

DEVELOPMENT OF LEARNING KIT 'KOMPUTER KAMI' AND THE USAGE IMPACT WITHIN CHILDREN WITH SPECIAL NEEDS

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Abstract: “Komputer Kami Learning Kit” are a combination of teaching aids using the mobile application in android environment, a workbook by level of cognitive and Tarsia puzzle game. Applications’ “Komputer Kami” developed using Adobe Flash for the topic “Know Your Computer Parts” on the syllabus of Multimedia in Special Education Curriculum for Learning Disabilities . The selection of technology can help reduce constraints, limitations and difficulties faced by special education teachers to integrate elements of entertainment and education to be more fun and interesting for them to learn. In addition, environmental factors that influence the students' use of applications using tablet computers in the learning process also noteworthy because these factors greatly influence the effectiveness of the use of tablet computers among students with Special Needs (SEN) towards 21st Century Education. Pre and post test data was analyzed using SPSS version 18 for the mean value of the marks obtained by the students. The findings showed that student achievement increased by 25.48% (Pre Test mean = 55.08%, Post Test Mean = 80.56%). While the T test showed no significant difference between the two mean scores on the significance level of 0.05. The conclusions of this study, has been able to improve the students’s skills master the learning objectives. This approach has the potential to be further extended.

Keywords: computer, learning kit, special education

INTRODUCTION

Based on our observations, LD students need extra time to understand new concept. Therefore, they need to be assisted by a fun materials to support the learning process. Using technology can help to reduce the constraints, limitations and difficulties faced by special education teachers to integrate entertainment and education elements to be more enjoyable

and interesting for them to learn (Anuar, Daniel, 2014). According to Mohamud (2016), the learning ability of LD students to understand new words will be easier to apply if using a combination of several elements such as definition, synonym, sentences and images to reinforce their understanding. Figure 1 shows the theoretical teaching LD students

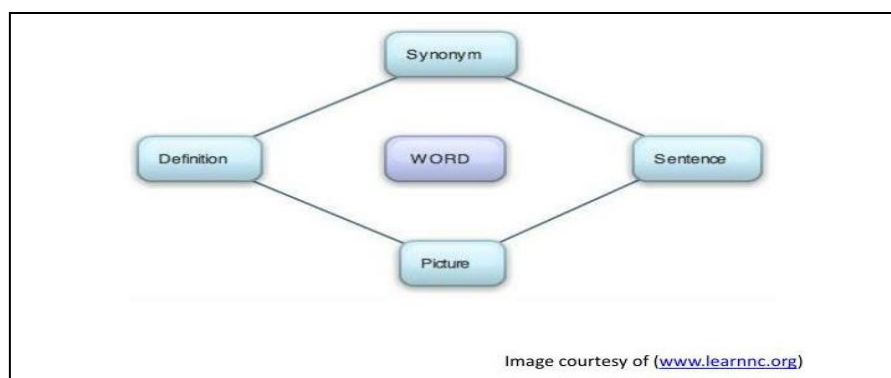


Figure 1-Theoretical teaching LD students

RESEARCH PROBLEM

The main problems that can be seen among LD students is lack of concentration and interest in conventional teaching and learning process which is blackboard and books were used.

THE INNOVATION APPLIED

The use of mobile applications in the Android platform using tablet was introduced, then

exercises using exercise books by students cognitive level, the next game IQ test is used as a reinforcement. Mobile applications developed in Android offline environment has three main modules, “Jom Main” (let’s play), “Jom Belajar” (let’s learn) and “Info Pengguna” (user info). Details of each module as shown in Figure 2.

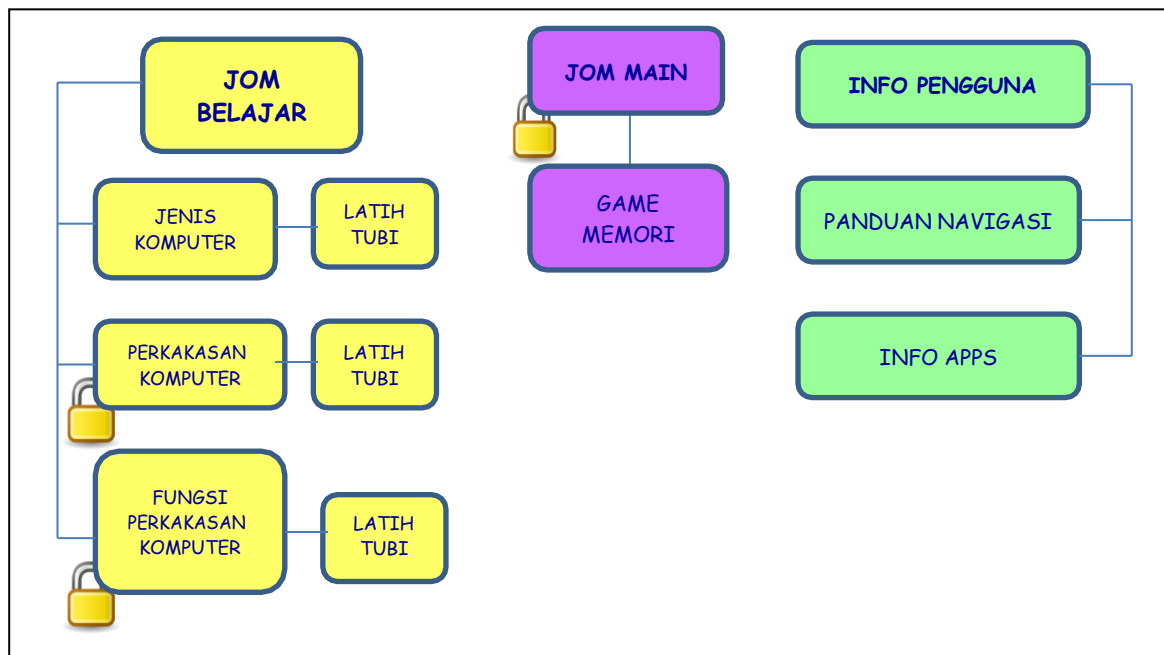


Figure 2-Main Framework

There are three sub module in “Jom Belajar” (Let’s Learn) module which are known as Jenis Komputer (Types of computer), Perakasan Komputer (Computer Hardware) dan Fungsi Perakasan Komputer (Function of the Computer Hardware). Each sub module came with their own exercise. Users need to complete each topic with the exercise before they can access to the next topic.

Users can also choose the “Jom Main” (Let’s Play) module that has memory game which they need to match the same picture. This memory game helps stimulate users’

memory indirectly while learning. The next menu “Info Pengguna” (User Info) which displays information about the applications.

“Komputer Kami” Learning Kits also combined reading textbook and writing exercise for drilling process. Exercise book is divided into three levels according to student cognitive level. Tarsia puzzle game was used as an additional activity for fun learning beside of applying the collaborative, creative, cooperative and critical thinking LD students. 16 cards were used to match the pictures with the correct words like shown in Figure 3 below.

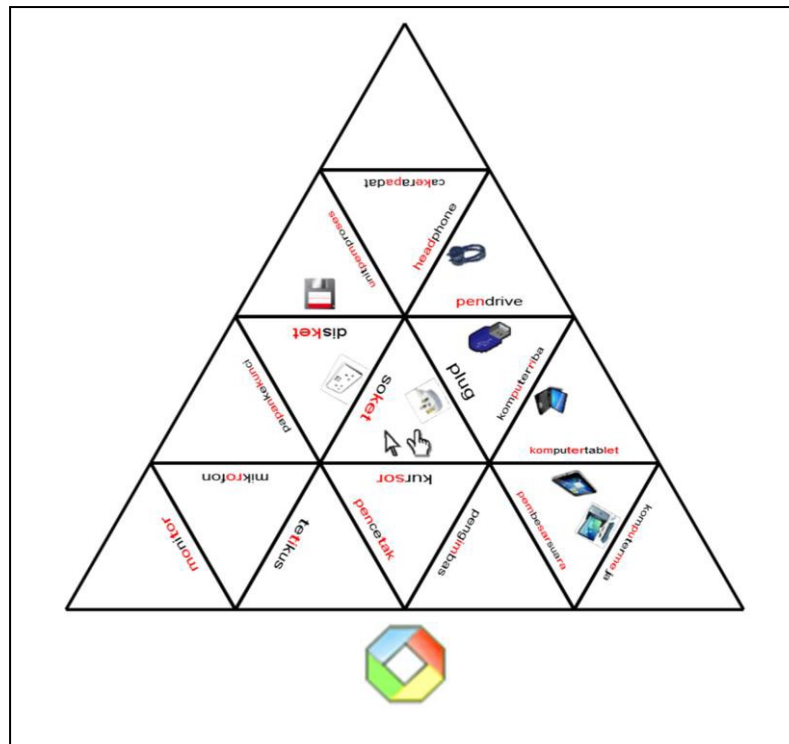


Figure 3 - Complete Tarsia puzzle

Selected topics in this innovation is “Mengenai Bahagian-bahagian Komputer” (recognize parts of the Computer) as in syllabus of Learning Disabilities Special Education Curriculum. Focus of this learning kit is in the teaching and learning area by applying information technology usage among SEN.

DEMOGRAPHIC DATA ANALYSIS

Demographic data from Part A of the questionnaire designed was to obtained profile

information of each respondent. Here are some of the questions and the assessment for each question.

Gender

Respondents had to choose one of two answers have been given in the item the question whether choosing male or female as in table 1 and chart pie in Figure 4.

Table 1- Gender analysis

| Gender | Frequency | Percentage (%) |
|--------|-----------|----------------|
| Male | 32 | 64 |
| Female | 18 | 36 |
| Total | 50 | 100 |

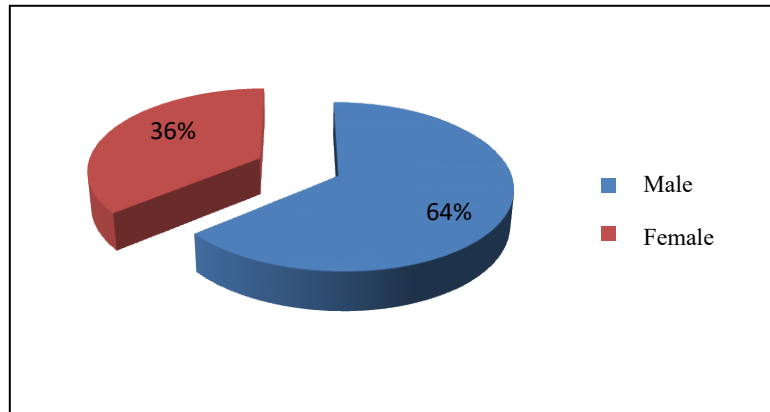


Figure 4-Percentage of respondent by gender

Table and diagram above shows the analysis of data respondents consisting of 32 male students representing 64 percent of the total respondents and 18 female students representing 36 percent of the total respondents. Which is conclude that female students is more participating in this research.

Races

Based on the questionnaire given, only two over four races chosen among the respondent which is Malay and Chinese. This were shown in Table 2 and Figure 5 below.

Table 2-Races analysis

| <i>Races</i> | <i>Frequency</i> | <i>Percentage (%)</i> |
|----------------|------------------|-----------------------|
| <i>Malay</i> | 37 | 74 |
| <i>Chinese</i> | 13 | 26 |
| <i>Indian</i> | 0 | 0 |
| <i>Other</i> | 0 | 0 |
| <i>Total</i> | 50 | 100 |

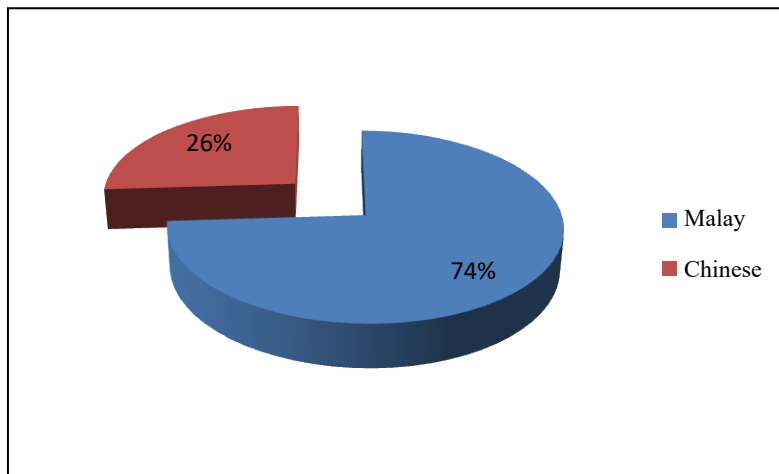


Figure 5- Percentage of the races analysis

Age

The results of data analysis showed that the age distribution of the respondents are almost evenly

because there is five respondents represent each level which is shown in Table 3 and Figure 6.

Table 3-Age analysis

| Age | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| 13 years | 7 | 14% |
| 14 years | 8 | 16% |
| 15 years | 5 | 10% |
| 16 years | 7 | 14% |
| 17 years | 9 | 18% |
| 18 years | 7 | 14% |
| 19 years | 7 | 14% |
| Total | 50 | 100 |

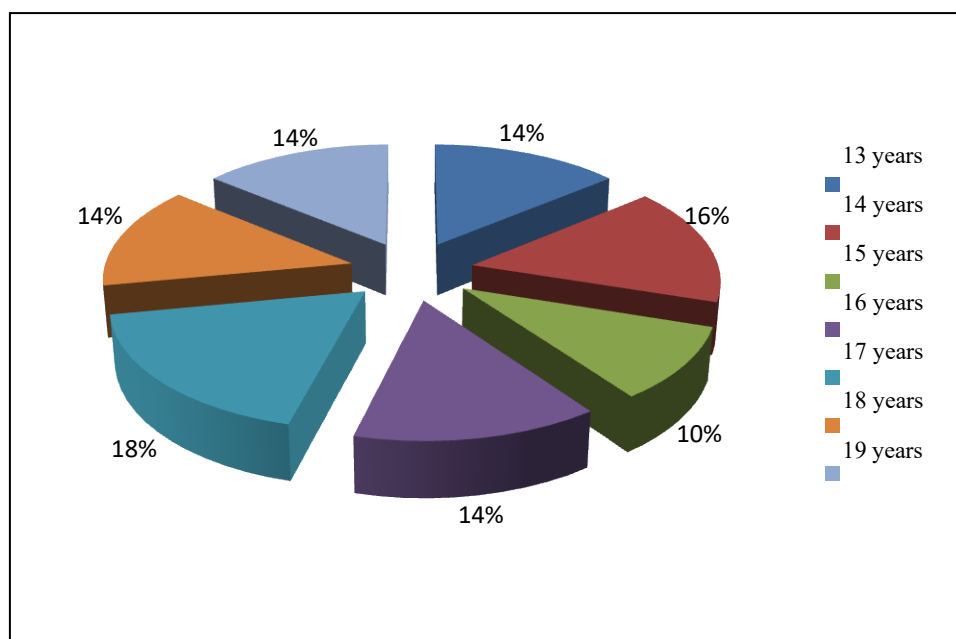


Figure 6 - Percentage of respondent age

Using Computer Tablet Experience

The experience of respondents against the tablet computer technology also asked to see the

acceptance. They respond their experience using the technology as in Table 4 and Figure 7 below.

Table 4 - Experience using computer tablet analysis

| Experience using tablet | Frequency | Percentage (%) |
|-------------------------|-----------|----------------|
| Never | 17 | 10 |
| Less than a year | 14 | 20 |
| 1 to 2 years | 14 | 30 |
| More than 2 years | 5 | 40 |

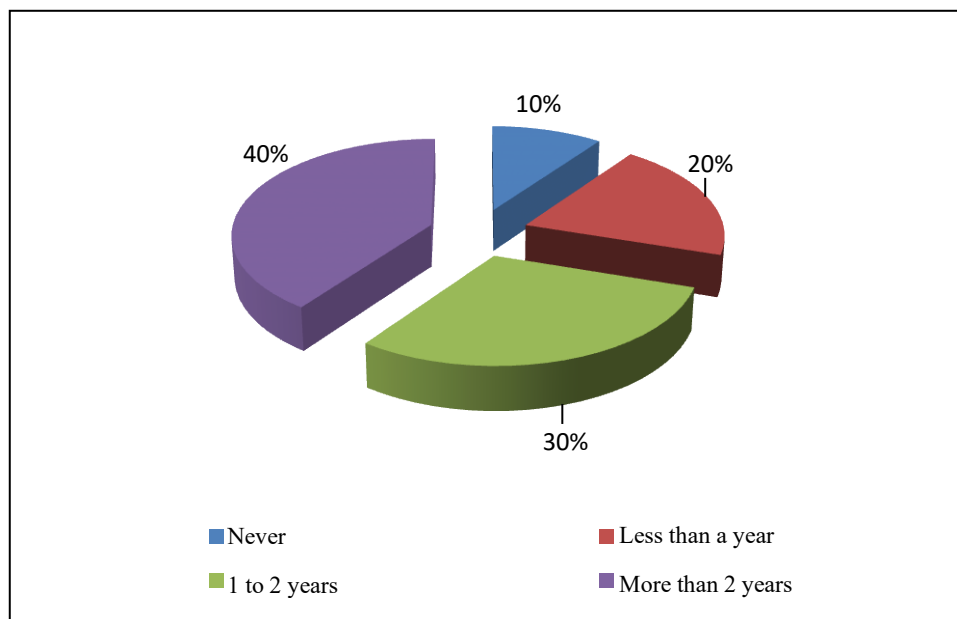


Figure 7-Percentage of respondent experience using computer tablet

Innovation was started in June 2016 with operating cost around RM 2000.00. After the innovations done, pre and post test data were analyzed using SPSS version 18 for the mean score achieved by students. The findings shows that student achievement increased (Mean = 55.08% Pre Test, Post Test Mean = 80.56%). T test shown a significant difference between the two mean score is 0.05.

using tablet computer in-depth analysis of paired t-test sample were used. Full marks for each test is 100 marks. The distribution of the overall student achievement scores in the pre-test and post-test described in Table 5.

THE EFFECT OF USING APPS “KOMPUTER KAMI” ANALYSIS

Pre-test and post test was conducted on 50 respondents in this research. The result were analysed in tabular form for ease of understanding. To see whether there is a difference of student performance before and after the learning process through apps

Table 5 - Overall marks distribution for pre-test and post test

| Student | Pre-test | | Post test | | Marks Different (y - x) |
|---------|----------|-------|-----------|-------|-------------------------|
| | x/100 | Grade | y/100 | Grade | |
| P1 | 32 | E | 88 | A | 56 |
| P2 | 24 | E | 56 | C | 32 |
| P3 | 14 | E | 40 | D | 26 |
| P4 | 14 | E | 28 | E | 14 |
| P5 | 28 | E | 30 | E | 2 |
| P6 | 28 | E | 90 | A | 62 |
| P7 | 88 | A | 92 | A | 4 |
| P8 | 30 | E | 90 | A | 60 |

| | | | | | |
|-----|----|---|-----|---|----|
| P9 | 90 | A | 90 | A | 2 |
| P10 | 20 | E | 92 | A | 72 |
| P11 | 64 | C | 68 | B | 4 |
| P12 | 30 | E | 46 | D | 16 |
| P13 | 48 | D | 72 | B | 24 |
| P14 | 86 | A | 88 | A | 2 |
| P15 | 72 | B | 72 | B | 0 |
| P16 | 76 | B | 88 | A | 12 |
| P17 | 58 | E | 58 | C | 34 |
| P18 | 30 | E | 92 | A | 62 |
| P19 | 90 | A | 94 | A | 4 |
| P20 | 92 | A | 96 | A | 4 |
| P21 | 96 | A | 94 | A | -2 |
| P22 | 62 | C | 64 | C | 2 |
| P23 | 70 | B | 94 | A | 24 |
| P24 | 96 | A | 98 | A | 2 |
| P25 | 52 | C | 90 | A | 38 |
| P26 | 64 | C | 90 | A | 26 |
| P27 | 58 | C | 70 | B | 12 |
| P28 | 30 | E | 90 | A | 60 |
| P29 | 66 | B | 92 | A | 26 |
| P30 | 90 | A | 94 | A | 4 |
| P31 | 84 | A | 92 | A | 8 |
| P32 | 44 | D | 60 | C | 16 |
| P33 | 40 | D | 68 | B | 28 |
| P34 | 96 | A | 96 | A | 0 |
| P35 | 48 | D | 90 | A | 42 |
| P36 | 40 | D | 88 | A | 48 |
| P37 | 40 | D | 68 | B | 28 |
| P38 | 26 | E | 86 | A | 60 |
| P39 | 36 | E | 68 | B | 32 |
| P40 | 36 | E | 68 | B | 32 |
| P41 | 34 | E | 88 | A | 54 |
| P42 | 46 | D | 100 | A | 54 |
| P43 | 94 | A | 98 | A | 4 |
| P44 | 36 | E | 92 | A | 56 |
| P45 | 32 | E | 90 | A | 58 |
| P46 | 48 | D | 92 | A | 44 |
| P47 | 88 | A | 90 | A | 2 |
| P48 | 66 | C | 66 | B | 16 |
| P49 | 96 | A | 94 | A | -2 |
| P50 | 78 | B | 88 | A | 10 |

Based on Table 5, majority of students showed an increase in test scores in the post test. For example P1 get 32 marks in the pre-test, increased to 88 marks in the test post. P6 was very brilliant when scoring 28 in the pre-test, but in the post-test scores rose 62 points to 90

points. However, there are two students P15 and P34 is not increased in the post-test. P21 and P49 showed a decrease of 2 points in the post test of each obtained 94 points.

The increase of student achievement can also be measured through the grade

obtained in the post test. The number of students who failed the test which is graded as E is decreased from 18 to 2. It shows the increment in the student achievement. The

number of students who obtained grade A also increased a large group of 20 people. The results of pre-test and post-test are detailed by grade in Figure 8 below.

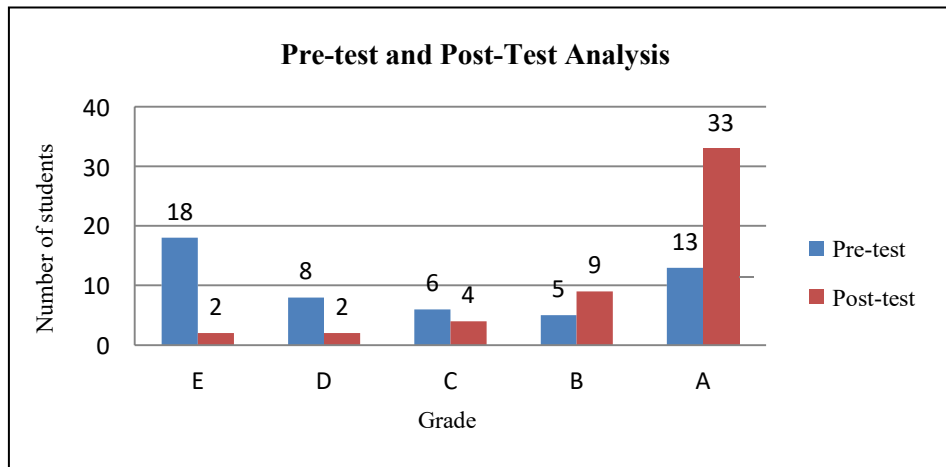


Figure 8-Pre-test and post-test analysis based on grade

Table 6 shows mean scores of pre-test is 55.08 while the mean score for post-test were 80.56. Based on these values, mean post-test scores were higher than the mean pre-test score which is increment in student

achievement. T-test analysis in Table 7 shows that there is a significant difference at significant level 0.05 between the two mean score.

Table 6: Pre-test and post-test mean analysis

| | | Mean | N | Standard Deviation | Standard Error Mean |
|----------|-----------|-------|----|--------------------|---------------------|
| 1st pair | Pre-test | 55.08 | 50 | 26.305 | 3.720 |
| | Post-test | 80.56 | 50 | 17.884 | 2.529 |

| | | N | Correlation | Sig. |
|----------|----------------------|----|-------------|-------|
| 1st pair | Pre-test & Post-test | 50 | 0.541 | 0.000 |

* $\alpha = 0.05$

Table 8-T-Test analysis for pre-test and post-test

| | Pairing Difference | | | | t | df | Sig (2 tailed) |
|-----------------------------------|--------------------|--------------------|---------------------|---|--------|----|-------------------|
| | Mean | Standard Deviation | Standard Error Mean | 95% Confidence Interval of the Difference Below Top | | | |
| 1st Pair Pre-test Post-test | -25.480 | 22.427 | 3.172 | -31854 -19.106 | -8.034 | 49 | 0.000 |

Referring to the results of the T-test in Table 8, the research is significant ($t = -8034$, $df = 49$, $p < 0.05$). The researchers decided that there is a significant difference between the student achievement before and after using the apps “Komputer Kami” in learning process. The higher mean score in post-test shows that this approach can improve student achievement.

CONCLUSION

This learning kit can realize M-Learning and improving the implementation of active learning especially in Special Educational Multimedia Learning Disabilities. Android-based platform learning application has been developed in accordance with the syllabus of special education in which students can learn anywhere and at any time.

Development of these applications not only benefit students but also for special education teachers. Mobile applications can also be shared with other SEN wherever they are with a minimal cost because they already have smart phones using the android platform and a home computer.

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