school staff totaling 330 students and is a school studying Japanese. As observed in the classroom, Japanese subjects, students who use mobile devices, both smartphones and laptops/notebooks, are around 88.90%. In other words, the application of M-learning media in the learning process can be implemented.

1.1 Research Hypothesis

Hypotheses are divided into two types, namely the working hypothesis (H_a) and the null hypothesis (H_0). The work hypothesis is a basic assumption that is compiled based on a theory that is considered reliable, while the null hypothesis is a basic assumption that is compiled because the theory used is still in doubt about its reliability [9].

In this study, the researcher compiled the following hypothesis:

H_a : The use of M-learning media in learning, improving student learning ($\mu_1 - \mu_2 < 0$).

H_0 : The use of M-learning media in learning does not improve student learning outcomes ($\mu_1 - \mu_2 = 0$).

2 Research Methodology

Simply said, the research process is a systematic approach to collecting information for a predetermined goal [10]. This study uses quantitative research methodologies with an experimental approach to investigate the impact of M-learning on the outcomes of Japanese language instruction in light of the current issues.

One sort of research whose requirements are methodical, organized, and clearly defined from the beginning to the development of the study design is quantitative research. From data collection and analysis to the presentation of findings, quantitative research is reliant on numerical precision. [11, 12], Quantitative techniques are defined as those used in studying populations and samples via the use of statistical data analysis in order to verify preconceived hypotheses (references [11, 13]).

Experiential research, often known as trial research, is one of the common approaches used in the classroom (see references [14, 15] for more information). This technique is meant to evaluate a popular strategy in the realm of education for its efficacy and efficiency. The goal of this methodology is to determine whether or not a certain strategy, procedure, or medium is useful for imparting knowledge, with the hope that the positive findings may be used in practical classroom settings.

A quasi-experimental approach was used in this investigation. Using a compiled list of independent variables, such treatment, stimulus, and testing changes brought on by the manipulation, a “quasi experiment” or “pseudo-explanatory” study may test hypotheses in the form of causal links [16].

2.1 Research Design

An overarching plan or blueprint for doing research. Methodologically, this study used a which was before design with a one-group pre- and post-test design.

Each participant in a study with a one-group pre- and post-test design serves as an independent experimental class since there is no control group to compare results against. The study is structured as follows: Table 1.

Research design *one group pre-test and post-test*.

Pre-Test	Variable	Post-test
O1	X	O2

O1: Initial Test

X: Treatment

O2: Final Test

Based on the research design above, the research steps that will be carried out are:

- 1) Provide a preliminary test to the sample to follow the learning outcomes before using the media.
- 2) Providing treatment to samples during 8 meetings by utilizing M-learning as a learning medium.
- 3) Provide a final test to the sample to measure learning outcomes after using the media.

2.2 Research Variables

Theoretically variables are defined as attributes of a person or object that have variations between one object and another.

Variables serve to find out the relationship between variations or problems under study. Whether or not problem X has anything to do with problem Y, or whether the identification of the problem is related to the problem. The general number of variables is divided into two, namely independent variables (free variables) and dependent variables (bound variables).

Based on the title of the research on the influence of *M-learning* on Japanese learning outcomes, the variables studied are:

Free variable (X):

the influence of *M-learning*

Bound Variable (Y):

japanese learning outcomes.

2.3 Population and Sample

In the process of research, it is also important that we must determine the population and samples in the study.

Population is a generalization area consisting of objects/subjects that have certain qualities and characteristics set by the researcher to be studied and then drawn conclusions.

The study was carried out at SLA Tompasso, in a Japanese elective class with the number of students studying Japanese amounting to 211 people and then being used as a population.

Due to the large amount of population, researchers use the sample as an object for research and as a source of data. Samples are those taken from the population, both its members and the characteristics studied and the samples taken will be used as material or research focus [17].

In determining the sample size, researchers used the formula

$$n = \frac{N}{N(d)2 + 1}$$

Information

n : Number of samples to be determined

N: Total Population

d : 15% set precision

Based on the formula above, the number of samples to be obtained is:

$$n = \frac{211}{211(0.15)2 + 1}$$

$$n = \frac{211}{5.7475}$$

n = 36.71161 rounded to 36 people.

2.4 Data Collection Techniques

The data collection process is the stage where researchers try to find and collect as many facts as possible in the field in the form of accurate data.

In data collection, researchers collect data using interactive methods.

The interactive method is an educational research method that uses a way of interaction or communication between the researcher and the object under study.

In this interactive method, researchers collect data through tests to find out student test results before and after using *M-Learning* media.

3. Research Instruments

A research instrument is a tool used to measure natural and social phenomena that are observed. In collecting data, researchers use one instrument, namely tests.

A test is an array of questions or Exercises or other tools used to quantify the skills, knowledge, intelligence, abilities or aptitudes possessed by an individual or group.

In the study, researchers divided the test into two stages, namely the first stage given at the first meeting before being given *treatment (Pre-test)* and the second stage at the end of the meeting after given *treatment (post test)*. The test questions used are divided into two objective first parts and the second part essay. The number of questions given is 25 numbers consisting of 20 numbers for objectives and 5 numbers for essays with question material taken from Japanese textbooks Sakura volume 1.

2.5 Data Analysis Techniques

In data collection, researchers match the formulation of the problem with the dat of the research results through tests.

To analyze the test result data, researchers calculated the data using SPSS version 22, SPSS (statistical *Package for The Social Sciences*) is a *software* package for statistical analysis and data management, in processing data and solving statistical problems [4]. There are several stages of calculation that will be used by researchers in the analysis of test results, namely:

- 1) Normality test
- 2) Descriptive analysis test
- 3) T Test Pre- post test
- 4) Sample T test

In analyzing the data of the test results researchers raised significant levels $\alpha = 5\%$.

3 Research Results

Researchers calculate and analyze the data from the study using SPSS Version 22 statistical software with a sequence of analysis, namely: (1) normality test, (2) descriptive analysis, (3) Pre-test T test and (4) T test (hypothesis). Analyze the data used using a significant level of $\alpha = 5\% = 0.05$.

Based on the data that has been obtained, the calculation results are as follows:

Table 1. Pre-Test Normality Test

	<i>Kolmogorov–Smirnov^a</i>			<i>Shapiro-Wilk</i>		
	Statistics	Df	Sig	Statistics	Df	Sig
Pretest	132	36	113	937	36	041

	<i>Kolmogorov–Smirnov^a</i>			<i>Shapiro-Wilk</i>		
	Statistics	Df	Sig	Statistics	Df	Sig
Posttest	104	36	200	951	36	116

This is a lower bound of the true significance. a. Lilliefors Significance Correction

3.1 Normality Test

On the normality test, if the $\alpha < \text{sig}$, then the sample is at an abnormal distribution. The normality test uses two forms of calculation, namely the Kolmogorov-Smisnov (KS) calculation and the Shapiro-Wilk (SW) calculation. From the calculation results in Table 1 of the normality test on the pre-test results, namely:

On the Column Kolmogorov-Smirnov obtained $\text{sig} = 0.113$. Since $\alpha = 5\% = 0.05 < \text{sig} = 0.113$, the sample is a normal distribution.

In the Shapiro-Wilk column is obtained $\text{sig} = 0.041$. Since $5\% = 0.05 < \text{sig} = 0.041$ then the sample is an abnormal distribution.

From the calculation results in Table 2 of the post-test normality test, namely:

- On the Column Kolmogorov-Smisnov obtained $\text{sig} = 0.200$. Because $\alpha = 5\% = 0.05 < \text{sig} = 0.200$, then the sample is a normal distribution.
- In the Shsiro-Wilk column obtained $\text{sig} = 0.116$. Because $\alpha = 5\% = 0.05 < \text{sig} = 0.116$, then the sample is a normal distribution.

3.2 Descriptive Analysis

Based on the results of the pre-test and post-test in Table 2, it shows the value data that has been obtained during the pre-test, namely the minimum value of 15 and a maximum of 68 with an average value of 34.07%, and the value obtained during the post-test is minimum 35 and maximum 100 with an average value of 74.11%. From these data, it can be seen that there is an increase in the average value obtained.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	36	15	68	34.07	12.387
Pretest	36	35	100	74.11	18.225
Valid N (listwise)	36				

Table 3. Pre-Test Frequency Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 15	1	2.8	2.8	2.8
19	1	2.8	2.8	5.6
20	1	2.8	2.8	8.3
21	2	5.6	5.6	13.9
22	1	2.8	2.8	16.7
23	3	8.3	8.3	25.0
24	2	5.6	5.6	30.6
25	1	2.8	2.8	33.3
27	1	2.8	2.8	36.1
28	1	2.8	2.8	38.9
32	2	5.6	2.8	44.4
35	2	5.6	5.6	50.0
36	1	2.8	2.8	52.8
37	1	2.8	2.8	55.6
38	1	2.8	2.8	58.3
39	3	8.3	8.3	66.7
41	3	8.3	8.3	75.0
44	1	2.8	2.8	77.8
45	2	5.6	5.6	83.3
52	2	5.6	5.6	88.9
57	1	2.8	2.8	91.7
59	1	2.8	2.8	94.4
68	1	2.8	2.8	97.2
Total	1	2.8	2.8	100.0
	36	100.0	100.0	

The values obtained by the sample during the test can be seen Table 3 and Table 4.

1. T Test Pre-Post test

From Table 6, you can see the average difference obtained from the pre-test and post-test results, with an average distance or mean difference of -40.04%. The difference can be seen in Fig. 3.

2. T-test (hypothesis)

Table 4. T samples in pairs Paired Samples Test

	Paired Differences			
	Mean	Std. Error Mean	95% Confidence Interval of the Difference	
			Lower	Upper
Pair 1	-40.042	13.591	-	-35.443
Pretest-posttest			44,640	

Based on the hypothesis that has been determined at the beginning, namely:

Ha: $\mu_1 - < 0$ (M-Learning affects Japanese learning outcomes) μ_2 .

Ho: $\mu_1 - \mu_2 = 0$ (M-Learning has no effect on Japanese learning outcomes).

On Table 6

- Columns t and df are obtained t = -17,677 and df = 35. From the distribution table t (appendix 3) obtained the value of $t_{0.05;35} = 1.689$.

Since $t = -17,677 < -t_{0.05;35} = -1,689$, then H_0 is rejected.

- Sig column. (2-tailed). Sig. (2-tailed) = $0.000/2 = 0$. Since $\alpha = 5\% = 0.05 > \text{Sig.} = 0$, then H_0 is rejected and H_a is accepted, in other words that the hypothesis created is accepted.

4 Discussion

In the learning process in the classroom, researchers use M-Learning in the following ways:

Ask students to install Japanese learning apps such as Japanese dictionaries, Hiragana and katakana learning apps and other apps as needed. Researchers created discussion groups on Whatsapp to communicate with each other with students and to send assignments via google drive, discussions via zoom or googlemeet. In learning, researchers give questions to students who are sent through groups, then ask students to answer questions by utilizing M-Learning media (applications, software or the internet). In the classroom, the researcher also gave some questions but in answering the students hanya can use tools or smartphone aids. In explained the material, the researcher used notebooks and LCDs by listening to audio and video to the students regarding the material. Such as *aisatsu* and *jikoshoukai* materials. In learning hiragana and katakana, researchers display images through powerpoints and also through applications on smartphones. To make it easier to assign tasks, researchers submit via online groups. In the learning process, researchers also provide opportunities for all students to freely use smartphones and the internet but with certain limitations.

The process of collecting data or giving treatment is carried out as many as 8 times face-to-face, with material, namely *jikoshoukai* (introducing yourself etc.), *aisatsu* (greetings), numbers, vocabulary and hiragana-katakana. After providing the treatment,

Table 5. Pre-Test Results

CATEGORY			FREQUENCY	PERCENT
VALID	0–25	Very unkind (E)	12	33.3%
	26–49	Not good(D)	20	55.6%
	50–65	Good enough (C)	3	8.3%
	66–79	Good (B)	1	2.8%
	80–100	Excellent (A)	0	0%
		Total	36	100%

Table 6. Post-Test Results

CATEGORY			FREQUENCY	PERCENT
VALID	0–25	Very unkind (E)	0	0%
	26–49	Not good(D)	3	8.3%
	50–65	Good enough (C)	8	22.2%
	66–79	Good (B)	10	27.8%
	80–100	Excellent (A)	15	41.7%
		Total	36	100%

the researcher gave a test to collect data and see the influence of the use of M-Learning in the learning process. Once the data is collected, it is reprocessed in some statistical calculations.

As can be observed in Table 2, the average value calculated from the descriptive test has grown from 34.07% in the pretest to 74.11% in the posttest. The outcomes of these evaluations suggest that there has been a shift in their approach to learning. The value of their learning outcomes improved if M-Learning was included in the learning experience for the first time. The table below displays the findings of the graduation rate derived from Table 3 and 4, respectively (Table 5):

From the results of it can be seen that in Table 6 the results of the most scores obtained by students are in the range of grades 26–49 with the predicate D (not good) with frequency 20 people. If the completion requirements start from the predicate C_A, then in the pretest only 4 people are complete and 32 people are declared incomplete. While in Table 9 the results of the most grades were obtained by students in the range of 30–100 with an A predicate (very good) with a frequency of 15 people. If calculated according to the completion requirements, 33 people are declared passed and 3 people do not pass.

From the results of the T pretest test, the distance of the average difference in test results was obtained by 40.04%. The average distance between these two tests can be said to be a big improvement.

In the hypothesis test, the calculation results in two ways give the same result, namely the null hypothesis (H_0) is rejected or it can be said that the working hypothesis (H_a) is accepted. This indicates that at an error rate of 5%, the average Japanese learning outcomes of Sla Tompasso students after being given treatment rose to 74.11% compared to before being given the average treatment of learning outcomes is only 34.07%. It can be said that *M-Learning* affects the learning outcomes of SLA Tompasso students.

The results of this study prove that *M-Learning* is very effective and efficient when used as the main medium for mauoun as a supporting medium in the learning process of using the internet in finding material, creating tasks, answering questions can even exchange information and thoughts with each other through online discussion groups.

We can use M-Learning as the main medium in learning such as the use of Applications or Japanese learning software such as exercises in the form of tests, games, flash cards, preparation exercises nihongo noryouku shaken and so on. There are several applications that we can use such as *Zkanji*, *nihongo learning*, *kanji recongnized*, *JLPT Test*, *obenkyou* and so on.

The use of social media (facebook, twitter, WA, line, path and so on) jugs provide benefits for foreign language learners, because through cahattingan we can practice conversations with foreigners (target Language learned).

In addition to providing advantages in the field of knowledge or cognitive, *M-Learning* also provides advantages in the financial field because it saves time in searching for materials, saves costs in purchasing books references or dictionaries are too expensive, and save effort because they are not too difficult to use and reduce the built-in load (dictionary textbooks and so on).

Although *M-Learning* is a learning media that can be categorized as still relatively new, the use of *M-Learning* media in the learning process is still lacking in interest, or even though there are already some use it but don't know the terms and functions and actual benefits of *M-Learning*. Therefore, through the results of this study, teachers can try to utilize and apply *M-Learning* as part of learning media in the teaching and learning process, especially in the learning of Japanese.

5 Conclusion

The average score of a group of students who had started out with a 34.07% (on a pre-test) increased to a whopping 74.11% after they had been exposed to M-Learning-based media (posttest). Because of the time and money it saves, M-Learning is a great learning tool for students both as a primary learning tool and as a supplementary tool that can be used in and out of the classroom.

6 Suggestion

The government may support or hold and optimize technology-based facilities and infrastructure in schools and universities, as well as maximize the use of tech learning media, in order to advance the education industry and the learning process, particularly Japanese language acquisition. It's safe to assume that all educators have access to and make use

of technologically-based media and M-Learning to aid in their own professional development, with particular emphasis on Japanese language instruction. The educational personnel is required to be flexible and proficient in the use of modern technology tools. Eventually, I'm hoping that this M-Learning material will be used by both the instructor and the students as a means of acquiring Japanese language skills.

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