A STRUCTURAL MODEL OF THE FACTORS AFFECTING MATHEMATICS PERFORMANCE IN THE DISTANCE LEARNING APPROACH

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ABSTRACT

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The purpose of this study was to determine the factors affecting mathematics performance in the distance learning approach, determine the correlation between the factors and the students' mathematics performance, determine the factor that best predicts mathematics performance, and generate a model that best fits mathematics performance in the distance learning approach. The study employed a descriptive-correlation research design. Stratified random sampling was used in the selection of 420 respondents. The respondents were first-year students of Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST), Malita, Davao Occidental, taking up Mathematics in the Modern World during the first semester of the school year 2020-2021. Results showed that all factors in the student-related category were high; all factors in the teacher-related category were high; all factors in the digital learning category were high except for low internet connectivity. The mathematics performance of

the respondents was average, but none got a failing grade. Teaching skills and computer literacy manifested a significant correlation to the mathematics performance of the respondents. The factors that best predicted mathematics performance in the distance learning scheme during the new normal were teaching skills and computer literacy. Lastly, a model was generated showing that 21% of the data was considered fit to the model.

INTRODUCTION

The COVID-19 pandemic has affected almost all segments of our society, including the education sector. Several higher education institutions (HEIs) closed their premises in response to the government's health protocols, particularly during lockdown and physical distancing measures (Yamagishi, 2020). According to the United Nations (2020), education disruptions have had and will continue to have substantial effects beyond education.

However, this crisis has also stimulated innovation within the education sector by quickly replacing face-to-face classroom lectures and discussions with a distance learning approach (United Nations, 2020). In the context of SPAMAST, flexible learning has been adopted in which printed learning materials were delivered to the students, and online interaction was conducted.

Though distance learning is not new to the education sector, its sudden utilization seems to stun several institutions. Teachers had to adapt to new pedagogical concepts and modes of delivery of teaching, while students have to rely more on their resources to continue learning remotely through printed materials, digital gadgets, and the internet (Schleicher, 2020).

During the pandemic, remote learning through the aid of digital technology became the main line to unhindered education and training of learners. Schleicher (2020) pointed out that technology can enable teachers and students to access specialized materials well beyond textbooks, in multiple formats, and in ways that can bridge time and space. Technology does not just change methods of teaching and learning; it can also elevate the role of teachers from imparting knowledge to working as co-creators of knowledge, coaches, mentors, and evaluators.

Mathematics education has long been recognized as a major variable in development, prompting nations to emphasize this in their national agenda. Yet, it is also a common observation that most students are struggling in terms of their mathematics performance in school (Kiwanuka & Damme, 2015), even in college, or even during conventional face-to-face classroom instruction. How about in this distance learning mode? It is generally believed that students' mathematics performance is well influenced by a lot of factors.

Several researchers in the field of education and psychology studied factors affecting mathematics performance in the distance learning approach. Belhu (2017) mentioned that there are student-related factors that affect students' performance. These are interest, study habits, and attitude towards

mathematics. His study concluded that interest in the subject, students' study habits, and students' attitudes toward mathematics are the most influential factors in learning mathematics. Another important factor is teacher-related, which includes personality traits, teaching skills, and utilization of instructional materials. According to Kell (2019), these factors influence a wide variety of students' short and long-term outcomes, including their grades, assessments, and academic performance.

Distance learning approach, such as digital gadgets and internet connectivity, plays a vital role; these digital-related factors, such as internet connectivity, computer accessibility, and computer literacy, are instructional practices that ultimately help students. It makes use of a broad range of technology-enhanced educational strategies. Establishing an efficient distance teaching and learning system becomes a challenge among Higher Education Institutions nowadays (Davis et al., 2021).

Identifying which of the several factors is significant is one of the key steps to improving the delivery of instructions and assessments during this time of the pandemic. It has to be noted that the researcher studying distance learning, particularly about mathematics performance in college, seldom combines student-related factors, teacher-related factors, and digital-related factors in their studies. For example, Harris and Al-Bataineh (2015) studied student-related factors about students' success but failed to include teacher-related factors and digital-related factors.

Considering the above scenario, this study aimed to look at the factors affecting college mathematics performance during the distance learning modality. A structural equation model was derived to explain the contribution and relationships among the variables.

Objectives of the Study

The study determined the structural model of the factors affecting mathematics performance in the distance learning approach among the different institutes of SPAMAST Malita, Davao Occidental. Specifically, it had the following objectives:

1. To determine the level of student-related factors of the respondents in terms of:
   1.1 Interest
   1.2 Study habits
   1.3 Attitude towards mathematics

2. To determine the level of teacher-related factors of the respondents in terms of:
   2.1 Personality traits
   2.2 Teaching skills

2.3 Utilization of instructional materials

3. To determine the level of digital-learning factors of the respondents in terms of:

3.1 Internet connectivity

1.1 Computer availability

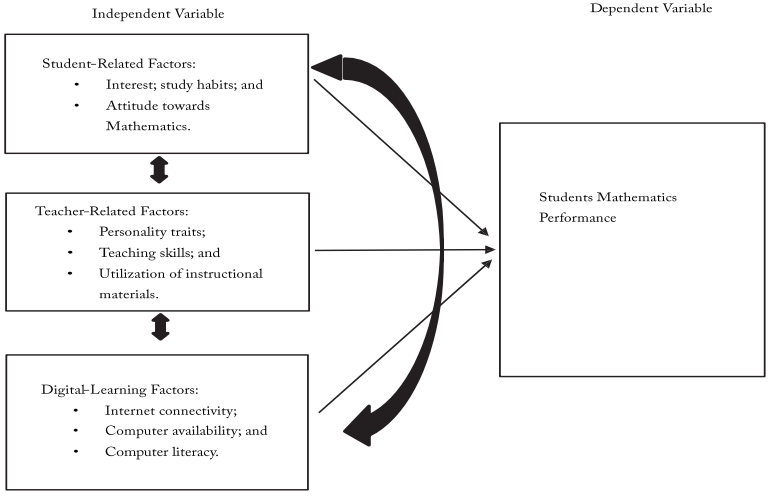
1.3 Computer literacy

4. To determine the mathematics performance of the respondents on the subject of Mathematics in the Modern World.
5. To determine the relationship between student-related factors, teacher-related factors, and digital-learning factors to their mathematics performance in college.
6. To determine which factor best predicts the mathematics performance of the students enrolled in Mathematics in the Modern World.
7. To determine which model best fits the college mathematics performance of the students enrolled in Mathematics in the Modern World.

Conceptual Framework

Figure 1

Paradigm showing interactions of the variables of the study hypothesis



The following hypotheses were considered in the study and were tested at a 0.05 level of significance.

Hypothesis

H_0: There is no structural model that best fits the college Mathematics Performance of the students.

MATERIALS AND METHODS

Locale of the Study

Research Locale

The study was conducted at the Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) located at Poblacion, Malita, Davao Occidental. SPAMAST, the lone state college in the province of Davao Occidental, offers quality free education and has four institutes, namely: Institute of Teacher Education and Information Technology (ITEIT), Institute of Fisheries and Marine Sciences (IFMS), Institute of Human Service (IHS), and Institute of Agricultural Technology and Entrepreneurial Studies (IATES).

Respondents of the Study

The respondents of this study were 420 freshmen students from different institutes of SPAMAST. These respondents were enrolled during the school year 2020-2021.

Research Design

This study employed a descriptive-correlational research design. Descriptive research involves gathering data that describe events, then organizing, tabulating, depicting, and describing the data collected. It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution (Glass & Hopkins, 1984). Likewise, it was correlational since the researcher aimed to determine the extent to which two or more variables were related (Siegle, 2015).

Sampling Design and Sample Size Distribution

In structural equation modeling, the sample size is 10 cases per parameter (Kline, 2011). In this study, there were 42 parameters in the researcher-made questionnaire. Hence, the number of respondents was 420. This study employed stratified random sampling since the study divided the population into sub-populations based on the respondents' characteristics (Thomas et al., 2020).

Table 1. *Distribution of freshmen students in SPAMAST S.Y. 2020-2021.*

Institute	No. of Freshmen Students	Population Percentage	Sample Size
ITEIT	347	29.21	123
IFMS	149	12.54	53
HIS	392	33.00	138
IATES	300	25.25	106

Research Instruments

The descriptive research questionnaire of this study was the factors affecting mathematics performance in the distance learning approach. The data for mathematics performance were the respondents' grades in Mathematics in the Modern World which were retrieved in the SPAMAST Electronic School's Management System (ESMS).

The questions for the factors affecting mathematics performance were interest, study habits, personality traits, and teaching skills, which were answerable on a scale from 1 to 5 with the following descriptions: 1 for never, 2 for rarely, 3 for sometimes, 4 for often, and 5 for always. The indicators of attitude towards Mathematics, utilization of instructional materials, computer accessibility, and computer literacy were answerable on a scale from 1 to 5 with the following descriptions: 1 for strongly disagree, 2 for disagree, 3 for neutral,

4 for agree, and 5 for strongly agree. Lastly, the indicator of internet connectivity was answerable on a scale from 1 to 5 with the following descriptions: 1 for poor, 2 for unsatisfactory, 3 for satisfactory, 4 for very satisfactory, and 5 for excellent.

The researcher-made questionnaire was submitted to the adviser for comments and corrections. It was validated by three expert validators using the institution's validation sheet.

Data Analysis

The researcher used descriptive questionnaires in gathering the data. The descriptive questionnaire was developed to capture or document the extent of a particular topic or issue within a population of interest. The questionnaires were usually focused on how many people participated in a particular opinion (Pahwa & Gupta, 2019).

The following rating scales were used in the interpretation of the responses in student-related factors, teacher-related factors, and digital-learning factors. Range of means for interest, study habits, personality traits, and teaching skills

Range of Means	Descriptive Level	Interpretations
4.20 – 5.00	Very High	This indicates that the provision on interest, study habits, personality traits, and teaching skills embodied in the item is always observed.
3.40 – 4.19	High	This indicates that the provision on interest, study habits, personality traits, and teaching skills embodied in the item is often observed.
2.60 – 3.39	Moderate	This indicates that the provision on interest, study habits, personality traits, and teaching skills embodied in the item is sometimes observed.

1.80 – 2.59	Low	This indicates that the provision on interest, study habits, personality traits, and teaching skills embodied in the item is rarely observed.
1.00 – 1.79	Very Low	This indicates that the provision on interest, study habits, personality traits, and teaching skills embodied in the item is never observed.

Range of means for internet connectivity

Range of Means	Descriptive Level	Interpretation
4.20 – 5.00	Very High	This indicates that the provision of internet connectivity embodied in the item has excellent quality.
3.40 – 4.19	High	This indicates that the provision of internet connectivity embodied in the item has a very satisfactory quality.
2.60 – 3.39	Moderate	This indicates that the provision of internet connectivity embodied in the item has a satisfactory quality.
1.80 – 2.59	Low	This indicates that the provision of internet connectivity embodied in the item has an unsatisfactory quality.
1.00 – 1.79	Very Low	This indicates that the provision of internet connectivity embodied in the item has poor quality.

In evaluating the respondent's mathematics performance, the SPAMAST Grading System will be used:

Grade Point Equivalence	Percentage Equivalence	Qualitative Rating
1.0	99-100	Excellent
1.25	96-98	Outstanding
1.5	93-95	Good Work
1.75	90-92	Satisfactory Work
2.0	87-89	Average
2.25	84-86	Moderately Average
2.5	81-83	Moderately Low Average
2.75	78-80	Low Average
3.0	75-77	Passing
5.0	74-below	Failure

Data Gathering Procedures

In gathering the data, the researcher followed these steps:

A formal letter, together with the letter of endorsement from the Graduate School Chairman, was written to the SPAMAST Vice-President for Academic Affairs to ask permission to conduct the study and seek approval.

Letters were sent to the different institute deans of SPAMAST, along with the approved letter of permission and authorization from the Office of the Vice-President for Academic Affairs, SPAMAST.

The questionnaire on the factors affecting mathematics performance was answered by the respondents through online Google Forms.

Data on mathematics performance were retrieved from the SPAMAST Electronic School's Management System (ESMS).

Consent was asked of the respondents before answering the research questionnaires. All collected data from the respondents were treated with confidentiality.

The data gathered were tallied, collated, and tabulated for processing and analysis.

Tables were made to illustrate the data collected.

The results were summarized and analyzed using the appropriate statistical tools with the aid of statistical software.

Statistical Tools

The data gathered were tallied, tabulated, and prepared in a manner suitable for the statistical software. The following statistical tools were employed to generate and interpret the results:

The percentage was used to analyze the demographic profile of the respondents in terms of age and gender.

Mean was used to determine the level of student-related factors, teacher-related factors, and digital-learning factors of the respondents. It was also used to describe the profile of the respondents.

Multiple Regression Analysis was used to determine which of the independent variables or the combination of these variables best predicts college mathematics performance.

Pearson Correlation Coefficient (r) was utilized to measure the statistical relationship or association between two continuous variables, as well as the direction of the relationship. The values of r and their corresponding descriptions are given below.

r - values	Description
0.00	No correlation
±0.01 to ±0.20	Slight correlation
±0.21 to ±0.40	Low correlation
±0.41 to ±0.60	Moderate correlation
±0.61 to ±0.80	High correlation
±0.81 to ±0.99	Very high correlation
±1.0	Perfect correlation

Structural Equation Modelling (SEM) is a multivariate statistical analysis technique used to analyze structural relationships. In this study, SEM was used to determine the best structural model that described students' college mathematics performance in terms of student-related factors, teacher-related factors, and digital-learning factors.

RESULTS AND DISCUSSIONS

The level of student-related factors

Table 2. *Mean score on the level of student-related factors*

Questions	Mean	Description
INTEREST		
1. I make myself prepared for mathematics.	3.8810	High
2. I scan other mathematics books.	3.7810	High
3. I ask questions to the instructor.	3.9762	High
4. I want to get good marks in mathematics.	4.5024	Very High
5. I am excited to explore the module.	4.1762	High
Overall	4.0633	High
STUDY HABITS		
1. I do my assignments and tasks.	4.1190	High
2. I exert more effort in my mathematics module.	4.3881	Very High
3. I spend my free time studying.	3.4071	High
4. I finish my tasks in mathematics before other subjects.		
3.9143	High	
5. I have a specific place of study at home.	3.3265	High
Overall	3.8310	High
ATTITUDE TOWARDS MATHEMATICS		
1. Mathematics is very interesting.	4.0762	High
2. I feel at ease in mathematics.	3.7238	High
3. I am happier in mathematics	3.8238	High
4. I feel a positive reaction to mathematics.	3.7952	High
5. I like the mathematics subject.	3.7714	High
Overall	3.8381	High
OVERALL STUDENT-RELATED FACTORS	3.9108	HIGH

Table 2 shows the mean score for the student-related factors. Results revealed that interest yielded an overall mean score of 4.0633, described as high; study habits yielded an overall mean score of 3.8310, also described as high; and attitude towards mathematics yielded an overall mean score of 3.8381, also described as high. Among the three factors, interest garnered the highest mean value, while study habits and attitude toward mathematics had means almost equal to each other. Furthermore, the overall mean score for student-related factors was 3.9108, described as high.

The high interest of the respondents indicates that the provision on interest, embodied in the item, is oftentimes observed. Interest was also discussed according to the pronouncement of McCarthy (2014) that student interest in mathematics topics holds so much power when a topic connects to what students like to do, engagement deepens as they willingly spend time thinking, dialoguing, and creating ideas in meaningful ways.

It also follows that most of the respondents are interested in the subject of Mathematics in the Modern World not because of the formula, numbers, and abstract theorems in mathematics (Azmidar et al., 2017), but because of the student's psychological state of attention that affects a particular topic in mathematics, and an enduring predisposition to relate it to real-world situations (Renninger & Hidi, 2016).

For the study habits and attitude towards mathematics, the results showed consistency with the pronouncement of Choudhury and Das (2012) that a high attitude towards mathematics has a direct impact on the study habits of mathematics.

The level of teacher-related factors

Table 3. *Mean score on the level of teacher-related factors*

Question	Mean	Description
PERSONALITY TRAITS		
1. My teacher is friendly.	4.1738	High
2. My teacher understands the situation.	4.0833	High
3. My teacher encourages me to strive hard in math.	4.2405	Very High
4. My teacher is willing to entertain students via social media.	4.1381	High
5. My teacher has a sense of humor.	4.1095	High
Overall	4.1490	High
TEACHING SKILLS		
1. My teacher explains the module.	4.0905	High
2. My teacher explains the topics clearly.	3.8238	High
3. My teacher manifests mastery in mathematics.	4.0095	High
4. My teacher organizes the lesson flow.	3.8976	High
5. My teacher integrates mnemonic devices to make learning effective.	3.9238	High
Overall	3.9490	High

UTILIZATION OF INSTRUCTIONAL MATERIALS		
1. Has developed a module.	4.3071	Very High
2. Includes assessment and evaluation.	4.0238	High
3. Reaches out to students via social media.	4.2238	High
4. Provides other learning materials.	3.9095	High
5. Allows students to scan other mathematics books.	4.1714	High
Overall	4.1271	High
OVERALL, TEACHER-RELATED FACTORS	4.0751	High

Table 3 shows the mean score for the teacher-related factors. Results revealed that personality traits yielded an overall mean score of 4.1490, described as high. Teaching skills yielded an overall mean score of 3.9490, also described as high. Utilization of instructional materials yielded an overall mean score of 4.1271, described as high. The high values for personality traits, teaching skills, and utilization of instructional materials indicate that the provision of these factors, as embodied in the questionnaire, had been agreed upon by the respondents.

The results are consistent with the idea of DeMarco (2016) that students' interests, study habits, and attitudes toward mathematics can be influenced by the teachers' personality traits, teaching skills, and utilization of instructional materials. Linking the findings in the student-related factors and teacher-related factors, we can see that both factors received descriptions of high. This also supports the statement of Wang et al. (2018) that student-related factors and teacher-related factors had a significant correlation.

The level of digital learning factors

Table 4. *Mean score on the level of digital-learning factors*

Question	Mean	Description
INTERNET CONNECTIVITY		
1. Rate your mobile data internet connection at your home.	2.4667	Low
2. Rate your mobile data internet connection outside your home.	2.7381	Moderate
3. Rate your overall access to the internet.	2.7905	Moderate
Overall	2.0751	Low
COMPUTER ACCESSIBILITY		
1. We have desktop or laptop computers.	3.7548	High
2. I only rely on my smartphone.	3.7071	High
3. I borrowed a laptop computer.	3.7095	High
4. We do not have access to computers and smartphones.	3.7571	High
Overall	3.7321	High
COMPUTER LITERACY		
1. I know how to browse the internet.	3.6881	High
2. I know how to use social media.	3.5310	High
3. I know how to download files.	3.4643	High
4. I know how to upload files.	3.6786	High
5. I know how to use other social media apps.	3.6905	High
Overall	3.6105	High

OVERALL DIGITAL LEARNING FACTORS	3.3359	HIGH

Table 4 shows the mean score for digital-learning factors. Results revealed that internet connectivity yielded an overall mean score of 2.0751, described as low. Computer access yielded an overall mean score of 3.7321, described as high. Computer literacy yielded an overall mean score of 3.6105, also described as high. Among the factors under digital learning, internet connectivity garnered a low description. This means that the respondents were experiencing unsatisfactory internet connectivity. On the other hand, computer accessibility and computer literacy were found to be high among the respondents. It indicates that the items for computer accessibility and computer literacy were agreed upon by the respondents.

Linking to the study of Yesilyurt et al. (2014), they said that internet connection contributes to academic performance. We can derive from the results that the respondents' academic performance can be improved in the new normal if their internet connectivity is fast (Siraj et al., 2015). Considering that the respondents are not allowed to physically come to school, the internet serves as their way to access information, aside from connecting to their teachers. The internet serves as a digital library for both teachers and students to access (Olatokun & Njideaka, 2020).

Mathematics performance of the respondents

Table 5. *Final Grade of Mathematics in the Modern World*

Mathematics Performance	Percentage Equivalence	Frequency	Percentage	Description
1.00	99-100	0	0	Excellent
1.25	96-98	53	12.6%	Outstanding
1.50	93-95	74	17.6%	Good Work
1.75	90-92	74	17.6%	Satisfactory Work
2.00	87-89	71	16.9%	Average
2.25	84-86	34	8.1%	Moderately Average
2.50	81-83	46	11.0%	Moderately Low Average
2.75	78-80	34	8.1%	Low Average
3.00	75-77	34	8.1%	Passing
5.00	Failed	0	0	Failure
	Overall Mean Grade	1.99		

n=420

Presented in Table 5 is the mathematics performance of the respondents in their subject, Mathematics in the Modern World. Results showed that out of 420 respondents, 53 (12.6%) of the respondents got a mathematics performance

mark of 1.25 described as outstanding; 74 (17.6%) of the respondents got a mathematics performance mark of 1.50 and 1.75 described as good and satisfactory respectively; 71 (16.9%) of the respondents got a mathematics performance mark of 2.00 described as average; 34 (8.1%) of the respondents got a mathematics performance mark of 2.25 described as moderately average; 46 (11%) of the respondents got a mathematics performance mark of 2.50 was described as a moderately low average, and 34 (8.1%) of the respondents got a mathematics performance mark of 2.75 and 3.00, described as low average and passing, respectively. In addition, the overall mean grade of the respondents was 1.99, which was described as average.

The relationship between student-related factors, teacher-related factors, and digital-learning factors to mathematics performance

Table 6. *Relationship between the variables of the study*

FACTORS	r-value	Description	p-value	Interpretation
Student-related Factors	0.037	Slight Correlation	0.447	Not Significant
Interest	-0.017	Slight Correlation	0.722	Not Significant
Study Habits	0.029	Slight Correlation	0.547	Not Significant
Attitude	0.012	Slight Correlation	0.814	Not Significant
Teacher-related Factors	0.028	Slight Correlation	0.570	Not Significant
Personality	-0.087	Slight Correlation	0.074	Not Significant
Teaching Skills	0.132	Slight Correlation	0.007	Significant
Utilization of I.M.	0.021	Slight Correlation	0.674	Not Significant
Digital-learning Factors	0.077	Slight Correlation	0.114	Not Significant
Internet Connectivity	-0.067	Slight Correlation	0.172	Not Significant
Computer Access	0.046	Slight Correlation	0.345	Not Significant
Computer Literacy	0.208	Slight Correlation	0.000	Significant

Table 6 shows the correlation between the variables of the study. Results showed that when student-related factors were correlated with mathematics performance, interest, study habits, and attitude towards mathematics showed a slight correlation was found to the respondents' mathematics performance. However, all factors under the student-related category produced a p-value greater than 0.05, indicating a non-significant correlation.

When teacher-related factors were correlated to mathematics performance, personality traits, teaching skills, and utilization of instructional materials showed a slight correlation to the respondents' mathematics performance. The factors of personality traits and utilization of instructional materials produced

a p-value greater than 0.05, indicating a non-significant correlation. On the other hand, the factor teaching skills showed a significant correlation to the mathematics performance of the respondents because its p-value was less than 0.05.

Finally, when digital-learning factors were correlated to mathematics performance, internet connectivity and computer access showed a slight correlation, while computer literacy garnered a low correlation. The factors of internet connectivity and computer access produced a p-value greater than 0.05, which showed a non-significant correlation to the mathematics performance of the respondents. However, computer literacy showed a significant correlation to the mathematics performance of the respondents because its p-value was less than 0.05.

The factor that best predicts the mathematics performance of the respondents

Table 7. *Summary of Stepwise Multiple Regression Analysis.*

Predictor	Unstandardized Coefficients	R-squared	Regression Model
Computer Literacy	0.149	0.05	y=1.180 + 0.149X1 + 0.069X2 Where: X1 – computer literacy X2 – Teaching skills y- mathematics performance
Teaching Skills	0.069		
Constant	1.18		

Among the factors considered, computer literacy and teaching skills were the best predictors of students' mathematics performance in the distance learning approach. It obtained a coefficient of 0.149 and 0.069, respectively. With a constant of 1.180. Hence, the regression model was:

$$y = 1.180 + 0.149X1 + 0.069X2$$

Where:
X1 – Computer Literacy
X2 – Teaching Skills
y – mathematics performance

Structural Equation Modelling (SEM) Model Generation of the Study

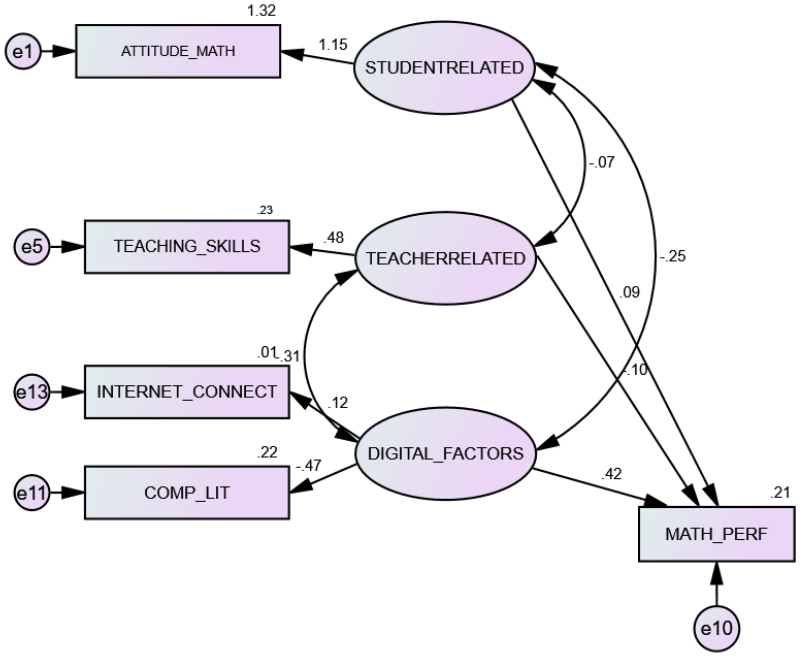


Table 8. *Fit Indices of the Hypothesized Model*

Index	Criterion	Model Fit Value	Remarks
CMIN/DF		0.544	Satisfied
P-value		0.580	Satisfied
CFI		1.000	Satisfied
TLI		1.318	Satisfied
NFI		0.970	Satisfied
RMSEA		0.000	Satisfied

For every increase of 1 standard deviation in the student-related factors, mathematics performance increased by 0.09. For every increase of 1 standard deviation in the teacher-related factors, mathematics performance increased by 0.10. For every increase of 1 standard deviation in the digital factors, mathematics performance increased by 0.42. The model acquires an r^2 value of 0.21, which means that 21% of the data is considered fit for the model.

SUMMARY AND CONCLUSION

Summary

Student-Related Factors. There were three factors under student-related consideration in this study: interest, study habits, and attitude towards mathematics. Interest got an overall mean score of 4.0633, described as high; study habits got an overall mean score of 3.8310, described as high; and attitude towards mathematics got an overall mean score of 3.8381, described as high. The overall mean score for the student-related factors was 3.9108, which was described as high.

Teacher-Related Factors. There were three factors under teacher-related consideration: personality traits, teaching skills, and utilization of instructional materials. Personality traits got an overall mean score of 4.1490, described as high; teaching skills got an overall mean score of 3.9490, described as high; and utilization of instructional materials got an overall mean score of 4.1271, described as high. The overall mean score for the teacher-related factors was 4.0751, described as high.

Digital-Learning Factors. The three factors under digital learning considered were internet connectivity, computer access, and computer literacy. Internet connectivity got an overall mean score of 2.0751, described as low; computer access got an overall mean score of 3.7321, described as high; and computer literacy got an overall mean score of 3.6105, described as high. The overall mean score for the digital-learning factors was 3.3359, which was described as high.

Mathematics Performance of the Respondents. The mathematics performance of the respondents in their subject, Mathematics in the Modern World, showed: out of 420 respondents, 53 (12.6%) got a grade of 1.25; 74 (17.6%) got grades of 1.50 and 1.75; 71 (16.9%) got a grade of 2.00; 34 (8.1%) got grades of 2.25, 2.75, and 3.00; and 46 (11%) got a grade of 2.50. The overall average grade was 1.99, which was described as average.

Relationship between the Variables of the Study. Student-related factors, when correlated with mathematics performance, showed a slight correlation with p-values greater than 0.05, indicating non-significance. Teacher-related factors showed slight correlations with p-values greater than 0.05, except for teaching skills, which showed a significant correlation with mathematics performance. Digital-learning factors showed a slight correlation except for computer literacy, which showed a low correlation; p-values were greater than 0.05 except for computer literacy, indicating a significant correlation with mathematics performance.

The Factor that Best Predicts Mathematics Performance. Among the factors considered, computer literacy and teaching skills were found to be the best predictors of students' mathematics performance in the distance learning approach. The unstandardized coefficient for computer literacy was 0.149, and for teaching skills, it was 0.069, with a constant of 1.180 and a squared value of 0.050. Thus, the regression model was: $y = 1.180 + 0.149X_1 + 0.069X_2$, where

X_1 represents computer literacy and X_2 represents teaching skills.

Structural Model that Best Fits Mathematics Performance. The fit indices table of the hypothesized model showed that all indices satisfied the criterion values; hence, a model was generated. For every increase of 1 standard deviation in the student-related factors, mathematics performance increased by 0.09. For every increase of 1 standard deviation in the teacher-related factors, mathematics performance increased by 0.10. For every increase of 1 standard deviation in the digital factors, mathematics performance increased by 0.42. The model acquired an r^2 value of 0.21, meaning that 21% of the data is considered fit for the model.

CONCLUSION

Student-Related Factors. The respondents manifest a high degree of interest in their subject, Mathematics in the Modern World, indicating motivation to achieve good mathematics performance. They also manifest a high degree of study habits, suggesting they consider strategic ways of studying to perform well. Their attitude towards mathematics is high, signifying they do not show negative attitudes or perceptions about the subject.

Teacher-Related Factors. Mathematics instructors manifest high degrees of personality traits, indicating satisfactory professional attitudes in teaching. They exhibit high teaching skills, reflecting the use of strategies and available resources effectively. The high utilization of instructional materials means instructors employ innovations and relevant resources to help students visualize mathematical concepts.

Digital-Learning Factors. Respondents experience low internet connectivity. However, they manifest high computer accessibility and literacy, meaning they can access and effectively use computers and educational software to support their learning.

Mathematics Performance of the Respondents. The overall mathematics performance falls within the average category. None of the respondents failed Mathematics in the Modern World during the distance learning scheme in the new normal.

Relationships Between Factors and Mathematics Performance. Teaching skills and computer literacy show significant correlations with respondents' mathematics performance, while other factors do not exhibit significant correlations.

Factors that Best Predict Mathematics Performance. Teaching skills and computer literacy are the best predictors of respondents' mathematics performance in the distance learning scheme during the new normal.

Structural Equation Modelling (SEM) of the Study. Twenty-one percent of the data considered in this study satisfactorily fit the model. The highest increase in mathematics performance (0.42) occurs with a 1 standard deviation increase in the digital-learning factor.

RECOMMENDATIONS

This research identifies different factors affecting mathematics performance in the distance learning approach. Since the new normal setting will remain until COVID-19 is controlled, this study can guide improvements in quality mathematics education and future research.

It is recommended that the college administration and local government prioritize digital learning factors. They should formulate plans and policies to improve digital-learning qualities in the new normal, including allowing other Internet Service Providers (ISPs) to operate in the province. The Local Government Unit (LGU) and the college should also include training activities for computer literacy and accessibility targeted at students and other stakeholders.

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