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# Effectiveness Learning Derivative On Period The Covid-19 Pandemic Through Mobile Learning Media in View of the Results Study STKIP student Hermon Timika

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**Abstract**

The education system is faced with a situation that requires teachers to be able to mastering distance learning media, such as during the Covid-19 pandemic outbreak . The distance education system is one of the solutions to overcome internal difficulties face-to-face learning with the existence of social distancing rules which is an obstacle big moment This. Mobile Learning (M-Learning) is paradigm learning utilise technology And device Mobile Which estimated will experience development rapidly And potential along with development technology that mobile Alone. M-Learning is one of the learning media easy remote and often used for. This study aims to see the effectiveness of Derivative learning with use media M-Learning reviewed from results Study student. Model study Which used on study This is quasi experiment with use one group pretest postest design . Sample study that is student semester 2 Which take subject calculus. Data sample processed with analysis descriptive And test the average difference in learning outcomes. The results of the study show the course lectures calculus derived material using M-Learning media is quite effective if you look at it from results Study student. Results Study student after lectures with use M-Learning more tall compared to with results Study student before lectures with use M-Learning .



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## 1. Introduction

One of the subjects taught at all levels of formal education is mathematics. Mathematics aim For equip participant educate with the ability to think logically, analytically, systematically, critically and creatively as well as the ability to work The same. Mathematics needs to be given to each learner optimally so that the concept in mathematics capable understood And applied in life daily. Mathematics have role Which very important in anticipate challenge increasingly complicated and complex future. Therefore learning mathematics expected can equip student with personality And ability For answer future problems. Complex math is very difficult to understand ifexperience problem on knowledge base, If participant educate Already haveability understanding Which Good so will make it easy mastery onability mathematical other. By Because That need effort lecturer For help students in understanding the initial concept of learning where students can know, understand, apply, analyze, evaluate about What Which studied. Given the importance of the role math, then math is wrong one of the main subjects in schools ranging from Elementary School to College Tall (Yensy, 2012:63).

The current problem is that there are still many students who think mathematicslesson Which difficult (Mustakim, 2020:2). as opinion Auliya (2016:16), Mathematics is considered a difficult subject because of the characteristics of mathematics characteristic abstract, logical, systematic, And full with symbol as well as formula Which confusing. Difficulty Which There is in eye lesson mathematics demand creativity of subject lecturers for develop their learning, both in terms of methods and media used. Active learning emphasizes engagement student in a manner active For experience Alone, find, solve problem so that potency they develop progressively optimal And ability think level tall more activated. However the problem, *social distancing* become choice heavy for every country in apply policy For prevention deployment *covid-19* , Because policy This negative impact on all aspects of life (Ervan, 2020: 119). Moment this is system education faced with situation Which demand para teacher For can master distance learning media, especially during the *Covid-19 pandemic outbreak* This. System education distance Far become Wrong One solution For overcome difficulty in face-to-face learning with *social distancing rules* considering the problems time, location, distance and cost which are the biggest obstacles today (Kusuma, JW; Hamidah, 2020:98). Moment situation plague Pandemic This *Covid-19* hit world including Indonesia until now has not ended, almost all educators use distance learning (No *face to face*). Interaction educator And participant educate done in a manner direct nor No direct, example with do *chat* past connection Internet (direct) nor by sending emails (indirectly) just to collect assignments (Rahmawati, 2016:595).

Media *on line* used like youtube, whatsapp group, google classroom, and quizzes. Material given in form *PowerPoint* , videos short, And material reading. However, in the implementation of online learning, it is necessary to evaluate it so that obtained step repair clear Which based data (Mustakim, 2020:3). Media learning that involves internet technology is one of the possible technologies every person can do learning in a manner *mobile* or can called *Mobile Learning* (*M-Learning*). Combination between telecommunication with technology Internet canpossible development system *M-Learning* as media learning. Development system evaluation *on line* through *cellphone* make process evaluation become easy And more effective. Moment This technology *M-Learning* of course Still in process development, however, *M-Learning technology* as a learning medium is Wrong One technology Which prospective in period front. In the development of *mobile learning*, Java and WAP *software* applications are used as well as utilizing GPRS/CDMA technology and other transfer technologies such as bluetooth, infrared, For transfer And installation application. Device Which can used For learning This is telephone cellular Which supports WAPs And java (Rasul, A, 2020).

*Mobile* (*Mobile)* is one of the most widely used gadgets by public. Use *cellphone* as telecommunication mature This Still Not yet utilized with optimal by education. Use *cellphone* as media learning is certainly interesting and practical, because it can be accessed anywhere and anytime. This is according to (Deo Shao's research 2014:25) on *MoMath: An Innovative Design of a Mobile based System for support Primary school Mathematics in tanzania,* Which show that more than 50% of teachers and students in primary schools in Tanzania like MoMath Because easy accessed and used Where just.

(Mohamed ally 2009:1) say "*M-Learning* use technology *wireless mobile* to access information and learn anywhere and anytime. That matter can be interpreted that the learner can control what will be learned and Where will he study from? From this definition it can be concluded that *M-Learning* is meeting from *Mobile computing* And *E-Learning* Which generated from knowledge knowledge And ability in field *mobile-technology* that can used For Study And teach without There is limit place And time.

In relation with results Study, learning distance Far like media *M- Learning* This Still become polemic among stakeholders And public (Darmamplete, W., hambali, R. Y. A., masrur, A., & Muhlas, 2020:3). Matter the because learning distance Far This Still in consider No more Good from on learning direct in a manner conventional especially in learning mathematics. Matterbecause in studying mathematics one has to think so that he is capable understand concepts mathematics Which studied as well as capable use draft-draft the in a manner appropriate when He must look for answer for various question mathematics (Widada, W, 2015:32), whereas process think the No can obtained from learning distance Far (Fuady, 2017:105). Furthermore Febriani, P; Widada, W & Herawaty, D (2019:122) said that the ability to understand students' mathematical concepts need developed Because in accordance with demands Curriculum 2013 as well as is Wrongone goal of each material delivered by educators, because teachers or educators is mentor participant educate for reach draft Which expected (A Rasul, 2020).

Ervan's research (2020) which explains the use of Moodle on motivation and interest in students' talents in the midst of a pandemic, Mustakim's research (2020) which explains online learning using online media during the co-19 pandemic. Based on some of the research and problems that have been described, a study was conducted to test the effectiveness of derivative learning through M-Learning media in terms of student learning outcomes in the mathematics education study program STKIP Hermon Timika.

## 2. Research Method

Type study Which done is study *Quasi Experiment* For seeconsequence from something treatment with compare results Study two group class *(independent class)* or two time group with class Which The same *(depend class* ) (Sugiyono, 2010). Study This use two group time that is group experiment I (student Not yet use media *M-Learning* ) And group experiment II (students already use *M-Learning media* ). So student at experimental group I is the same as students in experimental group II, with group time Study Which different that is before use *M-Learning* And after use *M-Learning* . So design study use *one group pretest-posttest design*.

The population in this study were all 2nd semester students of the STKIP Hermon Timika Mathematics Education Study Program. This is based on the consideration that this class has an average score of learning outcomes that are relatively the same (seen from the Quiz results). Given the total population <100, all members of the population are sampled (Arikunto, S and Jabar, C.S: 2010).

Data results Study student obtained from results Exam Middle Semester (UTS) that isfor group I and from the results of the Final Semester Examination (UAS) namely for group II. Data Then processed with use *SPSS* 19 software (Andi, 2015) with step as following:

1. Calculates mean, median, values maximum, mark minimum and standard deviation (analysis descriptive sample data).
2. Test normality data sample
3. Test the difference in means (using the t-dependent test or paired sample t test) Criteria testing that is If p-values (mark Sig on output SPSS) < 0.05 (level real), so there is difference results Study student before use *M-Learning* And after using *M-Learning* . Meanwhile, if the p-value (Sig) ≥ 0.05, then no there is difference results Study student before use *M-Learning* And afteruse *M-Learning*.
4. Count N-Gains score. If on test paired sample t test obtained there is difference results Study student before use *M-Learning* And after use *M-Learning* , so followed by calculating the Gain score (N-gain test) that is to determine effectiveness media use *M-Learning* in learning statistics mathematics. Formula Which used that is:

Information : Score Ideal : mark maximum ( highest ) Which obtained. Categorization acquisition

$$N\ Gain = \frac{Skor\ postest - Skor\ pretest}{Skor\ ideal - Skor\ pretes}$$

mark N-gain scores determined based on mark N-gain inform percentage as following:

**Table 1.** Category Interpretation Effectiveness N-Gains

| Percentage ( %) | Interpretation |
|---|---|
| $< 40{,}00$ | No Effective |
| $40{,}00 - 55{,}99$ | Not enoughEffective |
| $56{,}00 - 75{,}00$ | Enough Effective |
| $> 75{,}00$ | Effective |
| (Hake, RR :1999) | |

## 3. Results And Discussions

The following is the result of a descriptive analysis of student learning outcomes in the mathematics education study program at STKIP Hermon Timika:

**Table 2.** Description Results Learn Student

| Class | N | Min | Max | Means | std. Deviation |
|---|---|---|---|---|---|
| Ex I | 21 | 34.98 | 39,48 | 37,41 | 1.40 |
| Ex II | 21 | 39.97 | 45,68 | 42,64 | 1.49 |

*Source: Processing Data SPSS*

Table 2 shows that, the average learning outcomes of the experimental group I and experimental group II has a difference. Average learning outcomes of the experimental group II is better than the average learning outcomes of the experimental group I. To find out significance truth conclusion on need done calculation testing statistics. Furthermore, student learning outcomes data were tested for normality using the chi test square with help *software SPSS* , obtained results data second group sample (data UTS and UAS) have a normal distribution (sig value = 0.351) so it is continued with do testing different average use t-paired test.

**Table 3**. Results Test Difference Average Score Results Study Student

| Aspek Kemampuan | Kelas | T | Df | Sig.(2tailed) | Ketn |
|---|---|---|---|---|---|
| Postes | Eks I<br>Eks II | 11,681 | 40 | 0,087263 | Terdapat Perbedaan |

*Source: Processing Data SPSS*

Based on table 3 On test difference average This, researcher use results *test-two independent samples* with the assumption that both variances are equal ( *equal variance assumed)* .hypothesis H 0 to H 1 Which give mark mark ***t = 11,681*** with degrees freedom n 1 + n 2 - 2 = 21 + 21 - 2 = 40, And ***p-values (2-tailed)* = 0.087263.** Because in matter This researcher using a one-tailed hypothesis test, then the p-value (2-tailed) is divided by 2 become $\frac{0{,}087263}{2} = 0{,}0436315$ . Because p-values = 0,0436315 more small from $\alpha = 0.05$, canit was concluded that the increase in students' mathematics learning outcomes in the experimental class II was more Good than enhancement results Study student math class experiment I.

Furthermore based on *N-gain score* results obtained percentage N-gain as big 72.05%. This shows that derivative learning uses media *M-Learning* is quite effective. According to the opinion expressed by Jare (2012) put forward that "Learning algebra use media *M-Learning* show results that is student from class First And class second show increase in achievement, while the third class does not use mobile phones there is no difference in learning outcomes. Thus this *M-Learning media* can be used as an alternative media for learning derivatives of mathematics as a substitute for face-to-face lectures advance in moment pandemic *covid-19* like This.

## 4. Conclusion

Learning innovations carried out by mathematics teachers are by using *M-Learning* media helps students undergo online learning during a pandemic this *covid-19* . Derived Subject Lectures in the Mathematics Education Study Program Cot Kala Langsa with use media *M-Learning* Enough effective If seen from results student learning. Student learning outcomes after lectures using *the M- Learning* is higher than student learning outcomes before lectures with use *M-Learning* . For make learning mathematics more effective Again, in the future Teacher or educator expected apply ten suggestion Which given participant educate, ie (1) learning done through videos call; (2) gift concise learning materials; (3) minimize sending material in video form heavy For save quota; (4) election material in videos must based on criteria Language Which easy understood; (5) still give material before assignment; (6) provision of questions that are varied and different for each student; (7) giving assignments must included method it works; (8) give task in accordance with timetable lesson; (9) remind participant educate If There is task Which given; And (10) reduce task.

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