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# EFFECTIVENESS OF GOOGLE MEET SUPPORTED INSTRUCTION IN LEARNING POLYNOMIALS AMONG SECONDARY STUDENTS

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***Abstract***

*This research aimed to examine the effectiveness of Google Meet Supported Instruction in learning Polynomials and to assess the attitude towards Google Meet Supported Instruction. Experimental method was used and a sample of 180 Ninth standard students who were randomly selected from three schools. There were two groups made up of the 180 students. The 90 students were selected for the control group (Chalk and talk method) and the remaining 90 students were selected for an experimental group (Google Meet-supported instruction). The Kahoot application was used to conduct the pre-test and post-test. The Questionnaires with a 5-point Likert scale which has been constructed using google form was used to calculate the attitude towards Google Meet Supported Instruction. The outcomes demonstrated that the control group students outperformed the experimental group students (Google Meet Supported Instruction).This might be due to the result of students being more accustomed to the chalk and talk method than Google Meet Supported Instruction. So, the Students have performed better due to their familiarity with the traditional teaching (chalk and talk method). In future, When there is an absence of offline classes, the Google Meet Supported Instruction can be used to ensure the students are not negatively affected and to further improve their understanding. The Google Meet Supported Instruction that can be used at that time when the students feel that the duration for each class is not sufficient. At that time the teacher recommended Google Meet Instruction to enhance the students learning and to provide extra practice for that kind of student.*

***Keywords:*** *Effectiveness, Attitude, Google Meet Supported Instruction, Traditional teaching.*



## Introduction

During the pandemic situation, the educational system was totally confused and the level of the students' knowledge in terms of academics has been reduced. After much discussion, the Government of Tamilnadu introduced an online education system and insisted all the educational institutions follow online education. Many researchers have reported the

effectiveness of online education during COVID (Butnaru et al., 2021; Bahasoan et al., 2020; Fajri et al., 2021; Satyawan et al., 2021; Hasnan Baber, 2021). This online education could be conducted using various platforms. Some of the platforms were Google Meet, Zoom, Microsoft Teams, Go To Meeting. In this research, the researcher used Google Meet Platform because it has many features like providing high quality audio and video visuals, Screen sharing, white board to teach the concept. The teacher also faced many difficulties to evaluate and analyze the performance of the students. This could be done through applications and online platforms and the educational institution also made a way for online assessment applications. Kahoot, Quizizz, Socrative, Edmodo, Quizlet, Padlet, Mentimeter are few assessment applications from the numerous assessment applications.The researcher used the Kahoot application for the evaluation process because it has the features of test formats, multiple choice question types, an unlimited number of test takers, animation podium for the winners, reinforcement through music, and encouraging memes. This study is used to analyze the efficiency of Google Meet Supported Instruction in learning polynomials as well as to assess the attitudes towards Google Meet Supported Instruction.

**Studies related to Google Meet Supported Instruction**

**Setyawan's et al., (2020)** investigated the Effects of the Google Meet Assisted Method of Learning on Building Student Knowledge and Learning Outcomes. A quasi-experimental in the form of pretest-posttest control group design was used in this study. The sample for this study was 96 first year students in the elementary school teacher education. The Researchers involved three intact classes; 1 class was randomly selected as an experimental group and the remaining 2 classes as a control group. Knowledge Building Test (TMP) and Cognitive Learning Outcomes Test (THB) were administered as a pretest and posttest. The results of the two-way MANOVA revealed that students taught using the Google Meet media-assisted lecture method have posttest scores builded knowledge and learning outcomes in their post-test which was higher than other two groups. Therefore, it can be concluded that the method of lectures assisted by Google Meet media has a significant influence on building knowledge and student learning outcomes in lecturing learning strategies in elementary schools.

**Pham (2022)** The study aims to examine Engineering Students' Interaction in Online Classes via Google Meet: A Case Study During the COVID-19 Pandemic. The participation for this research paper was 115 engineering students from a private university. The results

indicate that the interaction and satisfaction of the participants was perceived at a positive level, but not very high. One of the three types of interaction, engineering students' interaction with their teachers was slightly higher than the other two types. Several reasons were cited: passive learning styles, lack of physical interaction, and need for private communication. To improve student interaction, it is suggested that more physical classroom activities should be included in each online lesson. Engineering students should then become more proactive and prepare lessons in advance. It is also recommended that Google Meet developers add private meeting room and messaging features,which has been suggested by participants. In general, instructors and students should consider these types of interactions from the students' perspective to maintain an effective learning environment during the pandemic.

**Studies related to Kahoot**

**Khamaiseh et al., (2022)** The researcher aimed to examine The effect of using Kahoot on Jordanian EFL Ninth-Grade Students' Reading Comprehension. A sample of 66 female students was distributed randomly into an experimental and a control group of 33 students each. The data were collected using a quasi-experimental design through a pre-/post-test for both control and experimental groups. In terms of data analysis, One-way MANCOVA and One-way ANCOVA were used to answer the research question. The findings revealed that there were significant differences between the two groups' performance in the post-test in favor of the experimental group. Therefore, the researcher recommends using Kahoot in different EFL skills and at different levels of students.

**Kusumayanthi et al., (2021)** The researcher investigated the students' engagement about vocabulary using Kahoot and their interests when Kahoot! is implemented in their English classes. In this research, the online gamification method applied by teachers in the classroom was used by students. This research employs a descriptive qualitative design. The data obtained through two main instruments, namely class observations and questionnaires. Class Observations show that Kahoot helps the students to be actively involved in learning vocabularies in English. Therefore, the use of Kahoot on Learning English is beneficial for students because it helps the student to learn in a variety of ways. The results of the questionnaire show that the students are interested in learning English vocabulary using Kahoot because they feel kahoot has many benefits in learning English as it helps them to learn better.

**Need and Significance of the study**

At COVID, there was an absence of an actual classroom. The education of the students had seen severe setbacks. All educational institutions were required to use the online education system and this has been insisted by the Tamil Nadu Government. Delivering and managing online education utilizes the internet. Online learning's education system has a primary goal to maintain the high standard of instruction that has been provided to the students. The advantages of online learning include convenience, enhanced student engagement, accessibility, and flexibility. **Axmedova et al., (2021)** examined a study on advantages and disadvantages of online learning and concluded that digital learning has emerged as a necessary resource for students and schools all over the world and the demand for online learning has risen significantly, and it will continue doing so in the future.

**Mishra et al., (2020)** conducted a study on the Online teaching-learning in higher education during lockdown period of COVID-19 pandemic and the results showed that the linkage between change management process and online teaching-learning process in education system amid the COVID-19 outbreak, so as to overcome the persisting academic disturbance and to ensure the resumption of educational activities and discourses as a normal course of procedure in the education system.

So, this study is about finding the effectiveness of the Google Meet Supported Instruction in learning polynomials of secondary students belonging to 9th standard students and to assess the attitude towards Google Meet Supported Instruction.

**Hypotheses of the study**

- There is no significant difference between pre- test scores of experimental group (Google Meet Supported Instruction) students and post- test scores of experimental group (Google Meet Supported Instruction) students.
- There is no significant difference between post- test scores of control group students and post- test scores of experimental group (Google Meet Supported Instruction) students.
- There is no significant difference between post- test scores of boys belonging to the experimental group (Google Meet Supported Instruction) and post- test scores of girls belonging to the experimental group (Google Meet Supported Instruction).

- There is no significant difference between post- test scores of Rural areas students belonging to the experimental group (Google Meet Supported Instruction) and post-test scores of Urban areas students belonging to the experimental group (Google Meet Supported Instruction).
- There will be a significant and positive relationship among post- test score, Gain score, attitude towards Google Meet score of students in the experimental group (Google Meet Supported Instruction) students.

**Sample for the study**

The 180 Ninth standard students from three schools were chosen randomly for this study. Out of these 180 students, 90 students were chosen to participate in the experimental group (Google Meet Supported Instruction), while the remaining 90 students were chosen to participate in the control group (Chalk and talk method). There were 45 boys, 45 girls, 60 students belonging to urban areas, and 30 students belonging to rural areas in each group.

**Methodology**

The present study employed an experimental method. The pre- test, post- test control group design was used and the randomization was included in this study to examine the effectiveness of Google Meet Supported Instruction for teaching polynomials to Secondary students.

**Treatment for the study**

The experimental group was taught using (Google Meet Supported Instruction), and the control group was taught using traditional methods (Chalk and talk method) after receiving prior approval from the head of the educational institutions.

The treatment of the experimental method lasted for 4 weeks, with a duration of 1 hour and 15 minutes each day. The students were guided through the installation and to familiarize themselves with the use of the Google Meet platform and Kahoot applications. The Students in the experimental group (Google Meet Supported Instruction) were required to adhere strictly to the rules when taking part in online instruction. Videos about polynomials, a pdf of mathematics problems, and notes about polynomials were shared using the "Screen sharing" feature. The problems in polynomials were taught using the "White board" feature. The researcher conducted the pre- test for the experimental group students through Kahoot application. After pre-test, the treatment was given using Google Meet Supported Instruction

to teach the concept of polynomials for 4 weeks. Finally, the Post-test was conducted in order to assess the performance of the students using the Kahoot application.

The control group students were taught the concept of polynomials using the chalk and talk method during Mathematics hour. There were ten mathematics periods with the duration of 45-minutes for each week. The pre- test was conducted for the control group students using the paper and pencil test. Then, the treatment was given with the help of the chalk and talk in order to teach the concept of polynomials. The researcher used teaching aids for the deep understanding of the polynomials while teaching. At the end of the treatment, the Post- test for the control group students was conducted and the performance was evaluated through a paper and pencil test.

**Assessment of attitude**

In order to find out the attitude towards Google Meet Supported Instruction, the attitude scale was constructed and administered to measure the experimental students attitude. This scale consists of 20 items out of which 15 items were positively worded and 5 items were negatively worded. The students were requested to give responses based on their preferences against five options namely Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. Weightage of 5, 4, 3, 2, 1 are given in the order for the positively worded statements and the scoring is reversed such as 1, 2, 3, 4 and 5 for the negatively worded statements. The score in this scale ranges from 20 to 100 in the direction of the most negatively worded statements to most positively worded statements.

**Analysis**

**Hypothesis 1:** There is no significant difference between pre- test scores of experimental group (Google Meet Supported Instruction) students and post- test scores of experimental group (Google Meet Supported Instruction) students.

| Variables | N | Mean | Standard Deviation | Standard Error difference | CR | Level of Significance |
|---|---|---|---|---|---|---|
| Pre-test scores of students belonging to experimental group | 90 | 2.04 | 1.483 | 0.235 | 70.074 | 0.01 |
| Post-test score of students belonging to experimental group | 90 | 18.51 | 1.664 | | | |

It is clear from the above table that the mean difference between the pre -test scores and post-test scores of the experimental group students (Google Meet Supported Instruction) is significant at the 0.01 level. The post-test scores of students are higher than the pre-test scores of students in the experimental group, according to a comparison of mean scores (Google Meet Supported Instruction), the post- test scores of students are higher than the pre- test scores of students in the experimental group( Google Meet Supported Instruction)students. As a result, the treatment of Google Meet Supported is effective in learning polynomials among Secondary students.

**Hypothesis 2:** There is no significant difference between post- test scores of control group students and post- test scores of experimental group (Google Meet Supported Instruction) students.

| Variables | N | Mean | Standard Deviation | Standard Error deviation | CR | Level of Significance |
|---|---|---|---|---|---|---|
| Post-test scores of students belonging to control group | 90 | 19.10 | 1.227 | 0.218 | 2.702 | 0.01 |
| Post-test scores of students belonging to experimental group | 90 | 18.51 | 1.664 | | | |

From the above table it is evident that the mean difference between the post- test scores of the control group (chalk and talk method) students and the experimental group students (Google Meet Supported Instruction) is significant at 0.01 level. A comparison between mean scores indicated that the control group students performed better than the experimental group

(Google Meet Supported Instruction) students. This indicates that the treatment using chalk and talk methods is effective for the control group students.

**Hypothesis 3:** There is no significant difference between post- test scores of boys belonging to the experimental group (Google Meet Supported Instruction) and post- test scores of girls belonging to the experimental group (Google Meet Supported Instruction).

| Variables | N | Mean | Standard deviation | Standard Error deviation | CR | Level of Significance |
|---|---|---|---|---|---|---|
| Post-test scores of boys belonging to experimental group | 45 | 18.60 | 1.529 | 0.228 | 0.505 | NS |
| Post-test score of girls belonging to experimental group | 45 | 18.42 | 1.803 | | | |

**NS*- Not Significant**

This table shows that there are no statistically significant differences in the mean post-test scores of boys and girls belonging to the experimental group (Google Meet Supported Instruction). This shows that there are no differences between the post- test scores of the boys and girls belonging to the experimental group (Google Meet Supported Instruction). Therefore, the boys and girls belonging to the experimental group (Google Meet Supported Instruction) are similar in their post- test scores.

**Hypothesis 4:** There is no significant difference between post- test scores of Urban areas students belonging to the experimental group (Google Meet Supported Instruction) and post-test scores of Rural area students belonging to the experimental group (Google Meet Supported Instruction).

| Variables | N | Mean | Standard Deviation | Standard Error difference | CR | Level of Significance |
|---|---|---|---|---|---|---|
| Post-test score of urban area students belonging to experimental group | 60 | 18.18 | 1.827 | 0.238 | 3.272 | 0.01 |
| Post-test score of rural area students belonging to experimental group | 30 | 19.17 | 1.020 | | | |

It is clear from the above table that the mean difference between the post-test scores of students belonging to the experimental group (Google Meet Supported Instruction) from Rural area and Urban areas is significant at the 0.01 level. The post-test scores of rural area students were superior to the urban areas students, belonging to the experimental group (Google Meet Supported Instruction) students. As a result, the rural area students are benefited more.

**Hypothesis 5:** There will be a significant and positive relationship between post- test score, gain score, attitude towards Google Meet Supported Instruction of students belonging to the experimental group (Google Meet Supported Instruction).

| Variables | Post- test scores | Gain score | Attitude towards Google Meet Supported Instruction |
|---|---|---|---|
| Post-test score | 1 | 0.318** | 0.251* |
| Gain score | - | 1 | 0.219* |
| Attitude towards Google Meet Supported Instruction | - | - | 1 |

****- Significant at 0.01 level**

***- Significant at 0.05 level**

From the above table, there exists a positive correlation between post- test scores, gain score and attitude towards Google Meet Supported Instruction of the students belonging to experimental group (Google Meet Supported Instruction) students.

**Findings**

- The experimental group (Google Meet Supported Instruction) post-test results are discovered to be greater than the experimental group (Google Meet Supported Instruction) pre-test results.
- The post- test scores of control group students are found to be higher than the post- test scores of experimental group (Google Meet Supported Instruction) students.
- The post-test results of the boys and girls in the experimental group (Google Meet Supported Instruction) are comparable.
- The post- test scores of Rural area students are found to be higher than the post- test scores of Urban areas in the experimental group(Google Meet Supported Instruction) students.
- There is a significant and positive relationship between post- test score, gain score and attitude towards Google Meet Supported Instruction of experimental group students.

**Discussion and conclusion**

The post- test scores of experimental group students were higher because the students attended the post- test after being exposed to the treatment (Google Meet Supported Instruction). The knowledge of the students related to polynomials in pre- test would be less, continue to the treatment was given through Google Meet Supported Instruction in order to teach polynomials by clearly explaining the concept and finally the post- test was conducted. Therefore, it is concluded that the treatment through Google Meet Supported Instruction is effective to teach the concept of polynomials for the experimental group students. Nehe (2021); Alturki (2022) have reported similar findings.

The students in the control group have been exposed to chalk and talk methods of teaching and learning for a longer period of time, so the post-test scores of the control group students were higher than post- test scores of the students belonging to the experimental group. In the control group, the traditional teachers have many advantages like face-to-face interaction, motivating the students when it is needed, immediately clearing the doubts of the students and assessing them by asking questions whether they understood the topic or not. This indicates the presence of many advantages in traditional teaching over their online teaching, and so the treatment through chalk and talk methods which has been provided to the control group were effective. Corroborative conclusions have been proposed by smith et al., (2016).

The post-test scores of rural area students were superior than urban area students belonging to the experimental group because the students in the rural area were very eager to learn about the new technology, so the post-test outcomes of the rural area students were better than the urban students belonging to the experimental group (Google Meet Supported Instruction) among Secondary students. Corroborative conclusions have been suggested by Erickson (2017).

The post-test scores of the students undoubtedly be higher than the pre-test scores of the students, therefore there would definitely be a positive correlation between gain score and post-test scores of the students belonging to the experimental group (Google Meet Supported Instruction). If post-test scores were higher than pre-test scores, then the gain score was also found and the attitude towards Google Meet Supported Instruction would be definitely high.

Yet, Google Meet Supported Instruction might be employed in emergency situations when there is an absence of offline classes and the students are suffering. In order to improve the student comprehension the Google Meet Supported Instruction can be used at that time.

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