The Effects of Emotional Intelligence and Parental Involvement on Online Mathematics Learning

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ABSTRACT

This article highlighted the role of emotional intelligence and parental involvement in online mathematics learning. The purpose of the study was to gain a better understanding of the relationship between emotional intelligence, parental involvement, and online mathematics learning. The researchers collected data through a cross-sectional questionnaire for emotional intelligence and parental involvement from 25 private school students in Karachi, Pakistan. The study adopted a quantitative approach. The result showed that students have a higher level of emotional intelligence than their high level of understanding of mathematics learning skills. On the other hand, when we add emotional intelligence with parental involvement, there is a very high level of online mathematics learning. Statistical analysis reports that the relationship between emotional intelligence with parental involvement and the effect of online mathematics learning is high and it shows a positively significant relationship. Due to the pandemic situations that arise at that time, it was recommended that all stakeholders, including parents and teachers, work on the emotional well-being of the students. Parents should be positively likely to be involved in the online mathematics learning of their children.

Keywords: *Online math learning, Emotional intelligence, Parental involvement, Students*

INTRODUCTION

The purpose of this research is to explore the effects of emotional intelligence and parental involvement on online mathematics learning (online mathematics assessment) among private school students in the context of Karachi, Pakistan. Online learning has been established as a viable option for students. Due to pandemic situations, it's common in higher education institutions to offer a learning environment with technology to their students. This learning environment is considered as an important teaching approach in educational institutes that can overcome limitations related to on-campus learning. Online learning in the United States of America is the place where it was used for the first time in 1998, and since then it has been spread worldwide, rapidly expanding from North America to Asia and Europe [1] However, currently, worldwide online learning takes place due to COVID-19. [2] Research to explore how well prepare our children for tomorrow as leaders and good citizens. In this pandemic situation, many issues arrive at that time. Education has played an important part in interacting with others to convey accurate information. [3] Expressed online learning as "blended learning", "electronic learning" and "distance learning". Online learning is integrated into the educational system that has reformed the

process of attainment and distribution of information throughout the world. Traditional learning is where the teacher provides physical education to students. Students easily communicate with the instructor as well as their peers. Now when the researcher sees the other side, the environment of online learning is where students learn with technology, and in this form of learning, Students can communicate with the instructor and other students using digital devices such as a different chat room, virtual learning class, zoom, blackboard, email, digital telecommunications, and so on. (Mokhtar et al, 2020) explore E-learning as an educational tool that is helpful for both students and educators. (Pierson, 2001) believes that teachers would be able to effectively use technology in online mathematics learning, with the help of ICT students performing calculations, drawing graphs, and solve problems. The most obvious example of using ICT in this way is when students use a calculator or something like that to perform more challenging numbers. However, spreadsheets, computer algebra systems, or graphical calculators can be used to solve problems through tests and improvement or retrieval methods. Students of mathematics can use graphical calculators or graph plotters instead of algebra to graphically solve an equation.

In modern learning techniques, emotional intelligence and parental involvement are not given their due weight. Due to COVID-19 nowadays, online learning is common in private schools especially. In Pakistan, during online learning, many issues arise and educational institutes need to be addressed. Most of the educational institutes in Pakistan promote online learning and they do excellent work in this field. In the current situation, the Pakistani government must encourage and assist these educational institutions in order for them to develop in the future. The use of technology in students' mathematics learning was also beneficial, and students got more accurate answers related to mathematics problems. The online environment, as well as the physical environment, effects the students' emotions, feelings, and thoughts. Some students take an interest in learning with technology. On the other hand, some students get frustrated using technology in their learning. In this study, emotional intelligence is a factor that describes the student's feelings and emotions using technology in their learning. According to [4], emotional intelligence is positively correlated with academic achievement in both traditional educational and online environments. [5] Suggested that the success of online learning is related to the student's comfort with computer technology rather than basic characteristics. According to [6] previous research has focused on the emotional intelligence aspect in academic accomplishment. Parental involvement is also an important factor. If parents offer their child an intention, the child must be emotionally secure and excel in mathematics disciplines. In this study, the researchers checked the effect of these factors on online mathematics learning. The researcher also promoted parental involvement, which is the main factor that supports online mathematics education. This study provides a foundation for further research and is a resource for schools to start new institutions of higher education offering online mathematics programs.

Research Questions:

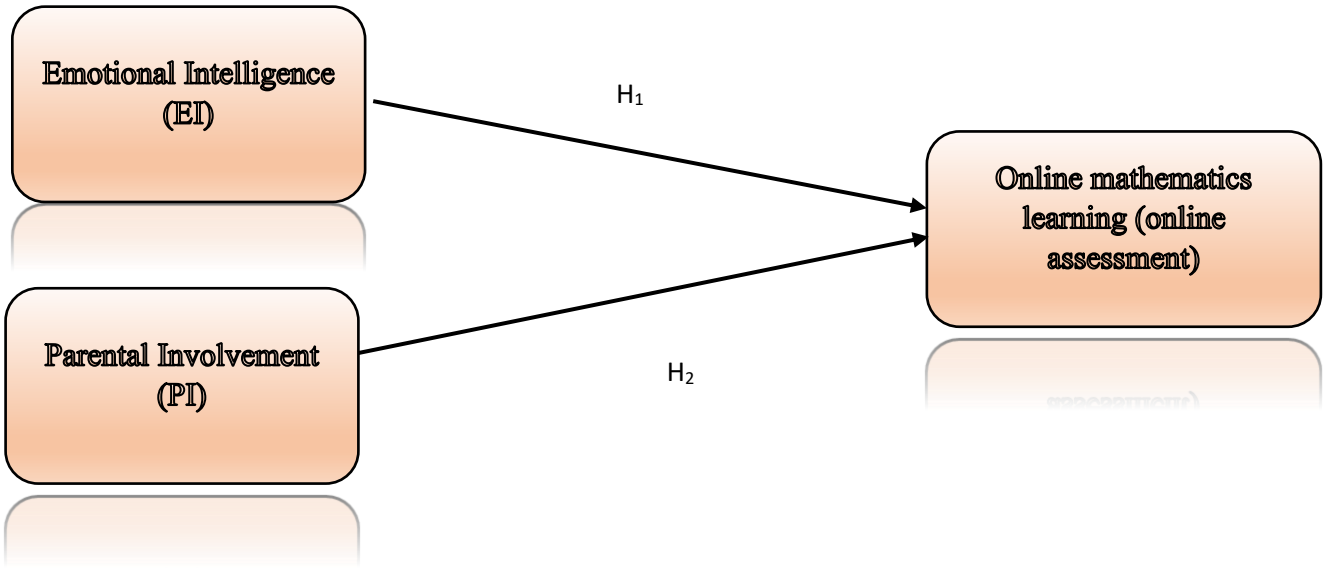
Based on the stated problems, the present study is intended to find answers to some research questions.

- Is there a relationship between emotional intelligence and mathematical learning?
- How does emotional intelligence effect online mathematics learning?
- Does parental involvement play an important role in online mathematics learning?

Theoretical Framework:

This study supports both theoretical and practical involvement by adding emotional intelligence to online mathematics learning. Each student has an inimitable experience in online mathematics education. The first concept of emotional intelligence is given by Mayer and Salor. Mayer describes how emotional intelligence is how to promote, control, analyze and control emotion. After further development, the emotional intelligence framework offered by [7] provides the theoretical base of this study. According to Goleman, emotional intelligence is the bunch of skills and ability in a person to use this ability to manage, control, analyze and understand the emotions of one's own and others. This theory has been divided into two parts. The first part describes the personal aspects of a person and the second one focuses on the social values of the person. Furthermore, it is constructed into four parts, such as self-awareness, self-management, social awareness, and relationship management. Self-awareness describes an ability to understand your own emotions, feelings, thoughts, and moods. It consists of emotional self-awareness, accurate self-assessment, and self-confidence. The second main skill of emotional intelligence is self-management and describes how to control their feelings and emotions. It's simple to think before acting. It includes self-control, transparency, adaptability, achievement drive, and initiative. The third skill is social awareness. It involves focusing on the emotions and feelings of others while treating the people with their moods and emotions. It consists of empathy, organizational awareness, and service orientation. The last one is that relationship management is used to build relationships with others. Relationship management includes inspirational leadership, developing other influences, conflict management, and teamwork. This study will show the relationship between parental involvement and students' emotional intelligence in their online mathematics learning, as measured by an assessment test. This model especially checks the level of emotional intelligence in students during online mathematics learning. Accordingly, the factor of emotional intelligence is useful for both personal and academic success and can be learned and developed [8]. The researchers used this instrument to measure the level of emotional intelligence in students' online mathematics learning. Students in online mathematics classes will be more comfortable and accurate. During online mathematics class, students appropriately used technology and made this study more effective.

Conceptual Framework



REVIEW OF LITERATURE

Online study is part of a new activity that characterized educational systems at the start of the 21st century. In the recent pandemic, COVID-19, the use of technology for educational purposes has increased. [1] Research to explore the impact of COVID-19 on the educational system of Wuhan, China. In this pandemic situation across the world, including in China, the Chinese government has introduced the campaign "School's Out, But Class's on". With the help of this campaign, more than 200 million students in Wuhan, China learn online. [9]It has been suggested that the use of technology in educational institutes has grown rapidly. Not only has online learning increased, but also the ratio of online course enrollment has increased in different subjects. During this pandemic situation, many studies show the variables or factors that show the success and failure of an online learning system. [10] Investigated the different factors that are associated with success in an online learning environment. Students use these gadgets for educational purposes, like finding materials related to their content, a calculator, an online dictionary, and many educational websites which help students in their learning. Using all these gadgets will help students in some particular subjects, like mathematics. Teachers who help students in online mathematics classes will help them to use technology in an appropriate way to get the answers to difficult questions. With the help of technology, students use and watch different videos related to their mathematics subject content that will help them with their learning outcomes. (We & Chou, 2019) explores the relationship between the learner and their behavior when they use technology. The results show that the flexibility of technology and time management is the key factor that is the cause of the success of the online learning environment. Students mostly feel afraid to solve mathematics in a traditional class. In online classes, this fear will reduce students independently solve the problems and also take help from their parents and guardians to solve the problems. According to the survey, conducted in 2020, shows that the rate of online courses has increased and students feel more comfortable than in a traditional or physical classroom. Students also appreciated the online learning environment because it provides well-structured learning materials and makes students self-regulated. Similarly, the online learning environment also enhances students' behavior toward studies, especially in mathematics content. (Wei & Chou, 2019) investigates the relationship between the learner and their behavior when they use technology. The results show that the flexibility of technology and time management is the key factor that cause of the success of the online learning environment. [22] Suggest that our new generation is stunned by different emotional issues, which are necessary to consider seriously because emotions can lead to learning. Emotions play an important role in a student's life when they use technology like he/she gets frustrated or being entertained. Some students feel relaxed and comfortable when they use technology in their studies. On the other hand, some are making trouble when they use technology. Every student has their own emotions regarding online learning. [12] Suggested that if students are not emotionally stable, they can't take an interest in their studies and they won't be able to understand the lesson. Emotional intelligence is a critical factor that determines the success of academics. Emotional intelligence is found to be the most important factor which influences the online learning environment. [9] Suggested that parental involvement plays an essential role in students' successful academic achievement in online classrooms, they motivate their children toward learning. Interaction with teachers is the main factor that motivates students towards learning in traditional learning. Nowadays, Pakistan's educational system will move from traditional to online learning due to the pandemic situation. Students in the current Covid-19 environment require parental assistance in learning. Parents' involvement in their children's online

learning at home is also vital, demonstrating the significant impact on pupils' learning. Teachers and parents, according to [16], should adapt their tactics to change the learning during online mathematics learning. Parental involvement in child online mathematics learning is helpful for student success. Parents motivate their children, supervise their activities, and provide materials for their children to use in their online learning. Parents can also assist their children in studying maths. Some students will support the relationship between the parents and their mathematics learning. Parents help their children regarding content as learning counselors. Through literature review, researchers found two main variables which play a significant role in the success of online mathematics learning. [9] Suggested that parental involvement plays an essential role in students' successful academic achievement in mathematics online classrooms. Researchers investigate parental involvement in virtual schooling in this study. Teachers and parents, according to [16], should adapt their tactics to change the learning during online mathematics learning. The researcher finds out the effects of students' emotional intelligence and parental involvement in online mathematics learning. The researcher reviewed the following hypothesis.

H1: There is a significant relationship between emotional intelligence and online mathematics learning.
H2: There is a significant relationship between emotional intelligence and mathematical learning.
H3: There is a significant relationship between parents and online mathematics learning.

RESEARCH METHODS

In the Quantitative approach, data is represented through numerical analysis and gathered through questionnaires, polls, and surveys. Quantitative research aims to test the intensity and persistence of relationships among various factors and it is a more scientific approach to social science (Tewksbury, 2013). Hence, the researchers chose a quantitative approach because this study has quantifiable objectives, and to provide better statistical results for larger data, they certainly used this approach. The researchers chose 275 students to collect data from. There were 150 boys and 125 girls among them. Because of the epidemic, researchers were unable to recruit an equal number of students for this study. In this study, two research instruments were used. The first was a questionnaire designed to assess students' emotional intelligence in order for them to study mathematics while using an online learning environment. The emotional intelligence measuring instrument was employed by the researchers, and it includes 33 items from the emotional intelligence questionnaire. The emotional intelligence questionnaire is designed to test four emotional talents of emotional intelligence. Self-awareness, social awareness, self-management, and relationship management are the four emotional competencies. The questionnaires were developed based on a five-item Likert scale. Responses were given to each statement using a five-point Likert-type scale, for which 1 = "**strongly disagree**" to 5 = "**strongly agree**." The second variable is parental involvement, which collects information about parents and their children. The parental involvement questionnaire was adopted from (Cai's, 2003) Parental Involvement Questionnaire (PIQ) which includes 20 items. The questionnaires developed were based on a five-item Likert scale. The responses were summed up to produce a score for the measures. (Cai, 2003) categorizes into five parts: the major involvement of parents as motivators, resource providers, monitors, mathematics content advisers, and mathematics learning counselors. The five parental involvements are parent's motivation (items 1-4), Parental monitoring consists (items 5-8), parent as a resources provider consists (items 9-12) parents as a content advisor consists (items 13-16),

and parents as a learning counselor consists (items 17-20). Responses were given to each statement using a five-point Likert-type scale, for which 1 = "**strongly disagree**" to 5 = "**strongly agree**."

Results:

The data analysis is done by using the Statistical Package for the Social Sciences (SPSS), which is used to evaluate and handle the research data. Descriptive statistics were used to summarize and unify the given research data. Researchers mostly focus on the frequency and percentage distribution tables, measures of central tendency.

Table 1 - Descriptive statistics

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Boys	150	54.5	54.5	54.5
Girls	125	45.5	45.5	100
Total	275	100	100	

Out of 275 respondents, 150 or 54.5 percent of the respondents are male whereas 125 or 45.5 percent are female. In the given table the value of means and standard deviation were calculated and it shows the consistency of the data.

Table 2 - Frequency Distribution Table

	No of responses	**Minimum**	**Maximum**	**Mean**	**S.D**
EI (Emotional intelligence)	275	3.06	5	4.3913	.44886
PI (Parental involvement)	275	1.25	5	4.4532	.54382
OML (Online math's learning)	275	2	5	4.387	.6939
N (Total responses)	275				

Reliability Analysis:

Reliability refers to the accuracy of the measurement of the score and the stability of the test measure or protocol. Effects of emotional intelligence and parental involvement on online mathematics learning made up from the block of questions responded by the private school students in Karachi

Table 3 - Reliability Statistics

Cronbach's Alpha	N of items
0.942	53

Table 4 - Cronbach's Alpha

Variables	**No. of Items**	**Cronbach's Alpha**
EI (Emotional intelligence)	33	0.953
PI (parental Involvement)	20	0.951

Table 4 shows that the Cronbach's alpha for overall model reliability is 0.942, which indicates a good level of internal consistency for our scale exists within this sample, The independent variable "EI" holding 33 items with its Alpha value is 0.953, which projects a high level of internal consistency for our scale exits within this sample. Another independent variable "PI" holds 20 items and its Alpha value is 0.951, which indicates a good level of internal consistency for our scale exists within the sample.

Inferential statistics

According to 275 respondents, the independent variable (EI) has a substantial positive association with Offline mathematics learning (OFML) (r =.705). Emotional intelligence, on the other hand, has a strong significant association with online mathematics learning where (r = 0.41), and parental involvement has a strong significant relationship with online mathematics learning where (r = 0.41). This is the correlation coefficient. 084. When we mix emotional intelligence and parental participation, we have a good association with online mathematics learning. (r =.044)

Table 5 - Regression Analysis

Variables	**(OML)**	**(EI)**	**(PI)**
OML Online math's learning	1.00	0.42	0.57
Emotional intelligence (EI)	0.42	1.00	0.007
Parental involvement (PI)	0.57	0.007	1.00

In SPSS, regression analysis was used to check the relationship between independent and dependent. Table 9 shows the significant relationship between the independent variables (Emotional intelligence and parental involvement) and dependent variables (online mathematics learning). In table 5, the inter-correlation matrix of the independent (emotional intelligence and parental involvement) and dependent (online mathematics learning) variables scores are computed.

Table 6 - Hypothesis Testing

Path	Coefficient	T Statistics	P Values	Results
EI-> OFML	0.072	7.67	0.003	Accepted
EI -> OML	0.843	6.71	0.00	Accepted
PI->OML	0.021	8.361	0.00	Accepted

Table 6 shows the results of hypothesis testing. Results reveal emotional intelligence shows a significant relationship with offline mathematics learning ($p > 0.003$; = 0.072), which allows us to support the H1. Further results support the H2. Parental involvement shows a significant relationship with online mathematics learning ($p > 0.000$; = 8.361), hence supporting H3.
The analyses of the relationship of independent variable emotional intelligence, parental involvement, and online mathematics learning in this show that there is a positive and significant relation between emotional intelligence, parental involvement, and online mathematics learning. The result shows that the variable emotional intelligence and parental involvement should be a good factor in online mathematics successful learning. In this study, three research questions were raised and answered. Findings from research question 1 exposed a positive and significant relationship between emotional intelligence and offline mathematics learning. The result indicated that when we take emotional intelligence in offline learning its shows positive relation to mathematics offline learning, the results of the study are in line with the previous research conducted in some other contexts which also indicated that emotional intelligence is a significant element for mathematics offline learning. It shows that students who have a greater level of emotional intelligence will be able to more intelligent in understanding the subject matter, motivate themselves to go ahead, be optimistic, have good relationship and friendship with others, be able to understand people, and has good learning performance. The result of secondary research questions is that the relationship between emotional intelligence and online mathematics learning had significant positive. The result means that the emotional intelligence level is greater shows that the understanding of online mathematics learning is higher or meanwhile a low level of emotional intelligence indicates a low understanding of online mathematics. It shows that students who have a greater level of emotional intelligence will be able to more intelligent in understanding the subject matter, motivate themselves to go ahead, be optimistic, have good relationship and friendship with others, be able to understand people, and has a good learning performance. When we talk about the third research question shows the relationship between parental involvement in online mathematics learning. After the teacher parents as a person who help their child in the study. Parents help their in study motivate them, encourage them and give some facilities to help in their study. After the calculation the result show that the relationship between parental involvement and online mathematics learning create the great impact on student's progress in online learning.

RECOMMENDATIONS AND FUTURE RESEARCH

For Researchers:

- This is quantitative research. For the limited time and resources, we cannot collect the large amounts of data for future implementation research that could be done on a large scale

For Stakeholders:

- Parents are their child's first instructor or guide after birth, and their role in encouraging and enhancing their child has a significant impact on their academic achievement.
- Parents, teachers, and other educational institute personnel should provide professional training and resolve issues concerning students' emotional intelligence, as this has a significant impact on students' success.
- When teachers adopt those pedagogical strategies which focus on the emotional factor in students and issues, then it's a cause of academic achievement.

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