



# Relationship Between Online Learning Of Mathematics And Mental Health Among Higher Secondary Students

**1Dr Hemalettha Thilakom S, 2Shabeena Muhammed Sakkariya**

**1 Assistant Professor in Physical Science, 2 Assistant Professor in Educational  
Technology(Guest Faculty)**

**1 Government College of Teacher Education, University Of Calicut,**

**2 Government College of Teacher Education, University Of Calicut**

## Introduction

Education is the lifelong process of growth and development. Mathematics education makes life orderly and prevent chaos. Certain qualities that are nurtured by mathematics are power of reasoning, creativity, critical thinking, problem solving ability and even effective communication skills. Now the world focusing on online learning and the classes have started with the help of online platform. Online learning is an internet-based course, programmes offered synchronously and asynchronously. Some of the difficulties children have been facing since switching to online education are deterioration in physical and mental health, self-esteem issues, Students Suffer from Lack of Interaction and Social Isolation etc. Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope up with normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community. Good mental health often has a bearing on making right decision and poor mental health cause ineffective educational attainment. The students have to associate with the teachers, peers, parents and community at large for the successful completion of their studies. They need a stress free environment and good mental health to fulfil their responses.

## Need and Significance of the study

Educational institutions (schools, colleges, and universities) in India are currently only on traditional methods of learning, that is, they follow the traditional set up of face-to-face lectures in a classroom. This pandemic COVID 19 situation changed the education system. Now our education has entirely moved into online mode. The sudden shift from the physical classroom to virtual space is creating a disruption among higher secondary students. Mathematics is a necessary skill that people use throughout their lives. Therefore, mathematics is an important skill to learn at school. Unfortunately, many students feel stressed and anxious when they have to do math. Especially in online classroom students feel very much stress to learn mathematics online. Academic stress hardens the learning path of the students. It adversely effects on mental health. Online learning adversely affects mental health by creating loneliness and isolation minds among students. This greatly impacts on the student's mental health. For student's who have existing mental health issues, it may worsen. According to modern concept, mental health is the capacity to keep one self-integrated in the face of stress and strain through integrative adjustment.

## Statement of the problem

The present study has been taken up in order to assess the relationship between Online learning of Mathematics and Mental Health and hence entitled as **“RELATIONSHIP BETWEEN ONLINE LEARNING OF MATHEMATICS AND MENTAL HEALTH AMONG HIGHER SECONDARY STUDENTS”**.

## Objectives of the study

1. To find out whether there exists any significant difference in the mean scores of Online Learning of Mathematics among higher secondary school students based on the subsample.
  - a) Gender
  - b) Type of management
2. To find out whether there exists any significant difference in the mean scores of Mental Health status scale among higher secondary school students based on the subsample.
  - a) Gender
  - b) Type of management
3. To find out the relationship between Online Learning of Mathematics and the Mental Health.

## Hypotheses of the study

1. There is no significant difference in the mean scores of Online Learning of Mathematics among higher secondary school students for the total sample and sub sample based on
  - a) Gender
  - b) Type of Management
2. There is no significant difference in the mean scores of Mental Health status scale for the total sample and sub sample based on
  - a) Gender
  - b) Type of Management
3. There will be no significant relationship between Online Learning of Mathematics and Mental Health among higher secondary students.

## Methodology

The present study attempts to explore the relationship between Online learning of Mathematics and Mental Health among higher secondary students. The investigator has selected survey method for conducting the study.

## Sample

The study was conducted on a representative sample of 150 higher secondary students of Kozhikode district.

## Tools

1. Online Learning of Mathematics status scale ( Dr.Hemaletha Thilakom.S and Shabeena, 2021)
2. Mental health status scale (Dr.Hemaletha Thilakom.S and Shabeena, 2021)

## Statistical techniques

1. Preliminary analysis
2. Test of significance of difference between mean scores.
3. ANOVA
4. Karl Pearson's product moment correlation

## Analysis

The data collected were analysed on the basis of the objectives said for the study and the results are given in the following tables:

Table 1

*Summary of Mean, Median, Mode, Standard deviation, Skewness and Kurtosis for the Total Sample*

Descriptive statistics	Online learning of mathematics	Mental health status
Mean	39.8133	112.1067
Median	40.0000	113.5000
Mode	42.000	116.00
Std Deviation	6.85750	10.91895
Skewness	0.098	-0.268
Kurtosis	-0.353	-0.231

Table 2

*Data and result of test of significance of difference between Mean scores of Online learning of Mathematics of higher secondary students for the subsample based on Gender*

Variable	Group	Sample Size(N)	Mean	SD	Z value	Significant Level
Online learning of Mathematics	Female	63	38.7143	6.04133	1.681	0.05
	Male	87	40.6092	7.32367		

From the table 2, it is clear that the calculated Z value is 1.68, which is less than the table value 1.96, value set for 0.05 level of significance . This shows that there is no significant difference in the mean scores of Online Learning of Mathematics between female and male students.

Table 3

*Comparison of the Mean Scores of Online learning of Mathematics based on type of management*

Variable	Group	Sum of Scores	Df	Mean Square	F value	Significant Level
Online learning of Mathematics	Between groups	347.051	2	173.525	3.830	0.05
	Within Groups	6659.723	147	45.304		
	Total	7006.773	149			

The F value is found to be 3.830 for df (2,147) which is greater than the table value 2.99, at 0.05 level of significance. The three type of management Govt, Aided and Unaided have significant difference in their mean scores of Online learning of Mathematics.

#### Post – Hoc analysis

The Tukey HSD test was used to carrying out for Post – Hoc analysis. The details are presented in table 4

Table 4

*Tukey's HSD Post Hoc analysis based on Online Learning of Mathematics on Type of management*

				Tukey's	HSD	comparison
Group	n	Mean	SD	Government	Aided	Unaided
Government	45	41.1778	6.641		<b>p&lt;0.05</b>	
Aided	48	37.625	5.973			p>0.05
Unaided	57	40.578	7.370	p>0.05		

From the table, Tukey's HSD Post hoc test revealed that the status of Online learning of Mathematics differ significantly between Government and Aided institutions (p= 0.032). There were no statistically significant difference between other groups.

Table 5

*Data and result of test of significance of difference between Mean score of Mental Health status for the subsample based on Gender*

Variable	Group	Sample Size(N)	Mean	SD	Z value	Significant Level
Mental Health status	Female	63	111.1746	12.15032	0.889	0.05
	Male	87	112.7816	9.95154		

From the table 5, it is clear that the calculated Z value is 0.889, which is less than the table value 1.96, value set for 0.05 level of significance. This shows that there is no significant difference in the Mental Health status between female and male students.

Table 6

*Comparison of the Mean Scores of Mental Health status of students based on Type of Management*

Variable	Group	Sum of Scores	Df	Mean Square	F value	Significant Level
Mental Health Status	Between groups	387.750	2	193.875	1.640	0.05
	Within Groups	17376.544	147	118.208		
	Total	17764.293	149			

The F value is found to be 1.640 for df (2,147) which is less than the table value 2.99, at 0.05 level of significance. The three groups, namely Government, Aided and Unaided have no significant difference in their mental health status of Students.

Table 7

*Data and result of the Relationship between Online learning of Mathematics and Mental Health status of higher secondary students for the Total sample*

Variables	N	R	Z	Level of significance	Type of Relation
Online learning of mathematics and Mental health status	150	0.174	74.775	0.01	Positive

From the table 7, It is clear that correlation coefficient between Online learning of Mathematics and Mental Health status among higher secondary students is 0.174. The relation can be interpreted as weak positive correlation between these variables.

### Major findings

- There exists no significant difference in the mean scores of Online learning of Mathematics between male and female students.
- There exists significant difference between in the mean scores of Online learning of Mathematics based on the subsample type of management. By Post Hoc analysis , there exist significant difference between Government and Aided schools. Students in Government school have higher status in Online learning of Mathematics.
- There exists no significant difference in the mean scores of Mental Health status scale between male and female students.
- There exists no significant difference between in the mean scores of Mental health status scale based on the subsample type of management.
- The correlation coefficient between Online learning of Mathematics and Mental Health status among higher secondary students is 0.174. The relation can be interpreted as weak positive correlation between these variables.

### Conclusion

Higher secondary students are in the period of adolescence. They have a lot of stress and tension. The study shows that the Online Learning of Mathematics slightly affects the Mental Health of the higher secondary students. Online Learning of Mathematics can be considered as an initiatory

factor in creating stress and tension which affects the mental health. So teachers have to use and incorporate innovative strategies and practices for effective and interested learning in mathematics.

## References

- Al-Salman, S., & Haider, A. S. (2021). Jordanian University students' views on emergency online learning during Covid-19. *Online Learning*, 25(1), 286-302 <https://files.eric.ed.gov/fulltext/EJ1287127>
- Ilmadi, I., Zarista, R., Aden, A., & Sastro, G. (2020). The Effectiveness of Online Learning for Mathematics Students during the Covid-19 Pandemic. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 4(2), 1273-1282 <https://doi.org/10.31004/cendekia.v4i2.372>
- Irfan, M., Kusumaningrum, B., Yulia, Y., & Widodo, S. A. (2020). Challenges during the pandemic: use of e-learning in mathematics learning in higher education. *Infinity Journal*, 9(2), 147-158.
- Kaur, S. (2014). Impact of Academic Stress on Mental Health: A study on School going Adolescents. *Global Journal for Research Analysis*, 3,27-30.
- Zilli, A.S.(2006). Mental Health among Male and Female Entrepreneurs. *Journal of Personality and Clinical Studies*, 22, 35-38.

