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CARING BEHAVIOR OF TEACHERS AS MEDIATOR ON LEARNERS' AUTONOMY AND NUMERICAL INQUISITIVENESS

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ABSTRACT

The main purpose of this study is to evaluate whether caring behavior of teachers have significant mediating effect on the relationship between learners' autonomy and numerical inquisitiveness. In this study, the researcher selected the 215 public elementary school teachers in Bunawan District in Davao City as the respondents of the study. Stratified random sampling technique was utilized in the selection of the respondents. Non-experimental quantitative research design using descriptive-correlational method was employed. The data collected were subjected on the following statistical tools: Mean, Partial Correlation, and Multiple Regression Analysis. Descriptive analysis showed that learners' numerical inquisitiveness and caring behavior of teachers were described as moderately extensive, while, learners' autonomy in Bunawan District in Davao City was rated as extensive. Further, correlation analysis demonstrated that there is a significant relationship among learners' autonomy, numerical inquisitiveness and caring behavior of teachers. Evidently, Multiple Regression Analysis proved that caring behavior of teachers partially mediated the relationship between learners' autonomy and numerical inquisitiveness. In other words, caring behavior of teachers is a significant mediator on the relationship between learners' autonomy and numerical inquisitiveness. The study, therefore, was conducted for further utilization of findings through publication in reputable research journal.

Keywords: Educational management, learners' autonomy, numerical inquisitiveness, caring behavior of teachers, Philippines

1. INTRODUCTION

A teacher's caring and supportive approach plays a crucial role in shaping students' attitudes, motivation, and performance in math. When teachers exhibit caring behavior, they create a positive and nurturing learning environment in the math classroom. This environment fosters a sense of belonging and emotional safety, allowing students to feel comfortable taking risks, asking questions, and making mistakes in their math learning journey. When teachers demonstrate empathy, understanding, and support, they create an environment where students feel valued, motivated, and confident in their math abilities. This, in turn, enhances students' numerical inquisitiveness, positively influences their academic performance, and contributes to their overall growth and development as learners.

Kim et al. (2015) highlighted that when learners lack numerical inquisitiveness, they are less likely to invest time and effort into learning the subject. As a result, their performance in math may suffer, leading to lower grades and academic achievement. Illiyas (2017) reported that a lack of numerical inquisitiveness can lead to negative attitudes and beliefs about the subject. Students may develop a mindset that math is difficult, boring, or irrelevant, further discouraging their engagement and motivation in learning math. Additionally, Acharya (2017) reported that a lack of interest in learning math results in a lack of effort from students. They engage in unnecessary tasks in the classroom during the learning process.

In contrast, Skolverket (2011) asserted that inquisitiveness serves as a powerful motivator for students to actively engage in learning. When learners are genuinely interested in the subject, they are more likely to invest time and effort in understanding mathematical concepts, solving problems, and exploring mathematical ideas. Ainley (2012) pointed out that inquisitiveness is an important motivational factor that increases the numerical inquisitiveness of learners. Moreover, Otoo et al. (2018) concluded that inquisitiveness promotes active learning. Students with a genuine interest in the subject are more likely to take an active role in their learning, asking questions, seeking clarification, and actively participating in mathematical activities and discussions. Likewise, Davadas and Lay (2017) indicated that learners who are interested in math are more likely to embrace challenges, think critically, and apply problem-solving strategies, which are essential skills not only in mathematics but also in various other domains.

Benson (2011) described learners' autonomy as the ability and freedom of learners to take control of their own learning process, make decisions, and actively engage in self-regulated learning. It involves learners' capacity to set goals, select learning strategies, monitor their progress, and reflect on their learning experiences. González (2017) noted that autonomous learners are motivated, self-directed, and capable of making informed choices about their learning. They have the ability to identify their learning needs, set objectives, and choose appropriate learning resources and strategies. Reinders (2012) asserted that promoting autonomy supports learners' engagement, motivation, and deep learning.

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Learners with autonomy are more likely to take responsibility for their learning, develop critical thinking skills, and become lifelong learners.

Kang (2016) described caring behavior as an essential component of teacher-student relationships, where teachers demonstrate genuine concern, empathy, and support for their students. Imna and Hassan (2015) noted that caring behavior reflects the type of people who compose the organization, the work processes, means of communication, and the exercise of authority within the individual organization. Zhu et al. (2013) noted that in a learning institution where teachers address the different needs and characteristics of students, the students are able to reveal their creativity in learning processes. Likewise, Putter (2010) explained that a supportive school environment, especially a supportive relationship with teachers, encourages innovativeness among students.

Previous investigations showed that learners' autonomy and the caring behavior of teachers are linked to the numerical inquisitiveness of learners. However, those studies were conducted in foreign settings and only examined the direct influence of these variables. For instance, the exploratory study conducted by Voss (2016) concluded that improving learners' autonomy is thought in several research studies to contribute to increasing students' interest in learning mathematics. Also, the phenomenological study conducted by Khoo (2018) found that autonomy, coupled with mathematical tools and real-world application, significantly influences students' interest in mathematics. In addition, Lawrence and Vimala (2013) argued that there is a significant relationship between caring behavior and learners' numerical inquisitiveness.

Much of the studies on the relationship among these variables were conducted in foreign settings and focused only on direct linkages. Thus, it is in this context that the researcher felt the need to fill the research gap by conducting a study in the Philippine setting, particularly in Bunawan District, Davao City, using a quantitative approach. Specifically, the researcher made use of path analysis through a mediation approach to gain a better understanding of learners' numerical inquisitiveness as determined by learners' autonomy and mediated by the caring behavior of teachers.

2. REVIEW OF SIGNIFICANT LITERATURE

Learners' Autonomy

Learners' autonomy in learning is defined by Ayyildiz and Tarhan (2015) as the ability and willingness of students to take control of their own learning processes. It involves self-directedness, independence, and the capacity to make informed decisions about one's learning goals, strategies, and evaluation of progress. Autonomy is often associated with intrinsic motivation. Students who possess a high level of autonomy find personal satisfaction and joy in the learning process itself, driving them to excel. According to Dam (2019), high autonomy leads to self-regulated learning. Students at this level proactively make decisions about what, when, and how to study, tailoring their learning approach to their individual needs. Autonomous learners at high levels set clear and achievable goals. They understand their learning objectives, breaking them down into manageable tasks, which contributes to focused and purposeful study.

As pointed out by Benson (2011), high autonomy allows students to adapt their learning styles. They explore various methods, techniques, and resources to find what works best for them, leading to a more personalized and effective learning experience. Learners with high autonomy develop strong metacognitive skills. They engage in critical thinking, reflecting on their learning processes, identifying strengths and areas for improvement, and adjusting their strategies accordingly. More so, Hall (2011) noted that high autonomy implies active involvement in the learning process. Students take ownership of their education, seeking out opportunities for enrichment, and showing a genuine interest in the subject matter. They allocate time efficiently, balancing various learning tasks and ensuring that they dedicate sufficient time to understand and master each concept.

As mentioned by González (2017), high autonomy fosters a mindset of continuous learning. Students exhibit curiosity and a willingness to explore beyond the prescribed curriculum, developing a passion for learning that extends beyond formal education. The active engagement characteristic of autonomy contributes to enhanced memory retention. Learners at high autonomy levels often remember and understand concepts more deeply due to their immersive learning experiences. According to Reinders (2012), high levels of autonomy correlate with consistent academic excellence. Students who actively manage their learning tend to perform well not only in individual assignments but also over the long term. Learners' autonomy at high levels is associated with self-regulated learning, intrinsic motivation, effective goal setting, adaptability to diverse learning styles, critical thinking and reflection, ownership of the learning process, efficient time management, continuous learning, enhanced memory retention, and consistent academic excellence.

Moreover, Tang and Tseng (2013) proposed that learners' autonomy encourages intrinsic motivation. When students have a say in what and how they learn, they are more likely to develop a genuine interest in the subject matter, leading to sustained motivation. According to Archana and Chamundeswari (2013), autonomy allows for personalized and

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individualized learning experiences. Students can choose learning methods that align with their preferences, pace, and styles, catering to diverse needs within a classroom. Autonomous learners often engage in critical thinking and reflective practices. They analyze information, make connections between concepts, and develop a deeper understanding of the subject matter. As pointed out by Kalaivani and Rajeswar (2016), autonomy fosters a mindset of continuous learning beyond formal education. Students who actively participate in decision-making regarding their education are more likely to develop habits that support lifelong learning.

In addition, Izuchi and Onyekuru (2017) proposed that learners' autonomy promotes a sense of responsibility and accountability. Students take ownership of their learning outcomes, which can lead to increased diligence and commitment to academic success. Adding more, Lao (2015) asserted that autonomous learners develop problem-solving skills by navigating challenges independently. They learn to adapt their strategies, seek solutions, and approach difficulties with a proactive mindset. Autonomy is closely tied to self-regulated learning. Students set goals, monitor their progress, and adjust their study strategies, leading to more effective and efficient learning. Likewise, Subramanian (2016) noted that autonomy encourages active engagement. When students have a sense of agency, they are more likely to participate in class discussions, ask questions, and contribute to a dynamic learning environment.

As highlighted by Sil (2017), learners' autonomy is closely linked to intrinsic motivation. When students have the freedom to make choices about what and how they learn, they are more likely to develop a genuine interest in the subject matter, leading to sustained motivation. Autonomy allows students to select topics and learning methods that are personally relevant and interesting to them. This personalization enhances the meaning and significance of the learning process, fostering motivation. Kabody (2013) asserted that autonomy gives students a sense of ownership over their education. This feeling of investment and control contributes to a positive attitude towards learning and increases the motivation to actively participate in educational activities.

Further, Varga (2017) found that autonomous learners often set their own learning goals. This process of goal-setting provides a clear sense of purpose, and the achievement of these goals becomes a source of motivation. Autonomy encourages active engagement in the learning process. Students who have a say in their education are more likely to participate in class discussions, ask questions, and explore topics beyond the basic requirements, leading to increased motivation. Maulana et al. (2013) pointed out that autonomy contributes to the development of self-efficacy—the belief in one's own capabilities. When students take control of their learning, they gain confidence in their ability to tackle challenges, which positively influences motivation.

Furthermore, Rimm-Kaufman and Sandilos (2013) revealed that autonomous learners are more likely to explore and inquire. The freedom to pursue one's interests encourages curiosity, and the satisfaction derived from self-driven exploration serves as a powerful motivator. The ability to make choices and exercise autonomy in learning can be perceived as a reward in itself. This sense of control and freedom becomes a motivating factor for students. Also, Skipper and Douglas (2015) found that autonomy fosters a mindset of continual learning. Students who experience the motivation associated with autonomous learning are more likely to carry this enthusiasm into lifelong learning habits. Adding more, Pean (2014) noted that learners' autonomy contributes to a positive emotional connection to learning. When students find joy and satisfaction in their learning experiences, they are more motivated to continue their educational journey.

Numerical Inquisitiveness. Numerical inquisitiveness, as defined by Snow (2011), is the extent of curiosity, interest, and eagerness displayed by learners when engaging with numerical concepts, problems, and mathematical content. It reflects the degree to which students actively seek to understand, question, and explore numerical information, fostering a dynamic and inquisitive approach to mathematical learning. Waynberg and Leiken (2019) noted that at moderate levels of numerical inquisitiveness, learners display a balanced curiosity. They show interest in numerical concepts without being overwhelmed, maintaining a healthy level of engagement with the subject matter. Bishara and Hui (2016) pointed out that moderately inquisitive learners apply their numerical knowledge effectively in problem-solving. They approach mathematical challenges with interest and a willingness to explore solutions without becoming overly fixated on specific methods.

The study conducted by Vale (2019) showed that numerical inquisitiveness at moderate levels contributes to sustained engagement. Learners can maintain attention during learning tasks, participating actively without experiencing excessive distraction or disinterest. According to Star (2015), moderately inquisitive learners demonstrate a willingness to explore numerical concepts. They engage in activities that involve experimentation and inquiry, contributing to a deeper understanding of mathematical principles. Numerical inquisitiveness at a moderate level is associated with the development of analytical thinking. Learners analyze numerical problems with a balanced approach, avoiding extremes of overthinking or oversimplification. More so, Liljedah et al. (2016) concluded that moderate inquisitiveness fosters a

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positive attitude towards numerical learning. Learners approach mathematical content with interest and a sense of positivity, creating a conducive learning environment.

As pointed out by Kozlowski et al. (2019), moderately inquisitive learners effectively utilize learning resources. They strike a balance between exploring various sources of information and avoiding information overload, leading to efficient learning outcomes. Numerical inquisitiveness at moderate levels encourages learners to actively contribute to collaborative learning efforts. They work well with peers, share insights, and contribute to group discussions without overshadowing others. Mazana et al. (2019) proposed that numerical inquisitiveness encourages the development of critical thinking skills. Learners analyze numerical information with a balanced and reasoned approach, promoting a deeper understanding of mathematical concepts. Likewise, Yang (2013) affirmed that numerical inquisitiveness at moderate levels contributes to building a foundation for advanced learning. Learners progress steadily, acquiring the necessary skills and knowledge without feeling overwhelmed.

Numerically inquisitive learners are more likely to actively participate in classroom discussions. Their curiosity motivates them to contribute ideas, ask questions, and engage in conversations related to numerical concepts (Blazar & Kraft, 2017). Inquisitive students are more inclined to ask questions when they encounter challenges or seek clarification. This behavior contributes to a more interactive learning environment, fostering a culture of curiosity and inquiry (Sakiz et al., 2012). Numerically inquisitive learners may explore various approaches to problem-solving. Their curiosity drives them to consider different methods and solutions, enriching classroom discussions with diverse perspectives. Inquisitive students often engage in collaborative problem-solving activities. They actively contribute to group work, share insights, and collaborate with peers to explore numerical concepts, enhancing the overall learning experience (Joseph, 2013).

The study of Enu et al. (2015) concluded that students with a high level of numerical inquisitiveness can positively influence their peers. Their enthusiasm and curiosity can inspire others to actively participate in classroom activities and discussions. According to Lalmuanzuali et al. (2019), numerically inquisitive learners tend to develop strong critical thinking skills. Their curiosity encourages them to analyze numerical problems, consider multiple perspectives, and evaluate solutions, contributing to a more intellectually stimulating classroom. Adding more, Guido (2013) asserted that inquisitive students may not only solve problems but also demonstrate and explain their problem-solving strategies to the class. This contributes to a shared learning experience, where students can benefit from each other's approaches.

Inquisitive learners are likely to actively engage in hands-on activities related to numerical concepts. Their curiosity motivates them to explore and experiment, making classroom activities more dynamic and interactive. Students who actively participate and engage with numerical content create a classroom atmosphere that fosters curiosity, collaboration, and a shared passion for learning (Baseya, & Francis, 2011). According to Ray (2015), inquisitive learners are more likely to develop habits of lifelong learning. Their active participation in the classroom reflects a genuine interest in numerical concepts, setting the stage for continuous curiosity and exploration beyond formal education. Likewise, Hansen and Gonzalez (2014) asserted that numerical inquisitiveness plays a crucial role in shaping learners' classroom participation by fostering active engagement, encouraging questions and exploration, promoting collaborative problem-solving, positively influencing peers, enhancing critical thinking, demonstrating problem-solving strategies, actively participating in hands-on activities, contributing to a positive learning environment, and laying the foundation for lifelong learning habits.

As proposed by Klerlein and Hervey (2017), a school where learners exhibit high numerical inquisitiveness is more likely to align with educational goals related to critical thinking, problem-solving, and a holistic understanding of mathematical concepts. This alignment enhances the effectiveness of the school in achieving its educational objectives. Taplin (2019) highlighted that inquisitive learners contribute to a culture of innovation within the school. Their curiosity and willingness to explore numerical concepts can lead to the development of creative solutions, projects, and initiatives that enhance the overall effectiveness of the school. Likewise, Lince (2016) affirmed that numerical inquisitiveness supports diverse learning styles. Inquisitive learners may seek out different resources, approaches, and methods to understand numerical concepts, catering to the varied needs and preferences of a diverse student population.

Moreover, West, Swanson, and Lipscomb (2017) proposed that inquisitive students are better prepared to face real-world challenges that require numerical literacy. Their active exploration of mathematical concepts enhances their problem-solving skills, making them more adept at addressing complex issues in various fields. Also, Kintu et al. (2017) asserted that numerically inquisitive learners are more likely to develop habits of lifelong learning. Their active engagement with numerical concepts sets the stage for continuous curiosity and exploration beyond formal education, contributing to a culture of ongoing intellectual development. Adding more, Hossain (2015), reported that learners with a high level of numerical inquisitiveness positively influence their peers. Their enthusiasm and curiosity can inspire

others to actively participate in classroom activities, creating a positive peer learning dynamic that benefits the entire school community.

In addition, Haber (2020) found that inquisitive learners actively engage in classroom activities, discussions, and exercises related to numerical concepts. This increased engagement contributes to a more dynamic and interactive classroom, fostering a conducive learning environment. According to Egalite and Kisida (2017), numerical inquisitiveness contributes to a positive learning culture within the school. When students are actively curious about mathematics, it creates an atmosphere of enthusiasm, collaboration, and a shared passion for learning, enhancing the overall school environment. Arikan (2016) found that inquisitive students develop strong critical thinking skills. Their curiosity prompts them to analyze numerical problems, evaluate different approaches, and think critically about mathematical concepts, contributing to a more intellectually rigorous learning environment.

Synthesis

Therefore, this portion of the paper provides the researcher with the results of other research to which the present study is related or has some bearing and similarity. More so, the literature showed that learners' autonomy, as proposed by Ayyildiz and Tarhan (2015), is measured in terms of willingness to learn, learning accountability, impulsement, and ability to plan learning. Numerical inquisitiveness, as contextualized by Snow (2011), is indicated with emotion, engagement, knowledge, and value. This gives the author sufficient background in understanding the study.

Theoretical/Conceptual Framework

The study is anchored on the proposition of Isaacs (2013) that caring teachers foster a supportive environment where autonomy is valued. Their encouragement and support create a conducive atmosphere for students to exercise autonomy in their numerical exploration. Learners with autonomy are more likely to exhibit numerical inquisitiveness, as they feel empowered to explore mathematical concepts independently. According to Ruey (2012), caring teachers reinforce learners' confidence by providing positive feedback and acknowledging their autonomy. This support enhances learners' belief in their ability to explore numerical concepts with curiosity. Nayak (2012) asserted that learners exercising autonomy contribute to shaping a positive learning culture where independence and self-directed learning are valued. Caring teachers actively nurture a positive learning culture.

In support, Cetin-Dindar (2016) postulated that learners with autonomy have the freedom to choose their learning path in mathematics. This empowerment fosters a sense of ownership, making them more likely to actively explore numerical concepts based on their interests and preferences. Lund and Hauge (2012) showed that caring teachers contribute to a positive attitude toward mathematics. By fostering a supportive and encouraging environment, they help students view numerical challenges with optimism, enhancing their curiosity and inquisitiveness. Similarly, Bay et al. (2013) proposed that caring teachers recognize and address math anxiety by providing emotional support during challenging numerical tasks. This emotional support helps students feel more comfortable exploring and inquiring about mathematical concepts.

As shown in Figure 1, this study consists of three variables. The independent variable is learners' autonomy, or the set of abilities that help students determine what one needs for learning. As proposed by Ayyildiz and Tarhan (2015), the measures of learners' autonomy are willingness to learn, learning accountability, impulsement, and the ability to plan learning. The dependent variable is numerical inquisitiveness, or the feelings, beliefs, and values held about an object that may be the enterprise of math, school math, and the impact of mathematics on society or mathematicians themselves. According to Snow (2011), the measures of numerical inquisitiveness are emotion, engagement, knowledge, and value. Lastly, the mediating variable is caring behavior, or the actions, attitudes, and expressions that demonstrate genuine concern, empathy, and support for the well-being, academic growth, and personal development of their students (Kang, 2016).

Statement of the Problem

The primary aim of this study was to determine the mediating effect of the caring behavior of teachers on the relationship between learners' autonomy and numerical inquisitiveness in Bunawan District, Davao City. Specifically, this study seeks to answer the following questions:

1. What is the extent of learners' autonomy in terms of:

1.1. willingness to learn;

1.2. learning accountability;

1.3. impulsement; and

1.4. ability to plan learning?

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2. What is the extent of learners' numerical inquisitiveness in terms of:

2.1. emotion;

2.2. engagement;

2.3. knowledge; and

2.4. value?

3. What is the extent of the caring behavior of teachers in Bunawan District, Davao City?

4. Is there a significant relationship among learners' autonomy, numerical inquisitiveness, and the caring behavior of teachers in Bunawan District, Davao City?

5. Does the caring behavior of teachers significantly mediate the relationship between learners' autonomy and numerical inquisitiveness in Bunawan District, Davao City?

Hypothesis

The following null hypotheses were tested at a 0.05 level of significance:

- H01: There is no significant relationship among learners' autonomy, numerical inquisitiveness, and the caring behavior of teachers in Bunawan District, Davao City.

- H02: The caring behavior of teachers does not significantly mediate the relationship between learners' autonomy and numerical inquisitiveness in Bunawan District, Davao City.

Significance of the Study

Department of Education. Research on learners' autonomy and numerical inquisitiveness can provide valuable insights into the factors that influence learners' engagement and motivation in mathematics. The Department of Education can use this research to inform the development of education policies and initiatives aimed at promoting math interest among learners. For example, the findings can guide the design of curriculum frameworks, teaching strategies, and assessment methods that foster learners' numerical inquisitiveness.

Policy Makers. Research on learners' autonomy and numerical inquisitiveness can contribute to the development of math curricula that are more engaging and relevant to students. Policy makers can use the findings to advocate for curriculum revisions that incorporate real-world applications, problem-solving activities, and hands-on experiences to enhance math interest. This can help students see the practical value and relevance of mathematics in their lives. Also, policy makers can use research on learners' autonomy and numerical inquisitiveness to allocate resources effectively. By understanding the factors that contribute to math interest, they can allocate funding and support to initiatives that have been shown to positively impact student interest in mathematics.

Teachers. Research on numerical inquisitiveness can provide teachers with insights into effective instructional strategies that can engage and motivate students in mathematics. By understanding the factors that influence math interest, teachers can adapt their teaching methods to create a more engaging and meaningful learning experience for students. They can incorporate activities, examples, and resources that cater to students' interests and promote a positive attitude towards math. Additionally, studies on numerical inquisitiveness can help teachers recognize the diverse interests and learning preferences of their students. This knowledge allows them to personalize their instruction, tailoring activities and assignments to align with students' individual interests and strengths.

Learners. Research on numerical inquisitiveness can help learners develop a positive attitude and intrinsic motivation towards mathematics. Understanding the factors that influence numerical inquisitiveness can enable learners to identify their own interests and strengths in math, leading to greater engagement and perseverance in their learning journey. When learners are interested and motivated in math, they are more likely to invest effort and time into their studies. This can lead to improved performance and achievement in mathematics. Research on learners' autonomy and numerical inquisitiveness can provide insights into effective instructional strategies and interventions that can support students in developing a strong foundation in math concepts and skills.

Future Researchers. Other researchers would benefit from the results of this study because the findings may provide a framework and model for future research in the context of numerical inquisitiveness of learners as well as their autonomy.

Definition of Terms

Learners' Autonomy. Conceptually defined as the ability and willingness of students to take control of their own learning processes. In this study, it refers to the independent variable being described in terms of willingness to learn, learning accountability, impulsement, and ability to plan learning.

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Numerical Inquisitiveness. Conceptually defined as the extent of curiosity, interest, and eagerness displayed by learners when engaging with numerical concepts, problems, and mathematical content. In this study, it refers to the dependent variable being described in terms of the following indicators: emotion, engagement, knowledge, and value.

Caring Behavior. Conceptually defined as the actions, attitudes, and expressions that demonstrate genuine concern, empathy, and support for the well-being, academic growth, and personal development of their students. In this study, it refers to the mediating variable expected to contribute to the relationship between the independent and dependent variables.

3. METHOD

This section contains the research design, research respondents, research instrument, data gathering procedure, data analysis, and ethical considerations.

Research Design

The study employed a quantitative approach using mediation analysis to gather data, analyze information, and test hypotheses. Mediation analysis quantified the causal sequence where an antecedent variable affects a mediating variable, which then influences a dependent variable. This method was chosen to understand the process by which learners' autonomy affects numerical inquisitiveness through the mediating role of teachers' caring behavior.

Research Respondents

The respondents were 215 elementary school teachers from Bunawan District, Davao City, selected via stratified random sampling. This method ensured representation across various strata based on shared attributes such as educational attainment. The inclusion criteria included teachers with a minimum of a bachelor's degree in mathematics education or a related field, at least three years of teaching experience, and experience in implementing autonomy-promoting methods in their instruction. All participants voluntarily signed informed consent forms.

Research Instrument

The study used adapted and modified questionnaires divided into three parts:

1. Learners' Autonomy: This section included indicators such as willingness to learn, learning accountability, impulsement, and the ability to plan learning. The scale's reliability, indicated by a Cronbach's alpha of 0.956, was high. Responses were measured on a 5-point Likert scale.
2. Learners' Numerical Inquisitiveness: This section included indicators of emotion, engagement, knowledge, and value. The reliability was confirmed with a Cronbach's alpha of 0.930.
3. Caring Behavior of Teachers: This section had a Cronbach's alpha of 0.942, indicating high reliability.

Data Gathering Procedure

1. Permission to Conduct the Study: The researcher obtained permission from the Dean of the Graduate School at Rizal Memorial Colleges, Inc., Davao City, and received ethical clearance certification. These documents were included in permission letters sent to the Schools Division Superintendent and school principals in Bunawan District, Davao City.
2. Distribution and Retrieval of the Questionnaire: The questionnaires were distributed to respondents following health protocols, and the study was conducted on November 14-15, 2023. The survey benefits were explained, and respondents were given sufficient time to complete the questionnaires. The collected data were then subjected to quantitative analysis.
3. Collation and Statistical Treatment of Data: After data retrieval, the scores were tallied and organized per indicator. Descriptive and inferential analyses were conducted using SPSS.

Ethical Considerations

The study adhered to ethical guidelines:

Informed Consent: Participation was voluntary, and respondents were informed about the study's purpose.

Vulnerability of Research Participants: Respondents were not considered vulnerable, and participation was convenient.

Privacy and Confidentiality: The Data Privacy Act of 2012 was observed, ensuring confidentiality.

Risk, Benefits, and Safety: The study aimed to collect academic information without causing harm or distress.

Justice: All respondents were treated equally and with respect.

Transparency: All communication was honest and transparent.

Qualification of the Researcher: The researcher ensured no conflict of interest influenced the study.

Adequacy of Facilities: The study was conducted in a conducive environment.

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Community Involvement: Findings were shared with the community through various forums.

Data Analysis

Statistical tools used included:

Mean: To characterize learners' autonomy, numerical inquisitiveness, and caring behavior of teachers.

Pearson Product Moment Correlation: To assess significant relationships among learners' autonomy, numerical inquisitiveness, and caring behavior of teachers.

Multiple Regression Analysis: To evaluate the mediating effect of caring behavior on the relationship between learners' autonomy and numerical inquisitiveness.

4. RESULTS

This chapter presents the results generated from the data gathered, sequenced based on the objectives of the study. It covers the extent of learners' autonomy, numerical inquisitiveness, and caring behavior of teachers; the significant relationships among these variables in Bunawan District, Davao City; and the mediating effect of caring behavior of teachers on the relationship between learners' autonomy and numerical inquisitiveness.

Learners' Autonomy

Willingness to Learn. The learners' autonomy was assessed by the respondents as moderately extensive with a category mean of 3.33. The mean ratings ranged from 2.43 to 4.03. The item "Learners believing that what they learn is more important than getting a passing grade" had a mean rating of 2.43, described as less extensive, while "Learners believing in the importance of playing an active role in learning" had a mean of 4.03, described as extensive.

Learning Accountability. Learners' autonomy in terms of learning accountability received an extensive category mean rating of 3.55. The mean ratings ranged from 3.24 to 4.14, indicating that this domain is oftentimes observed among the learners.

Impulsement. Learners' autonomy in terms of impulsement was rated as moderately extensive with a category mean of 3.26. The mean ratings of the items ranged from 3.02 to 3.46, suggesting that this domain is sometimes observed among the learners.

Ability to Plan Learning. Learners' autonomy in terms of the ability to plan learning was rated as extensive with a category mean of 3.71. The mean ratings ranged from 3.14 to 4.24, indicating that this domain is oftentimes observed among the learners.

Summary of Learners' Autonomy. Overall, learners' autonomy in Bunawan District, Davao City, was rated as extensive with an overall mean of 3.46. The learners actively engage in their education, demonstrating a sense of responsibility and ownership over their learning journey.

Learners' Numerical Inquisitiveness

Emotion. Learners' numerical inquisitiveness was rated as moderately extensive with a category mean of 3.12. The mean ratings ranged from 2.22 to 4.13, indicating a positive emotional connection without extremes.

Engagement. Learners' numerical inquisitiveness in terms of engagement was rated as moderately extensive with a category mean of 3.20. The mean ratings ranged from 2.38 to 4.09, indicating that this domain is sometimes manifested among the learners.

Knowledge. Learners' numerical inquisitiveness in terms of knowledge was rated as moderately extensive with a category mean of 3.25. The mean ratings ranged from 2.10 to 3.89, indicating that the degree to which students actively seek, acquire, and engage with numerical information and concepts is sometimes manifested.

Value. Learners' numerical inquisitiveness in terms of value was rated as extensive with a category mean of 3.40. The mean ratings ranged from 3.16 to 3.55, indicating that students recognize and appreciate the practical applications, relevance, and significance of numerical concepts.

Summary of Learners' Numerical Inquisitiveness

Overall, learners' numerical inquisitiveness in Bunawan District, Davao City, was rated as moderately extensive with an overall mean score of 3.28. Learners actively seek to understand, question, and explore numerical information, fostering a dynamic and inquisitive approach to mathematical learning.

Caring Behavior of Teachers. The caring behavior of teachers was rated as extensive with a category mean of 3.39. The mean ratings ranged from 2.49 to 4.05, indicating that actions, attitudes, and expressions demonstrating genuine concern, empathy, and support for the well-being, academic growth, and personal development of students are oftentimes evident in Bunawan District, Davao City.

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Relationship among Learners' Autonomy, Numerical Inquisitiveness, and Caring Behavior of Teachers

Pearson product moment correlation results showed that learners' autonomy has a significant positive relationship with numerical inquisitiveness ($r = 0.953$, $p < 0.05$) and with the caring behavior of teachers ($r = 0.972$, $p < 0.05$). Additionally, caring behavior of teachers has a significant positive relationship with numerical inquisitiveness ($r = 0.974$, $p < 0.05$).

Mediating Effect of Caring Behavior of Teachers on the Relationship Between Learners' Autonomy and Numerical Inquisitiveness

Structural Equation Modeling (SEM) through mediation analysis showed that the total effect of learners' autonomy on numerical inquisitiveness is significant (estimate = 0.963, $p < 0.05$). The direct effect of learners' autonomy on numerical inquisitiveness is significant (estimate = 0.124, $p < 0.05$), as is the indirect effect through caring behavior of teachers (estimate = 0.839, $p < 0.05$). The ratio index of 0.871 indicates that 87.10% of the total effect of learners' autonomy on numerical inquisitiveness is mediated by the caring behavior of teachers, while 12.90% is either direct or mediated by other variables not included in the model.

The significant role of caring behavior of teachers as a mediator emphasizes the importance of a supportive environment where autonomy is valued, enhancing learners' belief in their ability to explore numerical concepts with curiosity.

5. DISCUSSIONS

This chapter presents the conclusions and recommendations derived from the study. The discussion is supported by the literature presented in the earlier chapters, and the conclusions are in accordance with the statements of the problem addressed in this study.

Findings

The primary objective of this study was to evaluate the mediating effect of caring behavior of teachers on the relationship between learners' autonomy and numerical inquisitiveness in Bunawan District, Davao City, utilizing a non-experimental quantitative design with a descriptive-correlation technique. The researcher selected 215 elementary school teachers in Bunawan District, Davao City, as respondents through a stratified random sampling method. Modified and enhanced adapted survey questionnaires were pilot tested to ensure high reliability and internal consistency.

Learners' Autonomy: The overall mean was 3.47, with an extensive descriptive rating. The specific dimensions had mean scores of 3.33 (willingness to learn), 3.55 (learning accountability), 3.26 (impulsement), and 3.71 (ability to plan learning).

Learners' Numerical Inquisitiveness: The overall mean was 3.28, with a moderately extensive descriptive rating. The dimensions had mean scores of 3.12 (emotion), 3.20 (engagement), 3.25 (knowledge), and 3.40 (value).

Caring Behavior of Teachers: The overall mean was 3.39, with a moderately extensive descriptive rating.

Relationships:

Learners' autonomy has a significant positive relationship with numerical inquisitiveness ($r = .953$, $p < 0.05$).

Learners' autonomy has a significant positive relationship with the caring behavior of teachers ($r = .972$, $p < 0.05$).

Caring behavior of teachers has a significant positive relationship with learners' numerical inquisitiveness ($r = .974$, $p < 0.05$).

Mediation Analysis : Caring behavior of teachers mediates the relationship between learners' autonomy and numerical inquisitiveness. The total effect (estimate = 0.963, $p < 0.05$), direct effect (estimate = 0.124, $p < 0.05$), and indirect effect (estimate = 0.839, $p < 0.05$) were significant. The ratio index was 0.871, indicating that 87.10% of the total effect of learners' autonomy on numerical inquisitiveness goes through the mediator variable.

6. CONCLUSIONS

Based on the findings, the following conclusions were generated:

1. Learners' Autonomy: Learners' autonomy in Bunawan District, Davao City, was rated as extensive, indicating that students actively engage in their education, demonstrating a sense of responsibility and ownership over their learning journey.
2. Learners' Numerical Inquisitiveness: Rated as moderately extensive, this implies that learners actively seek to understand, question, and explore numerical information, fostering a dynamic and inquisitive approach to mathematical learning.

3. Caring Behavior of Teachers: Rated as moderately extensive, this means that the actions, attitudes, and expressions that demonstrate genuine concern, empathy, and support for the well-being, academic growth, and personal development of students are sometimes evident.
4. Intercultural Sensitivity, Social Connectedness, and Individual Work Performance : There are positive significant relationships among these variables.
5. Mediating Role of Caring Behavior: Caring behavior of teachers significantly mediates the relationship between learners' autonomy and numerical inquisitiveness. Caring teachers foster a supportive environment where autonomy is valued, encouraging and supporting students in their numerical exploration.

7. RECOMMENDATIONS

1. For the Department of Education (DepEd):

a. Develop and implement policies that encourage autonomy in the learning process, allowing flexibility in teaching methods and student-centered approaches.

b. Allocate resources for professional development programs that equip teachers with the skills to support learners' autonomy and cultivate caring behavior in the classroom.

2. For School Heads:

a. Foster a school culture that values autonomy, inquisitiveness, and caring behavior. Establish clear expectations for teachers and students to create a supportive learning environment.

b. Allocate resources for ongoing teacher training programs focused on promoting autonomy, nurturing inquisitiveness, and developing caring relationships with students.

3. For Teachers:

a. Adopt student-centered teaching strategies that empower learners to take ownership of their learning and encourage numerical inquisitiveness.

b. Develop caring relationships with students by showing empathy, providing emotional support, and creating a safe space for exploration and inquiry.

4. For Learners:

a. Provide students with choices in assignments, projects, and learning paths to foster autonomy and cater to individual interests and strengths.

b. Actively participate in the learning process, ask questions, and explore numerical concepts beyond the classroom to enhance inquisitiveness.

5. For Future Researchers:

a. Conduct research on pedagogical approaches that effectively promote learners' autonomy, numerical inquisitiveness, and caring behavior of teachers to further understand and develop strategies to improve these aspects in educational settings.

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