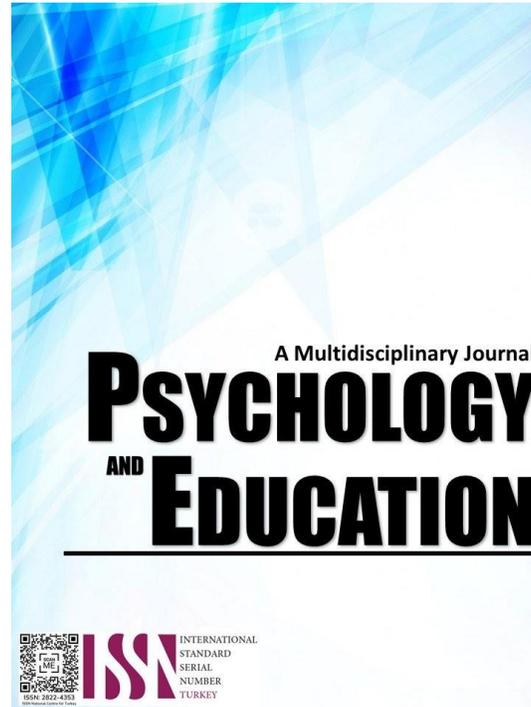


THE MEDIATING ROLE OF PERSONALITY TRAITS OF TEACHERS ON THE RELATIONSHIP BETWEEN TEACHING EFFECTIVENESS AND STUDENT'S PRODUCTIVITY AMONG GRADE 12 STUDENTS IN PRIVATE SCHOOLS



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The Mediating Role of Personality Traits of Teachers on the Relationship Between Teaching Effectiveness and Student's Productivity among Grade 12 Students in Private Schools

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Abstract

The purpose of this study was to determine the mediating role of personality traits of teachers on the relationship between teaching effectiveness and student productivity among grade 12 students in private schools. Quantitative non-experimental research utilizing descriptive correlational technique and mediation analysis were employed in this study. The data were gathered from 172 grade 12 students in private schools through stratified random sampling utilizing proportional allocation. Data was collected through survey questionnaires. The statistical methods used in data computation and hypothesis testing at the alpha 0.05 level of significance include Mean, Pearson-r, and Structural Equation Modelling (SEM) with mediation analysis. Results showed that the level of the role of personality traits of teachers, teaching effectiveness, and student productivity are at all high levels. Results revealed that the relationship between teaching effectiveness and student productivity, between teaching effectiveness, and the role of personality traits of teachers, and student productivity among grade 12 students in private schools all have a significant relationship. Results also revealed that the role of personality traits of teachers has partially mediated the relationship between teaching effectiveness and student productivity. It signifies that teachers may look into other factors that are affecting the student's productivity and teaching effectiveness. It means, teachers may also consider the role of teacher personality traits of students specifically extraversion, agreeableness, conscientiousness, neuroticism, and openness, as they partially mediate or significantly affect the relationship between teaching effectiveness and student's productivity.

Keywords: *teaching effectiveness, student's productivity, role of personality traits of teachers, mediation analysis, Philippines*

Introduction

Poor productivity among students can have widespread negative effects on their academic experience, affecting both their grades and overall success. The issue is complicated and goes beyond just what happens in the classroom. Students often face challenges in balancing their academic responsibilities with other aspects of their lives due to the demands of today's fast-paced lifestyle. This struggle doesn't only impact their grades but also takes a toll on their mental well-being, affecting their overall development. The consequences of this difficulty in managing different aspects of life can have a lasting impact on students' success. (Gusy et al., 2021)

In Indonesia, the productivity of college students was reduced. Learning through online media has various impacts on college students. This affects the level of college student productivity. The data interpretation affirms that students become lazier and sleepier during online classes. College students claim that they are stressed from being at home and worried about their future. They cope with burnout by hanging out with friends, talking to their family, and doing exercises (Limentie et al., 2022).

The low productivity of students in Kermanshah, Iran, has been linked to inadequate study skills. Studies have indicated that students' academic failures are primarily caused by a lack of proficiency in this area. Students who struggle with studying usually perform poorly academically, which can lead to a number of problems in the classroom, such as the loss of units or credits and a higher chance of being placed on student's probation (Jafari et al., 2019).

In Philippines, a study in the University of the Philippines Los Baños investigated the changing level of students' productivity in the Philippines. As a measure of productivity during the crisis, it examines how much time undergraduate industrial engineering students spend on their personal and academic pursuits. Students showed signs of productivity recovery, meaning that after a year of remote learning, they spent more time on academic tasks than they did during the emergency switch to remote learning at the start of the epidemic (Ramirez et al., 2022).

Based on the readings above, it is evident and observable that mathematical proficiency is really a problem in global, national, and even in the local setting. Hence, there is a need to conduct this study since the problem is an emergent and ongoing phenomenon. This study is socially relevant as it aims to investigate the factors that affect the productivity of students in private schools. The study focuses on the mediating role of personality traits of teachers in the relationship between teaching effectiveness and student productivity. The findings of this study can help improve the quality of education in private schools by identifying the personality traits that are most effective in enhancing teaching effectiveness and student productivity. This can lead to the development of training programs for teachers that focus on improving their personality traits, which can ultimately benefit the students. Moreover, this study needs urgency because through the data that this study will gather, new information will be formulated which enables us educators to utilize activities or deliver instruction effectively given the fact that there are diverse students inside the classroom. In which, it gives opportunities to facilitate an effective teaching-learning process.

In the literature review, I have found related studies such as the study of Hargrove (2022) titled “Effects of Background Music on Student Productivity in the Elementary Classroom” and Limentie et al., (2021) titled “College Student Productivity and Burnout Level during COVID-19” which discussed the students’ productivity.

These studies are in fact different from my own study for this research correlates students’ productivity and teaching effectiveness. In addition, its respondents are from Grade 12 students from private schools.

Research findings in this study can be used in the formulation of effective pedagogical strategies for it considers the interplay between teaching effectiveness, role of personality traits of teachers, and student’s productivity. Educators can adapt teaching methods and techniques that can be employ inside the classroom to increase students productivity. This research gap is important for educators, administration, and future researchers as it will contribute to the body of literature not only within the academe but also outside of it since its findings will be disseminated to the various research conferences and related agencies to be realized by the broader community through making actions and solutions on the problems being discussed as well as implementing the recommendations being suggested here. Moreover, this study was conducted in the Philippines, and this interests the college students of Kapalong College of Agriculture, Sciences and Technology (KCAST).

Research Objectives

The purpose of this study will be to examine the mediating role of personality traits of teachers on the relationship between teaching effectiveness and student’s productivity. To be specific, this study sought answers to the following objectives.

1. To determine the level of Teachers’ teaching effectiveness in grade 12 students of private schools in terms of:
 - 1.1. subject matter knowledge;
 - 1.2. instructional planning and strategies;
 - 1.3. assessment;
 - 1.4. learning environment; and,
 - 1.5. effective communication.
2. To determine the level of students’ productivity of grade 12 students in private schools in terms of:
 - 2.1. socialization;
 - 2.2. learner interaction;
 - 2.3. content information; and,
 - 2.4. research abilities.
3. To determine the level of teachers’ personality traits in grade 12 students of private schools in terms of:
 - 3.1. extraversion;
 - 3.2. agreeableness;
 - 3.3. neuroticism;
 - 3.4. conscientiousness; and,
 - 3.5. openness.
4. To determine the significant relationship between:
 - 4.1. teaching effectiveness and student’s productivity;
 - 4.2. personality traits of teachers and student’s productivity; and,
 - 4.3. teaching effectiveness and personality traits of teachers.
5. To determine the mediating personality traits of teachers on the relationship between teaching effectiveness and student’s productivity.

Methodology

Research Design

This study used quantitative non-experimental research utilizing descriptive- correlational techniques and mediation analysis. Mediating variables are the role of personality traits of teachers, and social constructs that transmit the effect of one variable to another variable. Mediation is one way that a researcher can explain the process or mechanism by which one variable affects another.

The manipulation of an independent variable, the random assignment of subjects to conditions the ordering of conditions, or both, are absent from non- experimental research. To group all these approaches collectively based on what they are not, in some ways, unjust (Price et al., 2014).

With little to no effort made to control unrelated variables, correlational research is a type of non-experimental study in which the researcher examines two variables and assesses their statistical relationship (i.e., the correlation). Researchers who are interested in statistical correlations between variables may favor a correlational study over an experiment for two key reasons (Price et al., 2014).

Mediation analysis in its simplest form, represents the addition of a third variable to this $X \rightarrow Y$ relation, whereby X causes the mediator, M , and causes Y , so $X \rightarrow M \rightarrow Y$ (MacKinnon et al., 2007).

The independent variable here in this study is teaching effectiveness while the dependent variable is student productivity, and the mediating variable is the role of personality traits of teachers. In this study, the researcher determined the relationship between teaching effectiveness and student's productivity, and the mediating role of personality traits of teachers on the relationship towards teaching effectiveness and student's productivity of grade 12 students in private schools.

Respondents

The study involves grade 12 students enrolled in the School Year 2023-2024 at Kapalong College of Technology Inc., Quezon Memorial Institute of Technology, Saint Jude Academy of Mindanao Foundation Inc, and Maryknoll School of Maniki Inc. The respondents in the study were primarily drawn from this private schools using the Slovin's formula with a margin of error of 0.05. A total of 172 students out of 382 across grade 12 students in four private schools: Kapalong College of Technology Inc., Quezon Memorial Institute of Technology, Saint Jude Academy of Mindanao Foundation Inc, and Maryknoll School of Maniki Inc. Moreover, to ensure an accurate distribution of samples, the researchers utilized stratified random sampling, specifically proportional allocation. Table 1 shows the distribution of the population of this study.

Table 1. *Distribution of Respondents*

| <i>Respondents</i> | <i>Population</i> | <i>Sample</i> | <i>Percentage</i> |
|--------------------|-------------------|---------------|-------------------|
| MARYKNOLL | 73 | 33 | 8.60% |
| KCTI | 149 | 67 | 17.56% |
| SJAM | 72 | 32 | 8.49% |
| QMIS | 88 | 40 | 10.37% |
| Total | 382 | 172 | 45.03% |

Instrument

The Likert scale is a five-point scale that enables individuals to communicate their degree of agreement or disagreement with a certain statement. The Likert scale (typically) presents five alternative responses to a statement or question, enabling respondents to demonstrate their positive-to-negative strength of agreement or sentiment concerning the question or statement (Mcleod, 2023). The study used a Five-point Likert Scale to assess the respondents' role of personality traits of teachers, teaching effectiveness, and student productivity. The scores given by the respondents to each statement were added up to calculate a total score, which represented their attitude score. This method allowed a quantitative analysis of the respondents' opinions on their, role of personality traits of teachers, teaching effectiveness, and student productivity.

Procedure

In collecting, the researcher took the following steps:

Questionnaire Development. The researcher searched the questionnaire drawn from journal articles that are related to the three variables.

Revision and Validation of Questionnaires. After it is formed, a questionnaire is used and submitted to a panel of experts to evaluate and contextualize. The researcher follows the advice of those revision experts until it is approved for use.

Requesting Approval to Carry out the Study. Through a formal letter that is signed by the researcher and acknowledged by his research adviser and the director for research and development, the researcher requested authorization from the school principals of the private schools in Maniki, Kapalong, Davao del Norte.

Distribution and Retrieval of the Questionnaire. Grade 12 students who enrolled in the said schools were the respondents, and each one was given a survey questionnaire in printed form.

Collection and Tabulation of the Data. Following the survey, the researcher collected and examined the research tool to record the information gathered from the respondents. The statistical information was examined, and the results were then evaluated. Conclusions and recommendations were made in accordance with the findings of the learning evaluation using the final data set.

Data Analysis

The data was collected from the questionnaires and were processed and analyzed using various statistical tools. These tools were applied to the data to help identify patterns and relationships that could shed light on the study's objectives. The results of this analysis were then used to draw conclusions and make recommendations based on the findings.

Mean. This was used to determine the level of teaching effectiveness, student's productivity, and role of personality traits of teachers.

Pearson r Correlation. This was used to determine the relationship between teaching effectiveness and student's productivity, which are the variables of this study.

Structural Equation Modeling using Mediation Analysis. This is carried out to figure out whether the mediating variable has any impact on the relationship between an independent variable and a dependent variable using the indirect effect. It was utilized in this research

to find out whether role of personality traits of teachers mediates the relationship between teaching effectiveness and student's productivity by answering the mean statement of the problem.

Ethical Considerations

The respondents in this study are grade 12 students from the research Kapalong College of Technology Inc., Quezon Memorial Institute of Technology, Saint Jude Academy of Mindanao Foundation Inc, and Maryknoll School of Maniki Inc. In this case, the researcher made sure that the study's objectives, as well as the respondents' safety, rights, and reliance on the researcher, would be handled fairly and righteously.

Researchers must also uphold the highest ethical standards when doing study with humans as participants. This quantitative investigation's main objective is to make sure the study adhered to ethical standards to protect the comfort of the human respondents. The researcher explained how the study followed the recommendations made by Denzin and Lincoln (2011), which centered on three fundamental ideas: informed consent, risk of harm, anonymity and confidentiality, and conflict of interest.

Informed Consent. It is the first fundamental ethical principle to consider. The responders must be given adequate notice of the requirements, the intended use of the data, and any potential consequences. To take part in the study, the respondents must give their explicit, active, and written consent. They must also acknowledge that they have the freedom to change their opinions at any moment and are aware of their right to access their information. When getting informed permission, an agreement between the researcher and the respondents may be taken into consideration (Denzin & Lincoln, 2011).

In this manner, the participants were oriented about their rights as part of the informed consent process. Participants were duly informed that they possess the right to discontinue their involvement in the study without obligation to provide any explanation. Additionally, individuals have the entitlement to decline to respond to inquiries deemed sensitive. Moreover, individuals can request further clarification or ask questions regarding the study. Finally, the participants were guaranteed the privilege of obtaining updates regarding the study's findings after the completion of the investigation.

Risk of Harm, Anonymity and Confidentiality. The respondent's information must always be kept secret or confidential, and pledges must go beyond simply keeping their names anonymous by forbidding the use of identification remarks and other materials. Secrecy and anonymity are crucial safeguards against potential harm (Denzin & Lincoln, 2011).

When the data is cautiously revealed to others, there is a potential danger of harm in terms of social liabilities. As a result, study data must be kept secure and confidential to prevent this happening. The participant's safety, identification, and personal information would all be maintained, the researcher underscored, and they would value their involvement in the study. The researcher strips identities from the data to produce a collection free of errors. Any information that may be used to identify the respondents, such as names or addresses (such information could be kept in separate, safe files elsewhere), is not included in a clean data collection. Three years after the completion of the study, the data must be archived and destroyed.

Conflict of Interest. An ethics committee applicant must disclose any ties or past actions that could create a conflict of interest so that the committee can offer guidance on how to resolve it (Fleming & Zegwaard, 2018). The study's author, however, insists that there were no financial or economic links that may be construed as a potential conflict of interest throughout the research's execution.

This point of view contends that respondents were likewise students and the researcher had no competing interests with the study, the research's conclusions were unaffected by outside circumstances. Only when the researcher has the authority to use coercive methods to force respondents to participate, such as threats of benefit termination, blackmail, or other forms of punishment (for example, principals threatening to fire teachers or teachers threatening to fail their students if they do not respond to the survey), does a conflict of interest arise.

Results and Discussion

Presented in the section below are the discussions of the data on the mediation analysis of role of personality traits of teachers on the relationship between teaching effectiveness and student's productivity among grade 12 students in private schools. This chapter presents the data results on the level of teaching effectiveness in terms of subject matter knowledge; instructional planning and strategies; assessment; learning environment; and, effective communication; the level of student's productivity in terms of socialization; learner interaction; content information; and, research abilities of grade 12 students in private school, and the level of role of personality traits of teachers in terms of extraversion; agreeableness; neuroticism; conscientiousness; and, openness. This also includes the significant relationship between teaching effectiveness and student's productivity, significant relationship between teaching effectiveness and role of personality traits of teachers, and the mediation analysis between teaching effectiveness and student's productivity via role of personality traits of teachers. Analysis and interpretations of the data, which were also done in parallel with the research objectives.

Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Subject Matter Knowledge

The level of teaching effectiveness was measured through the survey questionnaire with the indicator, of subject matter knowledge.

The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 2 is the level of teaching effectiveness of grade 12 students in private school in terms of subject matter knowledge. The data revealed that the level of teaching effectiveness in terms of subject matter knowledge had a total mean of 4.00 with a descriptive equivalent of high. This indicated that the level of teaching effectiveness in terms of subject matter knowledge is oftentimes observed.

Table 2. *Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Subject Matter Knowledge*

| Subject Matter Knowledge | Mean | Description |
|---|-------------|-------------|
| 1. demonstrating accurate knowledge according to subject matter while teaching. | 4.05 | High |
| 2. linking present content with past and future learning experiences. | 3.94 | High |
| 3. teaching content through a variety of teaching skills. | 4.01 | High |
| 4. making the subject matter accessible to me. | 3.90 | High |
| 5. linking the content with practical life. | 4.05 | High |
| OVERALL | 4.00 | High |

The highest mean is 4.05 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1 & 5 – Demonstrating accurate knowledge according to subject matter knowledge while teaching & links the content with practical life.

The lowest mean is 3.90 with a descriptive equivalent of high. This implies that the item is oftentimes manifested by the respondents of the study. This is from item no. 4 - Making the subject matter knowledge accessible to me.

Level of Teaching Effectiveness of Grade 12 Students In Private Schools In Terms of Instructional Planning and Strategies

The level of teaching effectiveness was measured through the survey questionnaire with the indicator, instructional planning and strategies. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 3 is the level of teaching effectiveness of grade 12 students in private school in terms of instructional planning and strategies. The data revealed a total mean of 4.14 with a descriptive equivalent of high. This high descriptive equivalent of the total mean implies that the level of teaching effectiveness in terms of instructional planning and strategies is oftentimes observed.

Table 3. *Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Instructional Planning and Strategies*

| Instructional Planning and Strategies | Mean | Description |
|---|-------------|-------------|
| 1. using different teaching strategies to enhance students' understanding. | 4.24 | High |
| 2. changing his/her teaching methodology to make the topic relevant to students' lives. | 4.09 | High |
| 3. teaching the students according to their individual differences. | 3.94 | High |
| 4. using the appropriate material, technology, and resources while teaching. | 4.14 | High |
| 5. engaging, motivating, and maintaining students' attention to their lesson. | 4.16 | High |
| 6. using available resources for students' learning needs. | 4.26 | Very High |
| OVERALL | 4.14 | High |

The highest mean is 4.28 with a descriptive equivalent of very high. This means that the item is always observed by the involved respondents. This is from item no. 6 – Using available resources for students' learning needs.

The lowest mean is 3.94 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3 - Teaching the students according to their individual differences.

Level of Teaching Effectiveness of Grade 12 Students In Private Schools In Terms of Assessment

The level of teaching effectiveness was measured through the survey questionnaire with the indicator, assessment. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 4 is the level of teaching effectiveness of grade 12 students in private school in terms of assessment. The data revealed that the level of teaching effectiveness in terms of assessment had a total mean of 4.10 with a descriptive equivalent of high. This indicated that the level of teaching effectiveness in terms of assessment is oftentimes observed.

Table 4. *Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Assessment*

| Assessment | Mean | Description |
|--|-------------|-------------|
| 1. conducting class tests to monitor students' performance regularly. | 4.16 | High |
| 2. evaluating students' performances and provides timely feedback on their errors. | 4.01 | High |
| 3. maintaining a record of students' results. | 4.11 | High |
| 4. using multiple assessment strategies. | 4.05 | High |
| 5. encouraging the students to do better next time. | 4.20 | High |
| OVERALL | 4.10 | High |

The highest mean is 4.20 with a descriptive equivalent of high. This means that the item is often times observed by the involved respondents. This is from item no. 6 – Using available resources for students' learning needs.

The lowest mean is 3.94 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3 - Teaching the students according to their individual differences.

Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Learning Environment

The level of teaching effectiveness was measured through the survey questionnaire with the indicator, learning environment. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 5 is the level of teaching effectiveness of grade 12 students in private school in terms of learning environment. The data revealed that the level of teaching effectiveness in terms of learning environment had a total mean of 4.23 with a descriptive equivalent of high. This indicated that the level of teaching effectiveness in terms of learning environment oftentimes observed.

Table 5. *Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Learning Environment*

| Learning Environment | Mean | Description |
|--|-------------|-------------|
| 1. creating a climate of mutual trust and respect in the classroom. | 4.37 | Very High |
| 2. emphasizing students' performance and provides timely feedback on their errors. | 4.02 | High |
| 3. maintaining a classroom improvement towards students' achievement. | 4.17 | High |
| 4. creating an attractive setting that minimizes disruption. | 4.04 | High |
| 5. creating an attractive and friendly classroom environment. | 4.20 | High |
| OVERALL | 4.23 | High |

The lowest mean is 4.02 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 2 - Emphasizing students' performance and provides timely feedback on their errors.

Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Effective Communication

The level of teaching effectiveness was measured through the survey questionnaire with the indicator, effective communication. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 6 is the level of teaching effectiveness of grade 12 students in private school in terms of effective communication. The data revealed that the level of teaching effectiveness in terms of effective communication had a total mean of 4.11 with a descriptive equivalent of high. This indicated that the level of teaching effectiveness in terms of effective communication oftentimes observed.

The highest mean is 4.24 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1 – using correct vocabulary and grammar in teaching.

Table 6. *Level of Teaching Effectiveness of Grade 12 Students in Private Schools in Terms of Effective Communication*

| Effective Communication | Mean | Description |
|---|-------------|-------------|
| 1. using correct vocabulary and grammar in teaching. | 4.24 | High |
| 2. explaining lessons according to the age and ability of the students. | 4.12 | High |
| 3. responding to students' questions in appropriate language. | 4.14 | High |
| 4. feeling comfortable explaining mathematical reasoning to others | 4.05 | High |
| 5. finding it easy to understand and interpret mathematical notation and symbols. | 3.99 | High |
| OVERALL | 4.11 | High |

The lowest mean is 4.02 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 5 - Finding it easy to understand and interpret mathematical notation and symbols.

Summary on the Level of Teaching Effectiveness

Presented in Table 7 is the overall level of Teaching Effectiveness in terms of subject matter knowledge; instructional planning and strategies; assessment; learning environment; and effective communication; the level of student's productivity in terms of socialization; learner interaction; content information; and research abilities. The data revealed that the level of teaching effectiveness of grade 12 students in private school has a total mean of 4.11 with the descriptive equivalent of high. This indicates that the level of teaching effectiveness of grade 12 students in private school is oftentimes observed.

The highest mean is 4.17 with the descriptive equivalent of high. This indicates that the level of teaching effectiveness as perceived by students in terms of learning environment is oftentimes observed.

Table 7. *Summary on the Level of Teaching Effectiveness*

| Teaching Effectiveness | Mean | Description |
|---------------------------------------|-------------|-------------|
| Subject Matter Knowledge | 4.00 | High |
| Instructional Planning and Strategies | 4.14 | High |
| Assessment | 4.10 | High |
| Learning Environment | 4.17 | High |
| Effective Communication | 4.11 | High |
| OVERALL | 4.11 | High |

Likewise, the lowest indicator is visual-spatial which obtained a mean of 4.00 with a descriptive equivalent of high. This indicates that the level of teaching effectiveness in terms of subject matter knowledge is oftentimes observed. Instructional planning and strategies obtained a mean of 4.14 which means high. This indicates that the level of teaching effectiveness in terms of instructional planning and strategies is oftentimes observed.

On the other hand, effective communication obtained a mean of 4.11 which means high. This indicates that the level of teaching effectiveness in terms of effective communication is oftentimes observed. Lastly, assessment obtained a mean of 4.10 which means high. This indicates that the level of teaching effectiveness in terms of assessment is oftentimes observed.

Level of Students Productivity of Grade 12 Students in Private Schools in Terms of Socialization

The level of student's productivity was measured through the survey questionnaire with the indicator, socialization. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 8 is the level of student's productivity of grade 12 students in private school in terms of socialization. The data revealed that the level of student's productivity in terms of socialization had a total mean of 3.79 with a descriptive equivalent of high. This indicated that the level of student's productivity in terms of socialization is oftentimes observed.

Table 8. *Level of Student's Productivity of Grade 12 Students in Private Schools in Terms of Socialization*

| Socialization | Mean | Description |
|---|-------------|-------------|
| 1. being ease when conversing with others in problem-solving situations. | 3.73 | High |
| 2. enjoying in collaborating with others in mathematics group activities | 3.97 | High |
| 3. being capable of building meaningful connections with others in a mathematics. | 3.69 | High |
| 4. believing in ability to communicate clearly in groups | 3.85 | High |
| 5. feeling confident in my ability to articulate my thoughts in group activities. | 3.73 | High |
| OVERALL | 3.79 | High |

The highest mean is 3.97 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 2 – Enjoying in collaborating with others in mathematics group activities

The lowest mean is 3.69 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3 – being capable of building meaningful connections with others in a Mathematics.

Level of Students Productivity of Grade 12 Students in Private Schools in Terms of Learner Interaction

The level of student's productivity was measured through the survey questionnaire with the indicator, learner interaction. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 9 is the level of student's productivity of grade 12 students in private school in terms of learner interaction. The data revealed that the level of student's productivity in terms of learner interaction had a total mean of 3.78 with a descriptive equivalent of high. This indicated that the level of student's productivity in terms of learner interaction is oftentimes observed.

The highest mean is 3.94 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 4 – being driven to improve and learn new things in my mathematics lessons.

Table 9. *Level of Student's Productivity of Grade 12 Students in Private Schools in Terms of Learner Interaction*

| Learner Interaction | Mean | Description |
|---|-------------|-------------|
| 1. being dedicated to putting in the effort of participating and succeeding in math class, and I frequently connect with. | 3.85 | High |
| 2. being able to stay focused on my mathem/atics tasks and responsibilities. | 3.75 | High |
| 3. being able to bounce back from setbacks and challenges that arise in my mathematics studies. | 3.67 | High |
| 4. being driven to improve and learn new things in my mathematics lessons. | 3.94 | High |
| 5. being able to stay organized and manage my time effectively in mathematics class. | 3.67 | High |
| OVERALL | 3.78 | High |

The lowest mean is 3.67 but with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3 & 5 - Being able to bounce back from setbacks and challenges that arise in my mathematics studies & being able to stay organized and manage my time effectively in mathematics class.

Level of Students Productivity of Grade 12 Students in Private Schools in Terms of Content Information

The level of student's productivity was measured through the survey questionnaire with the indicator, content information. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 10 is the level of student's productivity of grade 12 students in private school in terms of content information. The data revealed that the level of student's productivity in terms of content information had a total mean of 3.59 with a descriptive equivalent of high. This indicated that the level of student's productivity in terms of content information is oftentimes observed.

The highest mean is 3.66 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1 & 4 – Possessing a strong grasp of the mathematical concepts covered in the lessons & being able

to apply my knowledge of mathematics to real-world situations.

Table 10. *Level of Student's Productivity of Grade 12 Students in Private Schools in Terms of Content Information in a clear and concise manner*

| Content Information | Mean | Description |
|--|-------------|-------------|
| 1. being able to possess a strong grasp of the mathematical concepts covered in the lessons. | 3.66 | High |
| 2. being able to remember and recall important mathematical information from previous lessons. | 3.55 | High |
| 3. being able to synthesize and analyze mathematical information presented in the lessons, drawing connections between different concepts. | 3.53 | High |
| 4. being able to apply my knowledge of mathematics to real-world situations. | 3.66 | High |
| 5. being able to explain complex mathematical concepts in a clear and concise manner | 3.55 | High |
| OVERALL | 3.59 | High |

The lowest mean is 3.55 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 2 & 5 - being able to remember and recall important mathematical concepts

Level of Students Productivity of Grade 12 Students in Private Schools in Terms of Research Abilities

The level of student's productivity was measured through the survey questionnaire with the indicator, research abilities. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 11 is the level of student's productivity of grade 12 students in private school in terms of research abilities. The data revealed that the level of student's productivity in terms of research abilities had a total mean of 3.65 with a descriptive equivalent of high. This indicated that the level of student's productivity in terms of research abilities is oftentimes observed.

The highest mean is 3.77 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1 – being able to identify relevant sources of information needed for mathematics lessons.

Table 11. *Level of Student's Productivity of Grade 12 Students in Private Schools in Terms of Research Abilities*

| Research Abilities | Mean | Description |
|--|-------------|-------------|
| 1. being able to identify relevant sources of information needed for mathematics lessons. | 3.77 | High |
| 2. being able to evaluate the credibility and reliability of sources in finding related mathematics lessons. | 3.63 | High |
| 3. being able to analyze and synthesize mathematical information from multiple sources. | 3.70 | High |
| 4. being proficient in applying mathematical research methods and techniques. | 3.60 | High |
| 5. being able to design and conduct mathematical research studies. | 3.55 | High |
| Overall | 3.65 | High |

The lowest mean is 3.55 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 5 – being able to design and conduct mathematical research studies.

Summary on the Level of Student's Productivity

Presented in Table 12 is the overall level of student's productivity in terms of socialization; learner interaction; content information; and research abilities. The data revealed that the level of student's productivity of grade 12 students in private school has a total mean of 3.70 with the descriptive equivalent of high. This indicates that the level of student's productivity of grade 12 students in private schools is oftentimes observed.

Further, the highest mean is 3.79 with the descriptive equivalent of high. This indicates that the level of student productivity as perceived by students in terms of socialization is oftentimes observed.

In contrast, the lowest indicator is content information which obtained a mean of 3.59 with a descriptive equivalent of high. This indicates that the level of student productivity in terms of content information is oftentimes observed.

Table 12. *Summary on the Level of Student's Productivity*

| Student's Productivity | Mean | Description |
|------------------------|-------------|-------------|
| Socialization | 3.79 | High |
| Learner Interaction | 3.78 | High |
| Content Information | 3.59 | High |
| Research Abilities | 3.65 | High |
| OVERALL | 3.70 | High |

Furthermore, the socialization domain of student probability obtained a mean of 3.79 with a descriptive equivalent of high. This indicates that the level of student's productivity in terms of socialization is oftentimes observed. On the other hand, learner interaction obtained a mean of 3.78 which means high. This indicates that the level of student's productivity in terms of learner interaction is oftentimes observed.

Lastly, the assessment domain of student productivity obtained a mean of 3.65 with the descriptive equivalent of high. This indicates that the level of student's productivity in terms of research abilities is oftentimes observed.

Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Extraversion

The level of role of personality traits of teachers was measured through the survey questionnaire with the indicator, extraversion. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 13 is the level of role of personality traits of teachers of grade 12 students in private school in terms of extraversion. The data revealed that the level of role of personality traits of teachers in terms of extraversion had a total mean of 3.47 with a descriptive equivalent of high. This indicated that the level of role of personality traits of teachers in terms of extraversion is oftentimes observed.'

Table 13. *Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Extraversion*

| Extraversion | Mean | Description |
|--|-------------|-------------|
| 1. being talkative. | 3.68 | High |
| 2. generating a lot of enthusiasm. | 3.51 | High |
| 3. being inventive. | 3.47 | High |
| 4. feeling energized after spending time answering math tasks. | 3.35 | Moderate |
| 5. being comfortable speaking in front during math class. | 3.33 | Moderate |
| Overall | 3.47 | High |

The highest mean is 3.68 which means high. This means that the item is often times observed by the involved respondents. This is from item no. 1 – being talkative.

The lowest mean is 3.33 with a descriptive equivalent of moderate. This means that the item is sometimes observed by the respondents of the study. This is from item no. 5 – being comfortable speaking in front during math class.

Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Agreeableness

The level of role of personality traits of teachers was measured through the survey questionnaire with the indicator, agreeableness. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 14 is the level of role of personality traits of teachers of grade 12 students in private school in terms of agreeableness. The data revealed that the level of role of personality traits of teachers in terms of agreeableness had a total mean of 3.47 with a descriptive equivalent of high. This indicated that the level of role of personality traits of teachers in terms of agreeableness is oftentimes observed.

The highest mean is 3.87 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1 – being full of energy.

Table 14. *Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Agreeableness*

| Agreeableness | Mean | Description |
|--|-------------|-------------|
| 1. being full of energy. | 3.87 | High |
| 2. having an assertive personality. | 3.70 | High |
| 3. being outgoing, sociable. | 3.68 | High |
| 4. enjoying working collaboratively with others on math problems. | 3.81 | High |
| 5. finding it easy to understand and emphasize with others' struggles in math. | 3.44 | Moderate |
| Overall | 3.70 | High |

The lowest mean is 3.44 with a descriptive equivalent of moderate. This means that the item is sometimes observed by the respondents of the study. This is from item no. 5 - Finding it easy to understand and emphasize with others' struggles in math.

Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Conscientiousness

The level of role of personality traits of teachers was measured through the survey questionnaire with the indicator, conscientiousness. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 15 is the level of role of personality traits of teachers of grade 12 students in private school in terms of conscientiousness. The data revealed that the level of role of personality traits of teachers in terms of conscientiousness had a total mean of 3.47 with a descriptive equivalent of high. This indicated that the level of role of personality traits of teachers in terms of conscientiousness is oftentimes observed.

The highest mean is 3.92 with a descriptive equivalent is high. This means that the item is often times observed by the involved respondents. This is from item no. 4 – Believing that putting in extra effort is crucial for success in math courses.

Table 15. *Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Conscientiousness*

| Conscientiousness | Mean | Description |
|--|-------------|-------------|
| 1. being consistent meet deadlines for math assignment and projects. | 3.63 | High |
| 2. worrying a lot during math class. | 3.80 | High |
| 3. being diligent in reviewing and practicing math concepts regularly. | 3.58 | High |
| 4. believing that putting in extra effort is crucial for success in math courses. | 3.92 | High |
| 5. considering oneself to be a detail-oriented person when it comes to math related tasks. | 3.57 | High |
| Overall | 3.70 | High |

The lowest mean is 3.44 with a descriptive equivalent of moderate. This means that the item is sometimes observed by the respondents of the study. This is from item no. 5 - Considering to be a detail-oriented person when it comes to math related tasks.

Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Neuroticism

The level of role of personality traits of teachers was measured through the survey questionnaire with the indicator, neuroticism. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 16 is the level of role of personality traits of teachers of grade 12 students in private school in terms of neuroticism. The data revealed that the level of role of personality traits of teachers in terms of neuroticism had a total mean of 3.82 with a descriptive equivalent of high. This indicated that the level of role of personality traits of teachers in terms of neuroticism is oftentimes observed.

The highest mean is 3.92 which means high. This means that the item is often times observed by the involved respondents. This is from item no. 2 – Having an active imagination.

Table 16. *Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Neuroticism*

| Neuroticism | Mean | Description |
|---|-------------|-------------|
| 1. being original, coming up with new ideas. | 3.78 | High |
| 2. having an active imagination. | 3.92 | High |
| 3. being moody. | 3.87 | High |
| 4. worrying about performance in math courses. | 3.83 | High |
| 5. finding it difficult to shake off negative emotions related to math. | 3.71 | High |
| Overall | 3.82 | High |

The lowest mean is 3.44 but with a descriptive equivalent of moderate. This means that the item is sometimes observed by the respondents of the study. This is from item no. 5 - Finding it difficult to shake off negative emotions related to math.

Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Openness

The level of role of personality traits of teachers was measured through the survey questionnaire with the indicator, neuroticism. The responses of grade 12 students in private school on each indicator were presented and analyzed below.

Presented in Table 17 is the level of role of personality traits of teachers of grade 12 students in private school in terms of openness. The data revealed that the level of role of personality traits of teachers in terms of openness had a total mean of 3.97 with a descriptive equivalent of high. This indicated that the level of role of personality traits of teachers in terms of openness is oftentimes observed. The highest mean is 3.92 which means high. This means that the item is often times observed by the involved respondents. This is from item no. 5 – Liking to cooperate with others.

Table 17. *Level of Role of Personality Traits of Teachers of Grade 12 Students in Private Schools in Terms of Openness*

| Openness | Mean | Description |
|---|-------------|-------------|
| 1. being helpful and unselfish with others. | 4.02 | High |
| 2. being ingenious, a deep thinker. | 3.85 | High |
| 3. being generally trusting. | 3.87 | High |
| 4. being considerate and kind to almost everyone. | 3.98 | High |
| 5. liking to cooperate with others. | 4.10 | High |
| Overall | 3.97 | High |

The lowest mean is 3.85 with a descriptive equivalent of moderate. This means that the item is sometimes observed by the respondents of the study. This is from item no. 2 - being ingenious, a deep thinker.

Summary on The Level of Role of Personality Traits of Teachers

Presented in Table 18 is the overall level of role of personality traits of teachers in terms of extraversion agreeableness; neuroticism; conscientiousness; and openness. The data revealed that the level of role of personality traits of teachers of grade 12 students in private school has a total mean of 3.73 with the descriptive equivalent of high. This indicates that the level of role of personality traits of teachers of grade 12 students in private school is oftentimes observed.

Moreover, the highest mean is 3.97 with the descriptive equivalent of high. This indicates that the level of role of personality traits of teachers as perceived by students in terms of openness is oftentimes observed.

Likewise, the lowest indicator is extraversion which obtained a mean of 3.47 with a descriptive equivalent of high. This indicates that the level of role of personality traits of teachers in terms of extraversion is oftentimes observed.



Table 18. *Summary on the Level of Role of Personality Traits of Teachers*

| Role of Personality Traits of Teachers | Mean | Description |
|--|-------------|-------------|
| Extraversion | 3.47 | High |
| Agreeableness | 3.70 | High |
| Conscientiousness | 3.70 | High |
| Neuroticism | 3.82 | High |
| Openness | 3.97 | High |
| Overall | 3.73 | High |

Furthermore, agreeableness and neuroticism obtained a mean of 3.70 which means high. This indicates that the level of role of personality traits of teachers in terms of agreeableness and neuroticism is oftentimes observed. On the other hand, conscientiousness obtained a mean of 3.82 which means high.

Significant Relationship Between Teaching Effectiveness and Student’s Productivity

Presented in Table 19 is the result of the significant relationship between teaching effectiveness and student’s productivity, $r(170) = .478, p < .001$. Since the probability value ($p < .001$) is less than the level of significance ($\alpha = 0.05$), null hypothesis is rejected. This means that there is a positive and significant relationship between teaching effectiveness and student’s productivity

Table 19. *Significant Relationship Between Teaching Effectiveness and Student’s Productivity*

| Variable | Mean | R-Value | P-Value | Decision @=0.05 |
|------------------------|------|---------|---------|-------------------------------|
| Teaching Effectiveness | 4.10 | .478 | <.001 | H₀ Rejected |
| Student’s Productivity | 3.70 | | | |

Significant Relationship Between Role of Personality Traits of Teachers and Student’s Productivity

Presented in Table 20 is the result of the significant relationship between role of personality traits of teachers and student’s productivity, $r(170) = .584, p < .001$.

Table 20. *Significant Relationship Between Role of Personality Traits of Teachers and Student’s Productivity*

| Variable | Mean | R-Value | P-Value | Decision @=0.05 |
|----------------------------|------|---------|---------|-------------------------------|
| Role Of Personality Traits | 3.73 | .564 | <.001 | H₀ Rejected |
| Student’s Productivity | 3.70 | | | |

Since the probability value ($p < .001$) is less than the level of significance ($\alpha = 0.05$), null hypothesis is rejected. This means that there is a positive and significant relationship between role of personality traits of teachers and student’s productivity

Significant Relationship Between Teaching Effectiveness and Role of Personality Traits of Teachers

Table 21. *Significant Relationship Between Teaching Effectiveness and Role of Personality Traits of Teachers*

| Variable | Mean | R-Value | P-Value | Decision @=0.05 |
|--|------|---------|---------|-------------------------------|
| Teaching Effectiveness | 4.10 | .664 | <.001 | H₀ Rejected |
| Role Of Personality Traits of Teachers | 3.73 | | | |



Presented in Table 21 is the result of the significant relationship between the role of personality traits of teachers and student’s productivity, $r(170) = .664, p < .001$. Since the probability value ($p < .001$) is less than the level of significance ($\alpha = 0.05$), null hypothesis is rejected. This means that there is a positive and significant relationship between the role of personality traits of teachers and student’s productivity.

The Mediating role of personality traits of teachers on the relationship between teaching effectiveness and student’s productivity

Preacher and Hayes mediation analysis approach was utilized in this study to determine if the role of personality traits of teachers mediates the relationship between teaching effectiveness and student productivity among grade 12 students In private schools. It is a regression-based bootstrap approach similar to SEM (Structural Equation Modeling) that is used for analyzing mediation. It consists of two steps that reflect the recommendation for mediation analysis. In step 1, the direct and indirect effects are tested for significance. Step 2 involves defining the type of effect and mediation, which is classified into partial and full mediation. Full mediation is achieved if the direct effect is not significant and the indirect effect is significant. It means that only the indirect effect via the mediator exists. On the other hand, partial mediation happens when the direct effect is significant.

Mediation Analysis

Table 22 shows the direct effect of teaching effectiveness on student’s productivity. Based on the result, the direct effect of teaching effectiveness (IV) on student productivity (DV) is significant [$\beta = .192, SE = 0.086, 95\% CI (0.023, 0.360)$].

Table 22. *Direct Effects*

| | | Estimate | Std. Error | z-value | p | 95% Confidence Interval | |
|------------------------|--------------------------|----------|------------|---------|-------|-------------------------|-------|
| | | | | | | Lower | Upper |
| Teaching Effectiveness | → Student's Productivity | 0.192 | 0.086 | 2.224 | 0.026 | 0.023 | 0.360 |

Since the confidence interval in the direct effect does not include zero, it indicates that the direct effect of teaching effectiveness is significant. It also revealed that teaching effectiveness significantly influenced student’s productivity, ($\beta = .192, p = .026$).

Table 23. *Indirect effects*

| | | Estimate | Std. Error | z-value | p | 95% Confidence Interval | |
|------------------------|---|----------|------------|---------|--------|-------------------------|-------|
| | | | | | | Lower | Upper |
| Teaching Effectiveness | → Role of Personality Traits of Teachers → Student's Productivity | 0.305 | 0.063 | 4.842 | < .001 | 0.181 | 0.428 |

This announces that the mediating variable, which is the role of personality traits of teachers, mediates the relationship between the independent variable, multiple intelligence, and the dependent variable, which is student productivity.

Table 24. *Total effects*

| | | Estimate | Std. Error | z-value | p | 95% Confidence Interval | |
|------------------------|--------------------------|----------|------------|---------|--------|-------------------------|-------|
| | | | | | | Lower | Upper |
| Teaching Effectiveness | → Student's Productivity | 0.496 | 0.070 | 7.137 | < .001 | 0.360 | 0.632 |



Moreover, Table 24 shows that teaching effectiveness significantly influences to students’ productivity among grade 12 students in private schools. It means that even without the presence of the mediating variable, the role of personality traits of teachers, and teaching effectiveness already affects student productivity among grade 12 students in private schools. Since the direct effect is significant, it can be concluded that the relationship between teaching effectiveness and student productivity is only partly mediated by the role of personality traits of teachers.

Table 25. Path coefficients

| | | Estimate | Std. Error | z-value | p | 95% Confidence Interval | |
|--|--|----------|------------|---------|--------|-------------------------|-------|
| | | | | | | Lower | Upper |
| Role of Personality Traits of Teachers | → Student's Productivity | 0.516 | 0.097 | 5.324 | < .001 | 0.326 | 0.706 |
| Teaching Effectiveness | → Student's Productivity | 0.192 | 0.086 | 2.224 | 0.026 | 0.023 | 0.360 |
| Teaching Effectiveness | → Role of Personality Traits of Teachers | 0.590 | 0.051 | 11.646 | < .001 | 0.491 | 0.689 |

Furthermore, Table 25 revealed that teaching effectiveness significantly influenced students’ productivity, $\beta=.192$, $p=.026$. Also, teaching effectiveness significantly affected the role of personality traits of teachers, $\beta=.590$, $p<.001$. Lastly, the role of personality traits of teachers is found to be a significant predictor of student productivity, $\beta=.51$, $p<.001$.

In addition to the result of the study, Figure 3 shows the path estimates between teaching effectiveness and student productivity (Path c), teaching effectiveness and role of personality traits of teachers (Path a), and the role of personality traits of teachers and student’s productivity (Path b). It revealed that teaching effectiveness significantly influenced students’ productivity, $\beta=.192$, $p=.026$. Also, teaching effectiveness significantly affected the role of personality traits of teachers, $\beta=.590$, $p<.001$. Lastly, the role of personality traits of teachers is found to be a significant predictor of student productivity, $\beta=.516$, $p<.001$.

These results suggested the relationship between teaching effectiveness and student productivity was partially mediated by the indirect pathway through the role of personality traits of teachers, a claim that was also supported in Table 23 by the estimation of a significant indirect effect.

Further, the result implies that students’ productivity, should not only be bounded and limited to the teaching effectiveness of students. Teachers should look into other factors that are affecting the student’s productivity of a student and not just their effectiveness of students. Perhaps, teachers should also consider the engagement of students specifically students’ extraversion; agreeableness; neuroticism; conscientiousness; and openness, as it partially mediates or significantly affects the relationship between teaching effectiveness and student productivity.

Conclusions

This section contains an overview summary of the study, focusing on the results and their respective implications. Based on the results of this study, the following conclusions were formed in response to the objectives:

The level of teaching effectiveness as perceived by the grade 12 students in private schools who demonstrated teaching effectiveness is high. As a result, encouraging good teaching effectiveness as seen by students gives them more confidence to participate actively in the learning process and improves their capacity to understand and apply knowledge.

On the other hand, the level of student productivity among grade 12 students in private schools who demonstrated student productivity is high. Thus, create a welcoming environment in the classroom where students feel supported and at ease. Promote respect, cooperation, and involvement from the students. Positive surroundings encourage participation and output. recognizing the variety of learning methods and demands among students.

Moreover, the level of role of personality traits of teachers among grade 12 students in private schools who demonstrated role of personality traits of teachers is high. Thus, instructors' personalities work as catalysts, generating meaningful connections between students and teachers as well as supportive learning settings that eventually encourage students' academic and personal growth.

Based on the findings, there is a strong correlation between student productivity and teaching effectiveness because it has been demonstrated that learning effectiveness is more likely to have an impact on students' productivity overall. Consequently, there is a strong correlation between the two variables because students believe that their production is greatly influenced by the effectiveness of the teachers they get.

Based on the study's findings, there is also a significant relationship between teaching effectiveness and the role of personality traits of teachers. There is also a significant relationship between teaching effectiveness and the role of personality traits of teachers. As a result, over the course of their study of mathematics, grade 12 students perceive a positive correlation between the personality attributes of their teachers and their efficiency as teachers. As a result, there is a strong correlation between the two variables because grade 12 students believe that personality attributes have a major impact on how effective teachers are.

Also, there is a significant relationship between the role of personality traits of teachers and student's productivity. Therefore, Teachers' personality features have an impact on students' productivity because they create supportive and engaging classroom settings in which students are encouraged to thrive. Teachers that demonstrate enthusiasm, empathy, and organization frequently inspire better levels of student engagement and achievement, which contributes to overall academic productivity and success.

The mediation analysis revealed that the role of personality traits of teachers has partially mediated the relationship between teaching effectiveness and student's productivity. Therefore, personality qualities of teachers play a part in improving their ability to teach, which in turn supports student productivity in the classroom. Schools can adopt techniques that not only maximize teaching methods but also create an environment that is conducive to increased student engagement and achievement by recognizing and capitalizing on the positive effects of educators' personalities. The relationship between teaching effectiveness and students' productivity, however, is partially mediated by the indirect pathway through the role of teachers' personality traits, according to the results. This claim is further supported by the estimation of a significant indirect effect.

Based on the findings of the study, the following recommendations were being

The level of teaching effectiveness as perceived by grade 12 students in private schools is high. However, among the items of each indicator of teaching effectiveness it was found that assessment was the item with the lowest mean result. It is therefore suggested that to learn about the evaluation criteria and get clarification on how their work will be evaluated, students should actively contact their professors. Students may also think about practicing self-evaluation and making use of the tools that are accessible to them, including academic support services or tutoring, to enhance their comprehension and performance on tasks that are assessed. Students can improve their overall academic success and learning experience by being proactive with their assessments.

Moreover, the level of student's productivity among grade 12 students in private schools is high. However, among the items of each indicator of students' productivity, it was found that content information were the items with the lowest mean result. It is therefore suggested suggests that learners may benefit from additional support and resources to grasp essential course material effectively. To address this, students could consider seeking out supplementary learning materials, participating in study groups, or engaging in one-on-one discussions with instructors to deepen their understanding of the content. Additionally, actively participating in class discussions and asking questions can help students clarify any areas of confusion and improve their overall comprehension, ultimately leading to enhanced productivity and academic success.

Furthermore, the level of role of personality traits of teachers among grade 12 students in private schools is high. However, among the items of each indicator of personality traits of teachers, it was found that extraversion has the item with the lowest mean result. It is therefore suggested that the students should look for opportunities to interact with teachers and engage more actively in class discussions and activities. Students can improve their learning and feel more encouraged in their studies by participating more in the classroom.

Finally, as the role of personality traits of teachers partially mediates the relationship between teaching effectiveness and student's productivity, it is advised that future studies look into additional factors that might completely moderate the association between students' productivity and the effectiveness of the teachers during the mathematics learning process. They are also welcome to make use of any other approaches, elements, or variables that the study was unable to address. Additionally, only 172 students are involved in the study; however, it may be conducted elsewhere or with a higher number of participants.

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