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BARRIERS IN RESEARCH PRODUCTIVITY OF TEACHING AND NON-TEACHING PERSONNEL

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ABSTRACT

The study endeavored to contribute to the development of research activities and facilitate a means to increase the productivity of teaching and non-teaching personnel. It will be the basis to inform the administration about various research barriers to research productivity among the teaching and non-teaching personnel. It utilized the descriptive method of research. A survey questionnaire was used as a tool for gathering data. The respondents of the study were teaching and non-teaching personnel using a convenience sampling method. The findings and conclusions showed that the respondents were described to be young adults, females, holders of bachelor's degrees, with research training but a limited number of accomplished research. The teaching and non-teaching personnel completely concurred with the research capability indicators namely: (1) research capacity; (2) research training; (3) research report and assistance; and (4) research environment. Research time was also perceived as another factor that affected the research productivity among the respondents. It is recommended that research capability indicators be improved, particularly Training; school administrators must impose a fixed or standard research time to greatly help the teaching and non-teaching personnel; and intensive mentorship programs can also be spearheaded by the Research, Publications, and Linkages Office; Ascriptive factors such as gender, age of faculty member at a given point in time, intelligence, the personality of the individual should also be considered. It is also recommended for the office to assign full-time personnel who will monitor and guide the researchers.

Keywords: Research Productivity Barriers, Research Time

INTRODUCTION

The Commission on Higher Education (CHED) has seriously encouraged and even required the Higher Education Institutions (HEIs) to provide research outputs. CHED's advocacy presented in Memorandum Order No. 46, series of 2012, Article V states that universities should contribute to nation-building by training experts in the various technical and disciplinal areas and emphasizing the development of new knowledge and skills through research and development. As Meycauayan College envisions itself as an autonomous college, one of the CHED 2019 Guidelines for Granting Autonomous Status to Private Higher Education Institutions requires at least 50 full-time faculty members or at least 30% of full-time faculty, whichever is higher, must have actively engaged in research or creative work in the last five years and at least 10% full-time faculty has patents or publications in refereed journals. Of these, at least five percent (5%) of full-time faculty has publications in internationally indexed journals and/or books published in reputable academic presses in the last five (5) years. These indicators put pressure on the need to pursue research excellence. Even though research is viewed as a major function of HEIs with several beneficial effects on school and national development, faculty members of several schools are still reluctant to do it.

According to Çali et al. (2023), an important stream of research focused on the various barriers to research productivity. As mentioned in their research, one of the main barriers is research funding, which

the lack of it weakens the research capacity of an institution. They further discussed that another barrier to research productivity is the teaching load. This limits the time of the researcher to write and research. Haven et al. (2020) as mentioned by Çali et al. (2023), further pointed out the need for time to learn and improve, especially for early-career researchers while (Tariq et al., 2016) as mentioned in the research of Çali et al. (2023) noted that researchers whose native language is not English, language could also be a barrier. Shanmugam et al. (2019), showed that a lack of mentorship within the organization or school could be a substantial barrier to the members' research productivity.

There are also related studies that endeavored similar institutions in the Philippines to gain insights into the local and international context and specific challenges faced by teaching and non-teaching personnel. Bautista, M. A., & Baldoz, D. P. (2018) examined the multifaceted determinants shaping research productivity among faculty members within a Philippine university context. It delves into prevalent challenges such as demanding teaching commitments, constrained research funding, and insufficient support infrastructure. In Malaysia, Zulkefly, N. S., et.al., (2016) investigated the obstacles encountered by lecturers within Malaysian universities, shedding light on key factors such as time constraints, insufficient research skills, and restricted access to research facilities. Ismail, N. A., & Abu Bakar, R. (2014) explored the factors that affected research participation among non-teaching staff in Malaysian universities, highlighting challenges such as lack of awareness, training opportunities, and recognition. Further, Asobo, L. O., & Dimuna, I. O. (2013) explored the factors that influenced research engagement among university staff in Nigeria, including lack of motivation, limited time, and inadequate funding.

One of the missions of the Research, Publications, and Linkages Office (RPLO) is to promote a better research culture at Meycauayan College through facilitating webinars/seminars or workshops. Even during the pandemic, the RPLO discovered means to continue attaining their mission for the institution as well as the community. The research office provided a free series of seminars for teaching and non-teaching personnel as well as the students to ensure that the step-by-step process of research writing is well-covered and discussed. This activity covered research topics such as the Data Privacy Act of 2012, Research Title Formulation and APA Format, Writing Chapters 1 and 2, Questionnaire Development and Validation Process, SPSS Training Program, Writing Chapters 3 and 4, and Ethics Review. In addition, the research office conducted Workshops 1 and 2, exclusively for Teaching and Non-Teaching Personnel, intending to encourage them to participate in the Pre-Oral Defense and Research Colloquium Competition. Ayupov, R., & Alieva, N. (2018) put forth strategies aimed at enhancing the research culture within Kazakhstani universities. These strategies include the provision of research grants, the promotion of collaboration, and the cultivation of a supportive environment. Additionally, Cabrera, D., & Luna, M. G. (2003) examined strategies aimed at bolstering faculty research productivity in US universities. These strategies encompass providing research funding, alleviating teaching loads, and implementing faculty development programs.

However, with all the services mentioned, Teaching and Non-Teaching Personnel are still hesitant to engage in research writing. As per Capuno et al. (2020), the aspects attributable to low research productivity rates are lack of training in research writing, inadequate research time due to heavy teaching workload, and insufficient financial resources to undertake research and publication. Further, in the study of Saliot and Bernales (2021) Teacher's Level of Competence, Practices and Problems Encountered in Conducting Research, it was revealed that teachers faced challenges in various aspects of their research process. These challenges included grappling with financial issues, pinpointing researchable topics, formulating research titles, interpreting data, analyzing findings, drawing conclusions, and providing recommendations. Additionally, they encountered difficulties in crafting the related literature, formulating research problems, and effectively presenting and discussing their research results. They also struggled with adhering to proper regulations and policies during the research process.

In this campaign and call for research excellence, this paper will uncover the research productivity barriers of teaching and non-teaching personnel of Meycauayan College in the pursuit of increasing its research productivity. This study will contribute to the development of research activities, facilitate a means to increase the productivity of teaching and non-teaching personnel, and will be the basis to inform the administration about the concerns regarding research productivity among the teaching and non-teaching personnel.

STATEMENT OF THE PROBLEM

1. What is the profile of the teaching and non-teaching personnel respondents in terms of:
    1.1 Age;
    1.2 Gender;
    1.3 Educational Attainment;
    1.4 With/without training in research; and
    1.5 With/without accomplished research?
2. What are the research productivity barriers experienced by the teaching and non-teaching personnel of Meycauayan College in terms of:
    2.1 Researcher's capacity;
    2.2 Research training;
    2.3 Research support/assistance; and
    2.4 Research environment?
3. What other factors are perceived as barriers to research productivity?
4. What recommendations may be drawn based on the findings of the study?

METHODOLOGY

The researchers used a descriptive method of research to obtain relevant data from Teaching and Non-Teaching personnel of Meycauayan College. The instrument used in the study was a survey questionnaire adapted from Nuqui and Cruz's (2012) Research Capability Instrument. The data gathered from the survey questionnaires were subjected to data analysis procedures such as frequency and percentage for the demographic profile of the teaching and non-teaching personnel-respondents and weighted mean for the research productivity barriers, which were then tallied and summarized.

FINDINGS

Profile of the respondents. Based on the tables below, the respondents are mostly Bachelor's degree holders and females. There were a total of 64 out of 88 respondents with research training, however, the majority were without accomplished research.

Table 1. Distribution of Respondents According to Age, Gender, Levels of Educational

Age Range	Frequency	Percentage
21-40 (young adult)	49	55.68
41-60 (middle adult)	35	39.77
61-beyond (late adult)	4	4.55
Total	**88**	**100**

Gender	Frequency	Percentage
Male	31	35.23
Female	57	64.77
Total	**88**	**100**

Educational Attainment	Frequency	Percentage
Bachelor's Degree Holder	49	55.68
Bachelor's Degree with Masters (Units)	11	12.50
Master's Degree Holder	17	19
Master's Degree Holder with Doctorate Units	7	8
Doctorate Degree Holder	5	6
Total	**88**	**100**

Training on Research	Frequency	Percentage
With training in research	64	72.73
Without training in research	24	27.27
Total	**88**	**100**

Accomplished Research	Frequency	Percentage
With accomplished research	34	38.64
Without accomplished research	54	61.36
Total	**88**	**100**

The table above revealed that the majority of the respondents were young adults aged 21-40 years old with a frequency count of 49. Moreover, 41-60 was 39.77% which was middle adults while the 61 and beyond, the late adult, had a frequency count of four (4) with 4.55%. It was also notable that most of the respondents were female with 64.77% and 57 frequency count. The data also disclosed that there were only 31 males with 35.23%.

The data also manifested that the respondents were mostly bachelor's degree holders with 55.68% while the bachelor's degree with masters had 12.50%. In addition, about 19% were master's degree holders, 8% for master's degree holders with doctorate units, and 6% were doctorate degree holders. The table above can also predict that most respondents have training in research since the majority were bachelor's degree holders.

Furthermore, the respondents were mostly with training on research with 72.73% while 27.27% were without training on research. Many of the respondents do not have accomplished research, with 54 frequency counts or 61.36% and only 34 respondents have accomplished research with 38.64%.

Research Capability of Teaching and Non-teaching Personnel. The teaching and non-teaching personnel completely concurred with the research capability indicators namely: (1) research capacity; (2) research training; (3) research report and assistance; and (4) research environment. Based on the data below, the said indicators were all to a great extent which can be associated with the majority of the respondents being bachelor's degree holders and with training in research.

Table 2 Research Capability of Teaching and Non-Teaching Personnel

	Weighted Mean	Verbal Interpretation
Researcher's Capacity	3.91	Great Extent
Research Training	3. 72	Great Extent
Research Support/ Assistance	4.04	Great Extent
Research Environment	3.83	Great Extent

The overall weighted mean for the researcher's capacity was **3.91**, with the descriptive interpretation of a **great extent**. This means that the teaching and non-teaching personnel's educational experience and background were advanced in terms of their capacity. All predictors under the researcher's capacity received an interpretation of "Great Extent." The institution sends faculty members to seminars, workshops, and conferences on research (3.81), The institution encourages faculty members to become active members in research/professional organization (4.05), The institution requires research appropriateness of major field of specialization (3.72), The institution supports/motivates faculty members to publish their research outputs (4), The institution disseminates current researches and literature specific to the researcher's field (3.82), The institution encourages the faculty members to seek reviews of current professional literature (4.01), and The institution promotes consistency in demonstrating professional integrity (3.94).

In terms of research training, the overall weighted mean is **3.72** with the descriptive interpretation to a **great extent**. This means that the teaching and non-teaching personnel's cognitive competencies, technical skills, and activating characteristics were present through research training. All predictors have a verbal interpretation of **great extent**: "The institution makes a provision for improving researcher's cognitive competencies manifested by the researcher's" received a weighted mean of 3.76; "The institution hones the researcher's technical skill as evidenced by the researcher's," 3.74; and "The institution devel-

ops the researcher's activating characteristics as shown by the researcher's," 3.73. The overall weighted mean under Research Support/Assistance was **4.04** with the descriptive interpretation of a **great extent**. This means that the teaching and non-teaching personnel's research conceptualization, data gathering, and preparation of the research report were presented through research reports and assistance.

Lastly, the overall weighted mean for the Research Environment is **3.83**, with the descriptive interpretation of a **great extent**. This means that the institution develops and maintains a distinctive culture, positive group climate, decentralized organization, participative governance, and frequent communication that would enhance research among faculty members.

Table 3. Other Factors

Indicators	Frequency	Percentage
lack of research time	48	54.54
limited mentorship program	24	27.27
ascriptive factors (gender, age of a faculty member at a given point in time, intelligence, personality of the individual)	15	17.04
Other:	1	1.13
Total	**88**	**100**

The majority of the other factors perceived by the teaching and non-teaching personnel as barriers were research time, with forty-eight (48) or 54.54%, and limited mentorship program, with twenty-four or 27.27%.

CONCLUSIONS

Based on the findings of the study about the classroom management styles of teachers and science skills of learners, the following conclusions were found:
1. The respondents were described to be young adults, females, holders of bachelor's degrees, with research training but a limited number of accomplished research.
2. The teaching and non-teaching personnel completely concurred with the research productivity barriers namely: (1) research capacity; (2) research training; (3) research report and assistance; and (4) research environment.
3. Research time was also perceived as another factor that affected the research productivity barriers.

RECOMMENDATIONS

Based on the given findings and conclusions, the following recommendations were presented:
1. Although marked with a verbal interpretation of great extent, research productivity barriers can still be improved, particularly training which received the lowest weighted mean;
2. Fixed or standard research time imposed by the school administrators will be of great help to the teaching and non-teaching personnel;
3. Intensive mentorship programs can also be spearheaded by the Research, Publications and Linkages Office;
4. Ascriptive factors such as gender, age of a faculty member at a given point in time, intelligence, and personality of the individual should also be considered, and;
5. The Research, Publications, and Linkages Office may also strengthen the campaign of its virtual office since this will connect teaching and non-teaching personnel's queries. It is also recommended for the office to assign full-time personnel who will monitor and guide the researchers.

ACKNOWLEDGMENT

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A DEEP LEARNING INFERENCE APPROACH TO STUDENT ATTENDANCE AND BEHAVIORAL ANALYSIS DURING CLASS DISCUSSION

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ABSTRACT

The application of deep learning using Convolutional Neural Network was used in this project to identify a student's behavior in a class. Every educator's primary concern is their students' classroom behavior and performance. Instructors are responsible for ensuring the smooth operation of classroom activities as well as monitoring students' attendance, attentiveness, and behavior in class. Manually monitoring these could take time, disrupt the teaching and learning process, and divert attention away from achieving the objectives of each lesson. Behavior issues detract from other students' learning and necessitate teachers to devote valuable instructional time to discipline and behavior management. The problem affects the entire classroom. The objective of the project is to develop a system that monitors the behavior of the students in the classroom. The use of deep learning-based behavioral analytics in the classroom can significantly simplify the process of monitoring and analyzing students' behavior. It can use the network to perform automated real-time monitoring of the student's behavior and, if necessary, respond quickly to urgent situations. The primary focus of this project is on two analysis modules: facial recognition and behavioral analysis. The proposed project can identify and monitor students' behavior by utilizing deep learning and Convolutional Neural Network. The detection of eyes and head movement was used to determine the learner's concentration level. The results show that deep learning using Convolutional Neural Network can predict students' attendance, behavior, and concentration levels.

INTRODUCTION

The intellectual activity of concentrating on one element of the surrounding while ignoring others is called attention. "Pay attention!" is a saying that many teachers use all throughout the world. (R. Pekrun, 2014). The initial step in learning is paying attention. Students who are not paying close attention will have a difficult time learning because they won't be able to pick up information, comprehend it, or even remember it. Almost everyone finds it simple to focus on items or issues that fascinate or stimulate them. (D. Duraes, 2017). How students behave in classroom affects how much and how well, they learn.

However, one way to identify whether the student is attentive or not inside the classroom is through their facial appearance. Facial expressions are the physical changes made to the face in return to an individual's inside emotional condition, goals, or social connections. Since Darwin's work in 1872, behavioral scientists have been actively Investigating face expression analysis. (P. Ekman, 1989). Suwa et al. presented an early attempt to automatically evaluate facial expressions in 1978 by tracking the mobility of 20 recognized areas on a picture stream. Since then, enormous strides have been achieved in the creation of computer systems that may help us interpret and make use of this natural human communication mechanism. (P. Yang et al. 2008)

Additionally, "facial impression analytics" refers to computer algorithms that try to spontaneously recognize, evaluate, and classify variations in facial features and motions. Facial expression analysis and emotion analysis have occasionally been confused in the realm of computer vision. To analyze emotions, one needs to have more advanced understanding. For instance, facial expressions might convey intention, mental activity, physical work, or other intra- or interpersonal definition in addition to conveying emotion. Context, body language, voice, individual characteristics, cultural considerations, timing, and facial structure all contribute to interpretation. (Carroll, J and Russell J., 1996). Systems for analyzing facial expressions on computers must do so regardless of context, culture, gender, and other factors. (Yangli, 2014).

On the other hand, the direction of social and motivational actions is significantly influenced by facial displays of emotion. According to Darwin's view, these expressions specifically evolved to convey powerful messages for quick nonverbal communication. These assumptions have been supported by numerous recent research, which show that emotional information in faces may be efficiently and largely automatically identified by specialized brain systems, and that this may be used to successfully direct attention and action. (C. Darwin, 1998). When examining a student's attention in classroom lectures, emotion is a key factor. Understanding emotion symptoms by facial expressions is the quickest technique to recognize emotion among the numerous methods. (Ekman, P et al., 2013). A poor conduct and blatant indication that a student is bored and uninterested in the subject is abnormal head rotation. Drowsiness can be identified by the movement of the eyelid and by using facial recognition technology. Therefore, positive behavior will result in improved learning.

In this research, more focus is towards the behavior of the students through the use of image processing. A real-time application that tracks and recognizes student behavior will be part of the Student Behavioral Analytics in a Class using Deep Learning. Faces are extracted and processed using standardized algorithms using the face detection technique, which is dependable, secure, and quick. This method uses face recognition technology to automatically monitor a student's behavior without the intervention of the student or the teacher. Using a camera mounted in the classroom, which is constantly taking pictures of the students and detecting facial features such the eyes and head rotation, the behavior is recorded. The outcome is a calculation of the student's degree of concentration based on how attentive they were during class.

The objective of the project is to develop a system that monitor the behavior of students in the classroom.
The specific objectives are as follow:
a. To detect and recognize the face images of the students using image processing;
b. To identify the behavior of the student;
c. To develop a database for the trained data on behavior of students;
d. To generate report of the behavior of the student;
e. functionality of the system in terms of:
    • accuracy of the behavioral analytics;
    • reliability of the results of behavior of students.

This project aims to use image processing to automatically monitor the student's behavior anytime without any human intervention. The findings of this study are significant to the following.
• Teacher, in which made the lives of teachers easier by monitoring the behavior of the students makes faster, secure, and reliable.
• Guidance Counselor, where in the behavior of the student will be easily monitor and evaluated therefore it will be a great help for the guidance counselor to give proper counselling based on the behavior of the student.
• Researchers, which will be useful reference who plan to make related studies regarding the improvement of behavioral analytics system based on image processing using deep learning.

METHODOLOGY

Fig. 1 shows that the proposed architecture comprises two main sections: face recognition and behavior analysis. The data gathering was set up inside the prescribed classroom. The raw data were generated from a video camera set up at the school in a .mp4 format. Over 14,000 frames were extracted from each recorded video frame, and good-quality images were selected for the annotation procedure and split for dataset training. The selected quality images were labeled as high, mid, and low attention. The unique name was also given to every student to monitor the output during testing, monitoring student attendance easily.
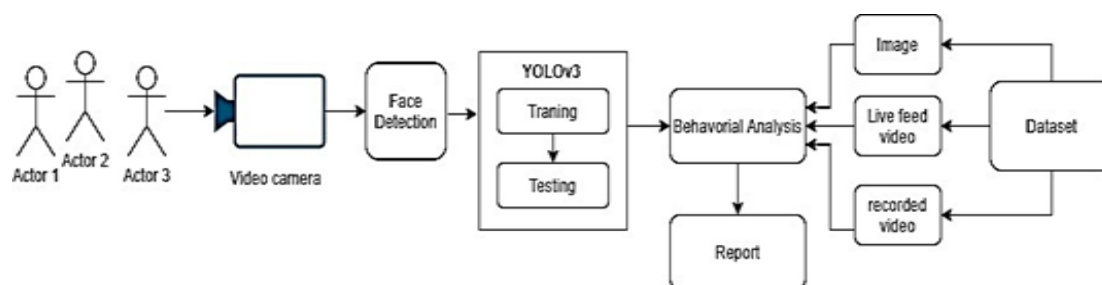
Fig. 1. Proposed Behavioral Analysis Architecture

Frames were preprocessed, which undergone to denoised, resized, and converted into grayscale to ease the later processing. YOLOv3 was utilized to analyze the behavior using high frame rate videos that still produced high detection accuracy. The model training was performed using Google Collaboratory on an excellent runtime and access available best GPU. A transfer learning technique was used to ease the training time.

A. Behavioral Analysis

This module fully utilizes the data collected, specifically focused on the student's eye and head movement, to analyze the student's behavior. Eq.1 was used to determine the level of concentration of the students easily.

It shows the metric to calculate the concentration level in a class by computing the percentage of P1 case (please refer to Table 1) of a student, px over the total number of student's frames detected on the screen fx. This metric assumes that if the particular student's face is not recognized on the screen, but the look is detected, the student's face might face in another direction, leading to other activities such as playing on cellphones, talking with friends, or sleeping on the table (Agarwal, R. and Vasant, D., 2014).

$$C_x = \frac{P_x}{f_x} \times 100\% \quad (1)$$

The student's concentration level is determined by continuously monitoring student head rotation and eye movement. Once the facial features are detected, it is possible to determine whether or not the student is paying attention in class. The head movement will then be measured in terms of time duration, and a certain level of concentration will be assessed.

1. High Concentration Level

To detect a high concentration level, it is necessary to identify whether the eyes and face are in the proper position, i.e. whether both eyes and face are facing the camera. Both the eyes and the face should meet the screen to assess the condition of the eyes and face. If not, it's assumed that the student isn't facing the screen correctly, and the concentration level is set to medium or low. The number of frames where sufficient attention is not detected is kept track of. If the number of frames with medium and low-

level concentrations surpasses a particular threshold, the learner is uninterested in the subject (Krithika, L.B. and Priya, L., 2016).

2. Medium Concentration Level

To detect a moderate degree of concentration, it is required to identify whether the eyes are in the correct position, i.e., whether both eyes are facing the camera. Both eyes should be viewing the screen when evaluating the eyes' status.

If only one eye is visible, the learner is not facing the screen correctly, and the concentration level is set to medium. The number of frames in which proper attention isn't detected is kept track of. If the number of frames with a medium concentration level surpasses a specific threshold, the student is uninterested in the material. The region of interest, i.e., the eye region, is then discovered (Krithika, L.B. and Priya, L., 2016).

3. Low Concentration Level

The facial features should be detected in order to determine the head status. The abnormal head rotation is detected if the facial features are not visible. Head rotation detection can be accomplished by measuring the amount of time that the face is seen in the correct position. If the face is not detected after a few seconds, the head usually rotates. If it is not visible for an extended period, the student is uninterested in the subject (Krithika, L.B. and Priya, L., 2016).

The number of frames for which the face is not detected is monitored. If the number of frames without face detection exceeds a specific limit, the concentration level is reduced. The region of interest is then found the facial feature is to be detected.

Table 1 shows the determinants of the students' behavior wherein certain conditions are given. For a high concentration level (HCL), the face must be detected and recognized, both eyes are in the proper position, and the head is not rotating. Medium concentration level (MCL), the face is seen and identified, but both eyes are not in the proper position, and the head is detected rotating. While the face is detected but not recognized at the low concentration level (LCL), both eyes are not in the proper position, and the head is seen rotating (Agarwal, R. and Vasant, D., 2014).

Table 1. Determinants of Student Behavior

Condition	Protocol		
	1	2	3
1. Face is detected	Y	Y	Y
2. Recognize face	Y	Y	N
3. Both eyes at the proper position	Y	N	N
4. Head rotation is not detected	Y	N	N
Results	**HCL**	**MCL**	**LCL**

The detection of the eyes of the student was used as a distinctive characteristic to determine if a student is attentive based on the student level of concentration.

B. Classroom Environment

The dimension of the classroom used in the setup of the testing was 16' x 24' (391 sq. ft.) for a maximum of 15 students. The lighting of the classroom must be 6500 K dynamic lighting. The camera's location is in front of the student at the upper portion of the whiteboard. The maximum distance of the camera from the student must be 20 feet. The camera angle used was a straight camera angle at eye-level of the students, wherein the camera points straight ahead. A webcam used in testing is the Logitech 720p with the following technical specifications:

Table 2. Webcam Specification

Specification	Description
Max Resolution	720p/30fps
Camera mega pixel	0.9
Focus type	fixed focus
lens type	plastic
Built-in mic	Mono
Mic range	Up to 3 ft (1 m)
Diagonal field of view (dFoV)	55°

The web camera dimensions, including fixed mounting clip, are the following: a.) Height: 2.87 in (72.91 mm), b.) Width: 1.26 in (31.91 mm), c.) Depth: 2.62 in (66.64 mm), e.) Cable length: 5 ft (1.5 m), and f.) Weight: 2.65 oz. Logitech C270 HD Webcam, HD 720p, Widescreen HD Video Calling, HD Light Correction, Noise-Reducing Mic.

Students were given an instruction about the planned activity for the purpose of acting normally during class discussion. Students were also requested to face the webcam to capture additional data that was used during the testing.

C. Training

Fig. 2 shows that during the model training, the average loss was monitored to ensure the output model produce an optimal performance. Re-training of the model was performed, and reconfiguration of parameters was also considered that produce the final model. The batch_size and num_experiments were determining the number of objects to be used per step and the number of epochs respectively.
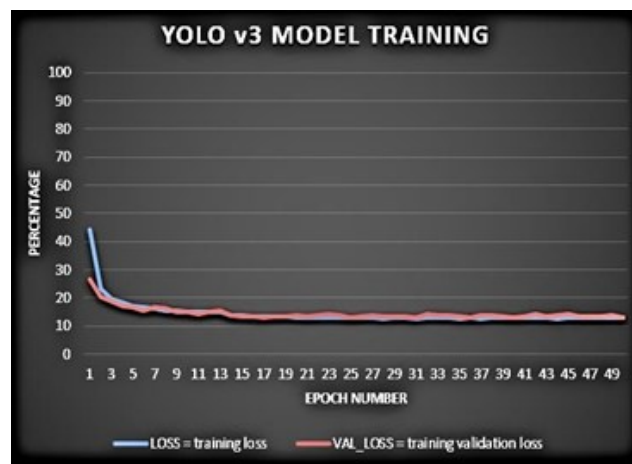
Fig. 2. YOLOv3 Learning Curve

The faces recognized by the model were used for attendance checking upon entering the classroom and sitting in the proper place or seating arrangement. After 15 minutes, the attendance was checked to attain the level of concentration of students in the middle of the discussion. As shown in fig. 3 and 4 are the face recognition detection made.
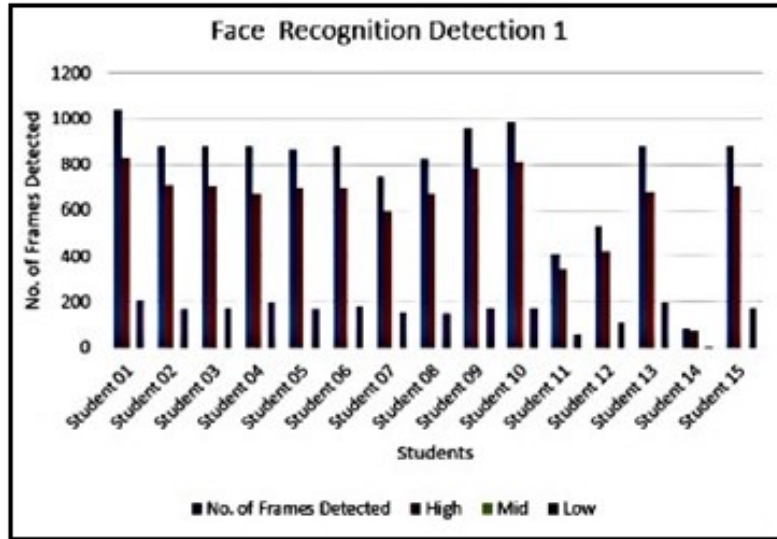
Fig. 3 First Student Face Recognition Detection
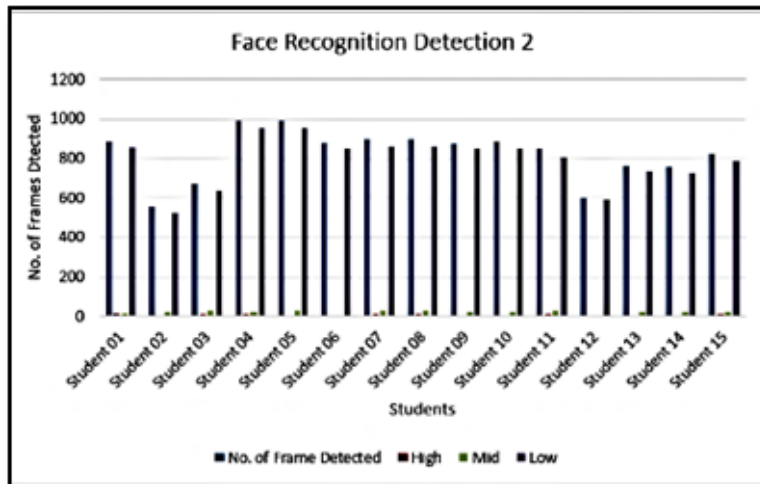
Fig. 4 Second Student Face Recognition Detection

RESULTS AND DISCUSSIONS

A. Model Performance

To determine which model is ideal, mAP was used as the metric to evaluate the models. The higher the mAP, the better the accuracy of the model. Average Precision (AP) is a specific performance measure used for ranked sets. Average precision is defined as the average of the precision scores after each true positive. Mean Average Precision (mAP) is the average of the average precision value for a set of queries.

Based on the model evaluation, it was determined that the model with an 11.394% loss has the highest mAP among the other models shown in fig. 5.

```
Model File: modelfinal/models/detection_model-ex-010--loss-0011.119.h5

Using IoU : 0.7
Using Object Threshold : 0.5
Using Non-Maximum Suppression : 0.7
Attentive: 0.7869
NotAttentive: 0.6952
mAP: 0.7411
================================
Model File: modelfinal/models/detection_model-ex-008--loss-0011.732.h5

Using IoU : 0.7
Using Object Threshold : 0.5
Using Non-Maximum Suppression : 0.7
Attentive: 0.8155
NotAttentive: 0.7658
mAP: 0.7907
================================
Model File: modelfinal/models/detection_model-ex-009--loss-0011.394.h5

Using IoU : 0.7
Using Object Threshold : 0.5
Using Non-Maximum Suppression : 0.7
Attentive: 0.8226
NotAttentive: 0.7971
mAP: 0.8098
--------------------------------
```

Fig. 5 Average Precision (mAP) Model Performance

Fig. 6 Attendance Checking using Face Recognition

The actual testing was done in the same class and classroom. Fig. 6 shows the result of testing for student attendance Students' names are reflected and generate a high percentage in terms because the student's faces are detected. This is considered that students are focused on the discussion and looking at the camera.

Fig. 7 Behavioral Analysis of Level of Concentration (Attentiveness)

Fig. 8 Behavioral Analysis of Level of Concentration (Not Attentive)

Fig. 7 and 8 illustrate the output of the low and high behavior of the students. It clearly shows that the students are with high level of concentration (attentive) if eyes and face are visible else student is considered as with low level of concentration (not attentive). The mAP produced the calculated average precision for each student's face.

B. Behavioral Analysis Results

The table displays the test results for each student. The students are attentive and extremely concentrated based on the number of frames recognized in the first test. The second test reveals that the students are inattentive and have a low concentration level, as the majority of frames observed fall into this category.

Table 3. Summary Of Results For High Concentration Level

Student Name and Student ID	HCL	MCL	LCL	Attendance Percentage	Behavior Percentage	Attentiveness Level
Student 1	834	0	207	98.980	93.180	HIGH
Student 2	711	0	168	98.274	93.873	HIGH
Student 3	703	0	176	99.819	93.403	HIGH
Student 4	677	0	202	98.673	93.32	HIGH
Student 5	700	0	167	99.852	93.742	HIGH
Student 6	698	0	181	99.102	93.317	HIGH
Student 7	594	0	155	99.376	93.716	HIGH
Student 8	674	0	154	99.037	93.718	HIGH
Student 9	783	0	177	99.479	93.773	HIGH
Student 10	810	0	176	98.228	93.475	HIGH
Student 11	347	0	64	98.955	93.997	HIGH
Student 12	420	0	111	97.507	93.631	HIGH
Student 13	682	0	197	99.372	93.668	HIGH
Student 14	76	0	9	97.454	92.524	HIGH
Student 15	704	0	175	99.777	93.327	HIGH

With the use of deep learning through CNN, the students can be detected if it belongs to high concentration level (HCL), medium concentration level (MCL) and low concentration level (LCL) and predict the students' attendance, behavior, and concentration levels.

Table II shows that 15 highly concentrated students during the class were detected and recognized 100 % for their attendance and 94% for the behavior with a high attentiveness level.

Table 4. Summary Of Results for Low Concentration Level

Student Name and Student ID	HCL	MCL	LCL	Attendance Percentage	Behavior Percentage	Attentiveness Level
Student 1	18	15	855	98.445	94.043	LOW
Student 2	7	21	526	98.728	94.229	LOW
Student 3	10	27	635	98.65	94.224	LOW
Student 4	9	25	953	99.402	94.257	LOW
Student 5	6	28	955	99.445	94.05	LOW
Student 6	5	4	852	99.392	94.081	LOW
Student 7	11	29	861	99.181	94.169	LOW
Student 8	11	30	860	99.751	94.188	LOW
Student 9	7	22	847	99.408	94.188	LOW
Student 10	8	25	852	99.372	94.423	LOW
Student 11	13	29	809	99.312	94.029	LOW
Student 12	5	6	590	98.428	94.715	LOW
Student 13	8	23	732	99.09	94.611	LOW
Student 14	8	25	725	99.003	94.355	LOW
Student 15	11	24	790	99.162	94.207	LOW

The results of the test for each student who has a low concentration level are shown in table III. With the help of CNN and deep learning, all of the students who were not paying attention in the class had their faces discovered and recognized 100 percent of their attendance, and 95% for the behavior and low attentiveness level.

The general goal of this project was to develop a system that will monitor students' behavior in the classroom by creating a system that determines whether a student is paying attention to their class or not using image processing. To detect and recognize the students' faces; a face recognition algorithm was used.

Deep learning has many applications based on the findings of this project. Machine learning can be applied to a variety of functional tasks. People can now create their own data science-based systems because it is so easily accessible. A user can use Deep Learning in an approach with only the necessary materials, such as datasets and hardware. Deep Learning can be applied to any data so that it can be used in a variety of fields and studies. Data science is transforming societal technology. It is not only based on predictions, but it also employs cutting-edge hardware and technology, making it amenable to new ideas. It can be used in medical research, engineering projects, education, and artificial intelligence, among other things.

The proposed student behavioral analytics system has a precise potential application for automated learning process analytics, providing a mechanism for classroom analytics of student behavior. This allows teachers to evaluate the lectures and improve the learning process as well as the teaching methods employed.

The same system might be used to assess other students emotions in the future. It is suggested that a generation of overall behavior analysis per student be created to better this project. It can also be used in conjunction with an online learning environment to detect students' virtual attentiveness. It's also good to utilize a higher-resolution web camera for a better image.

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TRAFFIC LAW VIOLATIONS ANALYSIS ON THE COMMON TRAFFIC LAW VIOLATIONS COMMITTED IN SANTIAGO CITY

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ABSTRACT

Traffic violations are a common occurrence in Santiago City, and a recent study analyzed the causes and responses of the respondents to these violations. The study found that the Department of Public Order and Safety (DPOS) lacks sufficient manpower, and traffic education is only given to those who break the law. Based on the findings of the study, the common traffic violations committed by motorists are disobedience to traffic signs, driving without a license, and illegal parking. When it comes to the intervention program done by the DPOS to prevent the commission of future violations, it found that traffic education, adjusting manpower, and number coding of vehicles is conducted. Also, the researcher recommends that there is a need to request additional traffic enforcement officers from the City Mayor's office to increase manpower and control traffic better. The study also suggests conducting traffic education for both violators and non-violators to keep them informed of any new ordinances. Finally, traffic violators should undergo a seminar on traffic safety before their driver's licenses are returned.

INTRODUCTION

Santiago City is a first-class independent component city located in the Cagayan Valley region of the Philippines. It is home to numerous business enterprises, banking institutions, educational entities, as well as various manufacturing companies. Due to the rapid population growth in both social and economic requirements in the communities of Santiago, the city has been continuously developing its traffic management system. The Department of Public Order and Safety (DPOS) is the agency responsible for enforcing traffic laws in the area. However, with the continuous production of cars for public and private use, there are currently an estimated 25,000 motor vehicles in the city, with around 90,000 to 100,000 new and second-hand cars, jeeps, vans, and buses being added to the existing traffic on the streets. As per the latest statistics, violations committed by motorists are becoming more and more unavoidable.

In the study of Krasovec (2011), the behavior of road users and their compliance with traffic regulations is low. Traffic signals are no longer sufficient, the reason for drivers to adhere to the speed limit. At the same time, the increasing traffic constantly increases the burden on Slovenian roads. Devices and traffic calming measures are important in ensuring the safety of road users. Technical specifications are used to determine the rules and dimensions for the design and implementation of traffic calming devices. These are the official document, which must be adhered to. Yet many road users believe that the practical installations were carried out incorrectly. Theory of planned behavior and competitiveness of driving in China, there are many researches on aggressive driving behavior (Li, 2015). However, competitive driving, a common phenomenon in China, has received considerably less attention. The present study aims to investigate the dimensionality of drivers' behaviors and predict competitive driving behavior based on the Theory of Planned Behavior (TPB). Results indicate that TPB is a good predictor of the intention of competitive behavior and a high correlation between the dimensions of social environment and intention was observed. Gender differences in driver competition were observed.

The study of Joemono T.B and Susilo (2017) investigated the factors underlying traffic violation behaviors and the types of traffic violations committed by young motorcyclists on urban roads in Indonesia, the structural equation modeling was performed to analyze the significant factors influencing young motorcyclists concerning committing traffic violations, including analysis of the causal relationship between the influencing factors, the characteristics of young motorcyclists, and the types of violations. The study analyses that young motorcyclists were influenced by different magnitudes of influencing factors in violating traffic regulations compared to more mature motorcyclists. This highlights the need to design a specialized behavioral change policy to reduce traffic violations among young motorcyclists in Indonesia.

In Iran, Elahe et al (2014), a longitudinal, interventional controlled trial study was conducted where all subjects with a history of fatal and non-fatal injuries were studied. Their injuries were caused by six risky violations (unauthorized speed, illegal overtaking, red traffic light crossing, reverse gear movement on the highways, and vehicle arrestment due to two simultaneous violations) from June 2010 to November 2010 (as control) and from June 2011 to November 2011 (as a case). The result of the study found that the new traffic laws led to the reduction of fatal and non-fatal road traffic injuries on urban and metropolitan roads after implementation, with a continuing trend for six months. It seems that strict enforcement and amendment of new traffic regulations could further increase the efficiency of traffic enforcers and reduce the commission of risky traffic violations.

In addition, Hintural Jr. et al., (2016) demonstrated that traffic enforcement effectively fulfills various critical roles. These roles encompass apprehending individuals violating traffic regulations, managing traffic accident scenes, enforcing traffic laws, rules, regulations, and local ordinances, directing and regulating traffic flow, and collaborating with other traffic authorities. Thus, this study is conducted to identify the common traffic violations committed in Santiago City.

STATEMENT OF THE PROBLEM

The general objective of this study is to discover the most common traffic violations committed in Santiago City.

Specifically, this stud has the following objectives:

1. To identify the most common traffic violations committed in Santiago City; and

2. To identify the interventions done by the Department of Public Order and Safety (DPOS) to address the common traffic violations committed in Santiago City.

METHODOLOGY

This study used the qualitative descriptive research method because it describes the personal experiences of the traffic enforcers in the common traffic law violations committed in Santiago City. Qualitative descriptive design is most appropriate for the study as it aims to bring out the phenomenon through an in-depth analysis of the themes. In identifying the key respondents, random sampling was used. To conceal the identity of the respondents, the researcher used aliases. Before the actual interview, the researcher handed out the informed consent to the key informants from the Department of Public Order and Safety (DPOS) in Santiago City. During the gathering of the data, the researcher used unstructured interview guide questions to answer the objectives of the study. The unstructured interview guide was suitable for this study since this set of questions is open-ended, thus for the researcher to make it possible to come up with follow-up questions to answer the study's statement of the problem. After the interview, the researcher transcribed and translated the gathered data. In identifying the themes, the researcher based the method on Braun and Clarke (2006) in doing Thematic Analysis by familiarizing the data, followed by generating the initial codes, searching for themes, reviewing themes, and finalizing the themes.

RESULTS AND DISCUSSION

What are the common traffic law violations committed?

Based on the interview conducted on the common traffic law violations committed in Santiago City, the following themes have been collected.

Disobedience to traffic signs is one of the most common violations committed by the motorist in Santiago City base on the findings of the study. These signs are erected on the streets to communicate to both drivers and pedestrians. It maintains the flow of the traffic, reduces traffic congestion, and may mitigate the cause of accidents especially on the busy road during rush hour. Most of the signs on the roads are usually with the use of images with specific colors rather than words. Its purpose is to easily connect to all road users and to easily understand its meaning. Traffic signs are important to all road users because it provides information on whether the drivers should stop, remain steady, or go.

Though there are so many traffic signs on the road that should be followed, road users are having the hard times to keep an eye to those signs which may result in the violation of traffic rules or worst in a traffic accident. Road users must obey traffic signs, whether they are in their hometown or other places because traffic signs are one way to reduce traffic accident and to avoid traffic law violations. Yet, a road user who disobeys the traffic signs on the road is similar to a person who violated the law.

It is supported by the statement of key informants 1 and 3 when asked about the common traffic law violations committed in the area:

K1: *"Disobedience sa sign. Ibig sabihin binabaliwala nila yung mga sinage na nakalagay don komo siguro napansin nila na walang nakabantay, yun yung isang nakita namin eh na dahilan don."* (Disobedience in signs, meaning, they are ignoring the signage being place there, maybe they didn't notice that nobody was watching, that's what we see as a reason.) personal communication May 14, 2020.

K3: *"yung mga driver namin dito, hindi masyadong sumusunod sa ordinansa, particularly tong mga traysikel drayber po natin. Yung iba na driver, yung hindi tamang pagsunod dun sa traffic signage lalong lao na along the national high way."* (Our drivers here are not strictly following the ordinance, particularly those tricycle drivers. And then, other drivers are not following the traffic signage in correct order especially in national high highway.) personal communication May 14, 2020.

Drivers should be aware of and obey the traffic signs, especially on public highways. These signs are placed on the road for the protection and prevention of accidents. Without these signs, no one would know how fast to drive down the road or if there is an upcoming hazard. Traffic signs are important because they communicate to drivers and pedestrians on what direction they should go. Its purpose as well is to alert the drivers to their speed limit on a particular road and ensure the safety of the pedestrians. The effectiveness of road signs should be assessed in terms of their ability to sensitize the driver to hazards, rather than in terms of recall accuracy, and point to inconsistencies between drivers′ verbal recall and vehicle control behavior which are not readily apparent from roadblock research (Fisher, 1992). Signal control based on multi-agent reinforcement learning is a kind of closed-loop feedback adaptive control method, which outperforms many counterparts in terms of real-time characteristics, accuracy, and self-learning and therefore will be an important research focus of control method in the future due to the property of "model-free" and "self-learning" that well accommodates the abundance of traffic information data.. (Wang et al., 2018).

The increasing traffic volume at our intersections has been creating problems like road accidents, conflicts, and congestion. These problems can now only be solved by providing efficient traffic control at intersections and that can be achieved by the provision of a traffic signal system at intersections for continuous and efficient movement of vehicles through the intersections (Kumar & Kumar, 2018). Traffic signal timings in a road network can not only affect total user travel time and the total amount of traffic emissions in the network but also create an inequity problem in terms of the change in travel costs of users traveling between different locations (Chun & Yan, 2013).

The human factor is also considered to be the central element in the whole system (Hung & Huyen, 2011). Both motorists and pedestrians were frequently observed committing road-rule violations at signalized intersections, suggesting a potential human behavioral contribution to pedestrian injury at the study sites (Cinnamon et al., 2011).

Road signs represent an application of technical communication to transmit some content using a system of signs, graphical symbols, and alphanumerical characters (Viganò & Rovida 2015).

Most maladaptive driving styles, as well as self-reported traffic offenses and accidents, suggest that these self-exonerating strategies favor the instilment and maintenance of habitual deviant behaviors on the road (Holman & Popusoi (2018). Respondents indicated for each location which maneuvers they deemed legal and how many conflicts they estimated without traffic signs, and safety perception and comfort level improved with the traffic signs (Bortei-Doku, et al., 2017). Traffic signs provide drivers with appropriate warnings and information and signal legal requirements and directions (Hudak & Madleňák (2016).

Driving without license

Driving a motor vehicle whether private or for a public utility vehicle, driver's license is the first and most important evidence that you may show to the traffic enforcement officer that you are legally allowed to drive a motor vehicle in public highways. It was found out that, driving without a license is one of the major common violations committed by drivers. It also reiterated by the key informant of this study:

K1: "yung walang license kalimitan talaga sa data namin kapag ka nasita sila na nag violate halimbawa ng disobideince sa signs, yun yung mga walang license." (Those unlicensed, mostly in our data, when they were found guilty of disobedience in signs, they are those unlicensed.? personal communication May 14, 2020.

Most of the motorists using the City Road of Santiago are usually driving without a license. This could not deny the fact that unlicensed driving is dangerous especially when accidents happen. Motorists should always bring their driver's license for their safety as well as to prove that the drivers are permissible to drive a motor vehicle. Do not drive if the license is expired, suspended, or revoked because there are several penalties if the drivers fail to produce their licenses whenever the traffic officers ask for them. According to Fu (2012), unlicensed driving is involved in a disproportionate and increasing number of preventable crash fatalities and plays a detrimental role in the lifesaving safety behaviors of their passengers. Unlicensed drivers were more likely to identify as being black or Hispanic, to live in rural or central city districts, and to report lower grades in school (Blows et al., 2005). Among some offenders, unlicensed driving appears to be indicative of a more general pattern of non-conformity; almost two-thirds of the disqualified and never licensed drivers had prior criminal convictions (Watson,2002). Lack of driving experience, higher-order perception, and maturity increase young driver crash exposure (Baura et al, 2014). On the other hand, formal driver education/training programs exist in almost all jurisdictions around the world. They are generally accepted as an efficient and effective means for learning to drive, and, more importantly, for learning to drive safely, although empirical evidence for safety benefits is lacking (Mayhew et al., 1998). Formal driver instruction is an effective safety measure. It is argued that such an outcome is not entirely unexpected given that traditional programs fail to address adequately the age and experience-related factors that render young drivers at increased risk of collision (Mayhew & Simpson, 2002). Targeting change at the systemic level, including a review of proof of identification and fines enforcement policy, diversionary programs, and increased provision for people experiencing financial hardship (Cullen et al., 2016).

Illegal parking

The continuous manufacture of cars for private and public use is being added to the existing bedlam on the streets. The continuous growth of cars on the roads can lead to severe problems such as traffic congestion. One of the reasons for the worsening of traffic conditions on the streets is the illegal parking of vehicles. Malls and other establishments that cater to the needs of the people bring rampant illegal parking and even double parking in the area.

In cities, illegal parking on the streets eats the space on the roads which may result in frequent traffic jams. Motorists often park their vehicles without any consideration for pedestrians. It was found out that illegal parking is also a common traffic law violation in the city. It is supported by the statement of key informants:

K1: *"yung sa mga illegal parking, yung mga obstruction sa traffic yun pa yung isa na nakita namin na common violation."* (Illegal parking, those obstruction in traffic where one of what we see as a reason.) personal communication, May 14, 2020.

K2: *"karamihan kasi maam dito sa santiago, mga establishment dito wala silang sariling parking area, ngayun yung ating sidewalks street yun ang ginagamit nila pansamantala, ngayun naiipon yung*

mga sasakyan, yun na nga po nag ko-cause na po yung traffic"(Mostly here in Santiago, most of the establishment do not have their own parking area that is why the sidewalks in the street are being used to be the parking area for the meantime, then vehicles will be accumulated which is the cause of the traffic.) personal communication, May 14, 2020.

The growth of illegal parking in the city is because of the insufficient parking areas of the establishments. Lack of parking areas can be a disaster in traffic management of the city. It may inconvenience other drivers, the pedestrians, and even the commuters. Illegally parked vehicles may be added to the volume of cars on the road causing traffic congestion.

Illegal parking can lead to reduced traffic speeds, congestion, changes in modal choice, loss of revenue from valid parking spaces, a decline in respect for the law, and even accidents. Its potential impact is of such magnitude that it is now widely recognized that policies aimed at its control should be incorporated into any sensible transport plan (Cullane & Pollak, 1992). A combination of factors including unattractive public transport offering a low level of service, the lack of parking facilities, inadequate drivers' education, and poor policing have led to illegal parking phenomena (Tsakalidis et al., 2015).

The increasing rate of private car usage in urban areas as a result of the fast-growing economy, derelict policies, and subsidies are the main causes making car parking one of the main concerns for transport and traffic management all over the world. The coordination between parking policies and traffic management revealed how parking is becoming a barrier to the through-traffic operation (Parmar et al., 2020). According to (Aljofie, 2016) parking spaces play a vital role in the transportation system. Parking policies ensure the efficiency of the transportation system and the management of traffic demand. Illegal parking practices can hamper the sustainability of the transportation system.

Parking information and reservation hardly impact search time but do reduce the walking distance for smart cars, leading to a reduction in total parking time, that is, the sum of search time and walking time. Reductions in search time occur only in zones with high occupancy rates, while a drop in walking distance is especially observed in low occupancy areas. Societal benefits of parking information and reservation are limited, because of the low impact on search time and the possible negative health effects of reduced walking distance (Tasseron & Martens, 2017). On the streets, illegal parking reduction has to be one basic pillar of mobility policies. This reduction would allow a higher road capacity and, consequently, greater traffic fluidity (Morillo & Campos, 2014). Pick-up and delivery services are essential for businesses in urban areas to lessen the huge number of cars parked on the side of the streets. However, due to the limited space in city centers, it might be unfeasible to provide sufficient loading/unloading spots (Roca-Riu et al., 2017).

What are the interventions done by the Department of Public Order and Safety (DPOS)?

In an interview conducted on the interventions done by the traffic enforcement officers, three (3) themes have materialized.

Traffic Education

Conducting traffic education for traffic law violators is one of the brilliant intervention programs to prevent the commission of traffic violations in the city. The DPOS believes that traffic education is essential to both drivers and pedestrians to embrace all the rules and regulations to be followed while traversing the road. With this intervention, all the road users will become more knowledgeable about traffic laws and may inform other drivers about the implementing rules and regulations in the area. Thus, traffic education is a great help to avoid injuries, fatalities, and violations of traffic laws. Also, this program helps the motorist to understand and realize that the traffic laws are for the safety of all road users. It is reiterated by the key informant when asked about the intervention program done by the Department of Public Order and Safety (DPOS) to reduce traffic violations and even traffic accidents on the road.

K1: *"nag lelecture din kami pagka may nahuli po dto lalo pag ka minor, yung mga below 18 years old na nag dadrive, nilelecturan naming sila, yung mga walang lisensya nilelecturan namin yan. Kasi hindi tayu magiging effective kung huli lang tayu ng huli. Kasi more on i-educate din natin sila doon sa mga traffic law na ini-implement natin para bumaba yung mga nagiging bilang ng mga nahuhuli."* (We are also conducting lectures when minor was caught, those below 18 years old who are driving a motor vehicle, we are lecturing them. Those unlicensed, we are conducting lecture for them. Because we will not be effective if what we do is to arrest and arrest only. We need to educate them in traffic laws that

we are implementing so that the volume of those arrested would be lessened.) personal communication, May 14, 2020.

Driver education appears to make a difference in teen traffic outcomes at a time when risk is highest (Duanne, et al., 2015). To prevent traffic violations in advance, a specific education program for potentially risky drivers is necessary (Lee, 2016). One of the pillars of road safety strategies, in almost every country in the world, is training and education. Due to the diversity and different extents of evaluation methods, the influence of education and training programs on traffic safety is still limited (Topolšek, 2019). Improvements in road traffic education have been recognized in several countries as an instrument for reducing road accidents. However, the level of road safety education imparted by different institutions lacks an objective performance measure regarding the level of awareness that different participants in the transport process have concerning road transportation risks (Obregón-Biosca, 2018).

According to (Rafter & Wundersitz, 2011) the effectiveness of current road safety educational programs remains largely undetermined as there is little evidence showing that road safety education (RSE) either does or does not work, although programs addressing the general causes of risk-taking behavior are showing some promise. Education/training programs might prove to be effective in reducing violations, and accidents if they are more empirically based, addressing critical age and experience-related factors (Mayhew & Simpson, 2002). Road Safety Education (RSE) is widely known as a reliable determinant of the future results of welfare and as an undisputable factor that contributes to the social behavior of individuals and their mid- and long-term road safety outcomes (Alonzo, et al. 2018). Education programs influence commercial drivers' behavior toward road traffic codes and safe driving.

Adjusting the manpower

In this study, it was found that adjusting manpower during peak hours is the best solution to maintain the smooth movement of vehicles on the road. There is no doubt that manpower is very essential in all types of organizations or departments. Sufficient manpower helps the organization to work well and to have an accurate and effective job performance. Thus, the respondents came up with a plan to adjust the manpower to maintain the smooth flow of vehicles on the highway, especially during rush hours because rush hour is when traffic enforcers are needed the most. In the findings of the study, the DPOS created a schedule on when and where is the area of guiding and conducting traffic. The schedule was all followed by the traffic enforcers officers to control the movement of the vehicles on the highway. Also, the respondents believe that the traffic enforcers' visibility may prevent future traffic law violations. It was supported by the statement of the key informant when asked about the intervention programs done by the DPOS:

K2: *"nag aadjust nalang kmi ng mga oras naming halimbawa, yung mga bandang alas dose ganon, breaktime, nag aadjust nalang kami ng mga tao naming para sa ganon tuloy tuloy padin yung mag co-conduct ng traffic para maiwasan yung clogging sa area kahit na lunch break."* (We adjust our time, like for an example, when it is already 12:00 lunch break, we are adjusting the manpower, so that there would be continuous enforcement of traffic to avoid clogging in the area even it is lunch break.) personal communication, May 14, 2020.

Officers in all divisions felt strongly that enough equipment was a factor facilitating an increase in work performance, whereas the imbalance of manpower and scarcity of modern equipment were factors that were obstacles to work performance (Tengpongsthorn, 2017). Manpower planning enables organizations to have an accurate estimate of the number of employees to accomplish set goals, reduces waste in employment, lessens uncertainties about current personnel level/needs, eliminates the mistakes involved in staffing, and enhances effective utilization of its human resources (Wajiga & Ndaghu, 2017).

Manpower education and training were needed to ensure the country had the necessary well-qualified personnel who would perform their employment duties properly so that the country achieves its planned socio-economic development targets (Zubi, 1992). To be effective, manpower planning must irrevocably be tied to corporate strategy (Pollok, 1980). Organizations should conduct a training needs assessment to ensure that the right training is given; ensure that their training programs are continuous; and motivate staff who perform exceptionally well during training sessions so that other staff will in turn aspire to excel (Ogbuabor & Malaolu, 2013). If extra manpower is not hired it results in disrupted work schedules and assignments (Krishnaswamy & Ganguly, 1987).

Number coding of vehicles

The most common traffic problems in the cities are attributed to the increasing number of private vehicles as well as public use. Because of this situation, the number coding of vehicles is implemented to mitigate the volume of vehicles on the road. Motorists should follow this alternative since it was created by the government to address the reduction of the worsening of traffic on the road.

It was found out in this study that, number coding of vehicles may help to lessen the number of vehicles traversing on the highways. It is supported by the statement of the key informant when asked about the intervention programs done by the DPOS:

K3: *"nagkaroon ng ordinansa sa number coding particulary sa mga traysikel para ma lessen yung traffic."* (There was an ordinance in number coding particularly in tricycle drivers to lessen the traffic.) personal communication, May 4, 2020.

Based on the results of the study, the number coding of vehicles was implemented through an ordinance in the city due to the existing bedlam on the road. DPOS implemented the coding scheme to decrease the number of cars on the highways. This intervention is for the advantage of the road users but to the community as well. Through this number scheme ordinance, pollution in the city may also be reduced, the noise and even human errors.

Number Coding Scheme (NCS) was introduced as a travel demand management (TDM) measure to control the use of vehicles, especially during rush hours. The scheme works by employing the last digits of the vehicle's plate number to restrict them from running the streets (Gueta & Gueta, 2013). The Unified Vehicular Volume Reduction Program (UVVRP), more popularly known as the "number coding" scheme was originally developed as a short-term travel demand management measure for Metro Manila, in the light of the ongoing construction of transportation infrastructure projects in the 1990s.

The UVVRP was effective enough to address traffic congestion. (Regidor, 2013). During the number coding scheme day, when their car is banned from plying the streets, a commuter would still use their car at the expense of extending their total activity time – meaning car use is not necessarily reduced but shifted to other times of the day (Padayhag & Guta, 2013). Communication of information from There was an ordinance in number coding particularly in tricycle drivers to lessen the traffic in roadway infrastructure to vehicles is expected to enhance Automated Highway Systems (AHS) by supporting subsystem functions like vehicle motion control, multiple vehicle coordination, and vehicle navigation. A suitable communication channel is information coding in the lateral reference used for automatic steering and lane-keeping control, e.g. in the magnet reference system used by California PATH (Partners for Advanced Transit and Highways) (Guldner, 1999).

Modifying the coding scheme by reducing vehicle usage from once a week to an odd-even scheme. This may be drastic but it certainly calls for the situation given that there is a lot of current infrastructure construction (Salvanera, et al., 2017). It is complex and difficult to perform the vehicle scheduling of urban bus lines, which is important to reduce operational costs and improve the quality of public transportation services. One has to assign vehicles to cover a set of trips contained in a timetable while minimizing multiple objectives that may conflict with each other (Zuo, 2015).

As a whole, the common traffic violations committed in Santiago City are (a) disobedience to traffic signs, (b) driving without a license, and (c) illegal parking. With these common violations, traffic enforcers should limit their considerations to road users who usually violate the traffic law. The widest information dissemination on the traffic rules must be done to the motorists to avoid being ignorant of the rules implemented. Thus, strict implementation of the traffic laws rules, and regulations would be effective if it applies to all road users even those who are crossing in the City. Traffic education is such a bright intervention to decongest the fatalities on the road. Due to peak hours, adjusting manpower is the best alternative to maintain the flow of traffic, and number coding would help to lessen the voluminous cars in the City.

CONCLUSION

Based on the salient findings of the study, the most common traffic violations committed in Santiago City are disobedience to traffic signs, driving without a license, and illegal parking. The intervention programs done by the Department of Public Order and Safety (DPOS) are Traffic education, Adjusting manpower, and Number Coding of Vehicles. Traffic violations are conducted to educate the road users, adjusting manpower is conducted especially during rush hours, and number coding of vehicles is implemented to reduce the number of vehicles on the highway.

RECOMMENDATION

Based on the findings and conclusions, the following recommendations are offered:

The Head of the Department is advised to request the office of the City Mayor the hiring of additional traffic enforcement officers to have enough manpower to control the traffic and lessen the violations of the motorists. Also, it is advised to the Department to conduct traffic education not only to the traffic violators but also to the non-violators for them to be aware if there are amendments or revisions in the existing traffic rules. Lastly, traffic safety shall also be given before their driver's licenses are returned.

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CONSUMER BEHAVIOR AND CUSTOMER LOYALTY DURING THE COVID-19 PANDEMIC: INPUT TO A PROPOSED ACTION PLAN FOR ONLINE FOOD DELIVERY SERVICES

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ABSTRACT

The study focuses on consumer behavior and loyalty towards online food delivery services during the COVID-19 pandemic. Moreover, the study aims to help food delivery companies identify new trends in service preferences, develop appealing offerings, attract new customers, and retain existing ones through a post-pandemic action plan. Majority of the survey respondents were millennial females, married, and low- to lower-middle-income, ordering through online food delivery services on a two- to three-times-a-week basis. The findings indicate that respondents perceived convenience as the most significant factor influencing their preferences. The study reveals that service quality and perceived trust were the primary factors influencing loyalty among online food delivery platform users, suggesting that positive experiences with reliable and trustworthy services lead to repeat purchases and customer loyalty. The study highlights differences in perception based on age, gender, civil status, income level, and frequency of ordering food online. Price, perceived severity, intention to use, and actual usage were common factors among low- to mid-income respondents. The results provide valuable insights for online food delivery companies to understand customer preferences, needs, and behaviors. The findings can also assist in identifying areas of inefficiency and developing strategies to streamline operations, thereby reducing costs and increasing profitability. Furthermore, the study concludes that convenience, perceived severity, price, actual use, intention to use, and hedonic motivation have highly significant relationships with customer loyalty.

Keywords: consumer behavior, customer loyalty, online food delivery services, perceived trust, service quality, convenience

INTRODUCTION

The COVID-19 pandemic significantly impacted businesses globally, particularly the food industry. In order to comply with safety protocols and avoid the spread of the virus, food delivery services have played a crucial role in delivering restaurant-quality-food to people's homes. As a result, there has been a surge in the demand for food delivery services, with studies showing substantial growth in the global market. According to the Online Food Delivery Services Global Market Report, the food delivery service market grew by 10.3% in 2021. It also predicted to have a Compound Annual Growth Rate of 8.76% by 2026. Mobile apps for food delivery also experienced significant growth during the pandemic.

In Lipa City, Batangas, the demand for efficient food delivery services increased, leading to the introduction of platforms like Foodpanda and GRABFood. Localized food delivery services also emerged during this time. During lockdown periods, consumers in Lipa City ordered food via delivery services, making home deliveries the principal source of revenue for most food establishments. Despite the additional fees for delivery services, people embraced food delivery due to its convenience and the fear surrounding the severity of the pandemic.

Consumer behavior plays a significant role in customer loyalty to food delivery services. Factors such as fear, pandemic severity, price, convenience, hedonic motivation, and word of mouth influence consumers' purchasing patterns during the pandemic. Convenience of service, in particular, has been

identified as a crucial factor in using food delivery services. Price also affects customers' willingness to use these services, especially during an economic crisis.

Declining loyalty rates has been observed in the retail industry as crucial, and increasing loyalty can lead to significant profit growth. Satisfied customers are more likely to be loyal and make repeat purchases, and their positive emotions and buying intentions limit brand switching. The Customer satisfaction, service quality (SERVQUAL) and perceived trust influence customers' continued use of food delivery services and their loyalty. Overall, customer loyalty, customer satisfaction, service quality, and perceived trust are interconnected and essential for building long-term relationships and business success in the food delivery industry (Prasetyo et al., 2021).

The pandemic led to a shift in consumer buying behavior, with a preference for online food delivery services due to convenience and safety. However, as the government eases restrictions and vaccination programs progress, there are questions about sustainability and future growth of food delivery services. Limited research has conducted on the post-pandemic dynamics of the platform-to-restaurant food delivery sector. Understanding consumer behavior and customer loyalty in food delivery services is necessary to adapting to the "new normal" and developing strategies for continued growth.

OBJECTIVES OF THE STUDY

The primary goal of this research is to identify the factors affecting consumer behavior and loyalty toward food delivery service companies during the COVID-19 period. Specifically, this study intends to provide answers and solutions to the following questions:

1. What is the profile of the respondents in terms of age, sex, civil status, monthly income and frequency of usage of food delivery services?
2. What are the respondent's preferences and behavior using food delivery services affected by the following external factors like convenience, price, perceived severity, hedonic motivation, intention to use and actual use?
3. What is the respondent's level of customer loyalty to food delivery services in terms of customer satisfaction, service quality and perceived trust?
4. Is there a significant relationship developed between consumer behavior and customer loyalty of the respondents toward food delivery services during the COVID-19 pandemic?
5. Is there a significant difference developed between consumer behavior and customer loyalty of the respondents towards food delivery services when grouped according to the profile of the respondents?
6. Based on the study's results, what action plan can be proposed to sustain the growth of food delivery service businesses?

METHODOLOGY

Due to the nature and scope of the study, the researcher employed correlational-descriptive and quantitative approaches to discuss relationships and describe consumer behavior and customer loyalty of users toward online food delivery services. The study utilizes 250 food delivery service customers and users from the five districts Lipa City as respondents using proportional allocation method.

The respondents' general profile was obtained using demographic criteria such as age, sex, monthly income, and civil status. The respondents' frequency of usage of food delivery services per week was used as the psychographic criteria. The survey questionnaire used a 4-point Likert scale to determine the level of agreement and disagreement of respondents on the factors affecting consumer behavior and customer loyalty. Descriptive statistics were employed to analyze the data. The gathered data were processed using suitable statistical methods, including frequency, percentile, weighted mean, ranking, Pearson r correlation and Kruskal Wallis test.

FINDINGS

Profile of the Respondents
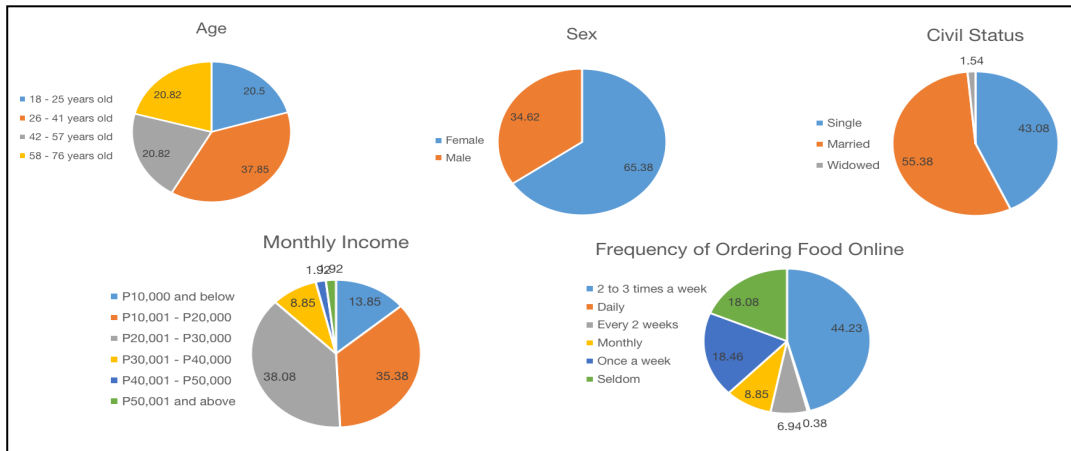
Figure 1. Demographic and Psychographic Profile of the Respondents.

Figure 1 presents a breakdown of the socio-demographics of this study. In terms of gender, out of 260 respondents, 90 respondents (34.6%) were male, and 170 respondents (65.4%) were female. Most respondents belong to the Millennial generation or between 26 to 41 years old or approximately 38%, while respondents representing Gen Z, Gen X, and Boomers followed with an approximate percentage of 20.0-21.0%. More than half of the respondents were married (55.4%), 43 percent were single, and 1.54% were widowed. Seventy-three percent (73.4%) of the respondents belong to the Low Income up to Lower Middle-Income class which receives a net monthly income ranging from ₱10,001.00 to ₱30,000.00. In terms of frequency of usage of online food delivery platforms, 44.2% of the respondents order from them 2 to 3 times a week, followed by those ordering food once a week and monthly.

Summary of Preferences and Consumer Behavior of Respondents

The study analyzed respondents' preferences and behavior towards food delivery services as shown in Table 1 below. Convenience was found to be the most significant factor, with a high composite mean of 3.42, indicating strong agreement among respondents. This suggests that the convenience of time and effort played a crucial role in their decision to purchase meals through online food delivery systems, particularly during the COVID-19 pandemic. Customers choose online food delivery due to its convenience and the ability to transact anytime and anywhere. (Chen et al., 2015)

On the other hand, hedonic motivation received the lowest composite mean of 3.21, ranking sixth and interpreted as agreement. This factor is more associated with mobile applications that offer aesthetic and fun features, such as social networking apps or games. In the context of food delivery applications, routine activities like Grab taxis or mobile banking are more relevant. As hedonic motivation is the experiential aspect of consumption, the findings of (Kumar and Shah, 2021) showed the relevance of pleasure and fun to use in food delivery applications customers' intention to purchase during the pandemic. Unlike previous studies where hedonic motivation played a stronger role in customer intention to use (Venkatesh et al.,2012), this study highlighted that pleasure and fun were not the primary drivers of intention to purchase through food delivery applications during the pandemic.

Table 1. Summary of Preferences and Consumer Behavior of Respondents for Using Online Food Delivery Services During Pandemic

Variables	Composite Mean	Interpretation
Convenience	3.42	Strongly Agree
Price	3.30	Strongly Agree
Perceived Severity	3.34	Strongly Agree
Hedonic Motivation	3.21	Agree
Intention to Use	3.25	Strongly Agree
Actual Use	3.27	Strongly Agree
Grand Mean	**3.30**	**Strongly Agree**

The overall grand mean of 3.30 indicated that respondents strongly agreed with their preferences and behavior towards online food delivery services during the pandemic. Convenience, perceived severity (related to health concerns), and price were identified as the top factors influencing their decision to purchase meals online. The challenges, economic struggles, and fears experienced during the pandemic led customers to prioritize convenience, health consciousness, and price awareness, making online food delivery their preferred purchasing method.

Summary of Level of Customer Loyalty to Online Food Delivery Services During Pandemic

According to Table 2 below, perceived trust and service quality received the highest composite means of 3.35, ranking equally at 1.5, indicating strong agreement among respondents. Trust in the online food delivery application and the service quality provided by delivery drivers are crucial factors in fostering customer satisfaction. This satisfaction, in turn, leads to repeated service usage and customer loyalty towards the preferred food delivery platform. This finding is consistent with the study conducted by (Agrawal et al.,2012), which highlights the combined influence of perceived trust and quality in predicting customer loyalty.

Table 2. Summary of Level of Customer Loyalty to Online Food Delivery Services During Pandemic

Variables	Composite Mean	Interpretation
Customer Satisfaction	3.33	Strongly agree
Service Quality	3.35	Strongly agree
Perceived Trust	3.35	Strongly agree
Grand Mean	**3.34**	**Strongly agree**

Despite being ranked third, customer satisfaction obtained a composite mean of 3.33, also indicating strong agreement among respondents. This result emphasizes the significant role of customer satisfaction in cultivating loyalty towards online food delivery services. The grand mean of 3.34 signifies that respondents strongly agreed with their loyalty to online food delivery services during the ongoing pandemic.

The pandemic has heightened the importance of food delivery services in ensuring logistics and food distribution while people remain reluctant to leave their homes. The increased demand for online food delivery prompted many customers, including those unfamiliar with such services, to turn to these platforms as a safe and convenient option. Consequently, online food delivery platforms have prioritized maintaining service quality, building trust, and ensuring customer satisfaction to retain these new customers. Platforms that focus on delivering high-quality service, establishing customer trust, and ensuring satisfaction are more likely to retain customers both during and after the pandemic.

Relationship Between Consumer Behavior and Customer Loyalty of the Respondents Towards Food Delivery Services During the COVID-19 Pandemic

According to Table 3 below, the behavior of respondents in terms of convenience, price, perceived severity, hedonic motivation, intention to use, and actual use showed significant relationships with customer loyalty toward food delivery services during the pandemic. The computed R-values and corre-

sponding p-values indicated strong associations between these factors and customer satisfaction, service quality, and perceived trust.

Table 3. Relationship Between Consumer Behavior and Customer Loyalty of the Respondents Towards Food Delivery Services During the COVID-19 Pandemic

Variables Compared	r-value	p-value	Decision	Interpretation
Convenience versus Customer Loyalty				
Customer satisfaction	0.58	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.48	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.55	0.00000	p<0.01, Reject Ho	Highly Significant
Price versus Customer Loyalty				
Customer satisfaction	0.62	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.67	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.63	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Severity versus Customer Loyalty				
Customer satisfaction	0.58	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.57	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.55	0.00000	p<0.01, Reject Ho	Highly Significant
Hedonic Motivation versus Customer Loyalty				
Customer satisfaction	0.49	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.55	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.54	0.00000	p<0.01, Reject Ho	Highly Significant
Intention to Use versus Customer Loyalty				
Customer satisfaction	0.53	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.65	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.56	0.00000	p<0.01, Reject Ho	Highly Significant
Actual Use versus Customer Loyalty				
Customer satisfaction	0.60	0.00000	p<0.01, Reject Ho	Highly Significant
Service Quality	0.61	0.00000	p<0.01, Reject Ho	Highly Significant
Perceived Trust	0.64	0.00000	p<0.01, Reject Ho	Highly Significant

Convenience was found to be a crucial factor influencing customer satisfaction, service quality, perceived trust, and loyalty toward food delivery services during the pandemic. Liu, Zhang, and Lu (2021) also highlighted the positive impact of convenience on customer satisfaction, service quality, and perceived trust, which led to increased customer loyalty during the pandemic. Price was identified as another important factor affecting customer loyalty toward food delivery services during the pandemic. High prices were associated with reduced customer satisfaction, service quality, perceived trust, and loyalty (Liu et al., 2021). To foster customer loyalty, food delivery services should offer competitive and transparent pricing while maintaining high levels of service quality and trustworthiness.

Perceived severity, reflecting customers' perception of the severity of the pandemic, was found to significantly influence customer satisfaction, service quality, perceived trust, and loyalty toward food delivery services. Customers who perceived higher severity had higher expectations for service quality and safety and were more critical of any perceived shortcomings in these areas (Liu et al., 2021; Hong et al., 2020). To build customer loyalty, food delivery services should prioritize safety, reliability, and transparency in their operations.

Hedonic motivation, related to the experiential aspect of using food delivery services, was also found to have a strong relationship with customer loyalty during the pandemic. Wu and Li (2020) indicated a positive correlation between hedonic motivation and customer satisfaction and loyalty, suggesting that enjoyable experiences can contribute to customer loyalty.

Intention to use and actual use of food delivery services were identified as factors significantly impacting customer loyalty during the pandemic. Aksu and Aksu (2021) highlighted the positive correlation between intention to use and customer loyalty, while Liu and Liang (2021) and Wang and Liang (2020) emphasized the positive relationships between actual use, customer satisfaction, perceived trust,

and loyalty. Encouraging frequent usage through high-quality service and convenience can enhance customer loyalty.

Overall, these findings emphasize the importance of convenience, price, perceived severity, hedonic motivation, intention to use, and actual use in shaping customer satisfaction, service quality, perceived trust, and loyalty toward food delivery services during the pandemic. Food delivery platforms should prioritize these factors to retain customers and build long-term loyalty.

Difference Between Consumer Behavior and Customer Loyalty of the Respondents Towards Food Delivery Services During the Pandemic When Grouped According to Their Profile.

Table 4 below summarizes the findings of several studies investigating customer behavior towards food delivery services during the pandemic, focusing on different factors and grouping respondents based on age, sex, civil status, net monthly income, and frequency of ordering food online.

When grouped according to age group, the computed K-value of 11.38 for convenience had a corresponding p-value of less than 0.01. Significant differences were found among different age groups, with younger customers showing higher convenience ratings compared to older customers. For intention to use and actual use, the computed K-values of 8.45 for intention to use and 7.85 for actual use have corresponding p-values of less than 0.05, thus rejecting also the null hypothesis. Significant differences were observed, indicating that younger customers had higher intentions to use and actual use of food delivery services compared to older customers.

For price, perceived severity, and hedonic motivation, the computed K-values are 6.89, 6.96, and 5.11 consequently have corresponding p-values of more than 0.05, thus failing to reject the null hypothesis. No significant differences were found among age groups for these factors. Regardless of age, price is not a factor for the respondents to avail their food in food delivery service platforms during the pandemic due to movement limitations and difficulty of availing food. According to Wang and Liang's (2020) study, younger customers showed a higher tendency to use and intend to use food delivery services compared to older customers. However, no significant differences were found among age groups in terms of price, perceived severity, and hedonic motivation.

Similarly, Kim, Lee, and Jang's (2021) study in South Korea found that younger customers had a higher perceived convenience and satisfaction towards food delivery services and were more likely to use them frequently compared to older customers. In addition, Liu and Liang's (2021) study found that younger customers had higher intentions to use food delivery services and were more satisfied with the online transaction service than older customers.

Table 4. Difference Between Consumer Behavior of the Respondents Towards Food Delivery Services During Pandemic When Grouped According to Their Profile

Variables Compared	K-value	p-value	Decision	Interpretation
Age				
Convenience	11.38	0.00982	p<0.01, Reject Ho	Highly Significant
Price	6.89	0.07563	p>0.05, Failed to Reject Ho	Not Significant
Perceived Severity	6.96	0.07309	p>0.05, Failed to Reject Ho	Not Significant
Hedonic Motivation	5.11	0.16382	p>0.05, Failed to Reject Ho	Not Significant
Intention to Use	8.45	0.03750	p<0.05, Reject Ho	Significant
Actual Use	7.85	0.04912	p<0.05, Reject Ho	Significant
Sex				
Convenience	4.72	0.02984	p<0.05, Reject Ho	Significant
Price	0.70	0.40340	p>0.05, Failed to Reject Ho	Not Significant
Perceived Severity	1.32	0.25059	p>0.05, Failed to Reject Ho	Not Significant
Hedonic Motivation	0.88	0.88360	p>0.05, Failed to Reject Ho	Not Significant
Intention to Use	0.01	0.91681	p>0.05, Failed to Reject Ho	Not Significant
Actual Use	1.32	0.25059	p>0.05, Failed to Reject Ho	Not Significant

Civil Status				
Convenience	5.68	0.05845	p>0.05, Failed to Reject Ho	Not Significant
Price	4.82	0.08982	p>0.05, Failed to Reject Ho	Not Significant
Perceived Severity	3.62	0.16365	p>0.05, Failed to Reject Ho	Not Significant
Hedonic Motivation	1.10	0.57839	p>0.05, Failed to Reject Ho	Not Significant
Intention to Use	0.06	0.97045	p>0.05, Failed to Reject Ho	Not Significant
Actual Use	9.88	0.00717	p<0.01, Reject Ho	Highly Significant
Net Monthly Income				
Convenience	24.15	0.00007	p<0.01, Reject Ho	Highly Significant
Price	8.75	0.06769	p>0.05, Failed to Reject Ho	Not Significant
Perceived Severity	2.53	0.64007	p>0.05, Failed to Reject Ho	Not Significant
Hedonic Motivation	16.81	0.00211	p<0.01, Reject Ho	Highly Significant
Intention to Use	6.70	0.15274	p>0.05, Failed to Reject Ho	Not Significant
Actual Use	2.76	0.59908	p>0.05, Failed to Reject Ho	Not Significant
Frequency of Ordering Foods Online				
Convenience	24.18	0.00006	p<0.01, Reject Ho	Highly Significant
Price	8.73	0.06772	p>0.05, Failed to Reject Ho	Not Significant
Perceived Severity	2.56	0.64001	p>0.05, Failed to Reject Ho	Not Significant
Hedonic Motivation	16.80	0.00213	p<0.01, Reject Ho	Highly Significant
Intention to Use	6.65	0.15292	p>0.05, Failed to Reject Ho	Not Significant
Actual Use	2.77	0.59906	p>0.05, Failed to Reject Ho	Not Significant

When grouped according to sex, the computed K-value of 4.72 for convenience had a corresponding p-value of less than 0.05. Significant differences were found between male and female customers, with female customers perceiving food delivery services as more convenient. For price, perceived severity, hedonic motivation, intention to use, and actual use, the computed K-values are 0.70, 1.32, 0.88, 0.01, and 1.32 consequently and have corresponding p-values of more than 0.05 thus no significant differences were found between male and female customers for these factors.

A study by Liang and Turban (2020) found no significant differences in convenience, price, and hedonic motivation among male and female customers. However, their study found that female customers had higher levels of perceived severity and use food delivery services more than male customers. Another study by Wang and Liang (2020) found no significant differences in intention to use and actual use among male and female customers. However, the study found that female customers were more likely to perceive food delivery services as convenient and had higher levels of satisfaction than male customers. Kim, Lee, and Jang's (2021) study also found no significant differences in convenience, perceived trust, service quality, or loyalty among male and female customers in South Korea.

When grouped according to civil status, the computed K-value of 9.88 for actual use had a corresponding p-value of less than 0.01. Significant differences were observed, with married customers using food delivery services more frequently than unmarried customers. Contrariwise, the computed K-values of 5.68 for convenience, 4.82 for the price, 3.62 for perceived severity, 1.10 for hedonic motivation, and 0.06 for intention to use have corresponding p-values of more than 0.05 thus, no significant differences were found among different civil statuses for these factors.

According to a study by Kim, Lee, and Jang (2021), customers in South Korea with different civil statuses did not show significant differences in convenience, perceived trust, service quality, or loyalty toward food delivery services during the pandemic. Similarly, Sun and Liang's (2021) study in China found no significant differences in convenience, price, perceived severity, hedonic motivation, and intention to use among respondents with different civil statuses.

When grouped according to net monthly income, the computed K-values of 24.15 for convenience and 16.81 for hedonic motivation have corresponding p-values of less than 0.01. Significant differences were found, indicating that customers with different levels of net monthly income perceive higher convenience and hedonic motivation. On the other hand, the computed K-values of 8.75 for price, 2.53 for perceived severity, 6.70 for intention to use, and 2.76 for actual use have corresponding p-values of more than 0.05. No significant differences were found among customers with different net monthly incomes for these factors.

During the pandemic in South Korea, customers with higher net monthly income were more likely to use food delivery services, according to a study by Kim, Lee, and Jang (2021). However, customers with varying net monthly incomes were similar in terms of convenience, perceived trust, service quality, and loyalty. Another study by Al-Gahtani, R. S., and Al-Maghrabi, T. (2020) found significant differences in convenience and hedonic motivation among customers with different levels of net monthly income in Saudi Arabia. Specifically, customers with higher net monthly income reported higher levels of convenience and hedonic motivation compared to those with lower net monthly income.

When grouped according to frequency of ordering food online, the computed K-values of 24.18 for convenience and 16.80 for hedonic motivation have corresponding p-values of less than 0.01. Significant differences were found, with customers who order food online more frequently perceiving higher convenience and hedonic motivation. On the contrary, the computed K-values of 8.73 for price, 2.56 for perceived severity, 6.65 for intention to use, and 2.77 for actual use have corresponding p-values of more than 0.05. No significant differences were found among customers with different frequencies of ordering food online for these factors.

One study by Ye, Chen, and Lan (2021) found significant differences in convenience and hedonic motivation among customers who order food online with different frequencies in China. Specifically, customers who ordered food online more frequently reported higher levels of convenience and hedonic motivation than those who ordered less frequently. Similarly, a study by Järvinen et al. (2021) found significant differences in convenience and hedonic motivation among customers who order food online with different frequencies in Finland. Customers who ordered food online more frequently reported higher levels of convenience and hedonic motivation compared to those who ordered less frequently.

In summary, the findings indicate that convenience and intention to use are influenced by age, while convenience is influenced by sex. Actual use is influenced by civil status, convenience and hedonic motivation are influenced by net monthly income, and convenience and hedonic motivation are influenced by the frequency of ordering food online. The factors of price, perceived severity, intention to use, and actual use did not show significant differences across the analyzed groups.

Table 5. Difference Between Customer Loyalty of the Respondents Towards Food Delivery Services During Pandemic When Grouped According to Their Profile

Variables Compared	K-value	p-value	Decision	Interpretation
Age				
Customer satisfaction	7.73	0.05243	p>0.05, Failed to Reject Ho	Not Significant
Service Quality	12.93	0.00478	p<0.01, Reject Ho	Highly Significant
Perceived Trust	7.08	0.06930	p>0.05, Failed to Reject Ho	Not Significant
Sex				
Customer satisfaction	2.45	0.11719	p>0.05, failed to Reject Ho	Not Significant
Service Quality	1.57	0.21008	p>0.05, Failed to Reject Ho	Not Significant
Perceived Trust	6.28	0.01219	p<0.05, Reject Ho	Significant
Civil Status				
Customer satisfaction	9.62	0.00815	p<0.01, Reject Ho	Highly Significant
Service Quality	3.78	0.15107	p>0.05, Failed to Reject Ho	Not Significant
Perceived Trust	3.50	0.17377	p>0.05, Failed to Reject Ho	Not Significant
Net Monthly Income				
Customer satisfaction	8.12	0.08711	p>0.05, Failed to Reject Ho	Not Significant
Service Quality	2.01	0.73417	p>0.05, Failed to Reject Ho	Not Significant
Perceived Trust	17.38	0.00163	p<0.01, Reject Ho	Highly Significant
Frequency of Ordering Foods Online				
Customer satisfaction	8.09	0.08742	p>0.05, Failed to Reject Ho	Not Significant
Service Quality	2.05	0.73410	p>0.05, Failed to Reject Ho	Not Significant
Perceived Trust	17.34	0.00170	p<0.01, Reject Ho	Highly Significant

In this study, the loyalty of respondents towards food delivery services during the pandemic was evaluated based on different factors such as age, sex, civil status, net monthly income, and frequency of ordering food online. When grouped according to age, the computed K-value of 12.93 for service quality

had a corresponding p-value of less than 0.01. The assessment of loyalty based on age showed a significant difference in perceived trust among respondents.

Meanwhile, the computed K-values of 7.73 for customer satisfaction and 7.08 for perceived trust have corresponding p-values of more than 0.05, thus failing to reject the null hypothesis. There were no significant differences in customer satisfaction and service quality based on age. These findings are supported by a study conducted by Huang et al. (2020) and Kim et al., (2021) that found age is not a significant factor for loyalty in terms of service quality. This signifies that respondents from different generation ranges, like Gen Z, Millenials, Gen X, and Boomers, have different perceptions of the service quality of food delivery service providers.

When grouped according to sex, the computed K-value of 6.28 for the perceived trust had a corresponding p-value of less than 0.05. The assessment of loyalty based on sex revealed a significant difference in perceived trust between men and women. Furthermore, the computed K-values of 2.45 for customer satisfaction and 1.57 for service quality have corresponding p-values of more than 0.05. There were no significant differences in customer satisfaction and service quality based on sex. Women showed a greater inclination towards utilizing food delivery services during the pandemic compared to men, with a focus on safety, cleanliness, price, convenience, and dependability.

When grouped according to civil status, the computed K-value of 9.62 for customer satisfaction had a corresponding p-value of less than 0.01. The assessment of loyalty based on civil status showed a significant difference in customer satisfaction among respondents. On the other hand, the computed K-values of 3.78 for service quality and 3.50 for perceived trust have corresponding p-values of more than 0.05. There were no significant differences in service quality and perceived trust based on civil status. Married respondents reported higher satisfaction with online food delivery services compared to single or divorced individuals. Based on the findings of Kim and Park (2021), there was a significant difference in customer satisfaction for online food delivery services among respondents with different marital statuses but no significant differences in perceived trust or service quality. Specifically, married respondents were more satisfied with online food delivery services than those who were single or divorced.

When grouped according to net monthly income, the computed K-value of 17.38 for the perceived trust had a corresponding p-value of less than 0.01. The assessment of loyalty based on net monthly income revealed a significant difference in perceived trust among respondents. On the other hand, the computed K-values of 8.12 for customer satisfaction and 2.01 for service quality have corresponding p-values of more than 0.05. There were no significant differences in customer satisfaction and service quality based on net monthly income. Customers with different income levels had varying levels of perception of trust in online food delivery transactions.

The research by Nguyen and Nguyen (2021) found that there is a significant connection between perceived trust and customer loyalty towards food delivery services during the pandemic. However, when customers were classified based on their income level, there were no significant differences in their level of satisfaction and perceived service quality. Similarly, in a separate study by Singh and Khan (2021), it was observed that perceived trust had a significant impact on customer loyalty towards food delivery services during the pandemic.

When grouped according to frequency of ordering food online, the perceived trust was found to have a computed K-value of 17.34 with a corresponding p-value of less than 0.01. The assessment of loyalty based on the frequency of ordering food online showed a significant difference in perceived trust among respondents. Conversely, the computed K-values of 8.09 for customer satisfaction and 2.05 for service quality had corresponding p-values of more than 0.05. There were no significant differences in customer satisfaction and service quality based on the frequency of ordering food online. Customers who ordered food delivery services more frequently during the pandemic valued convenience, safety precautions, and affordability over food quality and variety.

Overall, understanding factors like age, sex, civil status, income, and ordering frequency can help food delivery services improve customer satisfaction, perceived trust, and service quality. Providing convenient, safe, and affordable services while addressing the specific preferences and expectations of different customer segments can enhance customer loyalty during and beyond the pandemic.

Action Plan

As the pandemic subsides, online food delivery companies face a changed landscape. The study's findings can assist these companies in better understanding customer preferences, enhancing satisfaction, and improving various aspects of their services. By analyzing customer feedback, companies can enhance food quality, delivery processes, and overall customer experience. The study also highlights areas of inefficiency, allowing companies to develop strategies to improve efficiency, reduce costs, and increase profitability. Additionally, the study helps companies identify new trends, attract and retain customers, and develop effective marketing strategies tailored to their target audience as shown in the following Table 6.

Table 6. Proposed Action Plan for Online Food Delivery Companies

Findings	Program	Objective	Strategies	Expected Outcome
Hedonic motivation ranked the least factors affecting consumer behavior toward FDS.	Promotion of price competitive and innovative strategies	Encourage more customers to use food delivery services through price-saving strategies.	Collaboration with partner restaurants to promote and give away vouchers, e-games with vouchers as prizes, etc.	Use of electronic vouchers, gift vouchers, etc.
Price is a top factor driving customers to purchase food via online FDS		Regular discounts and promos to attract more customers	Study and map discount promotions based on customer preferences and categories etc.	Expanded promos and discounts
Consumers ranging from 18-25 years old got the lowest rank in demographic profile	The GenZ Project	Target inclusion of GenZ customers as they will be the future driving force for consumers	Incorporate online games in apps where e-vouchers and discounts will be the prize.	Launch of trending online games through delivery apps.
In order to increase customer satisfaction, FDS companies should also focus on perceived trust and service quality through appropriate training	Customer Service Training	To continuously promote sanitation and contactless service to all OFD users	Continuous training on health and safety interactions, customer service for the front liners.	Better service for all OFD users and customers.
		To provide an accessible customer service and feedback system	Develop easy-to-access ways for customers to give their feedback on the service	Implementation of an open customer feedback system
Convenience was found to be the most significant factor of users' consumer behavior towards online FDS.	Route expansion and route optimization algorithm	Widen delivery route to be able to cover as farthest hard-to-reach remote areas.	Improve mobile/ online applications for wider coverage of delivery routes.	Launching of the improved app.
		Route optimization to ensure the fastest delivery time and an algorithm that predicts sales demand for ease of drivers deployment	b.Update existing algorithm, which predicts sales demand in a certain area in specific peak hours.	Training and re-orientation of delivery riders with the new app system
		System improvement that matches and links customer orders with a specific driver's route with the most likelihood of reaching the restaurant	c.Maximize and update the existing ordering system.	Launching of the improved app by 4th quarter of 2023
Increase customer satisfaction by providing a broader range of options.	Expand restaurant partnership	To tie up partnerships with other famous restaurants	Initiate and approach other go-to restaurants including new food hubs.	Wider restaurant and food options to cater to all customer types
Cater majority of the decision makers : working married women in their 26-41 yrs old.		Boost and encourage cloud kitchens selling home-cooked and healthy meals.	b.Scout for potential restaurants and cloud kitchens serving healthy home-cooked and dietary meals.	Catering healthy option choices for the large female, married segment.

CONCLUSIONS

1. Majority of the study's respondents came from the millennial generation, female, married from a low to lower-middle-income class, and frequently used online food delivery service platforms twice to three times a week during the COVID-19 pandemic.
2. Factors that significantly influence respondents' preferences and behavior as users and consumers of online food delivery services are, from highest to lowest in ranking, convenience, perceived severity, price, actual use, intention to use, and hedonic motivation.
3. Both service quality (SERVQUAL) of online food delivery providers and perceived trust were the primary factors affecting their loyalty to online food delivery services during the pandemic, followed by customer satisfaction.
4. Convenience, perceived severity, and price, have highly significant relationships with customer satisfaction, service quality, and perceived trust.
5. When grouped according to profile, age is highly significant to service quality, civil status is highly significant to customer satisfaction, and sex, net monthly income, and frequency of ordering online are highly significant to perceived trust.
6. To sustain the growth of food delivery service businesses, an action plan can improve their operations, enhance customer satisfaction, and boost profitability in the post-pandemic period.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the researcher offers the following recommendations:
1. Online food delivery companies can enhance their operations by upgrading their systems and improving algorithms. These are achievable through route optimization, customized ordering options, and expanding delivery coverage to reach customers more efficiently and provide a personalized experience.
2. To expand their market, online food delivery companies can target Generation Z customers who significantly influence household purchase decisions. They can also form partnerships with new-breed restaurants to cater to wide range of customer preferences.
3. Improving marketing strategies is crucial for online food delivery companies. Offering promotions and discounts through e-vouchers, gift certificates, loyalty cards, and e-game point systems can attract customers and incentivize them to use food delivery services.
4. Enhancing service quality is essential. Online food delivery companies can provide regular in-house training for delivery drivers and front-line staff. Additionally, implementing a customer service system that is more accessible and personalized can assist customers with their inquiries, feedback, and complaints.
5. Local governments can support large online food delivery platforms and local players in Lipa City by promoting their businesses through collaboration in events such as Food Expos, exhibits, sponsorship fairs, and other initiatives.
6. Future studies can explore other aspects of food delivery platforms, such as contingency plans, bulk delivery vehicles, and customer-centric training for delivery staff, to continuously improve their systems and services to meet evolving needs and demands of customers.

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INVESTIGATING PRE-SERVICE TEACHER'S PEDADO-GICAL CONTENT KNOWLEDGE ON K12 STANDARD CURRICULUM: SELECTED PUBLIC ELEMENTARY SCHOOLS IN CAMARINES-NORTE AN EVALUATION

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ABSTRACT

The vital role of teachers in shaping students' learning experiences emphasizes the necessity of possessing comprehensive and continually updated professional knowledge. An essential aspect of this expertise involves the cultivation of Pedagogical Content Knowledge (PCK) right from the beginning of teachers' education. Although subject-matter expertise is important, effective teaching requires more than a deep comprehension of the content. Teachers must possess subject-matter expertise and a comprehensive understanding of curriculum, students, and teaching practices that impact their instructional approaches. This highlights the need for effective teacher education. Given the circumstances, it is crucial to evaluate the pedagogical content understanding of pre-service secondary teachers, specifically about the subject areas included in the K-12 Curriculum. This paper investigates and evaluates the pre-service teachers' pedagogical content knowledge of the current curriculum. A sample size of 40 teachers was selected using a purposive sampling method. Data collection was done using questionnaires. The sampling frame target demographic consists of pre-service teachers in their fourth year of the teacher education program. The participants were selectively recruited from the fourth year of the pre-service teacher program, guaranteeing that they have progressed through the pivotal phases of their education. The result shows that Pre-service teachers are highly knowledgeable on the content knowledge of the K-12 Standard Curriculum. Also, Pre-service teachers are moderately knowledgeable about the pedagogical content knowledge of the K-12 Standard Curriculum.

INTRODUCTION

Ensuring high-quality education is fundamental for imparting the necessary knowledge, attitudes, and practices to students by the United Nations Sustainable Development Agenda 2030. The vital role of teachers in shaping students' learning experiences emphasizes the necessity of possessing comprehensive and continually updated professional knowledge. An essential aspect of this expertise involves the cultivation of Pedagogical Content Knowledge (PCK) right from the beginning of teachers' education.

Preservice instructors in teacher education programs face numerous learning, teaching, and curriculum challenges. Although subject-matter expertise is important, effective teaching requires more than a deep comprehension of the content. Teachers must possess subject-matter expertise and a comprehensive understanding of curriculum, students, and teaching practices that impact their instructional approaches.

Shulman's PCK model highlights the importance of teachers' comprehensive grasp of subject content and pedagogical expertise to facilitate effective teaching. This entails understanding the complex interplay among content, pedagogy, curriculum, and other realms of knowledge (as mentioned in Aksu & KUL, 2016). The K to 12 Curriculum was implemented to revitalize education in response to the stagnant academic performance of Filipino pupils. The effective implementation of this program depends on the proficiency of teachers skilled at navigating novel methodologies and information.

According to the Teacher Education Development Study (TEDS), secondary school teachers in the Philippines were ranked seventh in their pedagogical content knowledge (PCK). This highlights the urgent need for effective teacher education. Given the circumstances, it is crucial to evaluate the pedagogical content understanding of pre-service secondary teachers, specifically about the subject areas included in the K-12 Curriculum. This study investigates and evaluates the effectiveness of pre-service teachers' pedagogical content knowledge about the K-12 standard curriculum.

Statement of Objectives

This study aims to investigate Pre-Service Teachers' pedagogical content knowledge on K-12 Standard Curriculum.

Specifically, it aims to:
1. Determine the demographic profile of the respondents in terms of:
    1.1 Age
    1.2 Gender
    1.3 Specialization.
2. Determine the level of content knowledge of pre-service teachers on K-12 Curriculum in terms of:
    2.1 Common Content Knowledge (CCK)
    2.2 Specialized Content Knowledge (SCK).
3. Determine the level of pedagogical content knowledge of pre-service teachers on K-12 Curriculum in terms of:
    2.1 Knowledge of Content and Teaching (KCT)
    2.2 Knowledge of Content and Students (KCT).
4. Is there any significant relationship between the profile of the respondents and their content knowledge?
5. Is there any significant relationship between the profile of the respondents and their pedagogical knowledge?

METHODOLOGY

Research Design

The study employs a quantitative research strategy, specifically adopting a cross-sectional technique. The study seeks to examine the pedagogical content knowledge of Pre-Service Teachers within the framework of the K-12 Standard Curriculum, with a particular emphasis on demographic profiles, content knowledge, and pedagogical content knowledge. The study will utilize a descriptive research approach to accomplish the initial objectives of the demographic profile, including age, gender, and specialization. The demographic features of the respondents will be summarized and analyzed using descriptive statistics, such as means and percentages.

Participants and Sampling Techniques

The study used purposive sampling as the sampling method, specifically focusing on pre-service teachers enrolled in the secondary education program. Purposive sampling is a deliberate sampling strategy that involves selecting participants based on certain criteria relevant to the study's aims. The choice to employ purposive sampling was motivated by the necessity to guarantee that the chosen participants possess adequate pedagogical and subject knowledge pertinent to the study's emphasis on the K 12 Standard Curriculum. The target demographic consists of pre-service teachers in their fourth year of the teacher education program. The participants were selectively recruited from the fourth year of the pre-service teacher program, guaranteeing that they have progressed through the pivotal phases of their education. Participants are anticipated to have acquired a significant amount of the teaching methods and subject knowledge specified in their university syllabi. Furthermore, they are highly attuned to the K-12 curriculum, closely matching the study's goals.

The research localities are based on the five universities in the 3rd district of Camarines Sur. The purpose of this geographical concentration was to encompass a wide range of pre-service teachers from various academic institutions. The sample size of 40 pre-service teachers was selected based on pragmatic considerations, such as the accessibility and readiness of participants who met the requirements.

The sample size is considered enough to achieve the study's objectives and strikes a compromise between being manageable and representative.

Research Instrument

The current study included three scales. The pre-service science teachers' background information was acquired using the demographic characteristics section of the instrument, which inquired about their age, gender, and specialization.

Procedures

The data collection process for this study is specifically developed to fit with the research objectives and guarantee the acquisition of relevant information. Initially, the procedure started with establishing a partnership with the education departments of specific universities in the 3rd district of Camarines Sur. The researcher clearly states the study's goals and requests approval for data collection. Subsequently, researchers choose potential participants from the group of pre-service teachers in their fourth year of secondary education program. After this, the researcher shared comprehensive and explicit details about the research, ensuring clarity and openness regarding the objectives, methodologies, and anticipated results. Following the administration of informed consent forms to participants, it is vital to specifically articulate their voluntary engagement, the confidentiality of their information, and their unrestricted freedom to withdraw at any moment without facing any negative consequences. This was followed by the distribution of self-administered surveys to chosen pre-service educators. The researcher ensured that completed questionnaires were collected within a set time frame, providing participants ample time to respond.

Data Analysis

The following statistical tools were utilized in analyzing the data gathered.

Frequency distribution and percentage was applied to present and describe the data gathered in terms of the socio-demographic profile of the respondents.

Ranking and Likert Scale was used to show the ranking of the respondents' ratings. A 4-point Likert scale was utilized for high accuracy of description.

Weighted Mean was used to describe the data scale on the questionnaire. WM has an interpretation based on its corresponding legends.

ANOVA (Analysis of Variance) is a statistical technique used to compare means among two or more groups

RESULTS AND DISCUSSIONS

This chapter presents, analyzes, and interprets the data gathered using appropriate statistical tools. This presentation is sorted with the specific questions presented on the rationale of this study. The data were presented in tabular form.

Table 1: Profile of the Respondents
1.1 By Age

Age	Frequency	Percentage	Rank
21-30 years old	29	72.5 %	1
31-40 years old	8	20 %	2
41-50 years old	3	7.5 %	3
Total:	**40**	**100 %**	

In Table 1.1, the profile of the respondents is presented in terms of age. It is observed that the age group of 21-30 years old has the highest frequency count, with a total of twenty-nine respondents, which corresponds to 72.5% of the total sample. The data indicates that a significant proportion of the participants belong to the conventional age range of 21-30 years.

1.2 By Sex

Sex	Frequency	Percentage	Rank
Male	12	30 %	2
Female	28	70 %	1
Total:	**40**	100 %	

Table 1.2 shows the profile of the respondents by sex, where females got the highest frequency count of twenty-eight, equivalent to 70%. The present data presents the outcomes of a study conducted by the World Bank about the proportion of female educators in the Philippines during the year 2021. According to the research findings, the data reveals the % of female teachers in the country during the specified year was 87.63%. The analysis of the available data indicates a notable prevalence of females in the teaching profession in the Philippines.

The observed high percentage suggests that during the specified period, a substantial proportion of teachers in the country were of the female gender. The research findings provide insights into the gender distribution observed within the teaching profession, revealing a significant overrepresentation of women in this field. The provided information holds potential value in comprehending the gender dynamics and trends within the education sector of the Philippines during the specified temporal scope.

1.3 Specialization

Subject	Frequency	Percentage	Rank
Science	7	17.5 %	3
Language Subjects	23	57.5 %	1
Mathematics	8	20 %	2
Technical and Livelihood Subjects	2	5 %	4
Total:	**40**	**100 %**	

Table 1.3 shows the profile of respondents in terms of specialization, where language subjects got the highest frequency count of twenty-three, equivalent to 57.5%. The data analysis suggests that the specialization in language subjects emerged as the participants' most favored area of focus. The observed pattern may suggest a notable inclination or emphasis on language-related disciplines among the surveyed individuals.

Table 2: Level of Content Knowledge on K-12 Curriculum
2.1 In terms of Common Content Knowledge (CCK)

Items	Weighted Mean	Verbal Interpretation	Rank
Basic Concept of General Education subjects	3.37	Highly Knowledgeable	3
Facts and Vocabularies of General Education subjects	3.72	Highly Knowledgeable	1
Theories and Principles underlying General Education subjects	3.54	Highly Knowledgeable	2
Overall Mean:	**3.54**	**Highly Knowledgeable**	

Legend: 1.00- 1.74 (No knowledge at all) 1.75- 2.49 (A little knowledge)
2.50-3.24 (Knowledgeable) 3.25-4.00 (Highly Knowledgeable)

Table 2.1 shows the level of content knowledge in the K-12 Curriculum in terms of common content knowledge, where "facts and vocabularies of general education subjects" got the highest weighted mean with the verbal interpretation of highly knowledgeable. This means Pre-service teachers frequently exhibit substantial expertise in factual information and vocabulary pertaining to various subjects within general education. This can be attributed to their rigorous academic training and comprehensive preparation within teacher education programs. The curriculum of these programs typically encompasses a di-

verse array of general education subjects, including but not limited to mathematics, science, social studies, and language arts. Using scientific theory-derived knowledge can be a valuable tool for teachers to analyze their daily instructional practices critically.

Table 2.2 shows the level of content knowledge in the K-12 Curriculum in terms of specialized content knowledge, where "Facts and Vocabularies of Major subjects" got the highest weighted mean of 3.46 with verbal interpretation of highly knowledgeable. Pre-service teachers are subjected to a comprehensive curriculum in teacher education programs that significantly emphasizes acquiring content knowledge about their selected major subjects. The researchers thoroughly examined the factual information, conceptual frameworks, theoretical foundations, and specialized terminology pertaining to their particular area of specialization. The specialized training provided to individuals ensures the development of a comprehensive understanding of the subject matter they will be responsible for teaching.

2.2 In terms of Specialized Content Knowledge (SCK)

Items	Weighted Mean	Verbal Interpretation	Rank
Correcting student's misconceptions on content	2.74	Knowledgeable	3
Facts and Vocabularies of Major subjects	3.46	Highly Knowledgeable	1
Theories and Principles underlying Major subjects	3.24	Knowledgeable	2
Overall Mean:	**3.15**	**Knowledgeable**	

Legend: 1.00- 1.74 (no knowledge at all) 1.75- 2.49 (A little knowledge)
2.50-3.24 (Knowledgeable) 3.25-4.00 (Highly Knowledgeable)

Table 3: Level of Pedagogical Content Knowledge on K-12 Curriculum
3.1 In terms of Knowledge of Content and Teaching (KCT)

Items	Weighted Mean	Verbal Interpretation	Rank
Various teaching approaches delivery concepts to learner	2.27	Knowledgeable	3
Various teaching strategies and technique in creative discussion of content	3.55	Highly Knowledgeable	1
Appropriate instructional materials in presenting content	3.23	Knowledgeable	2
Overall Mean:	**3.02**	**Knowledgeable**	

Legend: 1.00- 1.74 (no knowledge at all) 1.75- 2.49 (A little knowledge)
2.50-3.24 (Knowledgeable) 3.25-4.00 (Highly Knowledgeable)

Table 3.1 shows the level of pedagogical content knowledge in the K-12 Curriculum regarding content and teaching.

Table 3.2 shows the level of pedagogical content knowledge on K-12 Curriculum in terms of Knowledge of Content and Students (KCT) where "Personalized strategy in improving students' learning capabilities on difficult contents" got the highest weighted mean of 3.20 with verbal interpretation of knowledgeable.

3.2 In terms of Knowledge of Content and Students (KCT)

Items	Weighted Mean	Verbal Interpretation	Rank
Identifying learner's difficulties on absorbing content	3.18	Knowledgeable	2
Correcting learner's errors and misconception using effective strategy	2.51	Knowledgeable	3
Personalized strategy in improving students' learning capabilities on difficult contents	3.20	Knowledgeable	1
Overall Mean:	**2.96**	**Knowledgeable**	

Legend: 1.00- 1.74 (no knowledge at all) 1.75- 2.49 (A little knowledge)
2.50-3.24 (Knowledgeable) 3.25-4.00 (Highly Knowledgeable)

The consideration of educators' preparedness to contribute to system-wide initiatives is crucial in the context of increased efforts to enhance professional learning (PL). An avenue for exploring these considerations involves conducting an analysis to determine if professional standards play a role in shaping the structure and content of educator preparation programs (EPPs) with the aim of enhancing candidates' readiness for implementing complex personalized learning (PL) approaches.

Table 4: Significant relationship between profile of respondents and their perceived level of content knowledge

Relationship of:	R-value	P- value	Decision
Age			
Common Content Knowledge (CCK)	0.28	.080133	**Not Significant** at $p > 0.05$
Specialized Content Knowledge (SCK)	0.22	.172548	**Not Significant** at $p > 0.05$
Sex			
Common Content Knowledge (CCK)	0.19	.0240277	**Not Significant** at $p > 0.05$
Specialized Content Knowledge (SCK)	0.25	.11975	**Not Significant** at $p > 0.05$
Specialization			
Common Content Knowledge (CCK)	0.78	.00001.	**Significant** at $p < 0.05$
Specialized Content Knowledge (SCK)	0.92	.00001.	**Significant** at $p < 0.05$

It was found that there was a significant relationship between the profile of the respondents in terms of specialization and the Common Content Knowledge and Specialized Content under their perceived level of content knowledge. This suggests that pre-service teachers who have chosen to specialize in a specific field or subject area may possess a greater depth of content knowledge when compared to their counterparts who have pursued a more general or broad specialization. Specialization has an impact on the development of pre-service teachers' content knowledge. This includes common content, which refers to knowledge applicable across various disciplines or subjects, and specialized content, which pertains to knowledge specific to a particular field or subject. Two emerging bodies of literature offer strong evidence in favor of the benefits of teacher specialization.

Table 5: Significant relationship between profile of respondents and their perceived level of pedagogical knowledge

Relationship of:	R-value	P- value	Decision
Age			
Knowledge of Content and Teaching (KCT)	0.11	.499234	**Not Significant** at $P > 0.05$
Knowledge of Content and Student (KCS)	0.17	.294299	**Not Significant** at $p > 0.05$
Sex			
Knowledge of Content and Teaching (KCT)	0.07	.0667772	**Not Significant** at $p > 0.05$
Knowledge of Content and Student (KCS)	0.13	.423988	**Not Significant** at $p > 0.05$
Specialization			
Knowledge of Content and Teaching (KCT)	0.37	.018775	**Significant** at $p < 0.05$
Knowledge of Content and Student (KCS)	0.29	.069495.	**Not Significant** at $p > 0.05$

Lastly, pre-service teachers often view their mentors as role models, which can lead to highly productive and effective teaching outcomes for students (Roness, 2010). It has been found that teachers with a greater knowledge of the subject matter prefer to ask higher-level questions, engage students in the sessions, and allow for more student-led activities. This finding supports the argument made by Wenglinksy (2020).

CONCLUSIONS

The following conclusions were drawn:
1. Pre-service teachers are highly knowledgeable on the content knowledge of the K-12 Standard Curriculum.
2. Pre-service teachers are moderately knowledgeable about the pedagogical content knowledge of the K-12 Standard Curriculum.
3. There is a significant relationship between pre-service teachers' specialization and pedagogical content knowledge.

RECOMMENDATIONS

Based on the summary of findings and conclusion mentioned above, the researchers recommend the following:
1. Propose a strategic educational plan for improving the pedagogical content knowledge of pre-service teachers, focusing on Knowledge of Content and Students (KCT).
2. Conduct an in-depth study on the modifying factors that directly describe the relationship between the specialization and pedagogical content knowledge of pre-service teachers.
3. Conduct of similar study in a wider scope is recommended.

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ROLE OF LEARNING MANAGEMENT SOFTWARE (LMS) AS THE NEW INSTRUCTIONAL APPROACH: OPPORTUNITIES AND CHALLENGES SELECTED PUBLIC ELEMENTARY SCHOOLS IN CAMARINES-NORTE

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ABSTRACT

In response to the COVID-19 pandemic, some educational establishments adopted online learning, employing synchronous and asynchronous methods to guarantee continuous learning (Darius et al., 2021). This increased dependence on online educational resources, including language applications, virtual tutoring, video conferencing, and learning management systems (LMS). LMS is software designed to manage and monitor teaching and learning activities. It enables teachers and students to share learning materials, conduct tests and assessments, and facilitate communication through an online platform. However, previous research needs to be revised in the study of Learning Management Systems (LMS) in relation to the latest advancements in education. Researchers saw the need to conduct research that guides educational institutions and teachers on effectively utilizing resources to enhance teaching and management. Thus, this paper seeks to obtain instructors' viewpoints regarding utilizing LMS, with a specific focus on the opportunities and challenges associated with it. A sample size of 30 teachers was selected using the purposive sampling method. Using a non-random sampling technique, purposeful sampling, participants are chosen according to predetermined traits that complement the study's goals. Data collection was done using questionnaires. Teachers who actively use LMS in their service make up the target group. The result shows that educators find LSM helpful in monitoring assignment and activity submission, flexibility of time and place of utilization, and effectiveness in giving tasks and activities. Also, the findings suggest that educators find LSM's structure user-friendly and that it has a good announcement system for the new upload of learning materials. Additionally, educators encountered challenges using LSM, including a lack of interpersonal interaction with learners, experience and proper training, and an unstable LMS system, making it vulnerable to software errors.

INTRODUCTION

The emergence of COVID-19 in early 2020 caused substantial disturbances, particularly in education. Globally, educational institutions shut down in compliance with social distancing regulations, resulting in a cessation of all academic, curricular, and co-curricular endeavors, with an unpredictable outlook for the future. In response to these difficulties, some educational establishments adopted online learning, employing synchronous and asynchronous methods to guarantee continuous learning (Darius et al., 2021). The COVID-19 pandemic has increased the dependence on online educational resources, including language applications, virtual tutoring, video conferencing, and learning management systems (LMS). This scenario highlighted the necessity for a strong online learning system that can provide uninterrupted instruction despite external disturbances (Lederman, 2020).

A Learning Management System (LMS), also referred to as a Virtual Learning Environment (VLE) (Rhode et al., 2017), is software designed to manage and monitor teaching and learning activities. It enables teachers and students to share learning materials, conduct tests and assessments, and facilitate communication through an online platform. In their study, Susanto et al. (2018) defined LMS as software enabling students, content authors, lecturers, and administrators to access educational information online. The architecture and interface of a Learning Management System (LMS) differ depending on

whether it is a commercial product or built upon a free open domain. Additionally, LMSs can be utilized in many ways to cater to users' specific requirements. Nevertheless, as stated by Santana et al. (2021), all Learning Management Systems (LMSs) share a common characteristic in that they offer users the means to execute four fundamental functions: The four main functions of this platform: 1) creating and distributing educational materials, 2) facilitating communication between educators and learners, 3) evaluating students' advancement, and 4) overseeing course content and students' educational tasks.

Previous research conducted by Bach, Domingues, and Walter (2013) and Zawacki-Richter, Bäcker, and Sebastian Vogt (2009) highlights deficiencies in the study of Learning Management Systems (LMS) about the latest advancements in the context of education. Researchers saw the need to conduct research that guides educational institutions and teachers on effectively utilizing resources to enhance teaching and management. In the current educational environment, technology has introduced a newly developed Learning Management System (LMS), a shared platform for teachers to create and distribute online learning activities. The study emphasizes the promise of LMS as a novel instructional approach to learning, offering users flexibility and enabling chances for critical pedagogy and technological integration (Green & Chewning, 2020). This current study seeks to obtain instructors' viewpoints regarding utilizing Learning Management Systems (LMS), with a specific focus on the opportunities and challenges associated with it.

Statement of objectives

This study aims to describe the role of Learning Management Software (LMS) as the new instructional approach. However, specifically, it aims to:
1. Determine the demographic profile of the respondents in terms of:
    1.1 Age
    1.2 Gender
    1.3 Technological Capability.
2. Determine the opportunities brought by LMS in terms of:
    2.1 Usefulness
    2.2 Ease of Use.
3. Determine the challenges experienced by the educators in using LMS.
4. Determine whether there is a significant relationship between the demographic profile of the respondents and their perceived usefulness of LMS.
5. Determine whether there is a significant relationship between the demographic profile of the respondents and their perceived ease of use of LMS.

METHODOLOGY

Research Design

This study's research design is quantitative, using a descriptive correlation design.

A succinct overview of the respondents' demographic profile, the opportunities provided by LMS (usefulness and simplicity of use), and the difficulties experienced by educators will be provided using descriptive statistics. However, the correlation component of the design is analyzing the links between various factors, specifically investigating if the respondents' demographic profile and their perceptions of the LMS's utility and convenience of use are significantly correlated. This correlation analysis sheds light on any possible relationships or trends in the data.

Participants and Sampling Techniques

Purposive sampling is used in this study, focusing on secondary school program teachers. Using a non-random sampling technique, purposeful sampling, participants are chosen according to predetermined traits that complement the study's goals. The necessity to guarantee that the chosen participants had adequate pedagogical and subject expertise pertinent to the study's focus on LMS led to the adoption of purposive sampling. Teachers who actively use LMS in their service make up the target group. Five public secondary schools in Camarines Sur's 5th district were the focus of the investigation. The sample size of thirty teachers was chosen based on pragmatic factors, like participant availability and willingness to meet the requirements.

Research Instrument

This study utilized a quantitative research technique and employed a structured questionnaire as the main tool for gathering data. The questionnaire was developed to explore instructors' viewpoints on the Learning Management System (LMS), their usage of LMS technologies, and the difficulties faced during the process. The design of the questionnaire was influenced by the theoretical framework discussed earlier and pertinent research in the subject. The questionnaire is structured into four separate sections that allow a thorough examination of the research objectives.

Data Analysis

In order to conduct an analysis of the data that was gathered, the following statistical techniques were applied.

Both the frequency distribution and the percentage were utilized in order to show and describe the data that was acquired in relation to the socio demographic profile of the individuals who responded.

For the purpose of displaying the ranking of the ratings provided by the respondents, a Likert scale and ranking will be utilized. In order to get a high level of accuracy in the description, a Likert scale is applied.

For the purpose of describing the data scale on the questionnaire, the weighted mean was utilized. In accordance with the legends that correspond to it, WM has an interpretation.

For the purpose of determining whether or not the variables in this study have a significant relationship, the Pearson Correlation Coefficient was utilized. For the purpose of this particular investigation, this instrument was utilized to ascertain whether or not there is a substantial association between the profile of the respondents and their perceptions of LMS.

RESULTS AND DISCUSSIONS

This chapter present analyzed, and interpreted the data gathered using appropriated statistical tools. This presentation is sorted with the specific questions presented on the rationale of this study. The data were presented in the tabular form.

Table 1: Profile of the Respondents
1.1 By Age

Age	Frequency	Percentage	Rank
21-30 years old	18	60 %	1
31-40 years old	7	23.33 %	2
41-50 years old	5	16.67 %	3
Total:	**30**	100 %	

The age group of 21-30 years old exhibited the highest frequency count, totaling eighteen individuals or 60 % securing the top rank among the respondents who used LMS, as outlined in Table 1.1. In contrast, the age bracket of 41-50 years old recorded the lowest frequency count, with just five individual or 16.67 %, placing it at the fourth rank.

1.2 By Sex

Sex	Frequency	Percentage	Rank
Male	17	56.67 %	1
Female	13	43.33 %	2
Total:	**30**	100 %	

The demographic distribution of respondents based on gender is presented in Table 1.2. The analysis of the collected data indicates that a significant proportion of the participants in the study are male. This group represents the largest frequency, consisting of 17 individuals, which corresponds to approximately 56.67% of the total participants. In contrast, the remaining 43.33% of participants in the study are of the female gender.

<h3 style="text-align:center">1.3 Technological Capability</h3>

Level	Frequency	Percentage	Rank
Basic Innovative	0	0 %	4
Basic Operation	10	33.33 %	2
Intermediate Operation	12	40 %	1
Advanced Operation	8	26.67 %	3
Total:	**30**	100 %	

Table 1.3 presents a comprehensive analysis of the technological competencies exhibited by the participants in this study, offering valuable insights into the skill levels of educators, particularly those involved in the utilization of Learning Management Systems (LMS). The analysis of the data indicates that there is a significant prevalence of respondents with Level 3 competency. These teachers possess intermediate operational skills in utilizing technological tools. They constitute 40% of the respondents, which is the highest frequency count observed in the dataset. The data suggests that a notable portion of the participants exhibit a moderate level of proficiency, indicating a satisfactory level of familiarity with technology.

Additionally, the significant 33.33%, proportion of the participants, demonstrate Level 2 skills. These skills can be characterized as basic operational competence, indicating a fundamental understanding and ability to perform tasks within the given context. The observed collective exhibits a fundamental proficiency in the navigation and utilization of technological tools for essential tasks. In contrast, 26.67%, exhibit level of proficiency in operational skills, thereby positioning them within the esteemed Level 4 competency category. The identified group of educators is presumed to possess a heightened level of competence in navigating complex technological endeavors, thereby demonstrating an elevated proficiency in the effective utilization of technology.

The table prominently showcases a noteworthy finding, specifically indicating that there is a complete absence, or 0%, of respondents possessing fundamental innovative skills in the domain of technology utilization. The findings of this study indicate that the sampled group lacks individuals who possess introductory innovative technological skills. The lack of participants within this particular category may suggest a preference for traditional or well-established applications of technology among the teachers who were surveyed.

Table 2.1 presents a comprehensive analysis of the various opportunities offered by Learning Management Systems (LMS) and their perceived utility, as reported by the participants in this study. The obtained weighted mean (WM) of 3.98 indicates a notable level of agreement among the participants, suggesting that the Learning Management System (LMS) is perceived as highly effective in enabling the convenient monitoring of assignment and activity submissions. The aforementioned statement highlights the notable efficacy of the system in optimizing the process of tracking, thereby augmenting the overall operational efficiency within educational environments. Furthermore, the collected data presents a significant weighted mean (WM) value of 3.75, which suggests a consensus among the participants regarding the adaptability that a Learning Management System (LMS) offers in the context of teaching.

<h3 style="text-align:center">Table 2: Opportunities brought by LMS
2.1 In terms of Usefulness</h3>

Items	Weighted Mean	Verbal Interpretation	Rank
Helpful in giving instruction information clear and detailed	3.22	Agree	8
Helpful in making Teacher-Learner and Learner–learner interaction convenient	3.71	Strongly Agree	4
Helpful in creating online group discussion	2.52	Agree	10
Effectively assists in giving performance tasks and activities	3.77	Strongly Agree	3
Helpful in sharing or creating access to a variety of learning resources	3.45	Strongly Agree	5
Helpful in organizing and managing course content like lecture notes	3.30	Strongly Agree	6

Promoting students' engagement in learning activities	2.57	Agree	9
Convenient monitoring for assignment and activity submission	3.98	Strongly Agree	1
More convenient for testing and assessment	3.23	Agree	7
Teaching flexibly anywhere and at anytime	3.75	Strongly Agree	2
Overall Mean:	**3.35**	**Strongly Agree**	

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

This finding underscores the importance placed on the capability to conduct instructional activities in various locations and at any given moment. Moreover, the participants' WM of 3.77 indicates a strong consensus among them regarding the significant role played by the Learning Management System (LMS) in efficiently facilitating the management of performance tasks and activities. The aforementioned statement underscores the significant role played by the platform in facilitating the instructional process, thereby augmenting the overall quality of the teaching and learning encounter. In summary, the findings presented in Table 2.1 highlight the various advantages of utilizing a Learning Management System (LMS). These benefits encompass a wide range of areas, including the efficient monitoring of educational progress, increased learner interaction, and the provision of comprehensive data based for diverse content knowledge.

2.2 In terms of Ease of Use

Items	Weighted Mean	Verbal Interpretation	Rank
Every upload is arranged in a user-friendly structure	3.18	Agree	2
Announcement system speeds up the process of engaging with new uploads	3.23	Agree	1
Features a contemporary design that facilitates adaptable accessibility	2.56	Agree	3
Every guideline is formulated in a straightforward format	1.76	Disagree	5
Possess a feature for responsive support in the event of software errors	2.03	Disagree	4
Overall Mean:	**2.55**	**Agree**	

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

The opportunity brought by LMS in terms of ease of use is presented in this table. According to the statistics, the top ranking was with WM of 3.23, meaning educators agree that LMS feature ease of use in announcement system which speeds up the process of engaging with new upload learning materials. Also, with WM of 3.18, educators agree that they find LMS's design having a user-friendly structure.

Table 3: Challenges encountered in utilizing LMS

Challenges	Weighted Mean	Verbal Interpretation	Rank
Lack of experience and proper training in using LMS	3.42	Strongly Agree	2
Student's lack of motivation in using LMS tools	3.13	Agree	6
LMS Interface is confusing	3.23	Agree	4
Limited internet access restraint from using LMS	2.07	Disagree	8
Lack of technical support restraint from using LMS	3.18	Agree	5
Lack of security and privacy in using LMS	1.56	Strongly Disagree	10
LMS has unstable system, vulnerable to software errors	3.33	Agree	3
Lack of interpersonal interaction to learner	3.74	Strongly Agree	1
Unused functions or not useful features of LMS	2.45	Disagree	7
LMS is time consuming	1.76	Strongly Disagree	9

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

Table 3.1 presents a comprehensive analysis of the challenges encountered by educators during the implementation of Learning Management Systems (LMS). The challenge that stands out prominently among the various factors is the "Lack of interpersonal interaction with the learner," as indicated by the highest weighted mean score of 3.74. The presented statistic highlights a prevailing consensus within the field of education, indicating the considerable challenge educators encounter in sustaining interpersonal engagement with learners while utilizing Learning Management Systems (LMS).

Table 4: Significant relationship between profile of respondents and their perceived level of usefulness of LMS

Relationship	R-value	P- value	Decision
Age and LMS Level of usefulness	0.56	.001291	**Significant** at p <0.05
Sex and LMS Level of usefulness	0.33	.07492	**Not Significant** at p > 0.05
Level of Technological Capability and LMS Level of usefulness	0.78	.00001	**Significant** at p <0.05

It was found out that there was significant relationship between the age and level of technological capability and the perceived usefulness of LMS.

Table 5: Significant relationship between profile of respondents and their perceived level of Ease of Use of LMS

Relationship	R-value	P- value	Decision
Age and LMS Level of Ease of Use	0.25	.18273	**Not Significant** at p > 0.05
Sex and LMS Level of Ease of Use	0.27	.149029	**Not Significant** at p > 0.05
Level of Technological Capability and LMS Level of Ease of Use	0.86	.00001	**Significant** at p <0.05

The results presented in Table 5 demonstrate that there exists no statistically significant correlation between the age and sex of the participants and their perceived ease of use of Learning Management Systems (LMS). This observation suggests that the level of ease with which educators perceive and interact with Learning Management Systems (LMS) does not exhibit any relevance whether the teacher is male or female, younger or older. In contrast, observation that can be drawn from the previous table, which highlights the notable impact of technological capability on the ease of use of Learning Management Systems (LMS) among educators.

CONCLUSIONS

The following were drawn as conclusions of the study:

1. Educators find LSM helpful in monitoring assignment and activity submission, flexibility of time and place of utilization, and effectiveness in giving tasks and activities. Overall, educators "agree" with the usefulness of LSM.
2. Educators find LSM's structure user-friendly and has a good announcement system for new upload of learning materials.
3. Educators have encountered challenges in using LSM, including a lack of interpersonal interaction with learners, experience and proper training, and an unstable LMS system, making it vulnerable to software errors.
4. There is a significant relationship between the age/technological capability of the respondents and their perceived usefulness of LMS.
5. There is a significant relationship between the technological capability of the respondents and their perceived ease of use of LMS.

RECOMMENDATIONS

Based on the summary of findings and conclusion mentioned above, the researchers recommend the following:

1. Propose a strategic plan for improving the technological capabilities of educators by providing appropriate training and experience in utilizing LSM.
2. Construct an appropriate program minimizing the impact of the top challenges encountered in LSM utilization: lack of experience and proper training, and LMS unstable system making it vulnerable to software errors.
3. Conduct an in-depth study on the linear relationship between age and technological capability of educators toward their perception of LSM utilization.

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EFFECTIVENESS OF PEACE AND ORDER AND PUBLIC SAFETY PLAN IN LIPA CITY

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ABSTRACT

The researcher is interested in studying the difference between the assessment of the officials of selected high and low crime rate barangay of Lipa City regarding crime prevention, law enforcement, and disaster preparedness because they observed a continuous number of crimes happening in the city. The researcher used the descriptive research design and probability sampling. The researcher came up with 90 respondents and used a standardized questionnaire to measure the effectiveness of the POPS Plan in Lipa City. Based on the result of the study, the researchers found out that most of the respondents in the selected barangay with the highest crime rate were aged 45-54 years old, female, and married. The assessment of the official respondents from selected high-crime and low-crime-rate barangays in Lipa City regarding the level of effectiveness of the POPS Plan has significant differences in crime prevention and no significant differences in law enforcement and disaster preparedness. The level of effectiveness of the POPS Plan has highly significant relationships in crime prevention, law enforcement, and disaster preparedness when compared to their age. The level of effectiveness of the POPS Plan has highly significant relationships in crime prevention, law enforcement, and disaster preparedness when compared to their sex. The level of effectiveness of the POPS Plan has highly significant relationships in crime prevention, law enforcement, and disaster preparedness when compared according to their civil status. The study recommends a program for peace and order and public safety plans in different barangays in Lipa City.

Keywords: Peace and Order, Public Safety, Crime Prevention, Law Enforcement, Disaster Preparedness

INTRODUCTION

Peace is described as an environment where individuals and communities are able to develop their potentials fully and attain progress and freely exercise their rights with due regard for others while being equally mindful of their responsibilities while Public Safety refers to the welfare and protection of the general public (Breva, 2020). It is usually expressed as a governmental responsibility. The Peace and Order and Public Safety Plan is a three-year plan consisting of programs and activities to promote peace and order and public safety in a particular locality and consolidated Integrated Area/Community Public Safety Plan of the cities and municipalities within the province as specified in DILG Memorandum Circular No. 2022-118. DILG (2020) in their Year-End Report 2020, it stated that the agency continued to carry out the government's campaign for a whole-of-nation approach to achieving long-term peace development while also stepping up peace and order and public safety services to keep our communities peaceful, safe, and protected, particularly from criminals and lawless elements.

Today, the public order and safety domain face specific challenges. Law enforcement has become increasingly complicated with laws and regulations changing more often and more versatile than ever. Cooperation with an increasing number of organizations and institutions both in the public and the private sector requires a flexible and interactive administrative organization. Keeping track of personnel, activities and the issuing and collecting of fines requires problems.

According to the Department of Public Order and Safety (DPOS) they promote public order, security, and peace in the City. It is mandated to maintain orderliness through the strict implementation of all

existing rules governing land use as well as other rules related to the maintenance of peace and order. The clearing of all public roads of any forms of obstructions is one of its priority mandates. Their mission is to provide services using the pertinent provisions of laws, rules, and regulations for the benefit of the City's constituents with dedication, punctuality, outstanding service, and sincerity. They had vision to be dedicated in serving the people and passionate in upholding the peace, order, and safety of the city, to be an office where service, integrity, and discipline are always observed, and to be a steward of the City helping lead the people towards a progressive and dynamic economy.

Mangilimutan et.al (2020) said that strong community participation and leadership, according to their research make a difference in the implementation of the Peace and Order and Public Safety (POPS) program. Policies that minimize economic and social segregation promote the healthy development of communities. As a result, government agencies should take proactive measures to prevent crime. They also discovered that the barangays' challenges and community leaders' suggestions show that when the government and stakeholders work together to implement a program like the POPS, problems are minimized, if not completely eradicated. As a result, it is suggested that the government develop and implement strong economic policies that will create employment corridors, reduce poverty, and improve law enforcement agencies. Similarly, the municipality should address the primary needs of its component villages in the POPS Plan, taking into account their personnel and financial resources limits.

According to the American psychologist Abraham Maslow's hierarchy of needs, Maslow's second tier on his Hierarchy of Needs is safety and security. Being able to feel safe and secure is a primal need that we all face and that must be met before we can face other higher levels of need. The need for safety and security is not only inherent but is also an instinctual need. Man craves the need to be safe, sound and free from attacks of any kind. Man as a social animal feels obligated to constantly interact, and in this course of this intermingling, man is bound to offend and be offended, man is bound to launch and suffer spasm, hence the need to secure and save man from man, for man first of all is the enemy of man. One would not blame God for giving man the task of dominating and subduing the earth since man has misconstrued this divine assignment to mean subjugating his fellow man. In view of this there is no gainsaying that safety is not just a requisite but is a necessity. Little wonder in his theory of human needs, Abraham Maslow gave the safety and security need a favorable position is his five-tiered hierarchy of needs. It is based on this premise that one begins to look at how man came to be in dire need of safety and security and how well this grim desire has been met. The society is now in a state of one-eyed -slumber where one does not sleep with two eyes closed for fear of attack and reprisal attack. The present study focused on assessing the effectiveness of peace and order and the public safety plan. (Mcleod, 2024)

STATEMENT OF THE PROBLEM

The research aimed to assess the effectiveness of Peace and Order and Public Safety Plan in Lipa City. The research intended to answer the following questions:
1. What is the demographic profile of the respondents in terms of:
    1.1 sex,
    1.2 age, and
    1.3 civil status?
2. What is the extent of effectiveness of POPS Plan of Lipa City government as assessed by the Officials of selected high and low crime rate barangays in Lipa City in terms of:
    2.1 crime prevention,
    2.2 law enforcement, and
    2.3 disaster preparedness?
3. Is there a significant difference between the assessment of the Officials of selected high and low crime rate barangays of Lipa City regarding the aforementioned variables?
4. Is there a significant relationship between the demographic profile of the Officials of selected high and low crime rate barangays of Lipa City and their assessment on the effectiveness of POPS Plan?

METHODOLOGY

Researcher employed a quantitative descriptive method that aimed to describe a research problem accurately. It is concerned with collecting numerical data and generalizing. It across individuals or explaining a specific situation (Creswell, 2013). The participants of this study were the officials from selected high and low crime rate barangays in Lipa City who had direct knowledge of the public safety program. The researcher chose three barangays with high crime rates and another three barangays with low crime rates. The three barangays that had high crime rates were Tambo, Marawoy, and Balintawak while the three barangays with low crime rate were Sico, San Sebastian and Dagatan. In each barangay the researcher got 15 officials as respondents of their study a total of 90. They were considered the target population of the studied area because they were in the best position to provide the researchers with the information concerning the effectiveness of POPS Plan in Lipa City. To achieve the target population of the respondents, the researchers used probability sampling which would be defined as the method of sampling that utilizes some form of random selection. On the other hand, for the statistical tools, the researcher used the weighted mean, frequency, percentage t-test and Pearson- r.

FINDINGS

Table 1. Demographic Profile of the Respondents

Profile	High Crime Rate			Low Crime Rate		
	F	P	R	F	P	R
Age:						
25 – 34	3	6.67	4	1	2.22	4
35 – 44	16	35.56	2	9	20.00	2.5
45 – 54	17	37.78	1	26	57.78	1
55 and above	9	20.00	3	9	20.00	2.5
Total	**45**	**100**		**45**	**100**	
Sex						
Female	23	51.11	1	22	48.89	2
Male	22	48.89	2	23	51.11	1
Total	**45**	**100**		**45**	**100**	
Civil Status:						
Single	6	13.33	2	5	11.11	2.5
Married	36	80.00	1	35	77.78	1
Widowed	3	6.67	3	5	11.11	2.5
Total	**45**	**100**		**45**	**100**	

As stated in Table 1, in terms of the ages of the official-respondents from High Crime Rate Barangay in Lipa City, 45 – 54 years old made the highest frequency count of 17 or 37.78% at rank 1 while 25 – 34 years old got the least frequency count of three or 6.67% at rank 4. On the part of the respondents from the officials of selected Low Crime Rate Barangays, the age range of 45 – 54 years old got the highest frequency count of 26 or 57.78% at rank 1 while 25 – 34 gained one or 2.22% at rank 4.

Based on the result, majority of the respondents from the high crime rate barangay in Lipa City were aged 45-54 years old with a frequency of 17 or a percentage of 37.78 while majority of the respondents from the low crime rate were also aged 45-54 years old with a frequency of 26 or a percentage of 57.78. The overall result shows that many of the respondents ages ranged from 45-54 years old.

With respect to the sex of Official-respondents from selected High Crime Rate Barangays in Lipa City, female yielded the highest frequency count of 23 or 51.11% at rank 1 whereas male garnered the least frequency count of 22 or 48.89% at rank 2. For the sexes of the official-respondents from selected Low Crime Rate Barangays in Lipa City, male made the highest frequency count of 23 or 51.11% at rank 1 while female obtained the least frequency count of 22 or 48.89% at rank 2.

Majority of the respondents from the barangay with high crime rate were female with a frequency of 23 or a percentage of 51.11 while in the barangay with low crime rate majority of the respondents were male with a frequency of 23 or percentage of 51.11.

In terms of civil status 36 or 80% at rank 1 for the official respondents from selected High Crime Rate Barangays were married while three or 6.67% at rank 3 were widowed. Moreover, in terms of civil status, 35 or 77.78% at rank 1 for the Official-respondents from Low Crime Rate Barangays were married. In addition, single and widowed gained the least equal frequency counts of five or 11.11% at ranks 2.5.

Based on the data result, researchers can be assumed that majority of the respondents from the selected high crime rate barangay were married with a frequency of 36 or percentage of 80 while from the selected barangay with low crime rate majority of the respondents were also married with a frequency of 35 or percentage of 77.78. The overall result shows that many of the respondents were married.

Table 2. Extent of Effectiveness of POPS Plan of Lipa City Government as Assessed by the Officials of Selected High and Low Crime Rate Barangays in Lipa City in terms of Crime Prevention

Items	High Crime Rate Barangay			Low Crime Rate Barangay		
	WM	VI	R	WM	VI	R
1. Police visibility in the area through mobile patrol.	3.47	HE	2	3.09	E	5
2. Police visibility in the area through foot patrol.	2.93	E	7.5	2.62	E	8
3. Continuous operation in the area to identify and neutralize syndicated groups.	2.93	E	7.5	2.89	E	7
4. Conduct checkpoint and operation.	3.44	HE	3	3.07	E	6
5. Police officials coordinate with the barangay officials regarding peace and order.	3.49	HE	1	3.38	HE	1
6. Police officers and local government conduct seminars regarding maintaining peace and order.	3.29	HE	6	3.33	HE	2
7. Police and community partnership.	3.38	HE	4	3.31	HE	3
8. Police and city official's response time during reports of bad elements in the area.	3.31	HE	5	3.29	HE	4
Composite Mean	**3.28**	**HE**		**3.12**	**E**	

As revealed in Table 2, for the official-respondent of selected high rate crime barangays in Lipa City, they assessed that Police Officials were highly effective in coordinating with the barangay officials regarding peace and order which made the highest weighted mean of 3.49 and the highest rank of 1.

Based on the analysis of the researcher, it can be seen from the result that majority of the respondents in the barangay with high crime rate answered highly effective that the police officers coordinate with the barangay officials regarding peace and order. From this result, the researchers can be assumed that respondents and police officers' relationship were good.

Meanwhile, the said group of respondents rated that Police visibility in the area through foot patrol, and continuous operation in the area to identify and neutralize syndicated groups were effective which gained the least equal weighted means of 2.93 and least ranks of 7.5.

Based on the analysis of the researcher, it can be seen from the result that majority of the respondents answered that the police visibility in the area through foot patrol and continuous operation in the area to identify and neutralize syndicated groups were effective. From this result, the researchers can be assumed that the respondents were agreed that these two factors were on the least in terms of crime prevention.

For the assessment of the official-respondents from low crime rate barangays in Lipa City, they responded that Police Officials were highly effective in coordinating with the barangay officials regarding peace and order which gained the highest weighted mean of 3.38 and highest rank of 1.

Based on the analysis of the researcher, majority of the respondents in the barangay with low crime rate answered highly effective in the coordination of police officers with the barangay officials regarding peace and order. From this result, the researcher can be assumed that having a good relationship between the police officers and the barangay officials can led to have a successful program which can help lessen or not to have a crime.

Furthermore, the said group of respondents evaluated that police visibility in the area through foot patrol was effective which made the least weighted mean of 2.62 and least rank of 8.

Based on the analysis of the researchers, the barangay with high crime rate majority of the respondents from barangay with low crime rate answered effective for the police visibility in the area through foot patrol which made this at the least rank in terms of crime prevention. The selected barangay with low crime rate showed that they were lack in foot patrol police.

The composite means were 3.28 for high crime rate and 3.12 for low crime rate barangays implied that the POPS Plan of Lipa City was highly effective and effective, respectively in terms of crime prevention. Based on the analysis of the researchers, it can be seen from the result that in terms of crime prevention the respondents from the barangays with high and low crime rate was effective regarding from the POPS Plan in Lipa City.

Table 3. Extent of Effectiveness of POPS Plan of Lipa City Government as Perceived by the Officials of Selected High and Low Crime Rate Barangays in Lipa City in terms of Law Enforcement

Items	High Crime Rate Barangay			Low Crime Rate Barangay		
	WM	VI	R	WM	VI	R
1. Campaign against illegal drugs.	3.44	HE	1	3.49	HE	1
2. Campaign against human trafficking.	3.09	E	3	3.29	HE	2
3. Campaign against prostitution.	2.89	E	4.5	3.02	E	5
4. Enforcement of special laws and ordinances such anti-gambling and illegal structure.	2.80	E	6	3.00	E	6
5. Traffic law enforcement.	2.89	E	4.5	3.20	E	3
6. Enforcement of price tag law including regular compliance monitoring.	2.53	E	8	2.98	E	7
7. Monitoring of price and supply situation of basic necessities and prime commodities.	2.58	E	7	2.62	E	8
8. City government officials conduct information and education regarding consumer vigilance.	3.31	HE	2	3.04	E	4
Composite Mean	**2.94**	**E**		**3.08**	**E**	

As reflected in Table 3, for the official-respondent of selected high-rate crime barangays in Lipa City, they responded that Police Officials were highly effective in campaigning against illegal drugs which yielded the highest weighted mean of 3.44 and the highest rank of 1. Based on the analysis of the researchers, majority of the respondents in the barangay with high crime rate responded highly effective in terms of campaigning against illegal drugs.

Moreover, the said group of respondents affirmed that enforcement of price tag law including regular compliance monitoring were effective which got the least weighted mean of 2.53 and least rank of 8.

Based on the analysis of the researcher, it can be seen from the result that majority of the respondents in the barangay with high crime rate responded effective from the statement that the enforcement of price tag law including regular compliance monitoring which got the least rank. From this result, they must give enough attention from this matter to become a well-community in terms of law enforcement.

With respect to the assessment of the official-respondents from low crime rate barangays in Lipa City, they answered that campaigning against illegal drugs was highly effective which obtained the high-

est weighted mean of 3.49 and highest rank of 1. In addition, the said group of respondents rated that monitoring of price and supply situation of basic necessities and prime commodities was effective which got the least weighted mean of 2.62 and least rank of 8. Based on the analysis of the researcher, majority of the respondents from low crime rare barangays in Lipa City rated highly effective in terms of campaign against illegal drugs. From this result, the researchers can be assumed that in these barangays the campaign against illegal drugs has been executed well, this is one of the reasons that these barangays have low crime rate. While the respondents rated effective the statement of monitoring of price and supply situation of basic necessities and prime commodities which got the least rank. From this result, these barangays must pay attention from this matter for them to have a better community and to continue having a low crime rate barangay in Lipa City.

The composite means were 2.94 for high crime rate and 3.08 for low crime rate barangays affirmed that the POPS Plan of Lipa City were effective in terms of law enforcement. Based on the analysis of the researchers, they can be assumed that the POPS Plan of Lipa City in the barangays with high and low crime rate were effective in terms of law enforcement.

Table 4. Extent of Effectiveness of POPS Plan of Lipa City Government as Perceived by the Officials of Selected High and Low Crime Rate Barangays in Lipa City in terms of Disaster Preparedness

Items	High Crime Rate Barangay			Low Crime Rate Barangay		
	WM	VI	R	WM	VI	R
1. Systematic information dissemination during calamities or disaster.	3.53	HE	1	3.40	HE	1
2. Prompt enforcement of traffic regulations during disaster accident and unforeseen situation that may cause traffic congestion.	3.27	HE	2	3.27	HE	2
3. City officials conduct seminars and install fire safety consciousness awareness and preparedness in the area.	3.04	E	6	3.16	E	4
4. City government conduct inspection on the different houses and establishments for possible occurrence of fire.	3.02	E	7	3.00	E	6
5. Prompt responses from the city government disaster community during calamities and disaster.	3.11	E	4	3.24	E	3
6. Bureau of Fire maintains fire trucks and visible to the community.	3.07	E	5	3.02	E	5
7. Conduct fire safety seminar and fire drill to commercial industrial and institutional establishments and in the area as a whole.	3.24	E	3	2.98	E	7
8. Mobilize bantay karahasan volunteers in the area for prevention of all forms of abuses and discrimination.	3.00	E	8	2.93	E	8
Composite Mean	**3.16**	**E**		**3.13**	**E**	

As written in Table 4, for the official-respondent of selected high rate crime barangays in Lipa City, they agreed that systematic information dissemination during calamities or disaster was highly effective which gained the highest weighted mean of 3.53 and the highest rank of 1. However, the said group of respondents replied that mobilizing bantay karahasan volunteers in the area for prevention of all forms of abuses and discrimination were effective which made the least weighted mean of 3.00 and least rank of 8. Based on the analysis of the researcher, the respondents from the barangay with high crime rate rated the statement systematic information dissemination during calamities or disaster on the highest rank which means it was highly effective.

With regard to the assessment of the official-respondents from low crime rate barangays in Lipa City, they replied that systematic information dissemination during calamities or disaster was highly effective which yielded the highest weighted mean of 3.40 and highest rank of 1. Moreover, the said group of respondents responded that mobilizing bantay karahasan volunteers in the area for prevention of all forms of abuses and discrimination was effective which obtained the least weighted mean of 2.93 and

least rank of 8. Based on the analysis of the researcher, the result simply means that these barangay with low crime rate has a good communication in terms of disseminating information regarding the disasters or calamities.

The composite means of 3.16 for high crime rate and 3.13 for low crime rate barangays inferred that the POPS Plan of Lipa City were effective in terms of disaster preparedness. Based on the analysis of the researcher, the respondents for high and low crime rate barangay agreed that the POPS Plan in Lipa City in terms of disaster preparedness were effective. From the result, the researcher can be assumed that one of the reasons why POPS Plan in terms of disaster preparedness were effective it is just because they have a good communication especially in disseminating information about disasters or calamities.

Table 5. Difference Between the Assessment of the Officials of Selected High and Low Crime Rate Barangays of Lipa City Regarding the Aforementioned Variables

Variables	t-value	pvalue	Decision	Interpretation
Crime Prevention	2.15	0.0343	p<0.05, reject Ho	Significant
Law Enforcement	1.62	0.1088	p>0.05, Failed to Reject Ho	Not Significant
Disaster Preparedness	1.90	0.0607	p>0.05, Failed to Reject Ho	Not Significant

As discussed in Table 5, when the assessment of the official-respondents from selected high crime and low crime rate barangays in Lipa City regarding the level of effectiveness of the POPS Plan, the computed t-value of 2.15 for crime prevention has a corresponding p-value of less than 0.05, thus rejecting the hypothesis. On the contrary, the computed t-values of 1.62 for law enforcement and 1.90 for disaster preparedness have corresponding p-values of more than 0.05, thus failing to reject the hypothesis.

The researcher concluded that the assessment of the official-respondents from selected high crime and low crime rate barangays in Lipa City regarding the level of effectiveness of the POPS Plan have significant differences in terms of crime prevention while the assessment of the official-respondents from selected high crime and low crime rate barangays in Lipa City regarding the level of effectiveness of the POPS Plan in terms of law enforcement and disaster preparedness have no significant differences.

Table 6. Relationship between the Demographic Profile of the Officials of Selected High and Low Crime Rate Barangays of Lipa City and their Assessment on the effectiveness of POPS Plan

Variables	r-value	pvalue	Decision	Interpretation
Age:				
Crime Prevention	0.79	0.0000	p<0.01, Reject Ho	Highly Significant
Law Enforcement	0.86	0.0000	p<0.01, Reject Ho	Highly Significant
Disaster Preparedness	0.91	0.0000	p<0.01, Reject Ho	Highly Significant
Sex:				
Crime Prevention	0.91	0.0000	p<0.01, Reject Ho	Highly Significant
Law Enforcement	0.91	0.0000	p<0.01, Reject Ho	Highly Significant
Disaster Preparedness	0.72	0.0000	p<0.01, Reject Ho	Highly Significant
Civil Status:				
Crime Prevention	0.92	0.0000	p<0.01, Reject Ho	Highly Significant
Law Enforcement	0.94	0.0000	p<0.01, Reject Ho	Highly Significant
Disaster Preparedness	0.87	0.0000	p<0.01, Reject Ho	Highly Significant

As stated in table 6, when the assessment of the Official-respondents from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan were compared according to their age, the computed r-values of 0.79 for crime prevention, 0.86 for law enforcement,

and 0.91 for disaster preparedness have corresponding p-values of less than 0.01, thus rejecting the hypothesis.

According to the respondents, the assessment from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan have high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their age. In addition, when the assessment of the Official-respondents from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan were compared according to their sex, the computed r-values of 0.91 for crime prevention, 0.91 for law enforcement, and 0.72 for disaster preparedness have corresponding p-values of less than 0.01, thus rejecting the hypothesis. These generalized that the assessment of the Official-respondents from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan have high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their sex. Lastly, when the assessment of the Official-respondents from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan were compared according to their civil status, the computed r-values of 0.92 for crime prevention, 0.94 for law enforcement, and 0.87 for disaster preparedness have corresponding p-values of less than 0.01, thus rejecting the hypothesis. These generalized that the assessment of the Official-respondents from High Crime and Low Crime Rate barangays in Lipa City regarding the level of effectiveness of POPS Plan have high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their civil status.

CONCLUSIONS

The assessment of the official respondents from selected high crime and low crime rate barangays in Lipa City regarding the level of effectiveness of the POPS Plan have significant differences in terms of crime prevention, and no significant differences in terms of law enforcement and disaster preparedness. Hence, the level of effectiveness of POPS Plan has high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their age. The level of effectiveness of POPS Plan has high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their sex. The level of effectiveness of POPS Plan has high significant relationships in terms of crime prevention, law enforcement, and disaster preparedness when compared according to their civil status.

RECOMMENDATIONS

Based on the conclusions, the following recommendations were made to further improve the study.
1. The future researchers may use this study wherein they can make all barangay in Lipa City be locale of the study.
2. The researchers recommend guidance program that will help to improve the peace and order and public safety in the community especially with regards in foot patrolling and at the same time to have a better relationship between the members of the community and the police officers.
3. Peace and Order and Public Safety can make use of this study and its developed program in order for them to gain knowledge about the peace and order and public safety plan in different barangay in Lipa City. Peace and Order and Public Safety can also give plan for the solution of the problem in each barangay.
4. Criminology students are suggested to be part of the proposed program. Furthermore, the person under Peace and Order and Public Safety can utilize this study to be aware of the problem and make a solution in each barangay.
5. The future researchers may use this study which serves as resource material to enrich their own studies. The findings of the study would benefit those who, in the future, would pursue studies on conceptual change.

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ORGANIZATIONAL CULTURE, COMMUNICATION STRATEGIES, AND CONFLICT RESOLUTION IN ENHANCING SCHOOL MANAGEMENT WITHIN SELECTED PUBLIC ELEMENTARY SCHOOLS IN CAMARINES NORTE

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ABSTRACT

This study explores the intricate dynamics of school management within selected public elementary schools in Camarines Norte, Philippines. The ever-evolving global educational landscape necessitates a nuanced understanding of the interplay between organizational culture, communication strategies, and conflict resolution to foster effective school administration. The demographic characteristics of the participants reveal a concentration of educators aged 25 to 35, predominantly holding bachelor's degrees and possessing a moderate teaching experience of 6 to 10 years. This foundational understanding sets the stage for a deeper investigation into the organizational culture, leadership behavior, and communication strategies prevailing within these educational institutions. The organizational culture within these schools is characterized by a leadership style that encourages open communication and feedback and creates a calm and stress-free work environment. As perceived by the respondents, leadership behavior emphasizes the prompt resolution of conflicts within teams, fostering a positive working environment. Communication strategies within these institutions exhibit high effectiveness, with a proactive approach to addressing breakdowns that hinder productivity. Additionally, the leaders actively seek and consider employee feedback, further enhancing the efficacy of communication strategies. The study's correlations shed light on the relationships between organizational culture, communication strategies, and conflict resolution effectiveness. The positive correlation between organizational culture and the efficiency of communication strategies signifies the importance of a harmonious leadership style in fostering effective communication.

Keywords: organizational culture, communication strategies, conflict resolution, school management

INTRODUCTION

In the dynamic and interconnected global educational landscape, effective school administration is pivotal and multifaceted, playing a crucial role in nurturing student growth and propelling educational success. Beyond the conventional administrative functions, myriad elements, including nuanced communication strategies, adept conflict resolution approaches, and a robust organizational culture, collectively form the backbone of sound school administration. These elements engage in a complex dance, intricately interacting to shape decision-making processes, foster positive stakeholder Relationships, and enhance overall school effectiveness.

Within the intricate web of global education, where technological advancements, cultural diversity, and pedagogical paradigms continuously evolve, deciphering the interplay of these elements becomes increasingly pronounced. Educational institutions are tasked with navigating this ever-evolving landscape, demanding a comprehensive understanding of how communication, conflict resolution, and organizational culture synergize to impact school administration positively. Scholars like Ma (2022) advocate for a forward-thinking approach, emphasizing the practicality of developing diverse communication strategies within educational institutions to facilitate effective management on a global scale.

In this era of interconnectedness, the effectiveness of school administration transcends geographical boundaries, influencing educational institutions worldwide. A nuanced exploration of these essential components becomes imperative for educational leaders seeking to adapt and thrive amidst the complexities of the global educational environment. The dynamic interplay of communication dynamics, conflict resolution strategies, and organizational culture thus emerges as a cornerstone, shaping the trajectory of effective school administration on a global stage. As educational institutions strive to prepare students for a rapidly changing world, the exploration, and enhancement of these key elements become central to fostering a robust and adaptable educational system on a global scale.

With a distinctive blend of cultural influences, historical contexts, and regional variations, the Philippine education system presents a tapestry of challenges and opportunities. The ongoing quest to achieve educational goals in this dynamic context requires a nuanced understanding of the multifaceted interactions between administrative elements. Here, effective communication information is an indispensable tool, playing a pivotal role in aligning stakeholders, facilitating the transfer of information, and fostering trust within the intricacies of the Philippine educational system.

The Philippines, known for its cultural richness and diverse heritage, demands an educational administration that acknowledges and celebrates these distinctions. The interplay of communication strategies becomes essential for conveying information and embracing and respecting the diverse perspectives and cultural nuances that characterize the Filipino educational landscape. Moreover, conflict resolution processes take on added significance, requiring both efficacy and cultural sensitivity to intelligently navigate disagreements and differences within the complex web of Philippine education.

As the Philippines continues to evolve, effective school administration becomes a dynamic force in steering the course of education. Educational leaders are tasked with overcoming challenges and leveraging the unique strengths embedded in the nation's cultural fabric. The nuanced understanding of communication, conflict resolution, and organizational culture within the Philippine context is crucial for fostering an educational system that adapts and thrives in a landscape characterized by diversity, historical richness, and regional variations.

The effectiveness of school administration is paramount for the success of educational goals and the creation of a conducive learning environment. Educational institutions grapple with various challenges, necessitating competent management of administrative, instructional, and interpersonal components. Conflict resolution becomes a key element in maintaining peaceful Relationships in a setting where diverse perspectives and values converge. In the local context, cultural sensitivity is crucial for resolving disputes intelligently and fostering harmonious Relationships among stakeholders (Larasati & Raharja, 2020). The organizational culture within local schools, influenced by historical circumstances, cultural heritage, and societal conventions, significantly shapes behavior, attitudes, and Relationships among all stakeholders in the school community. The Philippines, known for its strong sense of community and tight family relationships, underscores the importance of understanding and nurturing the organizational culture for overall school success.

Statement of the Problem

The study aims to determine the interplay of organizational culture, communication strategies, and conflict resolution in enhancing school management within selected public elementary schools in Camarines Norte. Specifically, this study seeks to answer the following questions:

1. What is the organizational culture of the respondents in terms of:
   1.1 level of leadership style; and
   1.2 level of leadership behavior?
2. What is the level of efficiency of communication strategies of the respondents?
3. What is the level of effectiveness of conflict resolution of the respondents?
4. Is there a significant Relationship between:
   4.1 organizational culture and level of efficiency of communication strategies;
   4.2 organizational culture and level of effectiveness of conflict resolution; and
   4.3 level of efficiency of communication strategies and level of effectiveness of conflict resolution?
5. What are the plans of action to be proposed to enhance the school management practices?

METHODOLOGY

The research methodology implemented in this research project is elaborated upon, beginning with the chosen research approach and continuing through to the presentation of the research findings.

Research Design

The research design used descriptive/correlational methods of research, which included a survey to gather data from the respondents. A quantitative research approach was used in data collection and analysis. The research design aimed to describe the characteristics of the studied variables, including organizational culture, communication strategies, and conflict resolution. The study's methodology included diligent planning and execution, a well-designed study with objective, reliable, and repeatable methodology, appropriate conduct, data collection, and analysis with logical interpretation.

Participants

The participants of the study were composed of currently employed secondary teachers in selected public elementary schools in Camarines Norte, with 152 number of samples out of the estimated total population of 250 secondary teachers within the area. The actual sample of the study was chosen through a simple random sampling method. The total population of public elementary school teachers was limited within the selected public elementary schools in Camarines Norte.

Research Instrument

In this study, the researcher created a custom-designed questionnaire to gauge the impact of organizational culture, communication strategies, and conflict resolution in enhancing school management. This survey plays a crucial role in providing a comprehensive insight into how organizational culture, communication strategies, and conflict resolution can positively influence school management enhancement in a specific context.

The self-made survey questionnaire consists of 38 items. It is divided into five explicit categories: leadership style, leadership behavior, overall organizational culture, efficiency of communication strategies, and effectiveness of conflict resolutions. The researcher meticulously crafted the questionnaire, incorporating a set of statements that respondents assessed using a 5-point Likert Scale. This scale ranges from 1, denoting strong disagreement, to 5, signifying strong agreement.

Procedure

To initiate the actual study, the researcher must confirm approval from the administrators of the selected institutions. Once approved, the researcher began the data-gathering process on a predetermined schedule. Initially, briefing and orientation must be conducted for the respondents to guarantee the correctness of the data given. Subsequently, survey questionnaires were distributed during scheduled sessions, each lasting 25 minutes, ensuring careful completion by participants. The researcher must guide the respondents throughout this process. All participants are encouraged to seek clarification on any questions that may arise during the survey process.

Once the data collection is done, the data encoding process promptly commences. This swift transition from the questionnaire to data collection is intended to capture participants' responses while their perspectives and impressions remain fresh in their minds. The immediacy in data collection aims to ensure a comprehensive and accurate compilation of participants' input.

Data Analysis

To interpret the data effectively, the researcher was employed the following statistical treatment. The frequency count, percentage, ranking, weighted mean, and Pearson's r were utilized to interpret the data.
1. To assess the demographic profile of the respondents, frequency and percentage were used.
2. To evaluate organizational culture in terms of leadership style and behavior, the level of efficiency of communication strategies and assessing the level of effectiveness of conflict resolution, weighted mean was used
3. To investigate the Relationship between organizational culture in terms of leadership style and behavior, the efficiency of communication strategies, and effectiveness of conflict resolution, the researcher would use a correlational analysis, such as Pearson's correlation coefficient.

RESULTS AND DISCUSSIONS

This part of the study shows the presentation, analysis, and interpretation of the gathered data from the questionnaires answered by the respondents. Such presentation is in accordance with the specific questions posited on the objectives of the study.

1. Profile of the Respondents

Table 1. Profile of the Respondents

CATEGORY	DESCRIPTION	FREQUENCY	PERCENTAGE
Age	25-35 years old	100	64.50
	36-45 years old	33	21.30
	46-55 years old	13	8.40
	56 years old and above	6	3.90
Total		**152**	**100.00**
Educational Attainment	Bachelor's Degree	76	49.00
	Master's Degree	68	43.90
	Doctorate Degree	8	5.20
Total		**152**	**100.00**
Years of Service	1-5 years	30	19.40
	6-10 years	89	57.40
	11-15 years	24	15.50
	16 years and above	9	5.80
Total		**152**	**100.00**

Table 1 shows the profile of the respondents. Most of the respondents are 25-35 years old with a frequency count of 100 and percentage of 64.50. Also, most of the participants are attained bachelor's degree with a frequency count of 76 and a percentage of 49.00. Lastly, most of the respondents have 6 to 10 years of service aligned in teaching experience. A substantial majority falls within the age bracket of 25 to 35 years, indicating a concentration in the mid to early stages of their professional careers. In terms of educational qualifications, most participants have attained a bachelor's degree, suggesting a foundational level of academic achievement. Furthermore, the data underscores the teaching experience of the respondents, with a notable number falling within the 6 to 10 years of service range.

2. Organizational Culture of the Respondents

2.1 Level of Leadership Style

Table 2. Organizational Culture in terms of Level of Leadership Style

Items	Weighted Mean	Interpretation	Rank
1. Leaders in the organization encourage open communication and feedback.	4.53	Always	2
2. The predominant leadership style involves employee input in decision-making.	4.49	Always	5
3. Leaders inspire and motivate employees to excel in their roles.	4.50	Always	4
4. Rewards and recognition are tied to employee performance and contributions	4.51	Always	3
5. Leaders prioritize serving the needs of their team members.	4.59	Always	1
Composite Mean	**4.53**	**Always**	

As seen in Table 2, the respondents stated that the leaders in their respective schools encourage open communication and feedback which got the highest weighted mean of 4.59 and the highest rank of 1. This suggests that the school leaders encourage and facilitate a culture where individuals feel comfortable sharing their thoughts, ideas, and concerns openly.

Meanwhile, the said group of respondents strongly agreed that the predominant leadership style of the leaders in their respective schools involves employee input in decision-making, in which obtained the least weighted mean of 4.49 and least rank of 5. This indicates a participative or democratic leadership approach, where leaders actively seek and value the perspectives, opinions, and contributions of their staff members when making significant decisions.

The composite mean of 4.53 concluded that the leaders have a high organizational culture in terms of level of leadership style. The teachers exhibit a significant level of motivational factors concerning their work-life balance. This implies that the educators experience a strong sense of motivation related to achieving equilibrium between their professional responsibilities and personal life.

2.2 Level of Leadership Behavior

Table 3. Organizational Culture in terms of Level of Leadership Behavior

Items	Weighted Mean	Interpretation	Rank
1. Leaders frequently recognize and appreciate employee contributions.	4.42	Always	6
2. Leaders actively mentor and support the professional growth of team members.	4.43	Always	5
3. Leaders are approachable and available for discussions and problem-solving.	4.49	Always	3
4. The leadership style creates a calm and stress-free work environment.	4.55	Always	1
5. Leaders promote a sense of collaboration and teamwork among employees.	4.52	Always	2
6. Leadership behavior contributes to a positive and inclusive workplace culture.	4.47	Always	4
Composite Mean	**4.48**	**Always**	

Table 3 showed that the respondents stated that the leadership style creates a calm and stress-free work environment which got the highest weighted mean of 4.5 and the highest rank of 1. This indicates that the leaders in their respective roles foster a positive and supportive work culture that helps alleviate stress among the workforces.

Meanwhile, the said group of respondents strongly agreed that the leaders frequently recognize and appreciate employee contributions, in which obtained the least weighted mean of 4.49 and least rank of 6.

The composite mean of 4.48 concluded that the leaders have a high organizational culture in terms of level of leadership behavior.

In Table 4, the respondents stated that the communication breakdowns that hinder productivity were promptly addressed which got the highest weighted mean of 4.59 and the highest rank of 1.

3. Level of Communication Strategies

Table 4. Level of Communication Strategies

Items	Weighted Mean	Interpretation	Rank
1. Leaders communicate organizational goals and changes effectively.	4.48	Always	6
2. Leaders are transparent about decisions that affect employees.	4.49	Always	5.5
3. The organization provides clear and timely updates on important matters.	4.50	Always	4

Items	Weighted Mean	Interpretation	Rank
4. Communication channels are well-structured and easily accessible.	4.47	Always	7
5. Leaders ensure that all team members are informed about relevant information.	4.49	Always	5.5
6. Feedback from employees is actively sought and considered in decision-making.	4.45	Always	8
7. The organization uses a variety of communication methods to reach different teams or departments.	4.52	Always	3
8. Communication from leaders aligns with the organization's values and mission.	4.54	Always	2
9. Communication breakdowns that hinder productivity are promptly addressed.	4.59	Always	1
Composite Mean	**4.50**	**Always**	

Meanwhile, the said group of respondents showed strong agreement that feedback from employees is actively sought and considered in decision-making, in which obtained the least weighted mean of 4.45 and least rank of 8.

The composite mean of 4.50 concluded that the leaders have a high level of communication strategies. This implies that these leaders are effective in articulating messages, disseminating information, and fostering clear and transparent communication within the organization.

4. Level of Effectiveness of Conflict Resolution

Table 5. Level of Effectiveness of Conflict Resolution

Items	Weighted Mean	Interpretation	Rank
1. Conflicts within teams are addressed promptly by leadership.	4.53	Always	1
2. Leaders actively mediate and facilitate resolution in conflicts between team members.	4.49	Always	4.5
3. Conflicts are resolved in a manner that promotes a positive working environment.	4.43	Always	6
4. Leaders encourage open dialogue to resolve conflicts constructively.	4.47	Always	5
5. Feedback from employees is taken into account in improving conflict resolution methods.	4.49	Always	4.5
6. Conflicts are minimized through effective communication and clear expectations.	4.50	Always	3.5
7. The organization provides training to improve conflict resolution skills.	4.51	Always	2
8. Leaders consistently model respectful communication during conflicts.	4.50	Always	3.5
Composite Mean	**4.49**	**Always**	

Table 5 presented that the respondents specified that the conflicts within teams are addressed promptly by the leadership which got the highest weighted mean of 4.53 and the highest rank of 1.

On the other hand, the said group of respondents strongly agreed that conflicts were resolved in a manner that promotes a positive working environment, in which obtained the least weighted mean of 4.43 and least rank of 6.

The composite mean of 4.49 concluded that the leaders in these institutions have a high level of effectiveness of conflict resolution. This indicates that the leadership is adept at addressing and managing conflicts within the organization, ensuring that resolutions are achieved in a way that promotes harmony, understanding, and positive Relationships among team members.

5. Relationship Between the Variables of the Study.

Table 6. Relationship Between the Variables of the Study

Variables Compared	r-value	p-value	Decision	Interpretation
Organizational Culture and Level of Efficiency of Communication Strategies	0.004	0.962	p>0.01, Accept Ho	Not Significant
Organizational Culture and Level of Effectiveness of Conflict Resolution	-0.064	0.432	p>0.01, Accept Ho	Not Significant
Level of Efficiency of Communication Strategies and Level of Effectiveness of Conflict Resolution	0.036	0.657	p>0.01, Accept Ho	Not Significant

In Table 6, when the responses of the participants on their leaders' organizational culture and level of efficiency of communication strategies were correlated, the computed R-value of 0.004 has a corresponding p-value of more than 0.01, thus accepting the hypothesis. The analysis resulted in no statistical significance, in which as a result, the hypothesis was accepted.

Moreover, when the responses of the participants' school administrators on organizational culture were compared to the level of effectiveness of conflict resolution, the accumulated r-value of -0.064, with a corresponding p-value of more than 0.01, which signifies to accept the hypothesis. The results suggested that the responses their school administrators' organizational culture was compared to the level of effectiveness of conflict resolution, the analysis resulted in no statistical significance, in which also as a result, the hypothesis was accepted.

Lastly, when the responses of the teacher-respondents on the level of efficiency of communication strategies were compared to the level of effectiveness of conflict resolution, the computed r-value of 0.36, with corresponding p-values of more than 0.01, thus accepting the hypothesis. The finding implies that there is no meaningful or statistically significant correlation between the administrators' perceptions of the efficiency of communication strategies and the effectiveness of conflict resolution.

6. Action Plan

Table 7. Action Plan to be Proposed

PROGRAM	OBJECTIVES	IN CHARGE	OUTPUT	TIMELINE
Strengthen Communication Strategies	Improve information flow, enhance collaboration, and provide a platform for sharing ideas and concerns among teachers and administrators.	Communication Coordinator or designated staff	Established regular communication channels, platforms, and training programs for effective communication.	Within the first semester of the academic year
Promote Recognition and Appreciation	Boost morale, motivation, and job satisfaction by acknowledging and appreciating the contributions of teachers	Recognition Committee or designated staff	Implemented formal recognition system, conducted appreciation forums, and created a positive work environment.	Ongoing throughout the academic year
Foster Collaborative Decision-Making	Involve teachers in decision-making processes, ensuring their perspectives are considered in matters affecting their roles and the school environment.	Decision-Making Committee with representation from teachers and administrators	Established committees or forums, involving teachers in decision-making processes.	Initiate within the second semester of the academic year

Enhance Conflict Resolution Skills	Provide avenues for teachers' professional growth within the school setting, aligning individual goals with institutional objectives.	Professional Development Coordinator or designated staff	Expanded career advancement programs, personalized development plans for teachers.	Ongoing throughout the academic year
Promote Work-Life Balance Initiatives	Support teachers in achieving a healthy work-life balance by introducing initiatives that cater to their well-being.	Work-Life Balance Coordinator or designated staff	Introduced work-life balance programs or policies, regular surveys assessing teacher needs.	Initiate at the beginning of the academic year

The proposed action plan aimed to enhance organizational culture, leadership effectiveness, and the work environment in educational institutions through specific objectives. These include strengthening communication strategies, promoting recognition and appreciation, fostering collaborative decision-making, enhancing conflict resolution skills, introducing work-life balance initiatives, and encouraging professional development opportunities. The plan seeks to establish communication channels, formal recognition systems, decision-making forums, and conflict resolution protocols. Tangible outputs include improved morale, motivation, and job satisfaction among teachers, contributing to a positive organizational culture.

CONCLUSIONS

This part of the study showed the dynamics of educational institutions, in which the study traversed the realms of organizational culture, leadership behavior, communication strategies, and conflict resolution effectiveness. These facets intricately shape the landscape within which educators operate, influencing their professional experiences and, consequently, the overall effectiveness of educational institutions.

The results provide an overview of the demographic characteristics of the participants, shedding light on their age distribution, educational background, and teaching experience. Most participants fall within the 25 to 35 age range, indicating a concentration of educators in the mid to early stages of their careers. Most participants hold a bachelor's degree, highlighting a foundational level of academic accomplishment. Additionally, many respondents have accumulated 6 to 10 years of teaching experience, contributing to a diverse pool of insights.

Regarding organizational culture and leadership style, the findings suggest that open communication is encouraged and essential for fostering collaboration, understanding, and continuous improvement within the school community. This leadership approach values transparency, inclusivity, and a willingness to listen to the perspectives of teachers and staff, fostering a positive and constructive working environment. The high degree of motivational factors indicates that teachers find fulfillment, satisfaction, and intrinsic rewards in maintaining a harmonious balance between their work commitments and personal well-being. This positive motivation contributes to enhanced job satisfaction, increased productivity, and overall well-being among the teaching staff.

The results further imply effective communication, recognition of employees' contributions, and creating a harmonious work environment regarding leadership behavior. Acknowledging a calm and stress-free atmosphere suggests that the leadership style is conducive to employee well-being, job satisfaction, and a positive organizational culture. Such a leadership approach fosters a culture of appreciation and acknowledgment, positively impacting employee morale, motivation, and job satisfaction.

Regarding communication strategies, the positive organizational response indicates a commitment to promptly addressing employees' needs and concerns. The results imply a genuine commitment to incorporating employees' voices into decision-making processes, fostering a culture of collaboration. Leadership proficiency in communication strategies contributes to improved information flow, enhanced collaboration, and a positive organizational culture that values effective communication.

Regarding conflict resolution, the results indicate a prompt and effective handling of conflicts, fostering a positive work environment. The strong agreement among respondents suggests that the leadership emphasizes conflict resolution strategies that prioritize team harmony and overall well-being. The high effectiveness in conflict resolution signifies that leaders possess the necessary skills and abilities to navigate and resolve disputes, contributing to a healthy and productive institution.

Regarding the Relationships between organizational culture, communication strategies, and conflict resolution, the outcomes suggest that participants may not strongly perceive connections between these elements. Other unexplored factors might be more prominent in influencing perceived efficiency and effectiveness within the educational context.

RECOMMENDATIONS

Based on the comprehensive findings of the study, several recommendations can be proposed to enhance the overall organizational culture, leadership effectiveness, and work environment within educational institutions:

First and foremost is to strengthen communication strategies. Establish regular communication channels and platforms for teachers and administrators to share ideas, concerns, and feedback. Provide training programs on effective communication for school leaders to enhance their skills in conveying information and listening to the needs of the teaching staff.

Also, to promote recognition and appreciation. Implement a formal recognition system that acknowledges and appreciates the contributions of teachers, fostering a positive and motivating work environment. Encourage school leaders to actively recognize and commend the efforts of their team members through regular appreciation forums or programs.

Moreover, it fosters collaborative decision-making. Develop mechanisms for involving teachers in decision-making processes, ensuring their voices are heard in matters that directly impact their roles and the school environment. Establish committees or forums where administrators and teachers can collaboratively discuss and make decisions on relevant issues.

Offer training sessions or workshops on conflict resolution strategies for teachers and administrators to enhance their skills in effectively managing and resolving conflicts. Establish clear protocols and procedures for addressing conflicts within the school environment, ensuring a fair and prompt resolution process.

Also, there is a need to promote work-life balance initiatives. Introduce programs or policies that support and enhance teachers' work-life balance, recognizing its importance in maintaining overall well-being. Conduct regular surveys to assess teachers' work-life balance needs and preferences, tailoring initiatives accordingly.

Moreover, it encourages professional development opportunities to expand and improve career advancement programs, providing teachers with opportunities for professional growth within the school setting. Collaborate with educators to identify personalized development plans, aligning individual goals with the overall objectives of the institution.

These recommendations will be helpful to address the identified areas for enhancement and promote a positive, collaborative, and supportive organizational culture within educational institutions. Implementing these strategies can contribute to the teaching workforce's overall well-being, job satisfaction, and effectiveness, ultimately benefiting the entire educational community.

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TECHNOLOGY INTEGRATION AND STUDENT ENGAGEMENT ON 21ST CENTURY LEARNING ENVIRONMENTS IN SELECTED ELEMENTARY SCHOOLS IN CAMARINES NORTE

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ABSTRACT

Integrating technology into educational settings is no longer viewed as an optional enhancement. However, it has become a requisite adaptation in an age where information is abundantly accessible and digital skills are indispensable. The study aimed to comprehensively understand the influence of technology integration and student engagement on 21st-century learning environments in selected elementary schools in Camarines Norte, Philippines. The research design employed a combination of descriptive and correlational research methods, utilizing a survey instrument to assess the impact of technology integration and student engagement on the educational landscape within chosen elementary schools. The quantitative approach was chosen to quantify the gathered data effectively and provide a clear depiction of the responses provided by the participants. The demographic profile of the respondents reveals a predominantly female group, constituting 62.8% of the participants, and a significant portion falling within the 25 to 35 age range (61.50%). Additionally, a substantial % of respondents (35.80%) have accumulated 6 to 10 years of teaching experience. The findings shed light on the respondents' high degree of technology integration in instructional design, emphasizing online platforms for collaborative learning activities. This underscores the role of technology as a supplementary tool and a central facilitator in fostering interactive and participatory learning experiences. The study highlights the positive impact of technology integration on learning outcomes, indicating that teachers believe it enhances students' preparation for real-world challenges. The findings also emphasize the significance of feedback in the educational process, with participants providing constructive feedback on students' use of technology in assignments. Crucially, the correlation analysis between technology integration and student engagement presented no significance, thereby accepting the hypothesis.

INTRODUCTION

Education stands at the forefront of transformation in an age defined by unprecedented technological progress and rapid societal change. The convergence of digital innovation and pedagogical methodologies has given rise to what is commonly referred to as the "21st century learning environment." This dynamic educational landscape is characterized by its departure from traditional teacher-centered approaches, embracing instead a student-centric model that capitalizes on technology integration, adept teacher training, and heightened student engagement. Anagün (2020) stated that the contours of education continue to shift, and understanding the intricate interplay among these crucial factors becomes paramount. The study embarks on a comprehensive exploration of this evolving educational paradigm.

Integrating technology into education is no longer an optional enhancement but a requisite adaptation in an era where information is abundantly accessible and digital skills are indispensable. The seamless integration of technology tools within learning environments has the potential to amplify pedagogical approaches, making them more interactive, personalized, and aligned with the demands of the modern world. Technology's potential is vast and transformative, from virtual reality simulations that enable immersive historical experiences to artificial intelligence algorithms that adapt content to individual learning styles. However, the mere presence of technology does not guarantee its effective utilization. Within this context, the nexus between technology integration and effective teacher training emerges as a focal point of inquiry.

Teacher training, a cornerstone of educational development, finds itself in flux as it grapples with the demands of the digital age. Educators, long regarded as knowledge providers, are now catalysts of learning who facilitate the acquisition of skills necessary for navigating an information-rich, technologically advanced society. Equipping teachers with the competencies to blend technology into their instructional strategies seamlessly is imperative. This involves technical proficiency and pedagogical insight into harnessing technology's potential to enhance engagement and foster critical thinking. A comprehensive investigation into teacher training strategies that align with the demands of 21st-century learning environments is essential for cultivating educators adept at leveraging technology to its fullest extent. "A sustained focus on pedagogy, curriculum, and skill acquisition is critical to developing 21st-century teaching skills" (Martinez, 2022).

Central to this evolving educational landscape is the concept of student engagement. Student engagement was often linked to classroom attendance and compliance in traditional settings. However, in the 21st-century learning environment, engagement takes on a multifaceted form, encompassing active participation, intrinsic motivation, and collaborative exploration. With its interactive interfaces and gamified elements, technology has emerged as a potent tool for enhancing student engagement. When seamlessly integrated into pedagogy, it can transform passive information recipients into active knowledge co-creators. Yet, the relationship between technology and engagement is nuanced. A clear understanding of the conditions under which technology catalyzes engagement is imperative to leverage its potential effectively.

Amidst these intricacies, this thesis's overarching research question is: How do technology integration and student engagement intersect and shape the 21st-century learning environment? To answer this question, multi-dimensional exploration is necessary—one that draws from educational psychology, technology studies, pedagogical theories, and sociocultural frameworks. By delving into the experiences of educators and students alike, examining the challenges encountered and the strategies devised, and scrutinizing the outcomes of various technology-infused pedagogical interventions, a comprehensive understanding of the complex web of influences can be elucidated.

In the Philippines, as in many parts of the world, education is undergoing a profound transformation driven by technological advancements and changing pedagogical paradigms. This study delves into the intricate dynamics that define the modern educational ecosystem in this Southeast Asian nation. The 21st century has witnessed unprecedented technology integration into various aspects of life, including education. In the Philippines, where access to technology is becoming increasingly widespread, exploring how this integration influences the learning process is of paramount importance. Understanding how technology shapes teaching methods, curriculum delivery, and student interaction becomes a crucial research endeavor as classrooms evolve from traditional setups to digitally augmented spaces.

In the dynamic realm of education, the phenomena surrounding technology integration into teaching practices have unfolded as a transformative force, significantly shaping the landscape of 21st-century learning environments. This phenomenon is not confined to local boundaries but reflects a global shift in educational paradigms. Globally, the adoption of technology in education has become ubiquitous, reflecting a collective acknowledgment of the potential benefits it holds for enhancing teaching methodologies and student engagement.

Education stands at the forefront of transformation in an age defined by unprecedented technological progress and rapid societal change. Anagün (2020) stated that the contours of education continue to shift, and understanding the intricate interplay among these crucial factors becomes paramount. Across continents, educators and institutions are navigating the uncharted territories of digital learning tools, virtual classrooms, and interactive platforms to provide a more dynamic and responsive educational experience.

This global phenomenon takes on a unique flavor within the Philippines, influenced by the country's specific cultural, socioeconomic, and infrastructural contexts. The Philippine educational landscape is witnessing a profound transformation driven by technology integration, which echoes the nation's commitment to preparing students for the challenges and opportunities of the 21st century (Martinez, 2022). As the country endeavors to keep pace with global educational trends, it grapples with the complexities of bridging the digital divide, ensuring equitable access to technology, and tailoring strategies that align with the nation's educational goals.

In the Philippines, where diverse socioeconomic backgrounds and varying levels of technological exposure exist, investigating how teacher training programs address these disparities and foster equitable

learning experiences is a central concern. Amid these changes, student engagement remains a cornerstone of effective education. Integrating technology has the potential to captivate student interest, making learning more interactive and relatable. However, factors that enhance or hinder engagement in the Philippines might differ from those in other regions due to unique cultural, societal, and economic considerations.

The province of Camarines Sur serves as a microcosm encapsulating the localized manifestations of the technology integration phenomenon. Here, the phenomena unfold within the region's specific socio-cultural and economic context, creating a distinct tapestry of challenges and successes. Local elementary schools in Camarines Sur become focal points for understanding how educators and students implement, receive, and navigate technology. The phenomena within these schools encompass not only the introduction of digital tools into classrooms but also the adaptations made to curriculum design, pedagogical approaches, and student-teacher dynamics in response to the infusion of technology.

This study's heart lies exploring the interwoven phenomena of technology integration and student engagement. This research endeavors to dissect these phenomena, unraveling the multifaceted Relationships, challenges, and opportunities that emerge when technology becomes an integral part of the educational ecosystem. By focusing on these phenomena, the study aims to contribute nuanced insights that transcend geographical boundaries, providing a rich tapestry of understanding for educators, policymakers, and researchers vested in enhancing 21st-century learning environments.

Statement of the Problem

The study aims to determine the influence of technology integration and student engagement on 21st century learning environments in selected elementary schools in Camarines Norte. Specifically, this study seeks to answer the following questions:
1. What is the technology integration of the respondents in terms of:
    1.1 instructional design; and
    1.2 learning outcomes?
2. What is the level of student engagement within the institutions of the respondents?
3. Is there a significant Relationship between the technology integration and level of student engagement of the respondents?
4. What plan of action to be proposed to improve the learning environment within the selected institutions?

METHODOLOGY

In this chapter, the methodology utilized in the study included discussions on the research design, data resources, the target demographic, the validation of tools, the data collection process, ethical considerations, data management, and the techniques applied for data analysis. The research methodology implemented in this research project is elaborated upon, beginning with the chosen research approach and continuing through to the presentation of the research findings.

Research Design

This research employed descriptive and correlational research methods, utilizing a survey instrument to assess the impact of technology integration and student engagement on 21st century learning environments within chosen elementary schools in Camarines Norte.

Participants

Notably, the public elementary school teachers within select institutions, such as Camarines Norte Elementary School constituted the overall population under scrutiny. The determination of the exact population size hinges on the approval of the researcher's formal request.

Research Instrument

In this study, a custom-designed questionnaire created by the researcher was used to gauge the impact of technology integration and student engagement on the 21st century learning environment. This survey plays a crucial role in providing a comprehensive insight into how technology integration and

student engagement can have a positive influence on 21st century learning environment in a specific context.

The self-made survey questionnaire consists of 24 items divided into 5 categories: Technology Integration, Student Engagement, Assessment and Feedback, 21st Century Learning Environments, and Support and Resources. The questionnaire undergone validity testing by experts from the graduate school of Lipa City College. The researcher has meticulously crafted the questionnaire, incorporating a set of statements that respondents assessed using a 5-point Likert Scale. This scale ranges from 1, denoting strong disagreement, to 5, signifying strong agreement.

To ensure the survey's precision, dependability, and validity, it undergone a rigorous validation process overseen by a panel of specialists from the graduate school of Lipa City College having expertise in the relevant field. These experienced professionals meticulously scrutinized the survey, assessing the clarity of the statements, the appropriateness of the Likert Scale, and its alignment with the research objectives. This validation procedure is indispensable to ensure that the survey effectively captures the intended information and that the data collected can be relied upon for the research's analysis.

Also, to assure the reliability of the questionnaire, the researcher subjected it to a rigorous test-retest reliability examination, revealing a commendable Cronbach alpha reliability score of 0.874. This robust score underscores the stability and consistency of the test instrument over time, affirming its reliability. The meticulous testing process assures that the questionnaire is a valid and dependable tool for gathering accurate and consistent data from respondents in the study.

Data Analysis

To interpret the data effectively, the researcher was employed in the following statistical treatment. Frequency, percentage, weighted mean, ranking, and Pearson's r were utilized to interpret the data.
1. To assess the demographic profile of the respondents, frequency and percentage were used.
2. To identify the technology integration in terms of design and learning outcome, weighted mean provided insight into the respondents' perceptions.
3. To investigate the Relationship between technology integration and the level of student engagement, the researcher would use a correlational analysis, such as Pearson's correlation coefficient.

RESULTS AND DISCUSSIONS

This part of the study shows the presentation, analysis, and interpretation of the gathered data from the questionnaires answered by the respondents. Such presentation is in accordance with the specific questions posited on the objectives of the study.

Rationale

1. Profile of the Respondents

Table 1. Profile of the Respondents

CATEGORY	DESCRIPTION	FREQUENCY	PERCENTAGE
Gender	Male	81	37.20
	Female	137	62.80
Total		**218**	**100.00**
Age	25-35 years old	134	61.50
	36-45 years old	33	15.10
	46-55 years old	32	14.70
	56 years old and above	19	8.70
Total		**218**	**100.00**
Teaching Experience	1-5 years	74	33.90
	6-10 years	78	35.80
	11-15 years	53	24.30
	16 years and above	13	6.00
Total		**218**	**100.00**

Table 1 shows the profile of the respondents. Most of the respondents are female with a frequency count of 137 and percentage of 62.8%. Also, most of the participants are between ages 25 to 35 years old, with a frequency of 134 and a percentage of 61.50. Lastly, many of them have 6 to 10 years of teaching experience, with 78 frequency count, and a percentage of 35.80. As presented on this table, most respondents were female, ages from 25 to 35 years of age, with 6 to 10 years of teaching experience.

2. Technology Integration of the Respondents

2.1 Instructional Design

Table 2. Technology Integration in terms of Instructional Design

Items	Weighted Mean	Interpretation	Rank
1. I use technology tools consistently in my teaching.	4.45	Always	4
2. I incorporate multimedia elements into lessons to enhance understanding.	4.49	Always	2
3. I seamlessly integrate technology into various subjects across the curriculum.	4.49	Always	3.5
4. Technology enhances students' understanding of complex concepts.	4.49	Always	3.5
5. I use online platforms for collaborative learning activities.	4.52	Always	1
Composite Mean	**4.49**	**Always**	

Table 2 presented that the participants stated that they used online platforms for collaborative learning activities, which got the highest weighted mean of 4.52 and the highest rank of 1. This signifies a strong inclination among the participants towards leveraging digital tools and platforms to facilitate collaborative learning experiences.

Table 3 showed that the participants indicated that they incorporate digital citizenship and online safety education in their lessons, which got the highest weighted mean of 4.55 and the highest rank of 1. This signifies that the surveyed educators recognize the importance of equipping students with essential skills and knowledge to navigate the digital landscape responsibly. Ahmad & Hamad, (2020) stated that technology integration in teaching improves student achievement by reducing classroom discipline issues, boosting teacher self-confidence, and facilitating assessment and participation for all students.

2.2 Learning Outcomes

Table 3. Technology Integration in terms of Learning Outcomes

Items	Weighted Mean	Interpretation	Rank
6. The integration of technology has positively impacted students' critical thinking skills.	4.46	Always	3.5
7. Collaborative projects using technology have become a regular part of my classroom.	4.47	Always	2
8. Technology integration has improved students' preparation for real-world challenges.	4.45	Always	4
9. I incorporate digital citizenship and online safety education in my lessons.	4.55	Always	1
10. Technology use encourages my students to explore and pursue independent research.	4.46	Always	3.5
Composite Mean	**4.48**	**Always**	

3. Level of Student Engagement of the Respondents

Table 4. Level of Student Engagement of the Respondents

Items	Weighted Mean	Interpretation	Rank
1. My students actively participate in discussions and collaborative online activities.	4.55	Always	3
2. I use technology tools to tailor lessons to students' interests and learning styles.	4.51	Always	6.5
3. My students are more motivated to learn due to the integration of technology.	4.53	Always	4
4. My students take ownership of their learning when technology is used.	4.52	Always	5
5. Technology enhances my students' communication and presentation skills.	4.46	Always	8
6. I use technology for formative assessments to monitor student progress.	4.51	Always	6.5
7. I provide timely feedback to students using technology tools.	4.45	Always	9
8. Technology enables a variety of assessment methods to cater to diverse learners.	4.56	Always	2
9. I provide constructive feedback on students' use of technology in assignments.	4.57	Always	1
10. Assessment criteria include the effective use of technology for learning.	4.49	Always	7
Composite Mean	**4.52**	**Always**	

As seen in Table 4, the participants replied that they provide constructive feedback on students' use of technology in assignments, which got the highest weighted mean of 4.57 and the highest rank of 1.

4. Relationship Between the Variables of the Study

Table 5. Relationship Between the Variables of the Study

Variables Compared	r-value	p-value	Decision	Interpretation
Technology Integration vs. Level of Student Engagement	0.42	0.539	p>0.01, Accept Ho	Not Significant

Presented in Table 5, when the responses of the participants on their technology integration and level of student engagement were correlated, the computed R-value of 0.42 has a corresponding p-value of more than 0.01, thus accepting the hypothesis. This outcome implies that the extent to which teachers integrate technology into their instructional practices does not necessarily correlate with higher levels of student engagement.

5. Action Plan

Table 6. Action Plan to be Proposed

PROGRAM	OBJECTIVES	IN CHARGE	OUTPUT	TIMELINE
Prioritize Ongoing Teacher Training	Identify relevant professional development programs. Establish a regular schedule for training sessions. Provide resources for self-paced learning.	Professional Development Coordinator	Increased teacher proficiency in integrating technology	Continuous

Integrate Digital Citizenship in Curriculum	Form a curriculum development team. Incorporate digital citizenship modules into existing courses. Review and revise curriculum as needed.	Curriculum Development Team	Infusion of digital citizenship across subjects.	Next Academic Year
	Identify and implement suitable technology tools. Conduct workshops on effective feedback practices. Monitor the integration of feedback tools.	Technology Integration Specialist	Improved feedback mechanisms.	Within 3 months
Foster Collaborative Learning Platforms	Research and recommend collaborative platforms. Provide training on platform usage. Encourage educators to incorporate platforms in lessons.	IT Coordinator	Increased collaborative learning opportunities.	Within 6 months
Embrace Flexible Teaching Approaches	Conduct workshops on diverse teaching strategies. Encourage educators to tailor approaches to student needs. Establish a feedback mechanism for strategy effectiveness.	Educational Leadership Team	Varied and effective teaching methods.	Within the Academic Year
Monitoring and Evaluation	Establish a feedback loop for ongoing assessment. Regularly review the impact of implemented strategies.	Educational Leadership Team and Department Heads	Data-driven decision-making for continuous improvement.	Continuous

The proposed action plan for the institutions entails prioritizing ongoing teacher training for technology integration, integrating digital citizenship into the curriculum, promoting technology-enhanced feedback mechanisms, fostering collaborative learning platforms, and embracing flexible teaching approaches. The anticipated outcomes include enhanced proficiency in technology integration, seamless integration of digital citizenship principles, improved feedback processes, increased opportunities for collaborative learning, and diversified teaching methods catering to diverse student needs. The success of these initiatives relies on establishing a robust monitoring and evaluation system for ongoing assessment and informed decision-making, ensuring continuous improvement in educational practices.

CONCLUSIONS

From the study, several conclusions can be drawn:

Integral Role of Technology in Instructional Design: The study highlights the significance of technology in instructional design, indicating a positive trend among educators who actively utilize online platforms for collaborative learning. This reflects educators' adaptability and recognition of technology as a fundamental element in modern education.

1. Proactive Efforts in Addressing Contemporary Challenges: Educators are proactively addressing contemporary challenges by incorporating digital citizenship and online safety education into lessons. This approach contributes to creating a secure online environment and aligns education with real-world demands, thereby enhancing students' practical skills and critical thinking abilities.
2. Emphasis on Feedback Mechanisms and Technology Tools: Educators demonstrate a commitment to creating a responsive and dynamic learning environment by leveraging technology for feedback mechanisms. Timely feedback, facilitated by technology, supports students' continuous improvement and skill development.

3. Complex Relationship between Technology Integration and Student Engagement: While technology integration plays a positive role in instructional practices, the study suggests that various factors beyond technology use influence student engagement. This highlights the complexity of the teaching-learning process and the need for educators to explore diverse strategies to optimize student engagement.
4. Positive Trajectory in Technology Integration: The study showcases a positive trajectory in technology integration within instructional practices, contributing to enhanced learning outcomes and fostering a supportive educational environment.
5. Importance of a Multifaceted Approach to Student Engagement: Educators need to adopt a multifaceted approach to student engagement, acknowledging the role of diverse factors in shaping the overall learning experience.
6. Implications for Educators, Policymakers, and Researchers: The findings provide valuable insights for educators, policymakers, and researchers navigating the evolving landscape of education in the digital era. This includes the importance of integrating technology effectively, addressing contemporary challenges, and adopting diverse strategies to optimize student engagement.

RECOMMENDATIONS

Considering the comprehensive findings and insightful conclusions drawn from this study, a set of strategic recommendations emerges to enhance and optimize various facets of the educational landscape. These recommendations stem from a thorough data analysis, reflecting the evolving needs of educators, administrators, and students in the dynamic realm of contemporary education. This study seeks to provide actionable insights for educational stakeholders, policymakers, and institutions by aligning these recommendations with the identified challenges and opportunities. The following recommendations address specific areas identified as pivotal for fostering a conducive learning environment, promoting effective teaching practices, and preparing students for the demands of the digital era.

First and foremost, administrators must prioritize ongoing teacher training. Encourage continuous professional development programs to update educators on the latest technology tools and effective integration strategies.

Also, they must integrate digital citizenship into their curriculum. Collaborate on curriculum development to integrate digital citizenship and online safety education, ensuring students are well-prepared for the digital era.

Moreover, leaders should promote technology-enhanced feedback. Support the use of technology tools for providing timely and constructive feedback, fostering a culture of continuous improvement in student learning.

Also, administrators should foster collaborative learning platforms. Advocate for adopting collaborative online platforms to enhance interactive and participatory learning experiences among students.

Lastly, leaders and teachers must embrace flexible teaching approaches. Promote flexibility in teaching strategies, acknowledge that student engagement is influenced by various factors, and encourage personalized approaches to accommodate diverse learning needs.

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INFLUENCE OF MOTIVATIONAL FACTORS AND JOB SATISFACTION ON TEACHER RETENTION IN SELECTED ELEMENTARY SCHOOLS IN VINZONS DISTRICT, DIVISION OF CAMARINES

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ABSTRACT

This research delves into the crucial issue of teacher retention in the Philippines, specifically focusing on Vinzons District. The study aims to contribute valuable insights to inform evidence-based strategies for retaining skilled and motivated teachers, ultimately fostering a more robust and effective educational system in Vinzons District and beyond. To achieve this, the research investigates the influence of technology integration, teacher training, and student engagement on 21st-century learning environments in selected elementary schools. Demographic insights from the study reveal a predominantly female teaching force, indicating a notable gender dynamic. The age distribution is concentrated in the 36 to 45 age range, suggesting a significant cohort within this age bracket. Moreover, many participants have accumulated 6 to 10 years of teaching experience, pointing towards a mid-range level of professional expertise. The findings emphasize the recognition of career advancement opportunities, indicating effective mechanisms supporting the professional development of educators. Positive perceptions regarding clear professional growth pathways and strong motivation for personal development within the school context are evident. Support and recognition from school administrators emerge as pivotal motivational factors, contributing to educators actively seeking a balance between professional duties and personal needs. High levels of job satisfaction are reflected in positive working conditions, encompassing various factors such as physical facilities, resources, administrative support, and the overall school atmosphere. The study underlines the shared belief among respondents in the critical importance of promoting teacher retention for the stability of the education system.

Keywords: motivational factors, job satisfaction, teacher retention

INTRODUCTION

The realm of education stands as a cornerstone in the edifice of societal progress and development, with teachers serving as the architects of knowledge and the catalysts for personal growth. As the bedrock of successful education systems, teachers contribute to shaping future generations, imparting not only subject matter expertise but also valuable life skills and inspiration. In recent years, the field of education has faced a pressing challenge on a global scale – the retention of qualified and motivated teachers. The issue of teacher retention holds significant importance in the broader context of worldwide educational systems and within specific regional and local contexts, such as the Philippines. On a global scale, the shortage of skilled and dedicated educators has become a pervasive concern, contributing to the decline in the overall quality of education (Alexander et al., 2020).

The struggle to retain teachers is linked to multifaceted issues, including competitive job markets, changing societal expectations, and evolving educational paradigms.In the Philippines, education is deeply ingrained in the national ethos, viewed as a cornerstone for progress and development. However, the country faces its own set of challenges in retaining teachers. Economic factors, such as relatively low salaries compared to the increasing cost of living, coupled with limited career advancement opportunities, contribute to the attrition of skilled educators. Developing countries, in particular, grapple with the

migration of skilled educators seeking better opportunities elsewhere (Wang & Zhang, 2021). This brain drain phenomenon exacerbates the shortage of qualified teachers, hindering the ability of these nations to deliver quality education to their populations. Consequently, understanding the motivational factors and job satisfaction that contribute to teacher retention becomes crucial for devising strategies that can be applied universally while considering the unique challenges each region faces.

The Philippines also contends with the geographical dispersal of schools, making access to quality education a logistical challenge for teachers and students. Cultural considerations, such as the high regard for the teaching profession, add complexity to the issue (Bardach et al., 2022). The expectations placed on teachers to fulfill educational, societal, and moral roles can contribute to stress and burnout.

The Philippines boasts a rich cultural and historical tapestry, and its educational system is a cornerstone in nurturing the country's future generations. However, amidst the admirable aspirations of its educators, the Philippines grapples with the challenge of retaining its teachers in a manner that sustains quality education delivery. The need for skilled and motivated teachers is amplified by the diverse socio-economic landscape and the imperative of providing accessible and equitable education to all citizens.

From a local perspective, the Vinzons District serves as a microcosm reflecting the broader challenges faced by educational institutions. Unique socioeconomic factors, cultural nuances, and community dynamics shape the working environment for teachers in this district. Examining teacher retention in this context aims to provide insights to inform targeted interventions and policies to address the challenges educators face in Vinzons District. As the study embarks on an exploration of the influence of motivational factors and job satisfaction on teacher retention, it is essential to recognize the interconnectedness of these elements on a single perspective. This research seeks to contribute valuable knowledge that can inform evidence-based strategies for retaining skilled and motivated teachers, ultimately fostering a more robust and effective educational system in Vinzons District and beyond.

Statement of the Problems
The study aimed to determine the influence of technology integration, teacher training, and student engagement on 21st century learning environments in selected elementary schools in Vinzons District. Specifically, this study seeks to answer the following questions:
1. What is degree of motivational factors of the respondents in terms of:
    1.1 personal growth; and
    1.2 work-life balance?
2. What is the level of job satisfaction of the respondents?
3. What is the degree of teachers' retention?
4. Is there a significant Relationship between
    4.1 degree of motivational factors and level of job satisfaction;
    4.2 degree of motivational factors and the degree of teachers' retention; and
    4.3 level of job satisfaction and the degree of teachers' retention?
5. What plan of action to be proposed to enhance the professional development of the teachers from the selected institutions?

METHODOLOGY

In this chapter, the methodology utilized in the study is clarified. It includes discussions on the research design, data resources, the target demographic, the validation of tools, the data collection process, ethical considerations, data management, and the techniques applied for data analysis. The research methodology implemented in this research project is elaborated upon, beginning with the chosen research approach, and continuing through to the presentation of the research findings.

Research Design
This research employed descriptive and correlational research methods, utilizing a survey instrument to assess the influence of motivational factors and job satisfaction on teacher retention in selected elementary schools in Vinzons District. A quantitative approach was selected to quantify the collected data and accurately represent the participants' responses. By utilizing this method, the study seeks to system-

atically capture the Relationships and interactions among the variables of interest, thoroughly comprehending how these elements interact within the educational context under examination.

Participants

The research focused on currently employed elementary school teachers within a carefully selected elementary school group in Vinzons District. The study used the Raosoft formula to accurately determine 169 teachers as an appropriate sample size for investigation based on the estimated 300 elementary school teachers within the district. The research employed a simple random sampling technique to constitute this sample, guaranteeing an unbiased representation across the chosen schools. Specifically, the study focused on public elementary school teachers from the Vinzons District within certain institutions. The data gathered was limited to Vinzons Pilot Elementary School, Sto. Domingo Elementary School and El Trino P. Zenarosa Elementary School, respectively.

Research Instrument

In this research, the researcher designed a questionnaire to assess motivational factors and job satisfaction. The questionnaire has undergone a thorough validation process, where the researcher submitted it to a panel of experts for approval and validation.

The questionnaire employs a 5-point Likert Scale for its statements and is structured into three distinct categories: Motivational Factors, Job Satisfaction, and Teacher Retention. These categories were carefully chosen to capture the various aspects relevant to the study comprehensively. Experts in the relevant fields scrutinized the questionnaire to ensure its validity and reliability. Their expertise and feedback contribute to the questionnaire's robustness and ability to measure the intended constructs effectively.

Data Analysis

To interpret the data effectively, the researcher was employed in the following statistical treatment. The frequency count, percentage, ranking, weighted mean, and Pearson's r were utilized to interpret the data.
1. To assess the profile of the respondents, frequency count and percentage were used.
2. To assess the degree of motivational factors of the respondents in terms of personal growth and work-life balance, level of job satisfaction, and the degree of professional growth of the respondents, weighted mean and ranking provided insights into the respondents' perceptions.
3. To investigate the Relationship between degree of motivational factors in terms of personal growth and work-life balance, the level of job satisfaction, degree of professional growth of the respondents, the researcher would use a correlational analysis, such as Pearson's correlation coefficient.

RESULTS AND DISCUSSIONS

This part of the study shows the presentation, analysis, and interpretation of the gathered data from the questionnaires answered by the respondents. Such presentation is in accordance with the specific questions posited on the objectives of the study.

Rationale
1. Profile of the Respondents

Table 1. Profile of the Respondents

CATEGORY	DESCRIPTION	FREQUENCY	PERCENTAGE
Gender	Male	56	34.60
	Female	106	65.40
	Total	**162**	**100.00**
Age	25-35 years old	40	24.7
	36-45 years old	53	32.7
	46-55 years old	34	21.0

Age	56 years old and above	35	21.6
	Total	**162**	**100.00**
Teaching Experience	1-5 years	21	13.0
	6-10 years	70	43.2
	11-15 years	46	28.4
	16 years and above	25	15.4
	Total	**162**	**100.00**

Table 1 shows the profile of the respondents. Most of the respondents are female with a frequency count of 106 and percentage of 65.40. Also, most of the participants are between ages 36 to 45 years old, with a frequency of 53 out of 162 teachers, with a percentage of 32.70. Lastly, majority of the participants have 6 to 10 years of teaching experience, with a frequency of 70 and a percentage of 43.20. A notable proportion of the participants are female, representing the majority. Furthermore, a significant number of respondents fall within the age range of 36 to 45 years. Lastly, a considerable portion of the participants has accumulated teaching experience within the bracket of 6 to 10 years.

2. Degree of Motivational factors of the Respondents

2.1 Personal Growth

Table 2. Degree of Motivational factors in terms of Personal Growth

Items	Weighted Mean	Interpretation	Rank
I am motivated to improve my personal growth.	4.48	Strongly Agree	4.5
My school offers opportunities for career advancement.	4.54	Strongly Agree	1
Motivation enhances my job satisfaction.	4.52	Strongly Agree	2
There are clear pathways for professional growth at my school.	4.48	Strongly Agree	4.5
Adequate compensation is a significant motivating factor for me.	4.48	Strongly Agree	3
Composite Mean	**4.50**	**Strongly Agree**	

As seen in Table 2, the participants responded that the school they were assigned offered opportunities for career advancement.

2.2 Work-life balance

Table 3. Degree of Motivational factors in terms of Work-life balance

Items	Weighted Mean	Interpretation	Rank
Motivational factors play a significant role in my work-life balance.	4.58	Strongly Agree	1
I find motivation in the collaboration and camaraderie with colleagues.	4.53	Strongly Agree	2
My school provides adequate resources and materials for effective teaching.	4.51	Strongly Agree	4
I feel motivated by the support and recognition I receive from school administrators.	4.50	Strongly Agree	5
I receive regular feedback and support from school administrators to improve my teaching.	4.52	Strongly Agree	3
Composite Mean	**4.53**	**Strongly Agree**	

As seen in Table 3, the respondents stated that motivational factors play a significant role in their work-life balance.

3. Level of Job satisfaction of the Respondents

Table 4. Level of Job satisfaction of the Respondents

Items	Weighted Mean	Interpretation	Rank
I am satisfied with my current teaching workload.	4.46	Strongly Agree	3
I am satisfied with the working conditions at my school.	4.51	Strongly Agree	1
I have the autonomy and decision-making authority I need in my role.	4.44	Strongly Agree	4
Overall, I am satisfied with my job as a teacher.	4.47	Strongly Agree	2
Composite Mean	**4.47**	**Strongly Agree**	

This implies that the teachers find various aspects of their professional environment to be fulfilling and conducive to their work.

4. Degree of retention of the Respondents

Table 5. Degree of retention of the Respondents

Items	Weighted Mean	Interpretation	Rank
I have not considered leaving my current teaching position in the past year.	4.54	Strongly Agree	2
I am satisfied and fulfilled with teaching profession these past years	4.59	Strongly Agree	1.5
I believe that recognition and achievement will promote teacher retention	4.52	Strongly Agree	3
My school takes effective measures to retain experienced teachers.	4.51	Strongly Agree	4
I believe that promoting teacher retention is crucial for the stability of the education system.	4.59	Strongly Agree	1.5
Composite Mean	**4.55**	**Strongly Agree**	

As seen in Table 5, the participants replied that they were satisfied and fulfilled with teaching profession these past years, and they believe that promoting teacher retention is crucial for the stability of the education system.

Relationship Between the Variables of the Study.

Table 6. Relationship Between the Variables of the Study

Variables Compared	r-value	p-value	Decision	Interpretation
Degree of motivational factors and level of job satisfaction	0.129	0.101	p>0.01, Accept Ho	Not Significant
Degree of motivational factors and the degree of teachers' retention	0.008	0.923	p>0.01, Accept Ho	Not Significant
Level of job satisfaction and the degree of teachers' retention	-0.008	0.918	p>0.01, Accept Ho	Not Significant

These implied that the responses of the teacher-respondents on their degree of motivational factors and level of job satisfaction have no significant relationships.

Action Plan

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Table 7. Action Plan to be Proposed

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PROGRAM	OBJECTIVE	IN CHARGE	OUTPUT	TIMELINE
Strengthening Career Advancement Opportunities	Collaborate with educators, offer mentorship, and assess the effectiveness of career advancement programs.	Human Resources Department	Expanded and improved career advancement programs.	6 months
Enhancing Communication on Professional Growth	Develop comprehensive guides and encourage personalized development plans	Professional Development Coordinator	Improved communication on professional growth pathways	4 months
Implementing Work-Life Balance Strategies	Conduct surveys, tailor programs based on feedback to support work-life balance.	Work-Life Balance Committee	Implemented strategies supporting work-life balance.	8 months
Establish regular forums, implement reward systems to promote a culture of support and recognition.	Recognition and Support Coordinator	Recognition and Support Coordinator	Improved support and recognition mechanisms.	6 months
Assessing and Improving Job Satisfaction Factors	Regularly gather feedback, address identified areas of improvement for enhanced job satisfaction.	Job Satisfaction Task Force	Identified and addressed factors contributing to job satisfaction.	5 months

The action plans devised for organizational improvement and employee well-being encompass five key initiatives. The first plan focuses on enhancing career advancement opportunities, with a six-month timeframe led by the Human Resources Department. The second initiative, led by the Professional Development Coordinator over four months, aims to improve communication on professional growth. The third plan, spanning eight months and managed by the Work-Life Balance Committee, seeks to implement strategies supporting work-life balance. The fourth initiative, led by the Recognition and Support Coordinator over six months, aims to foster a culture of support and recognition. The final plan, led by the Job Satisfaction Task Force over five months, focuses on assessing and improving factors contributing to job satisfaction.

CONCLUSIONS

The study came up with the following conclusions:
1. **Demographic Profile and Experience**: The study's demographic profile predominantly consists of female educators aged between 36 and 45 years, with most participants possessing 6 to 10 years of teaching experience.
2. **Motivational Factors and Career Advancement**: Educators highly value career advancement opportunities within their school assignments, indicating effective mechanisms supporting professional growth. They also perceive clear pathways and exhibit strong motivation for personal development, suggesting a positive organizational culture that fosters continuous improvement.
3. **Work-Life Balance and Motivation**: There is a connection between motivation and work-life balance, implying that enhancing motivation could positively impact educators' ability to balance their professional and personal lives. Recognition and support from school administrators play a crucial role in maintaining this balance.

4. **Job Satisfaction and Working Conditions**: The study reveals a high level of job satisfaction among educators, attributed to positive working conditions encompassing various factors such as physical facilities, resources, administrative support, and overall school atmosphere.
5. **Teacher Retention**: Respondents believe in the critical importance of promoting teacher retention for the stability of the education system. The school administration actively implements strategies to address the unique needs of experienced educators, fostering an environment that encourages their continued commitment to the institution.
6. **Complex Interplay between Motivational Factors, Job Satisfaction, and Retention**: While there is no significant correlation between how teachers perceive motivational factors and their level of job satisfaction, and similarly, perceived motivational factors do not significantly influence teacher retention, this suggests a nuanced interplay between these variables. Efforts to improve job satisfaction and retention may need to target different aspects than those aimed at enhancing motivation among educators.
7. **Implications for Education Stakeholders**: The findings provide valuable insights for education stakeholders, emphasizing the importance of recognizing and supporting educators' professional and personal development, maintaining positive working conditions, and implementing effective strategies for teacher retention to enhance the overall well-being and effectiveness of the teaching workforce.

RECOMMENDATIONS

Based on the study's findings, the following recommendations can be drawn:

1. Career Advancement and Personal Growth:
- Strengthen and expand career advancement programs in collaboration with educators.
- Offer mentorship opportunities and regularly assess the effectiveness of career advancement initiatives.

2. Professional Growth Pathways and Motivation:
- Enhance communication on available professional growth pathways.
- Develop comprehensive guides and encourage educators to create personalized development plans.

3. Work-Life Balance and Motivational Factors:
- Implement strategies supporting work-life balance based on feedback obtained through surveys.
- Tailor programs to address specific needs and preferences of educators regarding work-life balance.

4. Support and Recognition:
- Promote a culture of support and recognition within educational institutions.
- Establish regular forums for educators to share experiences and accomplishments.
- Implement reward systems to acknowledge outstanding contributions and achievements.

5. Job Satisfaction and Working Conditions:
- Assess and prioritize factors contributing to job satisfaction through regular feedback mechanisms.
- Address identified areas of improvement in working conditions, resources, and administrative support.

6. Retention Strategies:
- Develop comprehensive retention strategies tailored to the needs of educators.
- Implement mentorship programs and create leadership pathways to retain experienced educators.
- Adapt retention strategies based on evolving needs and feedback from educators.

7. Holistic Approach to Educator Well-Being:
- Foster a holistic approach to educator well-being by encouraging open communication.
- Tailor initiatives to address various motivational factors, including career advancement, work-life balance, and recognition.

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INTEGRATION OF FLIPPED CLASSROOM UNDER NEW CURRICULUM: CRITICAL REVIEW OF CHALLENGES AND IMPACT SELECTED PUBLIC ELEMENTARY SCHOOLS IN CAMARINES-NORTE

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ABSTRACT

Twenty-first-century technological advancements have significantly impacted education, enabling students to access many online resources under the new curriculum. Within this evolving educational landscape, the flipped classroom model, characterized by its student-centered and flexible nature, has gained prominence in education. Flipped Classroom redefines the traditional lecture-centric approach. In FT, students are tasked with watching recorded lectures and materials independently at their own pace, while classroom time is dedicated to participatory learning activities. This approach has effectively transformed conventional lectures into dynamic, interactive sessions. While prior studies have offered valuable insights into flipped classroom research, it is evident that these reviews may need to adequately illuminate the practical aspects of implementing the flipped classroom approach in K-12 education. This paper highlights the determined features through a systematic review, focusing on implementation strategies, challenges, and reported effectiveness of the flipped classroom approach. By exploring pre-class and in-class activities and technologies utilized, this research aims to provide a comprehensive review of the integration of flipped classroom design under the K-12 curriculum setting. A sample size of 40 teachers was selected using stratified random sampling. Data collection was done using questionnaires. The sampling frame included educators actively utilizing Flipped Classroom in their educational practices. The result shows that teachers using flipped classroom set-ups encountered challenges in motivating and managing the discipline of learners during their out-of-class setting. Overall, the finding suggests that flipped classrooms positively impact students' engagement, self-efficacy, and overall academic performance .

Keywords: flipped classroom, new curriculum, critical review of challenges and impact

INTRODUCTION

The education landscape has witnessed a transformative shift towards student-centered and self-regulated learning in recent years. Despite widespread acceptance of the constructivist philosophy, educators often need help incorporating active learning within the constraints of large lectures and fixed schedules. In response, a concerted effort has been made to explore innovative strategies that enhance the teaching and learning process, fostering a transition towards more active student participation.

Twenty-first-century technological advancements have significantly impacted education, enabling students to access many online resources under the new curriculum. Concurrently, educators leverage digital tools to present multimedia content, ushering in a new era of blended learning that merges technology with traditional teaching. Within this evolving educational landscape, the flipped classroom model, characterized by its student-centered and flexible nature, has gained prominence in education.

The instructional method known as Flipped Teaching (FT) is commonly referred to as a "flipped classroom" or "flipped learning." As "flipped" implies, FT redefines the traditional lecture-centric approach. In contrast to conventional teaching, which typically involves teachers delivering lectures in the classroom and students engaging in various learning activities at home, FT reverses these roles. In FT, students are tasked with watching recorded lectures (or reviewing other materials) independently at their

own pace, while classroom time is dedicated to participatory learning activities (Dohun, 2017; Föster et al., 2022; Lee et al., 2022). More specifically, the flipped classroom paradigm encourages students to engage with instructional materials before attending class, typically through video-recorded lectures. Classroom time is devoted to collaborative activities, discussions, presentations, and knowledge construction facilitated by instructors acting as guides and motivators. This approach has effectively transformed conventional lectures into dynamic, interactive sessions.

However, the implementation of flipped classrooms is challenging. Students' access to devices and connectivity for viewing instructional videos at home poses a common obstacle. Teachers also need help with issues regarding time, resources, and skills required for pre-class material preparation. The fidelity of students in completing pre-class activities is another concern, as it directly influences the success of subsequent in-class activities.

While prior studies have offered valuable insights into flipped classroom research, it is evident that these reviews may not adequately illuminate the practical aspects of implementing the flipped classroom approach in K-12 education. Some review studies have confined their investigation solely to the education context (O'Flaherty & Phillips, 2015; Seery, 2015), while others have focused on subject disciplines typically found in post-secondary education, such as nursing (Betihavas et al., 2016; Presti, 2016). Notably, only two outdated articles addressing K-12 flipped classrooms were identified and reviewed. As of the current writing, more literature review studies need to be specifically delving into flipped classrooms in K -12 education. Hence, a systematic review becomes imperative to examine the implementation of K -12 thoroughly flipped classrooms.

This study addresses this gap through a systematic review, focusing on implementation strategies, challenges, and reported effectiveness of the flipped classroom approach. By exploring pre-class and in-class activities and technologies utilized, this research aims to provide a comprehensive review of the integration of flipped classroom design under the K-12 curriculum setting.

Statement of Objectives
This study aims to determine the extent of integration of Flipped Classroom under the new curriculum, focusing on its Challenges and Impacts. However, specifically, it aims to:
1. Determine the demographic profile of the respondents in terms of:
    1.1 Age
    1.2 Gender
    1.3 Years in Teaching
    1.4 Subject Teaching.
2. Determine to what extent does the integration of the flipped classroom set- up impact the student, in terms of:
    2.1 Student's Engagement
    2.2 Student's Self Efficacy
    2.3 Overall Academic Performance.
3.Determine the challenges do educators encounter when integrating the flipped classroom model in terms of:
    3.1. Out-of-class Learning
    3.2 In-class Learning.
4. Determine whether there is a significant difference among extent of integration of flipped classroom set-up when respondents are grouped according to profile.
5. Determine whether there is a significant difference among challenges encountered in integrating flipped classroom when respondents are grouped according to profile.

METHODOLOGY

Research Design

The selected research design for this study is a combination of Descriptive and Comparative Research Design. The descriptive aspect of the research design entails thoroughly examining the phenomena being studied. This refers to the level of integration of the Flipped Classroom model in the educational environment under the new curriculum.

Descriptive research offers a comprehensive comprehension of the present situation, whereas comparative research enables a detailed examination of potential distinctions among groups of educators. An all-encompassing strategy is crucial for producing profound insights beyond.

Participants and Sampling Techniques

This study primarily targets the selected public elementary school teachers who actively implement the Flipped Classroom approach in Camarines- Norte. The research site is located in the 5th district of Camarines Sur, offering a localized context for the investigation. In order to guarantee a sample that accurately represents the population, a stratified random sampling approach will be utilized. The approach entails categorizing the intended group (educators in the 5th district of Camarines Sur) into smaller groups or strata according to school locale.

This methodology improves the study's external validity, enabling the application of more generalized findings to a wider community of educators. The study employed a sample size of 40 participants. This sample size was determined based on practicality, resource limitations, and the capacity to gather comprehensive and significant data within the established study parameters. Although the sample size is relatively modest, it offered enough detailed and comprehensive information to gain qualitative knowledge of the integration, obstacles, and benefits of the Flipped Classroom model in the defined area.

Research Instrument

As this research uses a quantitative approach, the instrumentality will be a self-administered questionnaire.

The Likert scale, with its four-point range, allows respondents to express their levels of agreement or disagreement with statements related to student engagement, self-efficacy, overall academic performance, and challenges in out- of-class and in-class learning.

Procedures

After confirming the research tool's validity, the researcher performed a preliminary visit to the study site. This phase entails acquainting oneself with the physical surroundings, logistical factors, and any obstacles associated with the data-gathering procedure. Participating in a pre-tour allows the researcher to get essential knowledge that enhances the efficient implementation of the following research tasks. One week before the intended data collection day, the researchers completed the list of participants and verified the availability of active contact numbers. This strategic measure was implemented to enhance communication channels and reduce potential interruptions in contacting the chosen participants. On the scheduled day of data collection, the researchers personally visited the chosen respondents' location. The direct involvement enabled an immediate exchange and strengthened the relationship between the researchers and participants. This customized strategy is designed to optimize the response rate and guarantee the high quality of the gathered data. Upon completing the questionnaire distribution, the researchers promptly gathered the filled-out surveys. This approach was established to ensure a 100% recovery rate, reducing the likelihood of missing or incomplete data. The promptness of gathering further strengthens the dedication to data precision and comprehensiveness.

Data Analysis

The following statistical tools will be utilized in analyzing the data gathered: Frequency distribution and percentage; Ranking and Likert Scale; Weighted Mean; and, ANOVA (Analysis of Variance).

RESULTS AND DISCUSSIONS

This chapter presents, analyzes, and interprets the data gathered using appropriate statistical tools. This presentation is sorted with the specific questions presented on the rationale of this study. The data were presented in tabular form.

Table 1: Profile of the Respondents
1.1 By Age

Age	Frequency	Percentage	Rank
21-30 years old	15	37.5 %	1
31-40 years old	11	27.5 %	2
41-50 years old	3	7.5 %	3
51 years old above	1	2.5 %	4
Total:	**40**	**100 %**	

The age group of 21-30 years old exhibited the highest frequency count, totaling fifteen individuals or 37.5%, securing the top rank among the respondents, as outlined in Table 1.1. In contrast, the age bracket of 51 years old and above recorded the lowest frequency count, with just one individual or 2.5%, placing it at the fourth rank. It denotes that, younger teachers tend to use flipped classroom set up compared to older teachers. Younger teachers, who have grown up in a digital era, may generally be more familiar and comfortable with technology.

1.2 By Sex

Sex	Frequency	Percentage	Rank
Male	13	32.5 %	2
Female	27	67.5 %	1
Total:	**40**	**100 %**	

Table 1.2 presents the demographic distribution of respondents based on gender. The majority of participants in the study are female, constituting the highest frequency with 27 individuals, equivalent to 67.5%. This shows substantial portion of the individuals who took part in the study identify as female.

1.3 Years in Service

Years	Frequency	Percentage	Rank
Less than 1 year	2	5 %	5
1-3 years	11	27.5 %	2
4-6 years	18	45 %	1
7-10 years	6	15 %	3
10 years and above	3	7.5 %	4
Total:	**40**	**100 %**	

Table 1.3 displayed the duration of years involved in service. According to the data, the time period of 4 to 6 years had the highest frequency count of eighteen, which corresponds to 45% and ranks first. On the other hand, the time period of less than a year had the lowest frequency count of two, equivalent to 5%, and ranks fifth. This shows that, teachers with a moderate level of teaching experience (notably, between 4 to 6 years) are more inclined to use the flipped classroom setup. Experienced teachers embrace the flipped classroom, especially if they actively seek professional development opportunities and are open to adapting their teaching methods over the course of their careers.

1.4 Area of specialization

Subject	Frequency	Percentage	Rank
Science	10	25 %	3
Language Subjects	13	32.5 %	2
Mathematics	14	35 %	1
Technical and Livelihood Subjects	3	7.5 %	4
Total:	**40**	100 %	

Table 1.4 shows the subjects taught by participants where Mathematics got the highest frequency count of thirteen, which corresponds to 35% and ranks first. This means that mathematics often involves complex problem-solving and critical thinking.

Table 2: Impact of Integration of Flipped Classroom
2.1 In terms of Student's Engagement

Items	Weighted Mean	Verbal Interpretation	Rank
In-class learning increases students' engagement on activities and performances.	3.38	Strongly Agree	1
Students shows increase interest on materials presented on out-of-class learning.	2.52	Agree	3
Students feel more excited and enthusiasm on collaborative and performance tasks during in-class learning.	3.31	Strongly Agree	2
Overall Mean:			

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

Table 2.1 shows the Impact of Integration of Flipped Classroom in terms of student's engagement. Based on the data, "in-class learning increases students' engagement on activities and performances" obtained the highest rank recording a Weighted Mean of 3.38 with Verbal Interpretation of Strongly Agree. Lage, Platt, and Treglia (2016) looked at how the flipped classroom paradigm affected student participation. When compared to typical lecture-based classrooms, they discovered that students in the flipped classroom were more attentive during in-class activities. The reason for this boost in involvement, according to the researchers, was that more interactive and collaborative activities could be conducted in class because students had already been exposed to the material through pre-class tasks. The flipped classroom approach was used in a mathematics course at the college level. The results showed that during class, students in the flipped classroom participated in more problem- solving tasks. According to the researcher, students' pre-class projects contributed to their better comprehension of the subject matter, which raised their level of engagement and active participation in in-class activities (Strayer, 2017).

2.2 In terms of Student's Self Efficacy

Items	Weighted Mean	Verbal Interpretation	Rank
Student became more self-directed and reflect on their own.	3.72	Strongly Agree	1
Students became more confident in their ability to understand and master challenging course materials.	3.18	Agree	2
Students successfully complete assignments and projects in this course.	2.64	Agree	3
Overall Mean:			

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

The impact of integrating a flipped classroom on students' self- efficacy is displayed in Table 2.2. According to the statistics, the top ranking was "student became more self-directed and reflected on their own," with a verbal interpretation of "strongly agree" and a weighted mean of 3.72. It means that an increase in self-efficacy with the active learning experiences provided by the flipped classroom allows students to take ownership of their learning and engage in self-directed activities. Adult learners were surveyed, and 63% said they would like access to activities that would allow them to assess their learning after a study session. Students in flipped classrooms are much more likely to internalize the information and be able to apply it to their work because they can study whenever, whenever, and at their own pace.

2.3 Overall Academic Performance

Items	Weighted Mean	Verbal Interpretation	Rank
Students improve their study habits that enhance their academic performance.	3.20	Agree	2
Students performed better on their assessment which reflects on high grade remarks.	2.58	Agree	3
Students improved overall skills and knowledge.	3.47	Strongly Agree	1
Overall Mean:			

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

Table 2.3 presents the findings regarding incorporating the flipped classroom approach's influence on overall academic performance. According to the collected data, the statement "Students improved overall skills and knowledge" achieved the highest rank, as indicated by a Weighted Mean of 3.47. This score corresponds to a verbal interpretation of "Strongly Agree." The implementation of the flipped classroom methodology has been found to have a positive impact on both student satisfaction and learning performance.

Table 3: Challenges encountered by Educators
3.1 In terms Out-of-class setting

Items	Weighted Mean	Verbal Interpretation	Rank
Access to necessary technology resources for out-of-class learning is a challenge	2.44	Disagree	4
Inconsistency in internet connectivity hinders my ability to access instructional videos or materials.	2.52	Agree	3
The time required for out-of-class learning activities poses a challenge due to other commitments.	2.28	Disagree	5
Lack of clear instructions or guidance for out-of-class learning is a challenge	3.78	Strongly Agree	2
Find it challenging to stay motivated and disciplined during out-of-class learning activities.	3.92	Strongly Agree	1

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

In Table 3.1, the challenges faced by educators in out-of-class settings are presented. Among these challenges, the item "Find it challenging to stay motivated and disciplined during out-of-class learning activities" has the highest weighted mean of 3.92. This strongly agrees with the statement, suggesting that educators commonly experience difficulties maintaining motivation and discipline during out-of-class learning activities.

The study highlights a significant discovery regarding the challenges educators face in maintaining student engagement and discipline during learning activities outside the conventional classroom environ-

ment. The emergence of this challenge can be attributed to the transition of responsibility from educators to learners in terms of knowledge acquisition and active engagement with pre- class materials. The challenge of maintaining student motivation arises from the need for self-directed learning in out-of-class activities, which may be unfamiliar or uncomfortable for certain students. In certain instances, it has been observed that a subset of students needs help effectively managing their time or may exhibit a lack of intrinsic motivation when it comes to independently engaging with academic materials.

3.2 In terms In-Class setting

Items	Weighted Mean	Verbal Interpretation	Rank
Difficulty in understanding the pre-class materials affects engagement during in-class activities.	3.79	Strongly Agree	1
The transition from out-of-class learning to in-class activities pose challenges.	2.34	Disagree	2
Find it challenging to actively engage students to participate in in-class discussions or activities.	2. 22	Disagree	3
Face challenges in motivating learners to collaborating with their peers during in-class group discussions or activities.	1.67	Strongly Disagree	4
I find it challenging to create good learning environment for in-class sessions.	1.43	Strongly Disagree	5

Legend: 1.00- 1.74 (Strongly Disagree) 1.75- 2.49 (Disagree) 2.50-3.24 (Agree) 3.25-4.00 (Strongly Agree)

In Table 3.2, the challenges faced by educators in the in-class setting are presented. The highest weighted mean of 3.79, indicating a strong agreement, was obtained for the statement "Difficulty in understanding the pre-class materials affects engagement during in-class activities." While "I find it challenging to create good learning environment for in-class sessions" got the lowest weighted mean with verbal interpretation of strongly disagree. Pre-service teachers' reactions to the flipped classroom approach with microlearning support are investigated in a study. Although it doesn't specifically address the challenge of comprehending pre-class information, it looks at how the flipped classroom style affects student engagement and learning objectives.

Table 4: Significant difference between profile of respondents and their perceived impacts of the integration of Flipped Classroom

Perceived Impacts	f-ratio value	p-value	Decision
Student's Engagement	3.33	.046498	**significant** at $p < .05$, Reject Ho
Student's Self Efficacy	2.83	.071499	**Not significant** at $p > .05$, Failed to Reject Ho
Overall Academic Performance	2.31	.11304	**significant** at $p < .05$, Reject Ho

It was found that there was a significant difference between the perceived impact of the integration of Flipped Classroom in terms of student engagement and the profile of respondents. This was supported by a study that involved the formation of one control group and two experimental groups. In Experiment I, the students were exposed to the theoretical aspect of the course by engaging with materials in an online learning environment. These materials were carefully prepared before the class study time, aligning with the principles of the flipped classroom approach. In Experiment II, the students were exposed to the theoretical aspect of the course through classroom instruction, following the blended learning model.

They also participated in active learning activities outside their designated study time. In the study, the control group of students adhered to the conventional curriculum and engaged in active learning exercises within the confines of their homes. The research conducted in this study revealed a notable disparity in academic achievement and engagement scores between the experimental and control groups. Specifically, the scores of students in the experimental groups were higher than those of the control group. These differences observed between the groups were determined to be statistically significant.

Table 5: Significant difference between profile of respondents and their perceived challenges on the integration of Flipped Classroom

Challenges	f-ratio value	p-value	Decision
Out-of-class learning	4.26	.021416	**significant** at $p < .05$, Reject Ho
In-class learning	3.94	.027864	**significant** at $p < .05$, Reject Ho

It was found that there was a significant difference between the perceived impact of the integration of Flipped Classroom in terms of out-of-class learning and the profile of respondents. This denotes that there is significant variation among individuals when it comes to their learning preferences and styles. The flipped classroom approach is a teaching method that enables students to engage in self-paced learning and review course materials outside of traditional class time. This approach is particularly beneficial for students who prefer independent learning and the ability to progress at their speed. In contrast, individuals who prefer conventional classroom instruction may perceive the flipped classroom approach as less conducive to their preferred learning style. According to research, students with a higher level of comfort and familiarity with technology and online learning platforms may perceive the flipped classroom model as a more engaging and effective approach to their educational experience.

CONCLUSIONS

The study came up with the following conclusions:
1. The flipped classroom positively impacts the students' engagement, self- efficacy, and overall academic performance.
2. Educators using flipped classroom set-ups encountered challenges in motivating and managing the discipline of learners during their out-of-class setting.
3. Educators using flipped classroom set-ups encountered challenges transitioning from out-of-class to in-class settings where students helped understand the pre-class materials, affecting engagement afterward.

RECOMMENDATIONS

Based on the summary of findings and conclusion mentioned above, the researchers recommend the following:
1. Propose a strategic educational plan for improving the transition of out-of-class to the in-class settings of flipped classrooms.
2. Continue to improve the use of flipped classrooms since it is proven to positively impact the student's engagement, self-efficacy, and overall academic performance.
3. Conduct an in-depth study on the respondents' modifying factors that directly affect the flipped classroom's effectiveness, comparing the educator's reflection and the learner's perspective.

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