Scholarly Research Journal for Humanity Science & English Language,
Online ISSN 2348-3083, SJ IMPACT FACTOR 2021: 7.278, www.srjis.com
PEER REVIEWED & REFEREED JOURNAL, DEC-JAN, 2023, VOL-11/55

EFFECTIVENESS OF ZOOM SUPPORTED INSTRUCTION IN LEARNING MATRICES AND DETERMINANTS AMONG HIGHER SECONDARY STUDENTS

Shobana. D[1] & N. Kalaiarasi[2], Ph.D.

[1]M. Ed scholar, N. K. T National College of Education for Women, Chennai.

[2]Associate professor of Education, N. K. T National College of Education for Women, Chennai.

Paper Received On: 25 JAN 2023

Peer Reviewed On: 31 JAN 2023

Published On: 1 FEB 2023

Abstract

This study aimed to find the effectiveness of Zoom Supported Instruction in learning Matrices and Determinants and to assess the attitude of students towards Zoom Supported Instruction. Experimental method was adopted for this study with a sample of 180 Higher Secondary students belonging to 11th standard who were randomly selected from three schools. Out of these 180 students, 90 students were selected for the experimental group (Zoom Supported Instruction) and the remaining 90 students were selected for the control group (chalk and talk method). The pre- test and post- test were conducted using the Quizizz application. The attitude towards Zoom Supported Instruction was collected through a 5 point likert scale with the help of google forms. The results showed that the control group students achieved better than the experimental group students (Zoom Supported Instruction) which indicates that chalk and talk method is effective when compared to Zoom Supported Instruction. This might be due to the fact that students are more familiar with the chalk and talk method than the Zoom Supported Instruction. Due to the familiarity with the chalk and talk method, students might have performed better. However, Zoom Supported Instruction can be used in times of crisis to ensure that students do not suffer when offline classes are unable to be held and to further strengthen students' understanding. Some students in the classroom may find that the time allotted is insufficient. As a result, the teacher wishes to improve learning and provide more practice for that type of student. At that time, the Zoom Supported Instruction can be used.

Keywords: *Effectiveness, Attitude, Zoom Supported Instruction, chalk and talk method*

Introduction

Due to COVID, the schools did not function and the classes were not conducted. The students start to lag behind in education. Many researchers have reported the challenges in education during COVID (Bulletin, 2020; Schmidt and Ramot, 2020; Neuwrith, 2020; Toquero and Mae, 2020; Jena, 2020). So, the educational institution started utilizing an alternative mode (online mode) of teaching to engage the students. There are many online platforms to conduct

classes. One such platform is Zoom which helps the teacher to connect with their students via high quality audio- video live streaming sessions, sharing screen, using white board to teach the concept, recording the classes. The teacher also faces difficulty in assessing and evaluating the students. So, the educational institution also paved a way for online evaluation through applications and online platforms. There are many assessment applications like Quizizz, Kahoot, Edulastic, Playposit, Flipgrid, Pear deck, GoClass, Formative, Padlet, Edpuzzle, Google forms, Mentimeter. From the above Quizizz has more facilities such as different layouts, multiple choice question type, no limit for number of test takers, reinforcement through music and motivational memes when compared to other assessment applications. Therefore this study aims to find the effectiveness of Zoom Supported Instruction in learning Matrices and Determinants and to assess the attitude of students towards Zoom Supported Instruction.

Studies related to Zoom Supported Instruction

Mu'awanah et al., (2021) conducted a study on Using Zoom to Support English Learning during Covid-19 Pandemic: Strengths and Challenges. A qualitative approach with narrative inquiry design was employed and students from a junior high school voluntarily participated. Interviews were deployed as data collection methods, and the data were validated by triangulation and analyzed by following the interactive model analysis. The study reveals that learning English via Zoom helps students to practice English, make the teaching-learning process more effective, and facilitate teacher-student interaction and communication. Moreover, features on Zoom support distance English learning and these features have a good impact on students' English learning output.

Archibald (2019) conducted a study on the Using Zoom Video Conferencing for Qualitative Data Collection: Perceptions and Experiences of Researchers and Participants. In this study, the feasibility and acceptability of using Zoom to collect qualitative interview data within a health research context in order to better understand its suitability for qualitative and mixed-methods researchers is explored. Here 16 practice nurses participated in online qualitative interviews about their experiences of using Zoom and concurrently the researcher observations were recorded. Although several participants experienced technical difficulties, most described their interview experience as highly satisfactory and generally rated Zoom above alternative interviewing mediums such as face-to-face, telephone, and other video conferencing services,

platforms, and products. Findings suggest the viability of Zoom as a tool for collection of qualitative data because of its relative ease of use, cost-effectiveness, data management features, and security options.

Studies related to Quizizz Application

Safarati and Rahma (2020) conducted a study on the effectiveness of online learning using Quizizz education game media during the Covid-19 pandemic in applied Physics courses. This study uses a descriptive research method. The population in this study were students of the Al Muslim University Physics Education Study Program. The sample selection used a purposive sampling method, namely students who were taking applied physics lectures. The data collection techniques used were tests (quizzes) and questionnaires. This study indicates that quizizz educational game media is one of the most effective online learning media used during the Covid-19 pandemic in applied physics courses.

Munuyandi et al., (2021) conducted a study on the Effectiveness of quizizz in interactive teaching and learning Malay grammar. The researcher used descriptive questionnaire research design, and chose 130 students from Tamil schools by following the simple random sampling strategy. The researcher explored the effectiveness of the Quizizz application as a formative quizzing tool for teaching and learning Malay grammar in year-four Tamil school students from 15 Tamil schools in Manjung district. The results showed that it was imperative to use Quizizz as a formative assessment tool to learn and teach Malay grammar to Tamil students and the students responded positively to the use of Quizizz in the classroom through a survey questionnaire.

Need and Significance of the study

The physical classroom was not present during COVID. The education of the students had suffered a lot. At that time the Government of Tamilnadu insisted all the educational institutions make use of the online education system. The internet is used to deliver and administer online education. The main purpose of online education is not to permit the students to suffer from non-availability of quality education which has been provided for the students in the educational institutions. The benefits of online education include flexibility, ease of access, increased student participation, and convenience. It has been observed that online education has many advantages and disadvantages and there exists a growth in popularity and the students have benefited more

from using online platforms (Alshamrani and Mohammed, 2019) and the future belongs to blended learning which combines physical and online education (Moise et al., 2021).

In this context, the present study is about analyzing the effectiveness of Zoom Supported Instruction in learning Matrices and Determinants among Higher Secondary students belonging to 11th standard and to assess the attitude of students towards Zoom Supported Instruction.

Hypotheses of the study

- There is no significant difference between pre- test scores of experimental group (Zoom Supported Instruction) students and post- test scores of experimental group (Zoom Supported Instruction) students.
- There is no significant difference between post- test scores of control group students and post- test scores of experimental group (Zoom Supported Instruction) students.
- There is no significant difference between post- test scores of boys belonging to the experimental group (Zoom Supported Instruction) and post- test scores of girls belonging to the experimental group (Zoom Supported Instruction).
- There is no significant difference between post- test scores of Business Maths students belonging to the experimental group (Zoom Supported Instruction) and post- test scores of General Maths students belonging to the experimental group (Zoom Supported Instruction).
- There will be a significant and positive relationship between post test score, gain score, attitude towards Zoom Supported Instruction of the experimental group (Zoom Supported Instruction) students.

Sample for the study

The sample of the present study was 180 Higher Secondary students belonging to 11th standard who were randomly selected from three schools. From the sample of 180 students, 90 students were segregated for the experimental group (Zoom Supported Instruction) and the remaining 90 students were selected for the control group (Chalk and talk method). In both the groups there were 45 boys, 45 girls and 60 General Maths students, 30 Business Maths students.

Methodology

Experimental method was used for the present study. Since, the present study intends to investigate the effectiveness of Zoom Supported Instruction in learning Matrices and Determinants

among Higher Secondary students, the pre- test, post- test control group design was used. This type of design can be described as experimental design because it includes the process of randomization. Here, the comparison takes place between two different types of experiences of two different groups.

Treatment for the study

After getting prior permission from the head of the institutions, first the researcher segregated students into two groups. One group is an experimental group and the other group is a control group. Experimental group students were taught using Zoom Supported Instruction and the control group students were taught with the help of traditional teaching (chalk and talk method).

First, the pre- test was conducted for the experimental group students using the Quizizz application. Then, the treatment for the experimental group went on for 4 weeks at the duration 1 hour 15 minutes per day. Before starting the treatment, the students were instructed and facilitated to install and to get acquainted with the use of the Zoom platform and Quizizz application. A complete adherence of the protocol in participating online teaching was also ensured. The features like "Screen sharing" was used to share videos related to Matrices and Determinants, pdf of Mathematics text book and notes related to Matrices and Determinants and the "White board" was used to teach the problems in Matrices and Determinants. At the end of the treatment, the Post-test was conducted and the performance was assessed through a Quizizz application.

The pre- test was conducted for the control group students using the paper and pencil test. The control group students were taught using the chalk and talk method during the Mathematics period. There were 10 periods per week and the time allotted for each period was 45 minutes. This teaching process continued for 4 weeks. The researcher used teaching aids for the effective understanding of the Matrices and Determinants. Finally, the performance of the students was assessed through a paper and pencil test which is considered as post- test measure.

Assessment of attitude

In order to find out the attitude towards Zoom Supported Instruction, the attitude scale was constructed and administered to an experimental group. This scale consists of 20 items out of which 15 items were positively worded and 5 items were negatively worded. Each statement is set against a five point Likert type scale of "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 (Zoom Supported Instruction) students and post- test scores of experimental group (Zoom Supported Instruction) students.

Variables	N	Mean	Standard Deviation	Standard Error Mean	CR	Level of significance
Pre- test scores of students belonging to experimental group	90	5.78	2.941	.310	33.478	0.01
Post- test scores of students belonging to experimental group	90	17.72	1.676	.177		

From the above table it is evident that the mean difference between the pre- test scores of the experimental group students (Zoom Supported Instruction) and post- test scores of the experimental group students is significant at 0.01 level. The mean value of post- test scores of the experimental group (Zoom Supported Instruction) students is greater than the pre- test scores of the experimental group (Zoom Supported Instruction) students. A comparison between mean scores indicated that the post- test scores of students is better than the pre- test scores of students in the experimental group (Zoom Supported Instruction). Therefore it is concluded that the treatment of Zoom Supported Instruction is effective in learning Matrices and Determinants by Higher Secondary students.

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

Variables	N	Mean	Standard Deviation	Standard Error Mean	CR	Level of significance
Post- test scores of students belonging to experimental group	90	17.72	1.676	.177	2.753	0.01
Post- test scores of students belonging to control group	90	18.3	1.457	.154		

From the above table it is evident that the mean difference between the post- test scores of the experimental group (Zoom Supported Instruction) students and the control group students is significant at 0.01 level. The mean value of post- test scores of the control group students is greater than the experimental group (Zoom Supported Instruction) students. A comparison between mean scores indicated that the control group students performed better than the experimental group (Zoom Supported Instruction) students. Therefore it is concluded that the treatment of chalk and talk method is effective in learning Matrices and Determinants when compared with Zoom Supported Instruction among Higher Secondary students.

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

Variables	N	Mean	Standard Deviation	Standard Error Mean	Standard Error Difference	CR	Level of significance
Post- test scores of boys belonging to experimental group	45	17.93	1.601	.239	.353	1.189	NS
Post- test scores of girls belonging to experimental group	45	17.51	1.740	.259			

NS*- Not Significant

This table reveals that the mean difference in post- test scores of boys and girls belonging to the experimental group (Zoom Supported Instruction) is not significant. Hence, it is inferred that boys and girls belonging to the experimental group (Zoom Supported Instruction) are similar in their post- test scores.

Hypothesis 4: There is no significant difference between post- test scores of Business Maths students belonging to the experimental group (Zoom Supported Instruction) and post- test scores of General Maths students belonging to the experimental group (Zoom Supported Instruction).

Variables	N	Mean	Standard Deviation	Standard Error Mean	Standard Error Difference	CR	Level of significance
Post- test scores of Business Maths students belonging to experimental group	30	17.40	1.567	.286	.373	1.294	NS
Post- test scores of General Maths students belonging to experimental group	60	17.88	.718	.222			

NS*- Not Significant

This table reveals that the mean difference in post- test scores of business Maths students and General Maths students belonging to the experimental group (Zoom Supported Instruction) is not significant. Hence, it is inferred that Business Maths students and General Maths students belonging to the experimental group (Zoom Supported Instruction) are similar in their post- test scores.

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

Variables	Post- test scores	Gain score	Attitude towards Zoom Supported Instruction
Post- test scores	1	.425**	0.241*
Gain score	-	1	0.215*
Attitude towards Zoom Supported Instruction	-	-	1

**- Significant at 0.01 level

*- Significant at 0.05 level

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

Findings

- The post- test scores of experimental group (Zoom Supported Instruction) students are found to be higher than the pre- test scores of experimental group (Zoom Supported Instruction) students.

- The post- test scores of control group students are found to be higher than the post- test scores of experimental group (Zoom Supported Instruction) students.
- The boys and girls belonging to the experimental group (Zoom Supported Instruction) are similar in their post- test scores.
- The General Maths students and Business Maths students belonging to the experimental group (Zoom Supported Instruction) are similar in their post- test scores.
- There is a significant and positive relationship among post- test scores, gain scores and attitude towards Zoom Supported Instruction of the experimental group (Zoom Supported Instruction) students.

Discussion and Conclusion

The post- test scores of experimental group students is high because the students attended the post- test after being exposed to the treatment (Zoom Supported Instruction). The knowledge of the students related to Matrices and Determinant in pre- test found to be less, continuing that the treatment was given using Zoom Supported Instruction in order to teach Matrices and Determinant clearly, briefly and finally the post- test was conducted. Therefore it is concluded that the treatment of Zoom Supported Instruction was effective in learning Matrices and Determinants by Higher Secondary students. Similar findings have been reported by Dolighan and Owen (2021); Helda and. Zaim (2021).

It is interesting to note that the post- test scores of students in the control group were higher than the students in the experimental group because the students in the control group were already familiar with chalk and talk methods of teaching and learning for a long period of time. Further, the researcher has advantages like providing face- to- face interaction with the students, providing positive reinforcement when needed, directly clearing the students doubt and directly assessing whether the students understood the topic or not during traditional teaching. Therefore it is concluded that the treatment of chalk and talk method was effective in learning Matrices and Determinants by Higher Secondary students. Corroborative findings have been suggested by Bestiantono et.al. (2020) and Serhan, Derar (2020).

There exists a positive correlation post- test scores, gain score and attitude towards Zoom Supported Instruction of the students belonging to the experimental group (Zoom Supported Instruction) because the post- test scores of the students definitely be greater than the pre- test

scores of students and so if post- test scores is greater than pre- test scores, then the gain score is also found. The pre- test and post- test have been conducted for the students belonging to the experimental group using Zoom Supported Instruction and so, the attitude of students towards Zoom Supported Instruction is also high. Therefore, there is a positive relationship between post-test scores, gain scores and attitude towards Zoom Supported Instruction of the experimental group students (Zoom Supported Instruction) students.

The students in traditional teaching have many advantages over the students in online teaching and so the students belonging to traditional teaching have gained more scores compared to students belonging to online teaching. However, Zoom Supported Instruction could be used in times of crisis to ensure that students do not suffer when offline classes are unable to be held and to further strengthen students' understanding. Some students in the classroom may find that the time allotted is insufficient. As a result, the teacher wishes to improve learning and provide more practice for that type of student.

References

Minhas et al., (2021). Exploring students online learning: A study of Zoom application. https://www.researchgate.net/profile/Shahid-Minhas-2/publication/349664179_EXPLORING_STUDENTS_ONLINE_LEARNING_A_STUDY_OF_ZOOM_APPLICATION/links/603b007a92851c4ed5a0cbc5/EXPLORING-STUDENTS-ONLINE-LEARNING-A-STUDY-OF-ZOOM-APPLICATION.pdf

Helda & M. Zaim (2021). Effectiveness of the Zoom meeting application in micro teaching lecture in the pandemic time COVID- 19. https://jurnal.unimus.ac.id/index.php/ELLIC/article/view/7397

Shodik & Fajar (2021). The use of conference video application media "Zoom" as alternative media to improve students' speaking ability of some students at senior high school two Jombang http://repository.unisma.ac.id/handle/123456789/1732

Maulidya et al., (2022). The effectiveness of the use of Quizizz- Based gamification on students learning interest in 4th grade in Mathematics. https://jurnal.untirta.ac.id/index.php/jpsd/article/view/13375