ICT literacy with google suite for education (GSFE) in junior high school with different academic abilities

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Abstract. The ICT Literacy skills of the Student are very important, but in fact, the ICT Literacy skills of the student have not appropriate with the expectation. In this research, researchers tried to use the Google Suite for Education in learning to improve ICT Literacy skills of the students with different academic abilities. This research was using quantitative methods and the type of the research was quasi experimental. The research respondents consisted of two classes, namely a control class as many as 32 students and the experimental class as many as 32 students. The results showed that, after using Google Suite for Education in learning, it was found that the percentage of knowledge value of ICT Literacy ability for the high control class category is 59% for Access, 69% for Manage, 41% for Integrate, 56% for Evaluate and 44% for Create. The medium categories is 31% for Access, 19% for Manage, 38% for Integrate, 25% for Evaluate and 56% for Create. The Low categories is 9% for Access, 13% for Manage, 22% for Integrate, 19% for Evaluate and 44% for Create. The value of ICT Literacy ability skills for high control class is 53% for Access, 69% for Manage, 66% for Integrate, 75% for Evaluate and 34% for Create. The medium categories is 44% for Access, 25% for Manage, 0% for Integrate, 0% for Evaluate and 50% for Create. The Low categories is 3% for Access, 6% for Manage, 34% for Integrate, 25% for Evaluate and 16% for Create. While the experimental class it was found that the percentage of knowledge value of ICT Literacy ability for the high control class category is 72% for Access, 69% for Manage, 53% for Integrate, 84% for Evaluate and 59% for Create. The medium categories is 25% for Access, 13% for Manage, 38% for Integrate, 9% for Evaluate and 34% for Create. The Low categories is 3% for Access, 9% for Manage, 9% for Integrate, 6% for Evaluate and 6% for Create. The value of ICT Literacy ability skills for high control class category is 63% for Access, 84% for Manage, 78% for Integrate, 78% for Evaluate and 41% for Create. The medium categories is 38 % for Access, 13% for Manage, 0% for Integrate, 0% for Evaluate and 47% for Create. The Low categories is 0% for Access, 3% for Manage, 22% for Integrate, 22% for Evaluate and 13% for Create. The score of the independent sample t-test from the ICT Literacy knowledge post-test shows that there is a significant difference between the control class and the experiment with the sig (2-tailed) value is 0.046 < 0.05 (p = < 0.05). Then the score of the independent sample t-test from the ICT Literacy skills post-test shows that there is a significant difference between the control class and the experiment with the sig (2-tailed) value is 0.045 <
0.05 (p < 0.05). (RESULT) It can be concluded that the use of Google Suite For Education can improve ICT literacy knowledge and skills of Junior High School students.

1. Introduction
Changes are needed in education to create creative, innovative and competitive generations to face 4.0 industrial revolution era [9]. Optimizing information and communication technology (ICT) as an educational tool is expected to produce outputs that can adapt with changes, for a better education system. To be able to prepare students to face the 4.0 industrial revolution era, it is necessary to do a revolution and innovation in education. The efforts that made by Indonesian Education and Culture Ministry, to face of 4.0 industrial revolution era namely, 2013 Curriculum has developed the concept of education with 21st Century skills formulated into Indonesian Partnership for 21 Century Skills Standard (IP-21CSS) covers Creativity Thinking and innovation, Problem Solving and Critical Thinking, Communication and Collaboration, Information, Media and Technology Skills, Life & Career Skills [2] integrated in the planning and implementation of learning. One of the skills of the 21st Century that students must possess in facing the era of the 4.0 industrial revolution is Information media and technology skills, related to information literacy, media literacy, and ICT literacy.

Technology and Information media skills related to ICT literacy, can be developed by utilizing ICT media in learning process to produce an interactive, interesting, fun learning process, encouraging student interest in the learning process that have implications for student learning outcomes. This is related to how the material is delivered in the learning process, that can use offline or online sources, where material is saved into digital or cloud forms, so that the purpose of learning can be achieved, that have implications to the improvement of the student learning outcomes. Students become more interested in the learning process which makes it easier for them to find learning material [13].

Educational Testing Service states that is using digital technology, the tools of communication, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society [5]. According to the Educational Testing Service, there are five assessment components of ICT literacy. The five components represent a set of skills and knowledge presented in an order that shows an increase in cognitive complexity. The five components of ICT literacy are as follows:
1. Access is knowing about and knowing how to collect and/or retrieve information.
2. Manage is applying an existing organizational or classification scheme.
3. Integrate is interpreting and representing information. It involves summarizing, comparing and contrasting.
4. Evaluate is making judgments about the quality, relevance, usefulness, or efficiency of information.
5. Create is generating information by adapting, applying, designing, inventing, or authoring information.

Educational Testing Service [5] is represented by these component in Figure 1.

![Figure 1. ICT Literacy](image-url)
Google suite for education (GSFE) is a product of Google in the form of a set of productivity and collaboration tools with the Google cloud system for schools and educational institutions used to facilitate a better teaching and learning system [6].

Google Suite For Education (GSFE) uses cloud-based storage that offers a variety of applications that can be accessed free of charge by educational institutions with an Internet connection, web browser, or on a mobile device (Windows, Apple, or Android). In educational settings, GSFE is managed through the Google Admin Console which allows for the creation and management of user accounts, services, and devices such as Chromebooks. The common applications that make up GSFE are Gmail, Google Drive, Google Docs, Google Sheets, Google Slides, Google Calendar, Google Forms, Google Drawings, Google Sites, and Google Classroom. Access to various services can be turned on and off through Google Admin Console [3,7].

This research wanted to find out the effect of the using of google suite for education from the secondary school students with different academic abilities on ICT literacy. In this study we propose the following research question: is there a significant influence in the use of google suite for education on student’s different academic abilities on ICT literacy of grade VII students in informatics at SMP Negeri 1 Situbondo.

2. Method
This research used a quantitative approach and the type of research used quasi experimental. Quantitative research is based on the philosophy of positivism which emphasizes objective phenomena that are studied quantitatively or carried out using numbers, statistical processing, structure, and controlled experiments [12]. Experimental research is research that is intended to determine whether there is a result of treatment in the subject being investigated. The way to find out is to compare one or more experimental groups that were treated with one comparison group that was not treatment [1].

In the quasi experiment method, researchers try to determine whether a treatment affects the results of a study. This influence is assessed by applying certain treatments to one group (treatment group) and not applying it to the other group (control group), then determining how the two groups determine the final outcome [4].

Quasi experimental design was used in this study, by using the nonequivalent control group design. Before the treatment was given, the group of experimental and the group of control were given a test that is a pre-test, with a view to knowing the state of the group before treatment. Then after treatment, the group of experimental and the group of control were given a test that is a post-test, to determine the state of the group after treatment [10].

In this research, group of experimental is a group of students who were given treatment using google suite for education in informatics subjects and the control group is a group of students who were not treated in informatics subjects.

Design of the research can be explained on table 1 [11].

|   | E           | O₁          | X₁          | O₂          |
|---|-------------|-------------|-------------|-------------|
| K | O₃          | X₂          | O₄          |

E : experimental group using learning google suite for education.
K : the control group uses presentation media and modules.
O₁ : pre-test in the group of experimental.
O₂ : post-test after treatment using google suite for education in the experimental group.
O₃ : pre-test in the group of control.
O₄ : post-test after treatment using presentation media and modules in the control group.
$X_1$ : the treatment given to the experimental group, namely activities learning by using google suite for education.

$X_2$ : the treatment given to the control group was activity learning using presentation media and modules.

![Diagram of research procedure]

**Figure 2.** Research procedure

The first step that was taken, was to look at the condition of the SMPN 1 Situbondo, then the researchers made observations to find the problems that were in the school, after researchers found the problems contained in the researcher made the problem formulation and research objectives. The second step taken by the researcher is to determine the object of research, the objects of the research are class VII-A and class VII-B, then the researcher divides the 2 classes into experimental groups namely students of class VII-A and the control group of students class VII-B. The third step undertaken in this study is to create a research instrument in the form of a knowledge test sheet, an observation sheet of a skills test, a student and teacher questionnaire sheet and documentation. The fourth step in this research is collecting data from knowledge test results, the results of the observation skills, questionnaires, and documentation, then the data were analyzed with statistical techniques and finally making conclusions from the research results.

The research variables in this study consisted of:

| Table 2. Research Variables and Data Sources |
|---------------------------------------------|
| **Variables** | **Indicator** | **Data Source** |
| Independent Variable (X) | **Google Suite For Education** | **Questionnaire accuracy of learning with Google Suite For education** |
| | 1. *Google Classroom* | |
| | 2. *Gmail* | |
| | 3. *G Drive* | |
| | 4. *Google Calendar* | |
| | 5. *Hangout* | |
| | 6. *Google Office (Docs, Spreadsheet, Slide)* | |
| | 7. *Google Site* | |
| | 8. *Google Vault* | |
| Dependent variable (Y) | 1. *Access* | Knowledge test, skills test |
2.1. Population
The subjects of the research were students of class VII SMP 1 Situbondo of academic year 2019/2020 consisting of 32 students of the experimental class and 32 students of the control class. The sampling technique used cluster random sampling that was done by randomly choosing two classes, the first class was the experimental class with the implementation learning using google suite for education consisting of 9 males and 23 females, and the second class was control class with the implementation learning uses media presentations and modules consisting of 13 males and 19 females.

2.2. Instruments
The instruments that were used in this study are test, questionnaires, and documentation. The test instrument consisted of pre-test and post-test which were divided into 2 namely knowledge tests and ICT literacy skills tests in working on informatics test questions, then the results were divided into 3 categories namely high, medium and low categories. Knowledge tests were carried out using 50 multiple choice question. Whereas the skills test uses a practice test observation sheet consisting of 15 indicators. The questionnaire instrument used question instruments totaling 12 question items using the Guttman scale which included statements of true (score 1) and false (score 0), the last being documentation.

2.3. Data Collection and Data Analysis
Data collection techniques were test and questionnaire techniques. Test techniques by providing pre-test and post-test knowledge and skills for control and experiment classes. While the questionnaire technique was in the form of a questionnaire instrument consisting of 12 question items given to students. Analysis of the data used in this research is quantitative analysis using t-test and ANOVA on the pre-test and post-test results. Data obtained from the results of the study are frequency, average, and standard deviation. In addition, the inferential statistics used independent sample t-test to test the difference between the experimental class and the control class [8]. The independent sample t-tests were used to compare the average scores of the two groups with a significance level of 0.05.

3. Result
Prior to showing our results, we need to test the reliability and validity of our post-test instrument. The following tables show the reliability and validity results of post-test knowledge and skills.

**Table 3. The Test Result of the Validity Post-test Knowledge Question Control Class: Correlations**

| No | r_count | Validity | No | r_count | Validity |
|----|---------|----------|----|---------|----------|
| 1  | 0.429   | valid    | 26 | 0.386   | valid    |
| 2  | 0.473   | valid    | 27 | 0.379   | valid    |
| 3  | 0.367   | valid    | 28 | 0.088   | not valid|
| 4  | 0.407   | valid    | 29 | 0.395   | valid    |
| 5  | 0.354   | valid    | 30 | 0.390   | valid    |
| 6  | 0.414   | valid    | 31 | -       | not valid|
| 7  | 0.354   | valid    | 32 | 0.393   | valid    |
| 8  | 0.047   | not valid| 33 | 0.360   | valid    |
Based on Table 3, to find out the validity of the question items, Pearson correlation values ($r_{count}$) compared with $r_{table} = 0.349$ (df = $n - 2 = 32 - 2 = 2$). If $r_{count} > r_{table}$ then the question item can be said to be valid. Validity can also be seen through the significance value (Sig. 2-tailed). If value Sig. 2-tailed < 0.05 then the question item is valid. There are 45 items that are valid and 5 items of invalid questions are numbers 8, 10, 28, 31 and 34.

|   | $r_{count}$ | Valid |   | $r_{count}$ | Valid |
|---|-------------|-------|---|-------------|-------|
| 9 | 0.443       | valid | 34| 0.057       | not valid |
| 10 | 0.096       | not valid | 35| 0.443       | valid |
| 11 | 0.431       | valid | 36| 0.370       | valid |
| 12 | 0.418       | valid | 37| 0.382       | valid |
| 13 | 0.365       | valid | 38| 0.483       | valid |
| 14 | 0.420       | valid | 39| 0.442       | valid |
| 15 | 0.427       | valid | 40| 0.458       | valid |
| 16 | 0.380       | valid | 41| 0.531       | valid |
| 17 | 0.429       | valid | 42| 0.502       | valid |
| 18 | 0.357       | valid | 43| 0.405       | valid |
| 19 | 0.353       | valid | 44| 0.362       | valid |
| 20 | 0.351       | valid | 45| 0.398       | valid |
| 21 | 0.415       | valid | 46| 0.418       | valid |
| 22 | 0.372       | valid | 47| 0.462       | valid |
| 23 | 0.447       | valid | 48| 0.502       | valid |
| 24 | 0.402       | valid | 49| 0.463       | valid |
| 25 | 0.373       | valid | 50| 0.429       | valid |

**Table 4. The Test Result of the Reliability Question:**
Reliability Statistics of the Control Class

| Cronbach's | Alpha | N of Items |
|------------|-------|------------|
|            | .750  | 50         |

Based on Table 4, it can be seen that the overall reliability value is 0.750 is greater than 0.6. Therefore $r_{count} > r_{table}$. It concludes that the instrument items are reliable.

**Table 5. The Test Result of the Validity Post-test Knowledge Question**
Experimental Class: Correlations

| No | $r_{count}$ | Validity | No | $r_{count}$ | Validity |
|----|-------------|----------|----|-------------|----------|
| 1  | 0.429       | valid    | 26 | 0.482       | valid    |
| 2  | 0.406       | valid    | 27 | 0.126       | not valid |
| 3  | 0.437       | valid    | 28 | 0.399       | valid    |
| 4  | 0.382       | valid    | 29 | 0.421       | valid    |
| 5  | 0.418       | valid    | 30 | 0.528       | valid    |
| 6  | 0.381       | valid    | 31 | 0.429       | valid    |
| 7  | 0.441       | valid    | 32 | 0.561       | valid    |
| 8  | 0.369       | valid    | 33 | 0.377       | valid    |
| 9  | 0.410       | valid    | 34 | 0.551       | valid    |
| 10 | 0.446       | valid    | 35 | 0.425       | valid    |
Based on Table 5, to find out the validity of the question items, Pearson correlation values ($r_{\text{count}}$) compared with $r_{\text{table}} = 0.349$ (df = n – 2 = 32 – 2 = 2). If $r_{\text{count}} > r_{\text{table}}$ then the question item can be said to be valid. Validity can also be seen through the significance value (Sig. 2-tailed). If value Sig. 2-tailed < 0.05 then the question item is valid. There are 46 items that are valid and 4 items of invalid questions are numbers 24, 27, 44, and 48.

Table 6. The Result of the Reliability Post-test Knowledge Question: Reliability Statistics of the Experimental Class

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0.831            | 50         |

Based on Table 6, it can be seen that the overall reliability value is 0.831 is greater than 0.6. Therefore $r_{\text{count}} > r_{\text{table}}$. It concludes that the instrument items are reliable. Furthermore, we will show the distribution of knowledge and skills ICT Literacy of both control and experimental classes based on their pre-test and result as follows.
Based on the results of the pre-test analysis between the two classes, it can be seen both classes have the same variance. The results showed the knowledge value of ICT Literacy ability for the high control class category is 25% for Access, 34% for Manage, 31% for Integrate, 44% for Evaluate and 25% for Create. The medium categories is 50% for Access, 38% for Manage, 41% for Integrate, 19% for Evaluate and 44% for Create. The Low categories is 25% for Access, 28% for Manage, 28% for Integrate, 38% for Evaluate and 31% for Create. While the experimental class it was found that the percentage of knowledge value of ICT Literacy ability for the high experimental class category is 22% for Access, 28% for Manage, 16% for Integrate, 41% for Evaluate and 19% for Create. The medium categories is 44% for Access, 38% for Manage, 59% for Integrate, 22% for Evaluate and
66% for Create. The Low categories is 34% for Access, 34% for Manage, 25% for Integrate, 38% for Evaluate and 16% for Create.

The results of both classes can be seen in Figure 2 and Figure 3. With this distribution, this will help our knowledge to interpret the significant influence of google suite for education on students' ICT literacy knowledge.

![Figure 5. The Distribution of Students’ ICT Literacy Skills of the Control Class based on Pre-Test Result](image)

![Figure 6. The Distribution of Students’ ICT Literacy Skills of the Experimental Class based on Pre-Test Result](image)

Based on the results of the pre-test analysis between the two classes, it can be seen both classes have the same variance. The results showed the value of ICT Literacy ability skills for the high control class category is 19% for Access, 41% for Manage, 44% for Integrate, 63% for Evaluate and 38% for Create. The medium categories is 72% for Access, 47% for Manage, 0% for Integrate, 0% for Evaluate and 38% for Create. The Low categories is 9% for Access, 13% for Manage, 56% for
Integrate, 38% for Evaluate and 25% for Create. While the experimental class it was found that the percentage of knowledge value of ICT Literacy ability for the high experimental class category is 13% for Access, 63% for Manage, 69% for Integrate, 63% for Evaluate and 9% for Create. The medium categories is 78% for Access, 34% for Manage, 0% for Integrate, 0% for Evaluate and 34% for Create. The Low categories is 9% for Access, 31% for Manage, 31% for Integrate, 38% for Evaluate and 56% for Create.

The results of both classes can be seen in Figure 4 and Figure 5. With this distribution, this will help our knowledge to interpret the significant influence of Google Suite for education on students' ICT literacy ability skills.

Now, we will analysis the homogeneity test and normality test, and finally, we will analyze the google suite for education significantly influences students' ICT literacy knowledge and ICT literacy skills abilities by using the independent sample t-test.

**Table 7. The Analysis of the Homogeneity of ICT Literacy Knowledge pre-test:**

|                          | Levene Statistic | df1 | df2 | Sig. |
|--------------------------|------------------|-----|-----|------|
| pretest                  | 0.000            | 1   | 62  | 0.988|

Based on the output table of the Test of Homogeneity of Variances in Table 7, the significance value (Sig) of the ICT literacy knowledge pre-test in class VII-A and class VII-B is 0.988 because the value of Sig. 0.988 > 0.05, then as the basis for decision making in the homogeneity test above, it can be concluded that the variance of the ICT Literacy Knowledge pre-test data in class VII-A and Class VII-B homogeneous students.

**Table 8. Average pre-test scores of ICT literacy knowledge in control and experimental classes**

| class                   | N   | Mean   | Std. Deviation | Std. Error Mean |
|-------------------------|-----|--------|----------------|-----------------|
| pretest                  |     |        |                |                 |
| control                 | 32  | 60.3125| 13.54666       | 2.39473         |
| experimental            | 32  | 59.125 | 13.17806       | 2.32957         |

Table 8 shows that the average value of the pre-test ICT literacy knowledge of the control class (VII-B) was 60.3125 (SD = 13.54666) while the average pre-test score of ICT literacy knowledge of the experimental class (VII-A) was 59.125 (SD = 13.17806)

**Table 9. The Analysis of the Homogeneity of ICT Literacy Skills pre-test:**

|                          | Levene Statistic | df1 | df2 | Sig. |
|--------------------------|------------------|-----|-----|------|
| pretest skills           | 0.011            | 1   | 62  | 0.918|

Based on the output table of the Test of Homogeneity of Variances in Table 9, it is known that the significance value (Sig) of the ICT literacy skills pre-test in class VII-A and Class VII-B is 0.918 because the value of Sig. 0.918 > 0.05, then as the basis for decision making in the homogeneity test above, it can be concluded that the variance of the ICT literacy skills of the pre-test data in the control class and experimental class are homogeneous.
Table 10. Average pre-test scores of ICT literacy skills in control and experimental classes

| Group Statistics          | class       | N  | Mean   | Std. Deviation | Std. Error Mean |
|---------------------------|-------------|----|--------|----------------|-----------------|
| pretest_skills            | control     | 32 | 60.4063| 14.02730       | 2.47970         |
|                           | experimental| 32 | 59.4375| 13.80027       | 2.43957         |

Table 10 shows that the average score of the control class ICT literacy skills pre-test (VII-B) is 60.4063 (SD = 14.02730) while the average pre-test scores of the experimental class ICT literacy skills (VII-A) is 59.4375 (SD = 13.80027).

Based on the homogeneity test results above, it can be determined the pre-test results between classes VII-A and VII-B are homogeneous, with the provisions of class VII-B being the control class and VII-A being the experimental class.

Now it is time to analyze the result on post-test by using the inferential statistic. We start by analyzing the normality test.

Table 11. Test the normality of ICT literacy knowledge post-test

| One-Sample Kolmogorov-Smirnov Test          | posttest_control | posttest_experimental |
|---------------------------------------------|------------------|-----------------------|
| N                                           | 32               | 32                    |
| Normal Parameters\(^{a,b}\)                 |                  |                       |
| Mean                                        | 72,1875          | 79,1250               |
| Std. Deviation                              | 13,88765         | 13,35314              |
| Most Extreme Differences                    |                  |                       |
| Absolute                                    | ,135             | ,210                  |
| Positive                                    | ,087             | ,110                  |
| Negative                                    | ,135             | ,210                  |
| Kolmogorov-Smirnov Z                        | ,764             | 1,189                 |
| Asymp. Sig. (2-tailed)                      | ,603             | ,118                  |

The normality test results in Table 11 show the significance value of the control class (VII-B) is 0.603 and the significance value of the experimental class (VII-A) is 0.118. The significance value of the two classes is greater than 0.05 so it can be concluded that both are normally distributed.

Table 12. Average post-test scores of ICT literacy knowledge in control and experimental classes

| Group Statistics          | class        | N  | Mean   | Std. Deviation | Std. Error Mean |
|---------------------------|--------------|----|--------|----------------|-----------------|
| posttest_knowledge        | control      | 32 | 72,1875| 13,88765       | 2.45501         |
|                           | experimental | 32 | 79,1250| 13,35314       | 2.36052         |

Table 12 shows that the average value of the post-test ICT literacy control class knowledge is 72,1875 (SD = 13,88765) while the average pre-test ICT literacy skills of the experimental class is 79.1250 (SD = 13,335314).
Table 13. Normality Test post-test ICT literacy skills

| Normal Parameters | Posttest_skills_control | Posttest_skills_experimental |
|-------------------|-------------------------|-----------------------------|
| Mean              | 70,9063                 | 78,2500                     |
| Std. Deviation    | 14,30398                | 14,38637                    |
| Most Extreme Differences |                   |                             |
| Absolute          | 1,144                   | 2,260                       |
| Positive          | 1,121                   | 1,158                       |
| Negative          | -1,144                  | -2,260                      |

Kolmogorov-Smirnov Z, 1,813, 1,469
Asymp. Sig. (2-tailed), 0,523, 0,057

a. Test distribution is Normal.
b. Calculated from data.

The normality test results in Table 13 show the significance value of the control class (VII-B) is 0,523 and the significance value of the experimental class (VII-A) is 0,057. The significance value of the two classes is greater than 0,05 so it can be concluded that both are normally distributed.

Table 14. Average post-test scores of ICT literacy skills in the control and experimental classes

| Group Statistics | class     | N   | Mean   | Std. Deviation | Std. Error Mean |
|------------------|-----------|-----|--------|----------------|-----------------|
| posttest_skills  | control   | 32  | 70,9063| 14,30398       | 2,52861         |
|                   | experimental | 32  | 78,2500| 14,38637       | 2,54318         |

Table 14 shows that the average value of the post-test ICT literacy skills of the control class (VII-B) is 70,9063 (SD = 14,30398) while the average post-test scores of the ICT literacy skills of the experimental class (VII-A) is 78,25 (SD = 13,338637).

Table 15. Google suite for education t-test results on ICT literacy knowledge capabilities

| 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 |
|---|------|---|----|-----------------|-----------------|----------------------|----------------------------------------|
| posttest_knowledge      | Equal variances assumed | .109 | .742 | -2,037 | .046 | -6,93750 | 3,40576 | -13,74551 | -12,949 |
|                         | Equal variances not assumed | -2,037 | 61,905 | .046 | -6,93750 | 3,40576 | -13,74572 | -12,928 |

Table 15 shows that the significance value of the t-test sig. (2-tailed) of the independent sample t-test the value of ICT literacy knowledge post-test was 0,046 (p < 0,05). This shows that google suite for education significantly influences students' ICT literacy knowledge abilities.
Table 16. Google suite for education t-test results on the ability of ICT literacy skills

| Independent Samples Test | t-test for Equality of Means |
|--------------------------|----------------------------|
|                          | Std. Error  | 95% Confidence Interval of the Difference |
|                          | Difference  |                                  |
| posttest_skills          |             |                                 |
| Equal variances assumed  | .058        | -2.048 62 .045 -7.34375 3.58631 | -14.51268 -1.17482 |
| Equal variances not assumed | -2.048 61.998 .045 -7.34375 3.58631 | -14.51268 -1.17482 |

Table 16 shows that the significance value of the t-test sig. (2-tailed) of the independent sample t-test the post-test ICT literacy skills score was 0.045 (p < 0.05). This shows that google suite for education significantly influences students' ICT literacy skills.

3.1 Differences in ICT Knowledge Based on ICT Literacy Skills

Table 17. Differences in ICT Knowledge Based on ICT Literacy Skills: Descriptives

| Descriptives | 95% Confidence Interval for Mean |
|--------------|--------------------------------|
| Ability      | Lower Bound | Upper Bound | Minimum | Maximum |
| High         | 70.9566     | 85.4434     | 48.00   | 96.00   |
| Medium       | 75.3892     | 87.8108     | 68.00   | 94.00   |
| Low          | -51.0620    | 203.0620    | 66.00   | 86.00   |
| Total        | 74.3107     | 83.9393     | 48.00   | 96.00   |

Table 17 shows that the average ICT knowledge of students with high ICT literacy skills is 78.2, the average ICT literacy knowledge of students with moderate ICT literacy skills is 81.6 and the average ICT literacy knowledge of students with low ICT literacy skills is 76.

Table 18. Homogeneity Test of ICT Literacy Knowledge

| Test of Homogeneity of Variances |  |
|---------------------------------|--|----------|
| Ability                         | Levene Statistic | df1 | df2 | Sig. |
|                                 | 7.402           | 2   | 29  | .471 |

Before continuing the test it is necessary to test the homogeneity of ICT literacy knowledge of students with high, medium and low ICT literacy skills because one of Anova's assumptions is the same variance. From table 18 Test of Homegeneity of Variance it can be seen that the test results show that the variants of the three groups are the same (sig. = 0.471), so the Anova test is valid to test this relationship.
Table 19. ANOVA test

|                | Sum of Squares | df | Mean Square | F    | Sig. |
|----------------|----------------|----|-------------|------|------|
| Between Groups | 97,900         | 2  | 48,950      | 0.261| 0.772|
| Within Groups  | 5429,600       | 29 | 187,228     |      |      |
| Total          | 5527,500       | 31 |             |      |      |

Next to see if there are differences in the ICT literacy knowledge of the three students in the ICT literacy skills group. We see table 19 ANOVA, from that table in column Sig. a value of 0.772 was obtained. Thus at the real level = 0.05 we reject H1, so the conclusion reached is that there is no significant difference in the average ICT literacy ability of students based on the three groups of ICT literacy skills. This indicates that in the experimental class, the use of Google Suites has the same effect in increasing students' ICT literacy knowledge based on ICT literacy skills.

3.2 Differences in ICT Literacy Knowledge Based on Indicators and Categories

Table 20. Descriptives

| Indicator | Category | Mean     | Std. Deviation | N  |
|-----------|----------|----------|----------------|----|
| acces     | high     | 85,500   | 7,83612        | 22 |
|           | medium   | 65,3750  | 10,50085       | 8  |
|           | low      | 54,500   | 9,19239        | 2  |
|           | Total    | 78,5312  | 13,62395       | 32 |
| manage    | high     | 88,5455  | 8,86259        | 22 |
|           | medium   | 63,7500  | 15,55405       | 8  |
|           | low      | 45,500   | 13,43503       | 2  |
|           | Total    | 79,6563  | 17,61526       | 32 |
| integrate | high     | 91,000   | 15,04280       | 22 |
|           | medium   | 62,7500  | 27,86062       | 8  |
|           | low      | 16,500   | 23,33452       | 2  |
|           | Total    | 79,2813  | 27,72007       | 32 |
| evaluate  | high     | 89,0455  | 9,85358        | 22 |
|           | medium   | 67,6250  | 16,58689       | 8  |
|           | low      | 50,000   | 9,89949        | 2  |
|           | Total    | 81,2500  | 16,88481       | 32 |
| create    | high     | 87,0909  | 13,45507       | 22 |
|           | medium   | 64,6250  | 16,52649       | 8  |
|           | low      | 41,500   | 12,02082       | 2  |
|           | Total    | 78,6250  | 19,47662       | 32 |
| Total     | high     | 88,2364  | 11,29661       | 110|
|           | medium   | 64,8250  | 17,42808       | 40 |
|           | low      | 41,6000  | 17,68992       | 10 |
|           | Total    | 79,4688  | 19,41695       | 160|

Table 20 shows that the mean scores and standard deviations of students' ICT literacy knowledge based on indicators and categories.
Table 21. Test of Homogeneity of Variances
Levene's Test of Equality of Error Variances

|        | F   | df1 | df2 | Sig. |
|--------|-----|-----|-----|------|
|        | 1.570 | 14 | 145 | .094 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + indicator + category + indicator * category

Before continuing the test it is necessary to test the homogeneity of students' ICT literacy knowledge based on indicators and categories because one of Anova's assumptions is the same variance. From the Test of Homogeneity of Variances table it can be seen that the test results show that the variants of the three groups are the same (sig. = 0.094), so the Anova test is valid for testing this relationship.

Table 22. Tests of Between-Subjects and Effects

| Source                  | Type III Sum of Squares | df  | Mean Square | F       | Sig. |
|-------------------------|-------------------------|-----|-------------|---------|------|
| Corrected Model         | 33625,491               | 14  | 2401,821    | 13,232  | .000 |
| Intercept               | 282592,211              | 1   | 282592,211  | 1556,813| .000 |
| indicator               | 1292,894                | 4   | 323,224     | 1,781   | .136 |
| category                | 31373,814               | 2   | 15686,907   | 86,420  | .000 |
| indicator * category    | 2096,990                | 8   | 262,124     | 1,444   | .183 |
| Error                   | 26320,352               | 145 | 181,520     |         |      |
| Total                   | 1070391,000             | 160 |             |         |      |
| Corrected Total         | 59945,844               | 159 |             |         |      |

a. R Squared = .561 (Adjusted R Squared = .519)

Furthermore, to test the hypothesis can be obtained from Table 22 Tests of Between-Subjects and Effects.

Line hypothesis (indicator):
In the indicator bar, the significance value (Sig.) = 0,136 > 0,05 (Alpha). This means that H0 is accepted, there is no difference in knowledge based on indicators.

Column Hypothesis (category):
In the category bar, the significance value (Sig.) = 0,000 < 0,05 (Alpha). That means H1 is accepted, there are differences in ICT literacy knowledge by category.

Interaction hypothesis (indicator * category):
In the indicator line * category, the significance value (Sig.) = 0,183 > 0,05 (Alpha). This means that H0 is accepted, there is no interaction between indicators and categories.
3.3 Post Hoc Test
Post hoc tests are performed if there is H1 received. In this study, the column hypothesis (category), H1 is accepted, which means that there are differences in ICT literacy knowledge by category. The Post Hoc Test aims to see which categories are different.

Table 23. Multiple Comparisons

| posttest_knowledge |  |  |  |  |  |  |  |
|--------------------|---|---|---|---|---|---|---|
| LSD (I) | category | (J) | category | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |
| high | medium | 23,4114* | 2.48760 | .000 | 18.4947 | 28.3280 |
| low | 46.6364* | 4.49996 | 13.1810 | 55.4315 |
| medium | high | -23,4114* | 2.48760 | .000 | -28.3280 | -18.4947 |
| low | 23,2250* | 4.76340 | 13.1810 | 32.6397 |
| low | high | -46.6364* | 4.49996 | .000 | -55.4315 | -37.8412 |
| medium | low | -23,2250* | 4.76340 | .000 | -32.6397 | -13.8103 |

Based on observed means.
* The mean difference is significant at the .05 level.

Table 23 shows that for the categories all values can be obtained Sig. = 0.000. That shows the three categories are different. High categories differ from medium categories, high categories differ from low categories, and medium categories differ from low categories.

3.4 Differences in ICT Literacy Skills Based on ICT Literacy Knowledge

Table 24. Descriptives

| ICT_literacy_skills | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |
|---------------------|---|------|----------------|------------|---------------------------------|
|                     |   |      |                |            | Lower Bound   Upper Bound     Minimum | Maximum |
| high                | 22 | 78.6364 | 14.27801       | 3.04408    | 72.3059 | 84.9669 | 47.00 | 100.00 |
| medium              | 8  | 76.7500 | 16.94318       | 5.99032    | 62.5851 | 90.9149 | 47.00 | 93.00 |
| Low                 | 2  | 80.0000 | 9.89949        | 7.00000    | -8.9434 | 168.9434 | 73.00 | 87.00 |
| Total               | 32 | 78.2500 | 14.38637       | 2.54318    | 73.0632 | 83.4368 | 47.00 | 100.00 |

Table 24 shows that the average ICT literacy skills of students with high ICT literacy knowledge is 78,6364, the average ICT literacy skills of students with moderate ICT literacy knowledge is 76,75 and the average ICT literacy skills of students with low ICT literacy knowledge is 78,250.

Table 25. Test of Homogeneity of Variances

| ICT_literacy_skills | Levene Statistic | df1 | df2 | Sig. |
|---------------------|-----------------|-----|-----|------|
|                     |                 |     |     | .957 |

Before continuing the test it is necessary to test the homogeneity of ICT literacy skills of students with high, medium, and low ICT literacy knowledge because one of Anova's assumptions is the same variance. From table 25 Test of Homogeneity of Variance it can be seen that the test results show that
the variants of the three groups are the same (sig. = 0.396), so the Anova test is valid to test this relationship.

Table 26. ANOVA

| ICT_literacy_skills | Sum of Squares | df | Mean Square | F   | Sig. |
|---------------------|----------------|----|-------------|-----|------|
| Between Groups      | 27,409         | 2  | 13,705      | 0.062 | 0.940 |
| Within Groups       | 6388.591       | 29 | 220,296     |      |      |
| Total               | 6416.000       | 31 |             |      |      |

Next to see if there are differences in ICT literacy skills of the three students in the ICT literacy knowledge group. We see table 26 ANOVA, from that table in column Sig. a value of 0.940 was obtained. Thus at the real level = 0.05 we reject H1, so the conclusion obtained is that there is no significant difference in the average ICT literacy skills of students based on the three ICT literacy knowledge groups. This indicates that in the experimental class, the use of google suite for education has the same effect in improving students' ICT literacy abilities based on ICT literacy knowledge.

3.5 Differences in ICT Literacy Skills Based on Indicators and Categories

Table 27. Descriptives

| Indicator | Category | Mean   | Std. Deviation | N  |
|-----------|----------|--------|----------------|----|
| acces     | High     | 85,700 | 13,53008       | 20 |
|           | Medium   | 63,300 | 15,18808       | 10 |
|           | Low      | 58,500 | 12,02082       | 2  |
|           | Total    | 77,000 | 17,75642       | 32 |
| manage    | High     | 91,250 | 12,23401       | 20 |
|           | Medium   | 70,000 | 19,72027       | 10 |
|           | Low      | 37,500 | 53,03301       | 2  |
|           | Total    | 81,250 | 22,89527       | 32 |
| Integrate | High     | 90,000 | 30,77935       | 20 |
|           | Medium   | 60,000 | 51,63978       | 10 |
|           | Low      | 50,000 | 70,71068       | 2  |
|           | Total    | 78,125 | 42,00134       | 32 |
| evaluate  | high     | 90,000 | 30,77935       | 20 |
|           | medium   | 70,000 | 48,30459       | 10 |
|           | low      | .0000  | .00000         | 2  |
|           | Total    | 78,125 | 42,00134       | 32 |
| Create    | high     | 86,800 | 16,58661       | 20 |
|           | medium   | 60,100 | 21,29397       | 10 |
|           | low      | 50,000 | 24,04163       | 2  |
|           | Total    | 76,156 | 22,78810       | 32 |
| Total     | high     | 88,750 | 22,01899       | 100|
|           | medium   | 64,680 | 33,70668       | 50 |
|           | low      | 39,200 | 37,75006       | 10 |
|           | Total    | 78,131 | 30,91622       | 160|

Table 27 Descriptives shows the mean scores and standard deviations of students' ICT literacy skills based on indicators and categories.
Before continuing the test it is necessary to test the homogeneity of students' ICT literacy skills based on indicators and categories because one of Anova's assumptions is the same variance. From table 28 Test of Homogeneity of Variance it can be seen that the test results show that the variants of the three groups are the same (sig. = 0.473), so the Anova test is valid to test this relationship.

**Table 28. Test of Homegeneity of Variance**

Levene's Test of Equality of Error Variances

| F     | df1 | df2 | Sig. |
|-------|-----|-----|------|
| 0.725 | 14  | 145 | .473 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + indicator + category + indicator * category

Table 29. Tests of Between-Subjects and Effects

**Tests of Between-Subjects Effects**

| Source                | Type III Sum of Squares | df | Mean Square | F     | Sig.  |
|-----------------------|-------------------------|----|-------------|-------|-------|
| Corrected Model       | 41233,094               | 14 | 2945,221    | 3,856 | .000  |
| Intercept             | 285433,207              | 1  | 285433,207  | 373,735| .000  |
| Indicator             | 2147,443                | 4  | 536,861     | .703  | .591  |
| category              | 35479,014               | 2  | 17739,507   | 23,227| .000  |
| indicator * category  | 5277,055                | 8  | 659,632     | .864  | .549  |
| Error                 | 110741,150              | 145| 763,732     |       |       |
| Total                 | 1128693,000             | 160|             |       |       |

Corrected Total 151974,244 159

a. R Squared = .271 (Adjusted R Squared = .201)

Furthermore, to test the hypothesis can be obtained from Table 29 Tests of Between-Subjects and Effects.

Line hypothesis (indicator):
In the indicator bar, the significance value (Sig.) = 0.591 > 0.05 (Alpha). This means that H0 is accepted, there is no difference in ICT literacy skills based on indicators.

Column Hypothesis (category):
In the category bar, the significance value (Sig.) = 0.000 < 0.05 (Alpha). That means H1 is accepted, there are differences in ICT literacy skills by category.

Interaction hypothesis (indicator * category):
In the indicator line * category, the significance value (Sig.) = 0.549 > 0.05 (Alpha). This means that H0 is accepted, there is no interaction between indicators and categories.
### 3.6 Post Hoc Test

Post hoc tests are performed if there is H1 received. In this study, the column hypothesis (category), H1 is accepted, which means that there are differences in ICT literacy skills by category. The Post Hoc Test aims to see which categories are different.

#### Table 30. Multiple Comparisons

| posttest_ ICT_literacy_skills LSD | Multiple Comparisons | Mean Difference (I - J) | Std. Error | Sig. | 95% Confidence Interval |
|----------------------------------|----------------------|-------------------------|------------|-----|-------------------------|
| high                             | medium               | 24,0700                 | 4,78664    | .000| 14,6094 - 33,5306       |
| high                             | low                  | 49,5500*                | 9,16573    | .000| 31,4343 - 67,6657       |
| medium                           | high                 | -24,0700*               | 4,78664    | .000| -33,5306 - 14,6094      |
| medium                           | low                  | 25,4800                 | 9,57329    | .009| 6,5588 - 44,4012        |
| low                              | high                 | -49,5500*               | 9,16573    | .000| -67,6657 - 31,4343      |
| low                              | medium               | -25,4800*               | 9,57329    | .009| -44,4012 - 6,5588       |

Based on observed means.

The error term is Mean Square(Error) = 763,732.

* The mean difference is significant at the .05 level.

Table 30 shows that for the categories all values can be obtained Sig. = 0,000. That shows the three categories are different. High categories differ from medium categories, high categories differ from low categories, and medium categories differ from low categories.

Furthermore, we will show the distribution of knowledge and skills ICT Literacy of both control and experimental classes based on their post-test and result as follows.

**Figure 7. Distribution of Students’ ICT Literacy Knowledge of the Control Class based on Post-Test Results**
Figure 8. Distribution of Students' ICT Literacy Knowledge of the Experimental Class based on Post-Test Results

Figure 9. The Distribution of Students’ ICT Literacy Skills of the Control Class based on Post-Test Result
3.7 Questionnaire accuracy of learning with Google Suite For education

The questionnaire is used to determine the accuracy of use in learning. Prior to showing our results, we need to test the reliability and validity of our questionnaire instrument. The following tables show the reliability and validity results of questionnaire instrument.

Table 31. The Test Result of the Validity Google Suite For Education Questionnaire
Experimental Class: Correlations

| No | r_count | Validity |
|----|---------|----------|
| 1  | 0,421   | valid    |
| 2  | 0,469   | valid    |
| 3  | 0,362   | valid    |
| 4  | 0,641   | valid    |
| 5  | 0,408   | valid    |
| 6  | 0,370   | valid    |
| 7  | 0,362   | valid    |
| 8  | 0,377   | valid    |
| 9  | 0,352   | valid    |
| 10 | 0,465   | valid    |
| 11 | 0,521   | valid    |
| 12 | 0,371   | valid    |

Based on Table 31, to find out the validity of the question items, Pearson correlation values ($r_{count}$) compared with $r_{table} = 0,349$ (df = n – 2 = 32 – 2 = 2). If $r_{count} > r_{table}$ then the question item can be said to be valid. Validity can also be seen through the significance value (Sig. 2-tailed). If value Sig. 2-tailed < 0,05 then the question item is valid. In the Correlations Table above, it can be seen that all items are valid.

Figure 10. The Distribution of Students’ ICT Literacy Skills of the Experimental Class based on Post-Test Result
Table 32. The Test Result of the Reliability Question: Reliability Statistics of the Experimental Class

| Reliability Statistics          | Cronbach’s Alpha | N of Items |
|--------------------------------|------------------|------------|
|                                | .685             | 12         |

Based on Table 32, it can be seen that the overall reliability value is 0.685 is greater than 0.6. Therefore \( r_{\text{count}} > r_{\text{table}} \). It concludes that the instrument items are reliable.

Table 33. The Test Result of the Validity Google Suite For Education Questionnaire Control Class: Correlations

| Number Test | \( r_{\text{hitung}} \) | Validitas |
|-------------|-------------------------|-----------|
| 1           | 0.450                   | valid     |
| 2           | 0.427                   | valid     |
| 3           | 0.423                   | valid     |
| 4           | 0.425                   | valid     |
| 5           | 0.438                   | valid     |
| 6           | 0.575                   | valid     |
| 7           | 0.444                   | valid     |
| 8           | 0.357                   | valid     |
| 9           | 0.441                   | valid     |
| 10          | 0.385                   | valid     |
| 11          | 0.429                   | valid     |
| 12          | 0.571                   | valid     |

Based on Table 33, to find out the validity of the question items, Pearson correlation values (\( r_{\text{count}} \)) compared with \( r_{\text{table}} = 0.349 \) (df = n – 2 = 32 – 2 = 2). If \( r_{\text{count}} > r_{\text{table}} \) then the question item can be said to be valid. Validity can also be seen through the significance value (Sig. 2-tailed). If value Sig. 2-tailed < 0.05 then the question item is valid. In the Correlations Table above, it can be seen that all items are valid.

Table 34. The Test Result of the Reliability Question: Reliability Statistics of the Control Class

| Reliability Statistics          | Cronbach’s Alpha | N of Items |
|--------------------------------|------------------|------------|
|                                | .607             | 12         |

Based on Table 34, it can be seen that the overall reliability value is 0.607 is greater than 0.6. Therefore \( r_{\text{count}} > r_{\text{table}} \). It concludes that the instrument items are reliable.

Now, we will analyze the homogeneity test and the normality test, and finally, we will analyze the google suite for education significantly appropriate for use in learning by using independent sample t-tests.
The normality test results in Table 35 show the significance value of the control class is 0.064 and the significance value of the experimental class is 0.058. The significance value of the two classes is greater than 0.05 so it can be concluded that both are normally distributed.

Table 36 shows that the average value of the google suite for education questionnaire of the control class is 66.5313 (SD = 14.33692) while the average post-test scores of the google suite for education questionnaire of the experimental class is 73.6563 (SD = 13.30440).

Table 37 shows that the significant differences between the two classes (control and experimental) obtained from the significance value 0.042 (p < 0.05). While the significance value t-test sig. (2-tailed) from the independent sample t-test the post-test value is 0.044 (p < 0.05). This shows that the use of google suite for education in learning is appropriate.
4. Discussion
This research was conducted to determine the effect of using google suite for education on students' different academic abilities on ICT literacy of junior high school students. The findings of this research showed that the using of google suite for education has a significant influence on improving ICT literacy of students in terms of knowledge and skills.

The results show after the using Google Suite for Education in learning, based on the post-test result, it showed the knowledge value of ICT literacy ability for the control class with the high category is 59% for Access, 69% for Manage, 41% for Integrate, 56% for Evaluate and 44% for Create. The medium categories is 31% for Access, 19% for Manage, 38% for Integrate, 25% for Evaluate and 56% for Create. The Low categories is 9% for Access, 13% for Manage, 22% for Integrate, 19% for Evaluate and 0% for Create. While the experimental class it was found that the percentage of knowledge value of ICT literacy ability for the experimental class with the high category is 72% for Access, 78% for Manage, 53% for Integrate, 84% for Evaluate and 59% for Create. The medium categories is 25% for Access, 13% for Manage, 38% for Integrate, 9% for Evaluate and 34% for Create. The Low categories is 3% for Access, 9% for Manage, 9% for Integrate, 6% for Evaluate and 6% for Create. The results of both classes can be seen in Figure 7 and Figure 8. It can be seen that the ICT literacy knowledge of the experimental class is superior to the control class.

Furthermore, based on the results of the post-test, it showed the skills value of ICT literacy ability for the control class with the high category is 53% for Access, 69% for Manage, 66% for Integrate, 75% for Evaluate and 34% for Create. The medium categories is 44% for Access, 25% for Manage, 0% for Integrate, 0% for Evaluate and 50% for Create. The Low categories is 3% for Access, 6% for Manage, 34% for Integrate, 25% for Evaluate and 16% for Create. While the experimental class it was found that the percentage of skills value of ICT literacy ability for the experimental class with the high category is 63% for Access, 84% for Manage, 78% for Integrate, 78% for Evaluate and 41% for Create. The medium categories is 38% for Access, 13% for Manage, 0% for Integrate, 0% for Evaluate and 47% for Create. The Low categories is 0% for Access, 3% for Manage, 22% for Integrate, 22% for Evaluate and 13% for Create. The results of both classes can be seen in Figure 9 and Figure 10. It can be seen that the ICT literacy skills of the experimental class is superior to the control class.

From these results, the experimental class students showed higher ICT literacy skills in knowledge and skills compared to the class of control.

Furthermore, according to the results of the google suite for education questionnaire, it showed the average value of the google suite for education questionnaire from the experimental class was greater than the control class (Table 36), and based on the results of the t-test (Table 37) shows the significant differences between the two classes (control and experimental) obtained from the significance value 0.042 (p < 0.05). While the significance value t-test sig. (2-tailed) from the independent sample t-test the post-test value is 0.044 (p < 0.05). This shows that the use of google suite for education in learning is appropriate.

5. Conclusion
According to the results of the study, google suite for education has a significant influence on the ICT literacy abilities of students with different academic abilities in both knowledge and skills. Students, in the experimental class, demonstrate ICT literacy abilities in knowledge and skills higher than in the control class. Finally, we can claim that the use of Google Suite for Education can increase ICT literacy of students with different academic abilities.

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