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School-based Management: School Heads' Commitment, Compliance, and Challenges

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Abstract

School-based management (SBM) is a management framework of authorities and responsibilities. It devolves its purpose on student learning, quality-focused, and resource deployment of the school. This study determines school heads' level of commitment, the extent of compliance, and challenges in SBM. A total of 64 school heads were used in the study. However, in the challenges encountered, six school heads were interviewed one-to-one. Results showed a significant difference in the level of commitment when respondents were grouped and compared according to age and in the management of resources and curriculum and learning when grouped and compared according to age and sex. Also, results showed a significant difference in the extent of compliance on SBM in the area curriculum and learning when grouped and compared according to age. In addition, results showed a significant relationship exists between the level of commitment and extent of compliance on school-based management. Thus, school heads encountered challenges in SBM such as monitoring and evaluation, inadequate funding of resources in facilities, and intensifying the relationship between the schools and stakeholders. These results may imply that as school heads are more committed to their responsibilities, they will be more productive and exposed to engagement in decision-making, managing resources and manpower, and organizational structure. Given the findings and conclusions, this paper calls for a perpetual enhancement of implementing SBM and finding creative means for improving the efficiency and effectiveness of school heads in their responsibilities.

Keywords : School-Based Management (SBM), School Heads, Division of Bacolod City SY 2020-2021, commitment, compliance, challenges

1. Introduction

A strategy in managing a school and improving education by transferring significant decision-making authority from state and district offices to individual schools is through the implementation of school-based management (SBM) as a governance framework of DepEd in line with Republic Act No. 9155 or also known as Governance of Basic Education Act of 2001 as a legal cover. Llego (2016) says that SBM provides principals, teachers, students, and parents' greater control over the education process by taking responsibility for the budget, personnel, and curriculum.

SBM yields various positive results such as improved academic performance of students, increased participation of parents and the community in the education of the students/children, and more importantly, empowerment of the local school heads, among others. (Abulencia, 2016)

However, managing a school and bringing together departments and campuses to achieve the mission is always a big challenge for school leaders (Sriram, 2019). Alvarado et al (2021) also stated in the study that amid the multitude of tasks of a school leader lies the many challenges they find difficult. The most popular clamor is about the stressful nature of their administrative function with many papers works to do, leaving behind more critical tasks like curriculum development and instructional supervision.

Before the pandemic, the researcher observed that school heads encountered difficulty managing schools regarding the maintenance of facilities, inadequate funding of resources, process management implementation, curriculum management, student dropouts, lack of seminars for teachers, PTA meetings, and poor community linkages. With the present health crisis that greatly affects educational institutions, school heads are more challenged in managing the schools, minimizing the effects of COVID 19 while ensuring that education continues. With these, school heads need to innovate strategies on effectively managing the school through implementing School-Based Management using the following areas: Leadership and Governance, Curriculum and Learning, Accountability and Continuous Improvement, and Management of Resources.

For the above purpose, this study was conducted to determine the commitment, compliance, and challenges encountered by school heads on SBM that will help them cope with the changes in the education system and improve their services and the school's performance.

1.1 Theoritical Framework

The study was based on organizational change theory. School managers must have a broad understanding of how systems and organizations effectively carry out their respective duties and responsibilities. The role of the school administrators continuously evolved from managerial to leadership functions. Currently, these instructional leaders are perceived as the prime movers of change and transformation in their respective organizations (Alvarado et al, 2021).

Organization theory is concerned with the relationship between organizations and their environment, the effects of those relationships on organizational functioning, and how organizations affect the distribution of privilege in society. A central concept is an organizational design (sometimes termed "organizational form"). Organizational design is important because the ability of societies to respond to various problems depends on the availability of organizations with different capabilities. (Bloomberg, 2020)

Moreover, this study is also based on The Great Man Theory of Leadership by Thomas Carlyle (1840). It relates to the inbuilt leadership traits. Factors of becoming a great leader are mentioned, like upbringing, education, experiences of the leadership abilities.

During the 19th century, the Great Man Theory of Leadership became very popular. The theory was formulated by analyzing the behaviors of mainly military profiles of the time. In the 1800s, authoritative positions were held solely by men and were typically passed on from father to son. Thus, it is not a coincidence that the theory was named "Great Man Theory" as women were not allowed to rise when the occasion presented itself.

By linking the two (2) theories, this research has been given a strong foundation. These theories focus on the characteristics of leaders but attempt to identify the behaviors that people can adopt to improve their leadership abilities in different situations. Early debates on the psychology of leadership often suggested that such skills were simply abilities that people were born with. In other words, these theories proposed that certain people were simply "born leaders." Some more recent theories propose that possessing certain traits may help make people nature leaders, but experience and situational variables also play a critical role.

1.2 Objectives

This study aimed to determine the level of commitment, the extent of compliance, and challenges encountered by Elementary and Secondary School Heads on School-Based Management in the Bacolod City Division for 2020-2021.

Specifically, this study sought to answer the following questions:

1. What is the level of commitment of the School Heads on School-Based Management according to the following areas, Leadership and Governance, Accountability and Continuous Improvement, Management of Resources, and Curriculum and Learning?

2. What is the extent of compliance of the School Heads on School-Based Management according to the aforementioned areas?

3. Is there a significant difference in the level of commitment of the School Heads on School-Based Management when grouped and compared according to the aforementioned variables?

4. Is there a significant difference in the extent of compliance of the School Heads on School-Based Management when grouped and compared according to the aforementioned variables?

5. Is there a significant relationship between the level of commitment and extent of compliance of the School Heads on School-Based Management?

6. What are the challenges encountered by the School Heads on School-Based Management?

1.3 Hypotheses

There is no significant difference in the level of commitment of the School Heads on School-Based Management when grouped and compared according to the aforementioned variables, there is no significant difference in the extent of compliance of the School Heads on School-Based Management when grouped and compared according to the aforementioned variables, and there is no significant relationship between the level of commitment and extent of compliance of the School Heads on School-Based Management.

2. Related Research

This section presents various literature reviews to give him background on the study. Likewise, related concepts and studies that have significant bearings to the study conducted were also presented. Conceptual literature provided additional insights on the School Heads' commitment, compliance, and challenges on School-Based Management.

Wagner (2016) explains that as a school leader, your top commitment is to improve student learning. Refining instructional practice among your staff should be at the top of your priority list. In a study of the school's system, which provides quality in terms of management, He pointed out further that School-Based Management is a major school restructuring mechanism to provide quality education and attempt to decentralize and de-bureaucratize school control. Also, Wyk and Marumoloa (2017) studied the notion of school-based management that was firmly entrenched in South Africa with the Schools Act of 1996. It was found that, in the South African situation where school-based management is used widely, school policies are consistently seen as decision-making and problem-solving instruments. It is consistent with the research by Laily and Wahyuni (2017), which concluded that higher organizational commitment would also increase teacher performance. This research has also found a strong relationship between organizational commitment and teacher performance in vocational high schools in North Minahasa Regency, which confirms that factors related to organizational commitment correlate strongly with teacher performance. Munir et al. (2016) research results show that there is a positive relationship between all dimensions of self-management (decision-making, resource and personnel management, availability of resources, and organizational structure) and school effectiveness. In addition, the results show full mediation between resource management, personnel, and organizational structure and school effectiveness through motivation.

Several research studies show some challenges encountered in the implementation of SBM. Abulencia (2016) stated that every educational institution in the world has its own

share of problems that need to be addressed. Bart (2021) stated that schools experiencing exceptionally rapid principal turnover, for example, are often reported to suffer from a lack of shared purpose, cynicism among staff about principal commitment, and an inability to maintain a school-improvement focus long enough to actually accomplish any meaningful change. Most principals are stressed by the chronic burden imposed by the demands to perform to their utmost human capacity, only to fall short of what is demanded when it matters most. A study by Pepito & Acibar (2019) also shows that other school heads found some stakeholders unreachable. There are cases that when stakeholders are tapped, they will not prioritize the schools because they do not understand their roles and responsibilities in making themselves partners of the school. Less visitation of schools, fear, and unavailability to convince stakeholders are also considered gaps.

3. Methodology

This chapter presented the research design, the subject and participants of the study, the data gathering instrument, validity and reliability of the instrument, data-gathering procedure and processing procedure, analytical schemes, and the statistical tools used in this investigation to facilitate this investigation the data analysis.

3.1 Research Design

The mixed-method was suitable for the research as it allowed the researcher to collect and examine various opinions that various respondents provided to understand the said research better. The mixed-method was the research design which helped in the detailed interpretation of the data gathered. The researcher found the mixed-method research design as the most appropriate tool needed. Also, this design was appropriate for the study to know the present situation and determine the prevailing issues, making adequate and accurate interpretation of the data.

3.2 Respondents

The respondents were the 64 School Heads in the Division of Bacolod City, composed of 41 elementary schools and 23 secondary schools. Since the number of respondents is quite manageable, purposive sampling was utilized. Purposive sampling is non-probability sampling.

3.3 Instrument

The researcher gathered the needed data for this study by constructing a self-made questionnaire. The questionnaire was divided into three parts. Part I contained the participants' profile, which includes the participants' name, age, sex, length of service, and highest educational attainment. Part II was the questionnaire proper on compliance and commitment of school heads on school-based management. The 40-item test was based on Leadership and Governance, Accountability and Continuous Improvement, Management Resources, and Curriculum and Learning. The obtained scores for the level of commitment of the respondents in School-Based Management are rated on the scale of 1-5, with five interpreted as Always, four as Often, 3 Sometimes, two as Rarely, and one as Almost Never. Part III of the questionnaire consisted of 5 open-ended interview questions on challenges encountered by the School Heads on School-Based Management.

The validity index was 4.76, which is interpreted as "Excellent," making the instrument valid. The reliability index in the level of commitment was 0.956, which was interpreted as "Excellent," and 0.889. For the extent of compliance which was interpreted as "Good," making this instrument reliable.

3.4 Procedure

After the approval of the questionnaire by the panel members, the validity of the instrument was established. After which, the authority of the Schools Division Superintendent and School Heads were sought through submitting a request or a letter of communication asking permission to establish reliability and conduct of the study. In the conduct of the study, the researcher explained the purpose of the survey, personally administered the questionnaire to the respondents, and guided them in answering. For the individual interview, the researcher prepared a questionnaire with general and personal or specific questions asked to share their experiences and knowledge. The research assured the respondents of the confidentiality of the data gathered.

3.5 Analysis

A descriptive-analytical scheme was used to determine the level of commitment and the extent of compliance of school heads on School-Based Management with mean as the statistical tool. Along this line, the following rating scales and descriptions were utilized in interpreting the results for the level of commitment: 4.50-5.00 = Very High Level, 3.50-4.49= High Level, 2.50-3.49= Moderate Level, 1.49-2.49=Low Level, 1.00-1.49= Very Low Level. The following rating scale and description were utilized in interpreting the results for the extent of compliance: 4.50-5.00 = Very Great Extent, 3.50-4.49= Great Extent, 2.50-3.49= Moderate Extent, 1.49-2.49=Low extent, 1.00-1.49= Very Low Extent. Moreover, the comparative-analytical scheme was used to determine the significant difference in the level of commitment and extent of compliance when grouped and compared according to variables with Mann-Whitney U Test as the tools. In addition, the relational analytical scheme was used to determine to test the significant relationship between the level of commitment and extent of compliance with Spearman Rho as the tool. Finally, a thematic analytical scheme was used to determine the challenges encountered by school heads on School-Based Management.

3.6 Ethical Considerations

The study ensures that respondents have the free will to be involved in the study, their identity will not be disclosed, and confidentiality of the data gathered from them is assured. After completion, all data stored in electronic gadgets will be discarded in order to protect against unauthorized access or use of information.

4. Results and Discussions

This chapter includes the results and discussions that were gathered in consonance with the specific objectives outlined in this investigation.

This study was mainly concerned with the discussion on the Commitment, Compliance, and Challenges of School Heads on School-Based Management for the school year 2020-2021.

4.1 Level of Commitment of the School Heads on School-Based Management according to the Areas on Leadership and Governance, Accountability and Continuous Improvement, Management of Resources, and Curriculum and Learning

Table 3 Level of Commitment of the School Heads on School-Based Management in the Area Leadership and Governance

a. Leadership and Governance	Mean	SD	Interpretation
The School Heads…			
1. Institute, manage, and monitor operations and administrative systems.	4.63	.60422	Very High Level
2. Facilitates communication between and among school and community leaders	4.66	.54098	Very High Level
3. Strategically manage staff resources.	4.61	.60729	Very High Level

a. Leadership and Governance	Mean	SD	Interpretation
4. Seek, acquire, and manage other resources to support the curriculum, assessment, and student learning community.	4.56	.53080	Very High Level
5. Assign and schedule teachers and staff to roles and responsibilities	4.59	.52610	Very High Level
6. Employ technology to improve the quality and efficiency of operations and management.	4.58	.52869	Very High Level
7. Comply with the school community understand local laws, policies, and regulations to promote student success.	4.64	.48361	Very High Level
8. Provide decision-making and solving of school community wide-learning problems.	4.55	.53243	Very High Level
9. Administer systems for fair and equitable management of conflict among students, faculty, staff, leaders, families, and the community.	4.59	.55546	Very High Level
10. Manage governance processes internal and external politics toward achieving the school's mission and vision.	4.55	.56145	Very High Level
Overall Mean	**4.60**	**.40842**	**Very High Level**

Level of Commitment of the School Heads to school-based management in leadership and governance obtained an overall mean score of 4.60, which is interpreted as a very high level. Furthermore, the highest mean score of 4.66, interpreted as a very high level, is on item number 2, "The school heads facilitate communication between and among school and community leaders." On the other hand, item number 8, "The school heads provide decision-making and solving of school community wide-learning problems.", item number 10, "The school heads manage governance processes internal and external politics toward achieving the school's mission and vision," have the lowest mean of 4.55, which is interpreted as a very high level.

This implies that our school principals in Bacolod City show less encouragement to develop cooperation among the schools and communities in dealing with wide-learning problems and long-term perspective on good governance, along with a sense of what is needed for such development in achieving schools vision and mission.

The result of the study agrees with Cotton (2016), which states that much of the literature on school-based management is concerned with the problems in districts, schools, and stakeholders have experienced. Also, insufficient support for site councils which are the bodies concerned with planning and decision making in most SBM structures.

Table 4 Level of Commitment of the School Heads on School-Based Management in Accountability and Continuous Improvement

b. Accountability and Continuous Improvement	Mean	SD	Interpretation
The School Heads…			
1. Ensure that management structures and mechanisms are responsive to the community's emerging learning needs and demands.	4.61	.49175	Very High Level
2. Use continuous improvement methods to achieve the vision, mission, and core values of the school.	4.73	.51152	Very High Level
3. Prepare the school and the community for improvement, instilling mutual commitment and accountability.	4.58	.52869	Very High Level
4. Engage others in an ongoing evidence-based inquiry, planning, and implementation process for continuous school improvement.	4.53	.56256	Very High Level
5. Employ situational-appropriate strategies for improvement and attention to different implementation phases.	4.50	.59094	Very High Level
6. Assess and develop the capacity of staff to assess the value and applicability of emerging educational trends for the school and its improvement.	4.61	.52303	Very High Level
7. Develop technically appropriate data collection and management systems as needed to the district office and external partners.	4.53	.56256	Very High Level
8. Adopt a systems perspective and promote coherence among improvement efforts and all aspects of school organization, programs, and services.	4.50	.59094	Very High Level
9. Provide support and encouragement and openly communicate	4.50	.56344	Very High Level

b. Accountability and Continuous Improvement	Mean	SD	Interpretation
the need for, the process for, and outcomes of improvement efforts.			
10. Develop and promote leadership among teachers and staff for implementing improvement.	4.67	.47324	Very High Level
Overall Mean	**4.58**	**.38822**	**Very High Level**

Level of Commitment of the School Heads to school-based management in accountability and continuous improvement. Based on this result, the overall mean is 4.58, which is interpreted as a very high level. Item number 2, "The school heads use continuous improvement methods to achieve the vision, mission, and the core values of the school," has the highest mean score of 4.73 and is interpreted as a very high level.

However, item number 5, "The school heads employ situational-appropriate strategies for improvement, and attention to different phases of implementation," item number 8 "The school heads adopt a systems perspective and promote coherence among improvement efforts and all aspects of school organization, programs, and services." Item 9 "The school heads provide support and encouragement and openly communicating the need for, the process for, and outcomes of improvement efforts" have the lowest mean of 4.50, which is interpreted as very high level.

This indicates that school heads show less perseverance in creating an environment that would promote continuous improvement for the school. Also, school heads show fewer obligations in the communication on the needs and efforts of the school teachers, staff, and community partners.

According to Elgart (2017), schools and districts have generated voluminous school improvement plans with long lists of goals, objectives, strategies, and activities that fail to engage staff, students, and stakeholders. Requirements to demonstrate evidence of annual progress also encourage schools to shift direction more rapidly than the slow, sustainable process that characterizes many effective continuous improvement efforts because continuous improvement takes time.

Table 5 Level of Commitment of the School Heads on School-Based Management in the Management of Resources

c. Management of Resources	Mean	SD	Interpretation
The School Heads…			
1. Manage resources with transparency, effectiveness, and efficiency.	4.73	.44516	Very High Level
2. Produce completeness of records in the financial statement in school.	4.61	.52303	Very High Level
3. Engage stakeholders in planning and programming resources.	4.59	.49501	Very High Level
4. Provide resource inventory.	4.70	.52492	Very High Level
5. Manage the network and linkages that strengthen and sustain partnership for improving resource management	4.64	.51539	Very High Level
6. Monitor, evaluate and report regularly on processes of resource management	4.69	.46718	Very High Level
7. Provide access to learning resource portals such as internet, portal, and equipment	4.69	.50000	Very High Level
8. Manage the school's website and learning resource portal.	4.66	.54098	Very High Level
9. Provide resource management plan included in every program and Projects (PAPs)	4.64	.51539	Very High Level
10. Provide Inventory reports, Financial plan/budget, School Improvement Plan, and Programs, and Projects resources	4.67	.56497	Very High Level
Overall Mean	**4.66**	**.33405**	**Very High Level**

Table 5 depicts the level of commitment of the school heads to school-based management in the area of control of resources. In this area, the overall mean score is 4.66, interpreted as a very high level. Item number 1, "The school heads manage resources with

transparency, effectiveness, and efficiency," has the highest mean score of 4.73, which is interpreted as a very high level.

However, item number 3, "The school heads engage stakeholders in planning and programming resources," has the lowest mean of 4.59, interpreted as a very high level.

This implies that school principals are committed to engaging and building support from stakeholders for ongoing success. However, school heads also show fewer advocates for programs outside the immediate organization—constituents who understand the mission of the school, who share the school's vision and passion for student success.

This result of the study conforms with Nicdao and Ancho (2019), which states stakeholders have a hand and a greater stake in assisting with the education of the young learners as they are the agents in the community with the most suitable adequate resources. Their role in planning and programming resources is necessary to cater to the total development and improvement of the school through collaboration and shared responsibilities.

Table 6 Level of Commitment of the School Heads on School-Based Management in the Curriculum and Learning

d. Curriculum and Learning	**Mean**	**SD**	**Interpretation**
The School Heads…			
1. Build and maintain a safe, caring, and healthy school environment	4.63	.48795	Very High Level
2. Create and sustain a school environment where each student is known, accepted, and valued.	4.70	.49376	Very High Level
3. Provide coherent systems of academic and social support to meet the range of learning needs of each student.	4.55	.56145	Very High Level
4. Promote adult-student, student-peer, and school-community relationships that value and support academic learning.	4.53	.53359	Very High Level
5. Cultivate and reinforce student engagement in school.	4.59	.52610	Very High Level
6. Infuse the school's learning environment with the cultures and languages of the school's community.	4.53	.59010	Very High Level
7. Implement coherent systems of curriculum and instruction that promote the mission, vision, and core values of the school	4.64	.51539	Very High Level
8. Align and focus systems of curriculum, instruction, and assessment within and across grade levels.	4.64	.51539	Very High Level
9. Promote instructional practice that is consistent with knowledge of child learning and development	4.70	.46049	Very High Level
10. Promote the effective use of technology in the service of teaching and learning.	4.67	.53614	Very High Level
Overall Mean	**4.62**	**.37623**	**Very High Level**

Table 6 presents the level of commitment of the school heads on school-based management in the area curriculum and learning where the overall mean has a score of 4.62, interpreted as a very high level. Item number 2, "The school heads create and sustain a school environment in which each student is known, accepted and valued" and item number 9 "The school heads promote instructional practice that is consistent with knowledge of child learning and development" have the highest mean of 4.70 which interpreted as very high level.

Nonetheless, item number 4, "The school heads promote adult-student, student-peer, and school-community relationships that value and support academic learning" and item number 6 "The school heads infuse the school's learning environment with the cultures and languages of the school's community" have the lowest mean of 4.53 interpreted as very high level.

This indicates that school heads ought to promote home learning that parents and family members may engage in to help their children succeed academically. Likewise, school

heads show less dedication to creating a culture that can support the values and beliefs they consider essential for today's learners.

The result of the study agrees with Osher & Berg (2017), which state that there is an inextricable link between school climate and social and emotional learning. Attention to school climate is necessary for knowledge building and promoting social and emotional learning in students and adults, just as attention to SEL is necessary for knowledge building and improvement of school climate.

4.2 Extent of Compliance of the School Heads on School-Based Management according to Leadership and Governance, Accountability and Continuous Improvement, Management of Resources, and Curriculum and Learning

Table 7 Extent of Compliance of the School Heads on School-Based Management in Leadership and Governance

a. Leadership and Governance	Mean	SD	Interpretation
The School Heads…			
1. Institute, manage, and monitor operations and administrative systems.	4.55	.64068	Very Great Extent
2. Facilitates communication between and among school and community leaders	4.41	.65994	Great Extent
3. Strategically manage staff resources.	4.50	.61721	Very Great Extent
4. Seek, acquire, and manage other resources to support the curriculum, assessment, and student learning community.	4.36	.57369	Great Extent
5. Assign and schedule teachers and staff to roles and responsibilities	4.55	.50173	Very Great Extent
6. Employ technology to improve the quality and efficiency of operations and management.	4.52	.53429	Very Great Extent
7. Comply with the school community understand local laws, policies, and regulations to promote student success.	4.50	.50395	Very Great Extent
8. Provide decision-making and solving of school community wide-learning problems.	4.47	.56256	Great Extent
9. Administer systems for fair and equitable management of conflict among students, faculty, staff, leaders, families, and the community.	4.23	.68411	Great Extent
10. Manage governance processes internal and external politics toward achieving the school's mission and vision.	4.39	.55255	Great Extent
Overall Mean	**4.45**	**.30962**	**Great Extent**

Table 7 shows the extent of compliance of the school heads on school-based management in the area of leadership and governance. As to this area, the overall mean is 4.45, interpreted to a great extent. Item number 1, "The school heads institute, manage, and monitor operations and administrative systems," and item number 5, "The school heads assign and schedule teachers and staff to roles and responsibilities," have the highest mean of 4.55, which interpreted as a very great extent.

However, item number 9, "The school heads administer systems for fair and equitable management of conflict among students, faculty, and staff, leaders, families, and community," has the lowest mean of 4.23 interpreted as a great extent.

This implies that school heads have a deficiency in developing and sustaining positive relationships with both internal and external stakeholders, making them feel valued and involved through a fair and equitable approach.

The result of the study conforms with Tobin (2014), which states that school principals are confronted with a variety of issues as they provide leadership and organization to their schools, such as handling irate parents and supporting overwhelmed teachers. Evidence is growing that successful school leaders influence achievement through the support and development of effective teachers and the implementation of effective organizational practice.

Table 8 Extent of Compliance of the School Heads on School-Based Management in Accountability and Continuous Improvement

b. Accountability and Continuous Improvement	Mean	SD	Interpretation
The School Heads…			
1. Ensure that management structures and mechanisms are responsive to the community's emerging learning needs and demands.	4.55	.53243	Very Great Extent
2. Use continuous improvement methods to achieve the vision, mission, and core values of the school.	4.33	.89184	Great Extent
3. Prepare the school and the community for improvement, instilling mutual commitment and accountability.	4.55	.53243	Very Great Extent
4. Engage others in an ongoing evidence-based inquiry, planning, and implementation process for continuous school improvement.	4.44	.53080	Great Extent
5. Employ situationally-appropriate strategies for improvement and attention to different implementation phases.	4.63	.48795	Very Great Extent
6. Assess and develop the capacity of staff to assess the value and applicability of emerging educational trends for the school and its improvement.	4.42	.49776	Great Extent
7. Develop technically appropriate data collection and management systems as needed to the district office and external partners.	4.30	.63445	Great Extent
8. Adopt a systems perspective and promote coherence among improvement efforts and all aspects of school organization, programs, and services.	4.55	.53243	Very Great Extent
9. Provide support and encouragement and openly communicate the need for, the process for, and outcomes of improvement efforts.	4.42	.49776	Great Extent
10. Develop and promote leadership among teachers and staff for implementing improvement.	4.50	.53452	Very Great Extent
Overall Mean	**4.47**	**.31475**	**Great Extent**

Table 8 shows the extent of compliance of the school heads on school-based management in the area of accountability and continuous improvement, where the overall mean has a score of 4.62, interpreted as a very high level. Item number 5, "The school heads employ situationally-appropriate strategies for improvement, and attention to different implementation phases," has the highest mean of 4.63, which is interpreted as a very Great Extent. This implies that educational leaders act as agents of continuous improvement to promote each student's academic success and well-being, unify improvement strategies and resources to align with identified needs, and collaboratively establish strategic priorities for school improvement.

However, item number 7, "The school heads develop technically appropriate systems of data collection and management as needed to the district office and external partners," has the lowest mean of 4.30, which is interpreted to a great extent. This indicates that school heads have minor challenges in developing a system of data collection effectively as needed of school internal and external stakeholders.

The result of the study concurs with Ikemoto and Marsh (2017), which state that very few principals are deeply and skillfully engaged in data use on their own, and isolated engagement is not sustainable in the face of staff turnover. School leaders play a key role in determining how data are actually used and developed in their districts. They should sets expectations for data use in school improvement activities and monitor the efforts that follow; they must make use of supplementary tools to facilitate data use (e.g., data reports for schools, curriculum embedded assessment instruments of student learning); and they must mobilize expertise to help principals and teachers use data properly in decisions they make about improving student learning and school results.

Table 9 Extent of Compliance of the School Heads on School-Based Management in the Management of Resources

c. Management of Resources	Mean	SD	Interpretation
The School Heads…			
1. Manage resources with transparency, effectiveness, and efficiency.	4.64	.48361	Very Great Extent
2. Produce completeness of records in the financial statement in school.	4.64	.48361	Very Great Extent
3. Engage stakeholders in planning and programming resources.	4.58	.52869	Very Great Extent
4. Provide resource inventory.	4.61	.55255	Very Great Extent
5. Manage the network and linkages that strengthen and sustain partnership for improving resource management	4.73	.44516	Very Great Extent
6. Monitor, evaluate and report regularly on processes of resource management	4.48	.53429	Great Extent
7. Provide access to learning resource portals such as internet, portal, and equipment	4.58	.55791	Very Great Extent
8. Manage the school's website and learning resource portal.	4.38	.76636	Great Extent
9. Provide resource management plan included in every program and projects (PAPs)	4.58	.52869	Very Great Extent
10. Provide Inventory reports, Financial plan/budget, School Improvement Plan, and Programs, and Projects resources	4.56	.58757	Very Great Extent
Overall Mean	**4.58**	**.30987**	**Very Great Extent**

Table 9 presents the extent of compliance of the school heads on school-based management in the area of management of resources. The overall mean score is 4.58, which is interpreted as a very great extent. The highest mean score of 4.73, interpreted as a very Great Extent, is on item number 5 "The school heads manage the network and linkages that strengthen and sustain partnership for improving resource management" has. While the lowest mean score of 4.38, interpreted as Great Extent, is on item number 8, "The school heads manage school's website and learning resource portal."

The result indicates that school principals show fewer practices in improving and developing the role of information and communication technology such as learning resource portals, websites, learning systems, in providing access to all the information they need regarding their child and your school, including current marks, attendance statistics, details about homework requirements, announcements about extracurricular activities and more.

The result of the study conforms with Abbasi et al (2014), which concludes that the use of an e-learning portal like has a great impact on the whole system of school-based management and on the learning processes and has the potential to greatly improve the quality of the work in schools. Such an initiative is generally suitable for a large area of teaching practices, while it enables the accomplishment of the daily tasks easily and it offers a wide range of useful and updated learning resources.

Table 10 Extent of Compliance of the School Heads on School-Based Management in Curriculum and Learning

d. Curriculum and Learning	Mean	SD	Interpretation
The School Heads…			
1. Build and maintain a safe, caring, and healthy school environment	4.47	.50297	Great Extent
2. Create and sustain a school environment where each student is known, accepted, and valued.	4.52	.50371	Very Great Extent
3. Provide coherent systems of academic and social support to meet the range of learning needs of each student.	4.47	.50297	Great Extent
4. Promote adult-student, student-peer, and school-community relationships that value and support academic learning.	4.61	.49175	Very Great Extent
5. Cultivate and reinforce student engagement in school.	4.45	.50173	Great Extent
6. Infuse the school's learning environment with the cultures and languages of the school's community.	4.53	.50297	Very Great Extent
7. Implement coherent systems of curriculum and instruction that promote the mission, vision, and core values of the school	4.61	.49175	Very Great Extent

d. Curriculum and Learning	Mean	SD	Interpretation
8. Align and focus systems of curriculum, instruction, and assessment within and across grade levels.	4.58	.49776	Very Great Extent
9. Promote instructional practice that is consistent with knowledge of child learning and development	4.56	.53080	Very Great Extent
10. Promote the effective use of technology in the service of teaching and learning.	4.61	.49175	Very Great Extent
Overall Mean	**4.54**	**.32156**	**Very Great Extent**

Table 10 presents the extent of compliance of the school heads on school-based management in the area curriculum and learning in which the overall mean score is 4.54, which is interpreted as a very great extent. Item number 4, "The school heads promote adult-student, student-peer, and school-community relationships that value and support academic learning," and item number 10, "The school heads promote the effective use of technology in the service of teaching and learning," have the highest mean score of 4.61 which interpreted as a very great extent. While the lowest mean score of 4.45, interpreted as the great extent, is on item number 5, "The school heads cultivate and reinforce student engagement in school."

This implies that in the area of curriculum and learning, school-based administrators or principals demonstrate a low engagement in their schools. Also, school heads show an inferior development for teachers' need to select a goal that is challenging but attainable and find creative ways for students to work toward achieving the goal even during this pandemic.

The result of the study conforms with Pont et al. (2018), which states in his study that students who do not feel safe in school tend to have difficulty concentrating in class and retaining what was taught. Therefore, schools need to create a safe refuge for students in school. School leaders should set clear behavior expectations for students and encourage teachers and other staff to model expected behavior.

4.3 Comparative Analysis on the Level of Commitment of the School Heads on School-Based Management according to Leadership and Governance, Accountability and Continuous Improvement, Management of Resources, and Curriculum and Learning when grouped according to Age, Sex, and Length of Service

Table 11 Difference in the Level of Commitment of the School Heads on School-Based Management in the Area Leadership and Governance According to Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger (below 51 years old)	25	40.26	293.500	0.007		Significant
	Older (51 years old and above)	39	27.53				
Sex	Male	22	38.50	330.000	0.059	0.05	Not Significant
	Female	42	29.36				
Length of Service	Shorter (below seven years)	36	32.39	500.000	0.956		Not Significant
	Longer (7 years and above)	28	32.64				

Table 11 shows the difference in the level of commitment of the school heads on school-based management in leadership and governance when grouped and compared according to variables.

Using Mann Whitney U test, in terms of sex, garnered a *p*-value of 0.059, and length of service, which has a *p*-value of 0.956, is greater than the 0.05 level of significance. The result indicated that no significant difference exists. On the contrary, it garnered a *p*-value of 0.007, which is less than the 0.05 level of significance in terms of age.

This indicates a significant difference in the level of commitment of school heads on school-based management as assessed by the respondents in the area of leadership and governance when grouped and compared according to age. It can be said that age influences their level of commitment in the area of leadership and governance since that younger group of school heads are might more responsive in monitoring administrative systems than their counterpart. Also, younger groups of school heads might be more eager to learn and enthusiastic in facilitating communication between and among school and community leaders.

The result of the study contradicts Mulford (2015), which states that whether the principal was male or female and the teachers' years in education, age, and gender were not factors promoting leadership.

Table 12 Difference in the Level of Commitment of the School Heads on School-Based Management in the Area Accountability and Continuous Improvement according to Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger (below 51 years old)	25	39.20	320.000	0.020	0.05	Significant
	Older (51 years old and above)	39	28.21				
Sex	Male	22	37.25	357.500	0.137		Not Significant
	Female	42	30.01				
Length of Service	Shorter (below seven years)	36	31.78	478.000	0.723		Not Significant
	Longer (7 years and above)	28	33.43				

Table 12 shows the difference in the level of commitment of the school heads on school-based management in accountability and continuous improvement when grouped and compared according to variables. Sex and length of service obtained a *p*-value of 0.137 and 0.723, which is greater than 0.05 level of significance, indicating that no significant difference exists. In this regard, the null hypothesis is accepted.

On the other hand, age obtained a *p*-value of 0.020, lower than the 0.05 level of significance, indicating that a significant difference exists. The null hypothesis is rejected.

The result implies that age influenced the level of commitment of school principals in the area of accountability and continuous improvement. Those are younger school heads are more committed than their counterpart, which is the older group, because younger ones tend to be more active in the program and activities that the school is implementing. Likewise, the younger group are might more responsive to the emerging learning needs and demands of the community.

The result of the study agrees with Paletta et al. (2019), which states that age has a negative relationship with change in professional practices and teaching methods in achieving continuous improvement by suggesting that older teachers face more difficulties in changing their programs and activities. Professional practices tend to change with growing work experience, while work experience's relationship with teaching methods shows a negative non-significant relationship.

Table 13 Difference in the Level of Commitment of the School Heads on School-Based Management in the Area Management of Resources According to Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger (below 51 years old)	25	41.32	267.000	0.002		Significant
	Older (51 years old and above)	39	26.85				
Sex	Male	22	39.39	310.500	0.029	0.05	Significant
	Female	42	28.89				
Length of Service	Shorter (below seven years)	36	33.28	476.000	0.699		Not Significant
	Longer (7 years and above)	28	31.50				

Table 13 shows the level of commitment of the school heads on school-based management in the area of management of resources when grouped and compared according to variables. Length of service obtained a *p*-value of 0.699, which is greater than the 0.05 level of significance. The result indicates that no significant differences exist. The null hypothesis is therefore accepted.

On the contrary, age and sex obtained a *p*-value of 0.002 and 0.029, which is less than the 0.05 level of significance, indicating a significant difference exists. In this regard, the null hypothesis is rejected.

It can be said that the age and sex of the school heads influence their level of commitment in the area management of resources. Since the younger group of school heads are more committed and dedicated than their counterpart, maybe for the reason that they are more dynamic and self-motivated in exploring and managing resources. Also, same with those male group of respondents where they are more dedicated in the commitment to school-based management. Male school heads might be more advantaged when it comes to leadership and dealing with community linkages that would make the stakeholders more contribute to the programs and projects of the school.

The result of the study agrees with Grissom (2021) that school principals today are significantly more likely to be female and are less experienced, especially in high-need schools. This representation gap has implications for principals who are charged with creating inclusive and responsive school communities. It also challenges policymakers to find solutions to a growing diversity challenge in managing resources and school leadership.

However, Matheri et al (2015) contradicts the statement, which states that research has demonstrated that there are far more similarities than differences in the leadership and managing behaviors of women and men and that they are equally effective.

Table 14 Difference in the Level of Commitment of the School Heads on School-Based Management in the Area Curriculum and Learning According to Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger (below 51 years old)	25	38.94	326.500	0.024		Significant
	Older (51 years old and above)	39	28.37				
Sex	Male	22	40.11	294.500	0.016	0.05	Significant
	Female	42	28.51				
Length of Service	Shorter (below seven years)	36	33.29	475.500	0.694		Not Significant
	Longer (7 years and	28	31.48				

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
	above)						

Table 14 shows the difference in the level of commitment of the school heads on school-based management in curriculum and learning when respondents are grouped and compared according to variables.

In terms of length of service, it obtained a *p*-value of 0.694, which is higher than the 0.05 level of significance, indicating that no significant difference exists. The null hypothesis is accepted.

In terms of age and sex, which garnered a value of 0.024 and 0.016, which is greater than 0.05 level of significance, indicating a significant difference exists. The null hypothesis is rejected.

This implies that the age and sex of the school heads influence their level of commitment in the area of curriculum and learning since the younger group of school heads are more committed than their counterpart. Same with those male group of respondents where they are more dedicated in the commitment on school-based management in the area curriculum and learning. The younger group of school heads might be more active and techy in the development of the curriculum compared to the older group, especially in managing the school's website and learning resource portal. Moreover, male group of school heads might be more consistent than female group building and maintaining a safe, caring, and healthy school environment.

The result of the study contradicts Kemp (2019), which states female principals tend to use an instructional leadership style more than male principals, where it concentrates on the development of its teachers and curriculum to ensure that the students get the best possible learning experience in their classrooms.

4.4 Comparative Analysis in the Extent of Compliance of the School Heads on School-Based Management According to the Areas, Leadership and Governance, Accountability and Continuous Improvement, Management of Resources, and Curriculum and Learning when grouped according to Age, Sex, and Length of Service

Table 15 Difference in the Extent of Compliance of the School Heads on School-Based Management in the Area Curriculum and Learning According to Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger (below 51 years old)	25	38.30	342.500	0.044		Significant
	Older (51 years old and above)	39	28.78				
Sex	Male	22	36.00	385.000	0.271	0.05	Not Significant
	Female	42	30.67				
Length of Service	Shorter (below seven years)	36	33.86	455.000	0.503		Not Significant
	Longer (7 years and above)	28	30.75				

Table 15 shows the difference in the extent of compliance of the school heads on school-based management in the area curriculum and learning when they are grouped and compared according to variables. Sex obtained a *p*-value of 0.271 and length of service 0.503, which is greater than 0.05 level of significance. The result indicates that no significant difference exists. The null hypothesis is therefore accepted.

On the contrary, age obtained a p-value of 0.044, which is less than the 0.05 level of significance, indicating that there is a significant difference exists. In this regard, the null hypothesis is rejected.

This implies that younger groups of school heads are more practiced and efficient than their counterpart. The younger group of school heads tend to be more effective in using technology in the service of teaching and learning as well as infusing it in the school's learning environment.

4.5 Relational Analysis between the Level of Commitment and Extent of Compliance of School Heads on School-Based Management

Table 16 Relationship between the Level of Commitment and Extent of Compliance of School Heads on School-Based Management

Variable	rho	p-value	*Sig. level*	Interpretation
Level of Commitment Extent of Practices	0.553	0.000	0.01	Significant

Table 16 shows the relationship between the level of commitment and the extent of compliance of school heads on school-based management. The *p*-value obtained is 0.000, which is lower than the 0.01 level of significance, indicating that the relationship was significant. The result indicates that the level of commitment is significantly related to the extent of compliance in the implementation of school heads on school-based management. It can be said that their commitment is compared to their proficiency in implementing and improving education by conveying significant decision-making authority from teachers, staff, students, and community stakeholders.

The result of this study agrees with Arar and Nasra (2018), which states that their study's findings confirmed the research hypotheses, indicating that there was a significant positive correlation between compliance and commitment of school heads in the implementation of school-based management. School heads are exposed to engagement in decision-making, managing resources and manpower, access to resources, and organizational structure; as they are more committed to their roles and responsibilities, they will be more productive. Also, there is a significant correlation between SBM and teachers' commitment to the improvement of their student's academic achievements.

4.6 Challenges Encountered by School Heads on School-Based Management

The sixth objective of the study is to determine the challenges encountered by school heads on school-based management.

To fully understand the problems encountered by school Principals in the Division of Bacolod City in the implementation of School-Based Management, the researcher had interviewed the school heads through focused group discussion. The same respondents who answered the survey questionnaire were asked a set of questions to reflect the challenges that they had encountered during implementation. Their responses have been collectively analyzed and thematized into relevant and significant challenges during the implementation of the school-based management.

The first issue tackled in the one-to-one interview with six school heads, three from Secondary Schools and three from Elementary Schools, discusses the challenges encountered in the implementation of School-Based Management. From the responses gathered, two major themes have been identified as recurring challenges. These are presented as monitoring and evaluation in school-based management and inadequate funding of resources.

There's a need for the schools to require and reinforce monitoring and evaluation in teaching and learning—the influence of the lesson preparation process on the effectiveness of the teaching and learning process. Also, there's a need for improvement for school heads on the assessment of teachers teaching in classrooms, teacher's preparation of lesson plans, and a scheme of work.

The results show that school heads and teachers have encountered challenges in the scarcity of resources, lack of facilities, insufficient classrooms, lack of management and supervision, and lack of and/or poor quality textbooks and other learning materials. However, according to the respondents that though there is not enough budget for resources which is being provided in the MOOE, they only go for prioritization of the programs and projects to be implemented. Thus, they could manage and ask for support from all the community partners and linkages of the school like on the Local Government Unit, Alumni Association, and PTA in order to expedite resources and donate financial support for school activities.

The second issue tackled in the one-to-one interview with six school heads, three from Secondary Schools and three from Elementary Schools, discusses the address on the challenges in lack of presence and involvement of the community and the school. From the responses gathered, no reoccurring challenge that the respondents have encountered in connecting, collaborating, and tapping the engagement of the stakeholders and community partners.

Schools and communities are one unit, and partnerships with all sectors of the community are essential to helping children reach their maximum potential. Community collaboration with schools' complements and reinforces values, culture, and the learning opportunities that schools can provide for their students.

However, there is a challenge for other school heads in intensifying the relationship of the schools and stakeholders as they are important in molding the learners. The participation of the community partners would be a great help to the programs, projects, and activities that a school has. Through them, they could contribute a lot to the improvement of the school facilities. Also, both internal and external stakeholders could support the funding of the schools' PPAs. By engaging local partners and nonprofits to better understand what is already being done to address the essentials. Thus, through community partnerships, students have the opportunity to explore a wide range of issues, including food insecurity, environmental concerns, and public school infrastructure conditions.

The third issue tackled in the one-to-one interview with six school heads, three from Secondary Schools and three from Elementary Schools, discusses the challenges that school heads have encountered in complying with financial reports and statements and how do they address the challenges in inadequate funding and psychical facilities of the school. From the responses gathered, one major subject has been identified as a recurring challenge. This is presented as inadequate funding and psychical facilities of the school.

The results show that school heads have encountered difficulties in the resources—some schools are facing greater challenges in linking spending choices to improvement priorities. Administering and allocating funds effectively requires time, administrative capacity, and adequate preparation of school leadership teams. On the other hand, through community partners and linkages of the school like on the Local Government Unit, Alumni Association and PTA could provide funding to be used by schools for specific purposes and thereby ensure responsiveness to emerging priorities and the identified needs of particular programs, projects, and activities.

The fourth issue tackled in the one-to-one interview with six school heads, three from Secondary Schools and three from Elementary Schools, discusses the challenges the school heads have encountered in improving the capabilities and competencies that are manifested in the interventions employed in addressing the developmental needs in schools. From the responses gathered, one major subject has been identified as a recurring challenge. This is presented as financial management.

The respondents stated that they had been provided by training and development programs by the Division Office of Bacolod City in terms of the areas in school-based management such as leadership and governance, accountability and continuous improvement, and curriculum and learning. However, the result also showed that there is a difficulty for the school heads in terms of management of resources, specifically on financial management, such as in complying with all the reports and statements as per required in the MOOE.

The fifth issue tackled in the one-to-one interview with six school heads, three from Secondary Schools and three from Elementary Schools, discusses the challenges the school heads have encountered in addressing head teachers that do not provide necessary support and assistance to both teachers and students for secondary school principals, and teachers that do not properly utilize pupils time, teaching and learning materials. From the responses gathered, one major subject has been identified as a recurring challenge. This is presented as the performance of headteachers.

Performance of head teachers comprises two major aspects, behavioral and outcome respectively. The behavioral aspect is determined by the real work situation, and it entails what an individual does in the organization, while the outcome aspect is the ultimate consequence or result of the individual's behavior. Some of the school heads in secondary schools have challenges in managing and leading head teachers. Principals have stated that some of their head teachers do not show or give indications that they have problems with the instructions. Likewise, there is a challenge for some school heads that some of the head teachers have problems in analyzing the data, offering solutions and interventions, and monitoring and evaluating the programs.

5. Conclusion

School heads consistently and unfailingly practice their responsibilities and functions as the administrator of the school, and they demonstrate alignment and focus systems of curriculum and instruction and assessment within and across grade levels on the implementation of School-Based Management. Also, they show visibility in managing networks and linkages that strengthen and sustain partnerships for improving resource management. Evidence is growing that school leaders influence achievement in the school and community through the support and development of effective teachers and effective organizational practice. Similarly, respondents are shown dedicated to using methods of continuous improvement to achieve the vision, mission, and core values of the school.

However, there is a need for enhancement for school heads in working together with the stakeholders and strengthening and supporting individuals from parents and community as partners of the school. Also, there is still a need to enhance some leadership and governance factors, accountability, and continuous improvement. In addition, school heads display a need for improvement in collecting and managing data as needed by the district office, external partners, and the school to help organize essential data and make it available to the organization.

Thus, some school heads are facing challenges in linking spending choices to improvement priorities. School systems have limited resources to pursue their objectives, and

using these resources efficiently is a crucial aim for their activities. School heads, therefore, are recommended to reinforce the role of community partners in planning and programming resources necessary to cater to the school's total development and improvement through collaboration and shared responsibilities. Also, it is recommended that the school heads be more committed in creating a program, like "Building Community Partners," or “Build, Measure, and Learn; for School Improvement" that would encourage stakeholders and community partners to develop more cooperation among the schools and communities in dealing with wide-learning problems. This is a primary factor driving school improvement and promoting continuous improvement for the school environment. It strengthens the commitment in communicating the needs of the school officials and stakeholders to develop specific measures, resources, and strategies. Furthermore, all internal and external stakeholders are recommended to support the school's activities to help the school be more conducive and a better environment for the students to learn. Continuous improvement takes time and long participation of the said persons involved. Therefore, school heads are encouraged to be more consistent and unfailing to the different programs and projects that a school has. Finally, further research is recommended to deeply explore and investigate other areas and variables related to the study.

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The Effects of Inquiry-based Approach on Pupils' Performance and Motivation in Science

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Abstract

This experimental study investigated the effects of an Inquiry-based Approach on the performance and motivation in Science involving Grade 6 Pupils of Calatrava I Central School using the quasi-experimental research design. The 30 subjects of the control group were taught with Direct Instruction, and the 30 subjects of the experimental group were subjected to an Inquiry-based Approach. The research instruments utilized were: Test on Science Content Standards, Test on Science Performance Standards; and the questionnaire on Pupils' Level of Motivation before and after the experimentation. The experiment was completed for five (5) weeks. The pretest scores of both control and experimental groups were similar, but there appears a marked difference between their posttest scores as the control group obtained a rating of "high" compared to "very high" on the part of the experimental group. These results highlight the existence of that significant difference between the levels of performance of the control and experimental groups in the posttests on Science Content and Performance Standards, and between their levels of motivation after the experimentation. In plain language, these results prove that the Inquiry-based Approach is more effective in improving the pupils' performance in Science Content and Performance Standards, and their motivation in Science compared to Direct Instruction. These results call for broadening the scope of this experimental research on other teaching strategies suitable in science courses or possibly extending its scope beyond the walls of Calatrava I Central School in Calatrava, Negros Occidental.

Keywords : Science education, inquiry-based approach, performance and motivation, experimentation/intervention, Philippines

1. Introduction

The learners' need to acquire the essential competencies of the 21st century has provided a new set of challenges to the teachers in innovating their teaching strategies to fulfill the transformation of the education system. The curriculum has been designed around the three domains in learning Science which is reflected in the K to 12 Curriculum Guide Science of 2013: understanding and applying scientific knowledge, performing scientific processes and skills, and developing and demonstrating scientific attitudes and values.

However, the Program for International Student Assessment (PISA) of 2018 shows the Philippines' declining score of 357 points in scientific literacy. The mean score of Filipino students falls within the lowly Proficiency Level 1a, which pales in comparison to a typical 15-year-old student from the Organization for Economic Cooperation and Development (OECD) countries obtaining Proficiency Level 3 which can draw upon moderately complex content knowledge to construct explanations of familiar phenomena. Sadly, the Philippines fared significantly lower in scientific literacy than all the ASEAN countries that participated in PISA 2018 (PISA 2018 National Report of the Philippines, 2019).

Scientific literacy and 21st Century skills can be cultivated using the Inquiry-based Approach, which aims to inculcate the scientific knowledge, skills, and values required to think systematically to answer questions and solve problems. The study was anchored on Inquiry-based Learning Model in which Kilbane and Milman (2014) imply that through the participation of a process-oriented

instructional model, students also develop knowledge of academic content that includes an understanding of facts, principles, and concepts within a meaningful context- the solving of a problem. However, Harlen and Qualter (2018) emphasize the outcome of children's investigations will depend on whether the inquiry skills are carried out 'in a scientific manner.' The extent to which ideas become more powerful depends both on the way ideas from previous experience are linked to new experience and on how the testing of a possible explanatory idea is carried out on the use of inquiry skills.

The related studies of Abdi (2014) in Iran involving 40 Grade 5 pupils, Supasom and Promarak (2015) in Turkey with 44 Grade 11 students, and Duran and Dokme (2016) in Turkey consisting of 90 Grade 6 pupils on the effectiveness of Inquiry-based Approach on performance confirmed that students exposed to Inquiry-based Approach have become more successful than students taught by traditional teaching methods. Furthermore, the study of Tze Jiun Lee *et al.* (2017) in Malaysia affirms that students educated by structured-inquiry-laboratory practices achieved higher performance in posttest than those who were taught by classroom teaching. The studies emphasized that the Inquiry-based approach has a significant effect on learners' performance as it enhances their conceptual understanding and improves their inquiry or process skills.

The related literature on the effects of an Inquiry-based Approach on motivation includes the study of Cairns and Areepattamannil (2019) in the United Arab Emirates which concluded that a significant positive relationship exists between Inquiry-based science teaching and dispositions toward science as the approach evidently engages the students in learning concepts. The studies of Koksal and Berberoglu (2014) and Sever and Guven (2015) in Turkey confirmed the positive effects on students' attitudes and resistance behaviors as the approach promotes a meaningful and enjoyable learning process.

There have been numerous international studies on Inquiry-based Approach, but only a few kinds of are research implemented locally to confirm its appropriateness in elementary Science education to Filipino pupils. It is henceforth imperative to determine its effectiveness in enhancing pupils' achievement and motivation in Science.

Despite the extensive professional development efforts of the Department, some teachers have been reluctant to utilize this approach because of the challenges in the implementation in elementary science education. The researcher has been a constant advocate of the development of scientific literacy and has been compassionate to the difficulties encountered by other teachers, especially in the implementation of the Inquiry-based Approach. It is in this context that this researcher decided to investigate the effects of the Inquiry-based Approach on elementary pupils' performance and motivation, in the hope of inspiring his fellow teachers in upholding the ideals of 21st-century education.

2. Objectives

The purpose of the study was to determine the effects of an Inquiry-based Approach on the performance and motivation in Science of Grade 6 Pupils of Calatrava I Central School during the Third Quarter of School Year 2019-2020.

Specifically, the paper sought answers to the following questions:

1. What are the pretest and posttest scores of the control and experimental groups in Science Content and Performance Standards (SCPS)?
2. What are the levels of motivation of both control and experimental groups before and after the experimentation?
3. Is there a significant difference between the pretest and posttest scores of the control group in SCPS?
4. Is there a significant difference between the pretest and posttest scores of the experimental group in SCPS?

5. Is there a significant difference between the levels of motivation of the control group before and after the experimentation?

6. Is there a significant difference between the levels of motivation of the experimental group before and after the experimentation?

7. Is there a significant difference between the pretest scores of both control and experimental groups in SCPS?

8. Is there a significant difference between the posttest scores of both control and experimental groups in SCPS?

9. Is there a significant difference between the levels of motivation of both control and experimental groups before the experimentation?

10. Is there a significant difference between the levels of motivation of both control and experimental groups after the experimentation?

Hypotheses

In view of the aforementioned specific objectives, the following hypotheses are hereby set forth:

1. There is no significant difference between the pretest and posttest scores of the control group in SCPS.

2. There is no significant difference between the pretest and posttest scores of the experimental group SCPS.

3. There is no significant difference between the levels of motivation of the control group before and after the experimentation.

4. There is no significant difference between the levels of motivation of the experimental group before and after the experimentation.

5. There is no significant difference between the pretest scores of both control and experimental groups in SCPS.

6. There is no significant difference between the posttest scores of both control and experimental groups in SCPS.

7. There is no significant difference between the levels of motivation of both control and experimental groups before the experimentation.

8. There is no significant difference between the levels of motivation of both control and experimental groups after the experimentation.

3. Materials and Methods

This chapter presents the research design, the subjects of the study, research instruments, its validity and reliability, data gathering procedures, analysis and ethical considerations.

3.1. Research Design

The study utilized the quasi-experimental research design which involves the pretest and posttest of the control and experimental groups. The sections were established at the start of the school year which inhibited the random assignment of subjects to control and experimental groups. However, the pretest on Science Content Standards was administered to five sections of Grade 6 to determine the sections with a comparable mean value which were then randomly assigned as control and experimental groups. Furthermore, the researcher employed techniques guided by Fraenkel *et al* (2019) to control or at least reduce threats to internal validity by using a matched sampling method.

3.2. Subjects

The study involved 60 subjects, specifically: 30 pupils from Grade 6-Mahogany for the control group and 30 pupils from Grade 6-Acacia for the experimental group. In order to ensure the equivalence of groups, there were 15 male pupils and 15 female pupils for each group; and the subjects in each group were appropriately matched based on their average grade in Science during the First and Second Quarter.

3.3. Instruments

The researcher formulated three data-gathering instruments: the test on Science Content Standards (SCS), the test on Science Performance Standards (SPS), and the questionnaire on Pupils' Level of Motivation in Science before and after the experimentation.

The test on SCS consisted of forty items of multiple-choice type of questions was constructed based on the Table of Specifications with the contents of the Third Quarter: Gravitational and Frictional Forces, and Energy. The posttest was an identical form of the pretest on SCS since the interval between these tests was large.

The test on SPS allowed the researcher to directly observe and evaluate an individual's performance of a certain task and/or judges the finished product of that performance. It offered a way to measure abilities and skills that cannot be measured by paper-and-pencil tests (Ary *et al*, 2018). The test consisted of two performance tasks incorporating the contents of the Third Quarter. The performance tasks of the posttest were identical with the pretest since the interval between these tests was large. The performance tests contained the objective, the list of materials to be used, the procedure and the guide questions.

In the first task entitled Wind Turbine, the subjects individually designed and constructed a wind turbine to transfer and convert wind to electricity. In the second task entitled Simple Machine Project, the subjects designed and constructed simple machines as a group. Along this line, the researcher developed a rubric scale that lists the relevant criteria used in evaluating the performance or the product namely: Design and Materials, Construction, Scientific Procedure, Function, and Exposition. The scoring criteria and quality levels of this rubric were: Exemplary (4), Proficient (3), Developing (2), and Emerging (1). The total rating for each performance task was 20 points. The researcher evaluated the subjects' performance of the tasks individually.

The questionnaire on Pupils' Level of Motivation in Science was used to determine the level of motivation of the subjects before and after the experimentation. The questionnaire consisted of two parts. The first part of the instrument collected the information comprising the name, gender, and grade and section of the subjects. The second part contained fifteen statements intended to measure pupils' motivation in Science which addressed Science learning of the elementary pupils based on the factors of motivation in Science, namely: Self-efficacy, Active Learning, Achievement Goal, and Performance Goal. A Likert-scale was used to measure how the subjects feel on each of the statements.

3.3.1. Validity and Reliability

The three instruments were evaluated by five research professionals and experts in Science education using the criteria developed by Carter V. Good and Douglas B. Scates to evaluate the validity; and obtained a mean score of 4.56 for SCS, 4.58 for SPS, and 4.53 for the questionnaire on Pupils' Level of Motivation in Science.

After the validity was established, these instruments were administered to other Grade 6 pupils in another school to evaluate the reliability. The internal consistency reliability for SCS was determined using Kuder-Richard Formula 21 and it obtained a reliability coefficient of 0.71 (reliable). Item Analysis was conducted for SCS. Cronbach's Alpha was used to determine the reliability of SPS, rated 0.81 (Good); and the questionnaire on Pupil's Level of Motivation in Science, rated 0.90 (Excellent).

3.4. Procedure

At the onset, the researcher secured the approval to conduct the study from the Schools Division Superintendents and the School Principals, respectively. After establishing the validity and reliability of the research instruments, the researcher administered the pretest on SCS to the five sections of Grade 6 pupils. The test obtained the following information: Mean value of the five sections and the baseline information of the subjects' content knowledge in science. The test papers were checked, and the scores were tallied and tabulated. The two sections with comparable mean value were randomly assigned to control and experimental groups.

On the second day, the subjects of both groups accomplished the questionnaire on Pupils' Level of Motivation in Science. Thereafter, the answers to the questionnaire were tallied and tabulated. The subjects of both groups performed the Test on SPS for two days. The researcher evaluated their performance using the rubric scale. The sum of two scores was then tallied and tabulated. The experiment was conducted after the instruments were administered.

These were some of the protocols strictly observed in the conduct of this experimentation.

Firstly, the Science teacher of the five sections in Grade 6 was responsible for teaching Science in both groups. The Grade 6 Science class of both groups was scheduled daily with a duration of 50 minutes. The control group was scheduled from 8:00 – 8:50 am followed by the experimental group from 9:00 – 9:50 am. The 10-minute interval provided the teacher the time to organize the room and prepare for the next class. The teacher organized the classroom with good ventilation and adequate lighting. The same classroom was used for the control and experimental groups during the conduct of the study with a duration of five weeks.

Second, the researcher formulated two sets of lesson plans for the daily learning objectives of the Third Quarter based on the learning competencies of the Curriculum Guide for Grade 6 Science.: the first set employed the Direct Instruction for the control group, and the second set utilized the Inquiry-based Approach for the experimental group.

Direct Instruction refers to the teaching strategies that are structured and directed by the teachers; the learning contents for the students are delivered by the teachers which are commonly observed in lectures. On the other hand, the principles of the Inquiry-based Approach are incorporated in 5E's Instructional Model which consists of five phases, namely: Engagement, Exploration, Explanation, Elaboration, and Evaluation.

In Engagement, the teacher accesses the pupils' knowledge and helps them make connections between past and present learning experiences and organize their thinking toward the learning objectives. In Exploration phase, the experiences provide the pupils with exploratory activities which can be used later to formally introduced the concepts and processes. In Explanation phase, it focuses the pupils on a specific aspect of the earlier phases and provides them with resources and opportunities to support learning and demonstrate their understanding. In Elaboration phase, the teacher involves the pupils in further experiences to extend or apply their conceptual understanding and skills. In Evaluation phase, the pupils are encouraged to assess their understanding and abilities and provides opportunities for teachers to evaluate their progress toward achieving the learning objectives.

After the experimentation, the posttest on SCS was administered to all Grade 6 pupils. The test papers were checked, and the scores were tallied and tabulated. The results of the pretest and posttest on SCS of the control and experimental groups were analyzed and interpreted. The same questionnaire on Pupils' Level of Motivation in Science was accomplished by the subjects of the study on the following day. The answers to the questionnaire were tallied and tabulated. The results of the level of pupils' motivation in Science in the pretest and posttest of both groups were analyzed and interpreted.

Finally, the posttest on SPS was conducted for the last two days. The researcher evaluated the performance of the two tasks and the scores were summarized and tabulated. The results of the pretest and posttest of both groups were then analyzed and interpreted.

3.5. Analysis

This paper employed the following procedures to facilitate the data analysis:

1. Objective 1 employed the descriptive-analytical scheme, and the mean and standard deviation as statistical tools to determine the pretest and posttest scores of the control and experimental groups in SCPS.

2. Objective 2 employed the descriptive-analytical scheme, and the mean and standard deviation as statistical tools to determine the levels of motivation of both control and experimental groups before and after the experimentation.

3. Objective 3 employed the comparative analytical scheme, and the dependent t-test as the statistical tool to determine the difference, if any, between the pretest and posttest scores of the control group in SCPS.

4. Objective 4 employed the comparative analytical scheme, and the dependent t-test as the statistical tool to determine the difference, if any, between the pretest and posttest scores of the experimental group in SCPS.

5. Objective 5 employed the comparative analytical scheme, and the dependent t-test as the statistical tool to determine the difference, if any, between the levels of motivation before and after the intervention of the control group.

6. Objective 6 employed the comparative analytical scheme, and the dependent t-test as the statistical tool to determine the difference, if any, between the levels of motivation of the experimental group before and after the experimentation.

7. Objective 7 employed the comparative analytical scheme, and the independent t-test as the statistical tool to determine the difference, if any, between the pretest scores of both control and experimental groups in SCPS.

8. Objective 8 employed the comparative analytical scheme, and the independent t-test as the statistical tool to determine the difference, if any, between the posttest scores of both control and experimental groups in SCPS.

9. Objective 9 employed the comparative analytical scheme, and the independent t-test as the statistical tool to determine whether or not a significant difference exists between the levels of motivation of both control and experimental groups before the experimentation.

10. Objective 10 employed the comparative analytical scheme and the independent t-test as the statistical tool to determine whether or not a significant difference exists between the levels of motivation of both control and experimental groups after the experimentation.

3.6. Ethical Considerations

The design and conduct of the study were in accordance with the recognized standards of educational research. The administrators of the institutions were informed about the research methodology, and prior approval for the conduct of the study was secured. The informed consent from the parents was obtained after they were oriented with the purpose and nature of the research. More importantly, the researcher implemented appropriate measures to protect the rights and welfare of the subjects by ensuring their anonymity and the confidentiality of their responses.

4. Results and Discussion

This section elaborates on the results of the study in accordance with the sequence of the objectives of the study.

4.1. Pretest Scores of the Control and Experimental Groups in SCPS

Table 1 Pretest Scores of Control and Experimental Groups in SCPS

	Groups	Mean	*sd*	Interpretation
SCS	Control	14.97	4.709	Low Level
	Experimental	15.93	3.695	Low Level
SPS	Control	15.40	2.908	Low Level
	Experimental	15.80	3.508	Low Level

Table 1 presents the pretest scores of both groups in SCS, with the control group obtaining a mean score of 14.97 and the experimental recording its mean score of 15.93. The pretest mean scores in SCS of both groups are both interpreted as "low level."

The same table shows the pretest scores of both groups in SPS, with the control group gaining a mean score of 15.40, while the experimental group attaining 15.80. Both pretest mean scores were interpreted as "low level."

4.2. Posttest Scores of the Control and Experimental Groups in SCPS

Table 2 Posttest Scores of the Control and Experimental Groups in SCPS

	Groups	Mean	*Sd*	Interpretation
SCS	Control	25.83	3.384	High Level
	Experimental	34.57	3.059	Very High Level
SPS	Control	29.23	3.126	High Level
	Experimental	35.30	3.030	Very High Level

The preceding table has thus far illustrated the posttest scores of both groups in SCS and SPS. When viewed closely, the control group registered a mean score of 25.83, interpreted as "high level" while the experimental group recorded a mean score of 34.57, interpreted as "very high level" in SCS. These findings convey that the subjects of both groups have acquired knowledge and comprehension of the content standards. The level of performance in the posttest of the experimental group was remarkably higher compared to that of the control group. This conforms to the study of Ramirez and Francisco (2017) which reported the posttest that the non-Inquiry-based Group remained in the low achieving level while the Inquiry-based Learning Group moved from the low achieving level to the high achieving level.

The same table shows the control group obtaining a posttest mean score of 29.23 interpreted as "high level" with the experimental group achieving a posttest mean score of 35.30 interpreted as "very high level" in SPS. This indicates that the subjects of both groups have further developed their skills and have demonstrated their understanding to achieve the performance standards. The experimental group performed better compared to the control group. This is in agreement with the study of Abdi (2014) in which the mean scores of the students taught science education using inquiry-based instruction were higher compared to those taught using traditional approach.

4.3. Levels of Pupils' Motivation of the Control and Experimental Groups before and after the Experimentation

Table 3 Levels of Pupils' Motivation of the Control and Experimental Groups before and after Experimentation

	Groups	Mean	*Sd*	Interpretation
Before	Control	3.35	0.375	Average Level
	Experimental	3.39	0.311	Average Level
After	Control	3.93	0.262	High Level
	Experimental	4.32	0.266	High Level

The previous table presents the level of motivation of both groups before and after the experimentation on the use of two teaching strategies. Before the conduct of experimentation, the control group obtained a mean score of 3.35 while the experimental group got a mean score of 3.39, which are all interpreted as "average." The result indicates that both groups were similar in their level of motivation in Science before the experimentation. This is in harmony with the study of Bilgin *et al* (2015).

In reference to Table 3, the findings show the levels of pupils' motivation after the experiment was applied to both groups. The control group's level of motivation increased to 3.93 while that of the experimental group recorded an ascent of 4.32. Incidentally, both mean scores are interpreted as "high level." As expected, the experimental group obtained a higher mean score of their level of motivation compared to that of the control group. The study of Koksal and Berberoglu (2014) observed a similar result which indicates that the experimental group of students improved their attitudes toward Science more than the control group students as a result of treatment.

4.4. A Comparative Analysis between the Pretest and Posttest Scores of the Control Group in SCPS

Table 4 Difference between the Pretest and Posttest Scores of the Control Group in SCPS

Control Group		Mean	T	*p*-value	Sig level	Interpretation
SCS	Pretest	14.97	-16.325	0.000	0.05	Significant
	Posttest	25.83				

Control Group		Mean	T	*p*-value	Sig level	Interpretation
SPS	Pretest	15.40	-45.013	0.000		Significant
	Posttest	29.23				

Table 4 depicts the comparative analysis between the pretest and posttest scores of the control group in SCS. It obtained a pretest mean score of 14.97 and posttest mean score of 25.83. The dependent t-test revealed the t-value of -16.325, and the p-value of 0.000, interpreted as significant at 0.05 level. A significant difference was henceforth found between those twin tests. This result validates Abdi's (2014) findings that the traditional approach, or in this case, direction instruction likewise increases pupils' level of achievement.

The same graphic in Table 4 displays the comparative analysis of pretest and posttest scores in SPS of the control group. It got a pretest mean score of 15.40 and posttest mean score of 29.23. The dependent t-test revealed the t-value of -45.013, and the p-value of 0.000, interpreted as significant at 0.05 level. It was henceforth found that a significant difference exists between those twin tests in SPS. The findings are in line with the previous study of Duran and Dokme (2016), which revealed a significant difference in the scores of the control group instructed through the traditional lecturing method.

4.5. A Comparative Analysis between the Pretest and Posttest Scores of the Experimental Group in SCPS

Table 5 Difference between the Pretest and Posttest Scores of the Experimental Group in SCPS

Experimental Group		Mean	T	*p*-value	Sig level	Interpretation
SCS	Pretest	15.93	-25.434	0.000	0.05	Significant
	Posttest	34.57				
SPS	Pretest	15.80	-34.281	0.000		Significant
	Posttest	35.30				

Table 5 illustrates the comparative analysis between the pretest and posttest scores of the experimental group in SCS. It obtained a pretest mean of 15.93, and a posttest mean of 34.57. The dependent t-test reported the t-value of -25.434, and the p-value of 0.000, interpreted as significant at 0.05 level. Therefore, a significant difference was found between the pretest and posttest scores of the experimental group. The result shows the group's marked improvement in the level of achievement in SCS. Moreover, it substantiates the common assumption that the inquiry-based approach promotes a deeper comprehension of science contents as it provides the subjects with learning opportunities to reinforce their existing knowledge, understand how it is generated and how they can utilize it to construct new knowledge. This coincides with the study which verified that inquiry was an effective means of enhancing and retaining students' conceptual understanding (Supasom & Promarak, 2015).

Still, in reference to Table 5, the graphic compares the pretest and posttest scores of the same group in SPS. The group recorded a pretest mean of 15.80 and posttest mean of 35.30. Subsequently, the dependent t-test revealed the t-value of -25.434, and the p-value of 0.000, interpreted as significant at 0.05 level. Henceforth, a significant difference has been found to exist between those twin tests on SPS involving the experimental group. The result shows the group's marked improvement in the level of achievement in Science Performance Standards, an outcome comparable to Prahani *et al* (2016), which reported an increase in students' problem-solving skills after the implementation of the guided inquiry model.

4.6. A Comparative Analysis between the Levels of Motivation of the Control Group before and after Experimentation

Table 6 Difference between the Levels of Motivation of the Control Group before and after Experimentation

Control Group	Mean	T	*p*-value	Sig level	Interpretation
Before	3.35	-9.337	0.000	0.05	Significant
After	3.93				

Table 6 presents a comparative analysis between the levels of motivation of the control group before and after the use of Direct Instruction. The control group got a mean of 3.35 before the conduct of the teaching strategy and a mean of 3.93 after the Direct Instruction was applied. The dependent t-test reported the t-value of -9.337 and the p-value of 0.000, interpreted as significant at 0.05 level. These figures indicate the existence of a significant difference between the levels of motivation of the control group before and after the Direct Instruction was used. This result shows a marked improvement in the level of motivation as a result of Direct Instruction applied in teaching Science. If at all, it proves that Direct Instruction helps develop the understanding of science concepts and application of skills directed by the teacher, which can promote self-efficacy and determination to acquire knowledge and skills. This coincides with the similar study of Bilgin *et al* (2015), which showed that there was a statistically significant relationship between the scores obtained by the students of the control group in pre– and post-Self Efficacy Belief Scale (SEBS). The students of the control group obtained a higher post-SEBS score who were instructed through a use of traditional method.

4.7. A Comparative Analysis between the Levels of Motivation of the Experimental Group before and after Experimentation

Table 7 Difference between the Levels of Motivation of the Experimental Group before and after the Experimentation

Experimental Group	Mean	T	*p*-value	Sig level	Interpretation
Before	3.39	-11.680	0.000	0.05	Significant
After	4.32				

Table 7 presents the comparative analysis between the levels of motivation of the experimental group before and after the use of the Inquiry-based Approach. The experimental group obtained a mean of 3.39 before the intervention and a mean of 4.32 after the intervention. The dependent t-test revealed the t-value of -11.680 and the p-value of 0.000, interpreted as significant at 0.05 level. A significant difference was henceforth found between the levels of motivation before and after the intervention of the experimental group.

The findings denote that the subjects of the experimental group who were instructed with Inquiry-based Approach have enhanced their level of motivation as a result of the intervention. In Inquiry-based Approach, the participants can improve their skills by investigating the problem and exploring the concepts independently or collaboratively which can promote their confidence and apply the skills to fulfill the learning goals. The outcome corroborates Koksal and Berberoglu (2014) who claimed that the experimental group have improved their attitudes toward Science.

4.8. A Comparative Analysis between the Pretest Scores of the Control and Experimental Groups in SCPS

Table 8 Difference between the Pretest Scores of both Control and Experimental Groups in SCPS

Pretests	Groups	Mean	t	*p*-value	Sig level	Interpretation
SCS	Control	14.97	-0.885	0.380	0.05	Not Significant
	Experimental	15.93				
SPS	Control	15.40	-0.481	0.632		Not Significant
	Experimental	15.80				

Data gathered compared the pretest scores of both control and experimental groups in SCS and SPS. The pretest mean score on SCS obtained by the control group was 14.97, and the experimental group was 15.93. The independent t-test reported the t-value of -0.885 and the p-value of 0.380, interpreted to be not significant at 0.05 significance level. No significant difference was henceforth found between the pretest scores of both groups in SCS. Additionally, these data proved the homogeneity of groupings in terms of their mental ability and level of comprehension of Science concepts before the experiment. This is in agreement with the study of Njoroge *et al* (2014) which

reported that the mean scores of Group 1 and 2 were not statistically significantly different. This meant that the groups used in the study exuded comparable characteristics.

Still, in reference to the same data, the result shows the control group obtaining a pretest mean of 15.40 with the experimental group getting 15.80 in SPS. The ensuing independent t-test revealed the t-value of -0.481 and the p-value of 0.632, interpreted to be not significant at 0.05 significance level. This paper therefore concluded that no significant difference exists between the pretests of both groups in SPS. Both control and experimental groups were appropriately matched in terms of their level of abilities, problem-solving, and process skills to accomplish the performance tasks before the experimentation. This is consistent with the investigation of Prahani *et al* (2016) which reported that there is no difference of student's problem solving skills before implementation of the physics learning material through guided inquiry model in one class to another class.

4.9. A Comparative Analysis between the Posttest Scores of both Control and Experimental Groups in SCPS

Table 9 Difference between the Posttest Scores of both Control and Experimental Groups in SCPS

Posttests	Groups	Mean	t	*p*-value	Sig level	Interpretation
SCS	Control	25.83	-10.485	0.000	0.05	Significant
	Experimental	34.57				
SPS	Control	29.23	-7.632	0.000		Significant
	Experimental	35.30				

Table 9 compares the posttest scores of both groups in SCS. The control group attained a posttest mean of 25.83 while the experimental group got a posttest mean of 34.57. A subsequent independent t-test revealed the t-value of -10.485 and the p-value of 0.000, interpreted to be significant at 0.05 significance level. A significant difference was therefore found between those posttest scores in focus. These findings indicate that the subjects of the experimental group achieved higher results in the posttest in SCS compared to the subjects of the control group. The Inquiry-based Approach is more effective in improving the pupils' achievement in SCS compared to Direct Instruction. It cultivates the pupils in building comprehension by facilitating them make their own connections about what they learned towards significant engagement, immersive exploration, and deeper understanding of the Science content. This concurs with the study of Njoroge *et al* (2014), which reported that the Inquiry-based Approach produced a significant difference in students' achievement between students in the experimental and control groupings.

Still referring to Table 9, the graphic compares the posttest scores of both groups on SPS. The control group obtained a posttest mean of 29.23 while the experimental group recorded a mean of 35.30. The ensuring independent t-test reported the computed t-value of -7.632, and the p-value of 0.000, interpreted as significant at 0.05 level. This, therefore, proves the existence of a significant difference between the posttest scores of both groups in SPS. The experimental group performed better in the posttest compared to the control group. In plain wordings, the Inquiry-based Approach is more effective in improving pupils' performance in SPS compared to Direct Instruction. Additionally, it provides the pupils with opportunities to nurture their talents and problem-solving skills as it develops them on how to investigate independently, and it further promotes the process of questioning the concepts and deeper understanding of the process of accomplishing Science performance tasks or standards. This concurs with Prahani *et al* (2016), which showed the implementation of the guided inquiry model was effective in improving student's problem-solving skills.

4.10. A Comparative Analysis between the Level of Motivation of both Control and Experimental Groups before Experimentation

Table 10 Difference between the Levels of Motivation for both Groups before Experimentation

Groups	Mean	T	*p*-value	Sig level	Interpretation
Control	3.35	-0.525	0.602	0.05	Not Significant
Experimental	3.39				

The ensuing analysis of mean scores of 3.35 and 3.39 showed no significant difference between the levels of motivation of both control and experimental groups. This was validated by the t-value of -0.525 and the p-value of 0.602, respectively. This result further shows that both groups have the same level of motivation before the experimentation. In plain wordings, subjects from both groups were similar in terms of their belief of their own ability to accomplish the science activities, their role in building new knowledge based on past experiences and understanding, their determination to comprehend concepts, and their fulfillment on the development of science process skills and 21st Century skills. Bilgin *et al.* (2015) corroborate these findings.

4.11. A Comparative Analysis between the Level of Motivation of both Control and Experimental Groups after Experimentation

Table 11 Difference between the Levels of Motivation for both Groups after Experimentation

Groups	Mean	T	*p*-value	Sig level	Interpretation
Control	3.93	-5.798	0.000	0.05	Significant
Experimental	4.32				

The preceding table aptly compares the level of motivation of both groups after the experimentation. The control group obtained a mean score of 3.93, and the experimental group got a mean of 4.32. The independent t-test shows the computed t-value of -5.798 and the p-value of 0.000, interpreted as significant at 0.05 significance level. In other words, a significant difference was found between the levels of motivation after the experimentation was carried out. Subjects belonging to the experimental group who were subjected to Inquiry-based Approach have increased motivation compared to the subjects of the control group subjected to Direct Instruction. Inquiry-based Approach cultivates pupils' confidence of their ability to accomplish the tasks as it promotes in seeking solution and learning the concepts and process. It empowers the pupils in constructing new knowledge through connection of previous experiences and understanding. It strengthens the pupils to be diligent in comprehending concepts and processes and encourages the demonstration of abilities. The Inquiry-based Approach appears more effective in enhancing the pupils' motivation towards learning Science.

5. Conclusion

In hindsight, the purpose of the study was to determine the effects of an Inquiry-based Approach on the performance and motivation in Science of Grade 6 pupils of Calatrava I Central School during the Third Quarter of the School Year 2019-2020. At the very outset, the homogeneity of groupings was established first prior to experimentation. A pretest proved that both control and experimental groups were appropriately matched and equivalent in terms of their knowledge and skills before the experimentation was carried out. The ensuing results show the experimental group subjected to an Inquiry-based Approach as an intervention getting more success than their counterparts from the control group subjected to Direct Instruction. In other words, an Inquiry-based Approach is more effective in improving pupils' achievement in SCPS compared to Direct Instruction. A point worth highlighting is that both experimental and control groups recorded the same level of motivation prior to experimentation. After the experimentation, however, the experimental group registered an increase in motivation compared to the control group. Simply put, the Inquiry-based Approach appears more effective in enhancing the pupils' motivation towards learning Science. Future experimental research might attempt to broaden its scope on other teaching strategies suitable in science courses or possibly broaden its scope beyond the walls of Calatrava I Central School in Calatrava, Negros Occidental, Philippines.

6. Acknowledgment

The completion of this dissertation was made possible through the collaboration and encouragement of the people whose valuable inputs are genuinely appreciated. The researchers wish to express profound gratitude to the following: Dr. Lilybeth P. Eslabon, Dr,

Wilfredo O. Hermosura, Dr. Luis P. Serviñas, Dr. Ma. Leni C. Francisco, Dr. Renith S. Guanzon, Joelie G. Batiduan, and Dr. Randolf Asistido. Furthermore, the significant contribution extended by these people has been cherished, namely: Krisna Erika R. Leonor, Janith A. Fajardo, Kim John B. Abapo, Michael Angelo L. Lim, Rowell N. Apayla, Ferjohn A. Ulgasan, Fidel G. Tirol, Jr., Honellie Claire C. Tirol, Edgardo C. Paglinawan, and Ma. Nelsa C. Tirol.

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The Effects Of Group Chat On Learners' English Proficiency

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Abstract

In these changing times, educators constantly look for more innovative techniques and strive to provide an interactive and dynamic learning environment for students. The stakes in making sure that classes are dynamic and interactive are high because these attract students to participate; in fact, it encourages them to collaborate and exchange ideas and experiences with peers. This study sought to establish the effects of a secure group chat on the English proficiency of Grade 11 students. Putting into considerations that English Classes conducted by the researcher used full English conversation and respondents were not allowed to use jejemon or chatrooms lingo. A Group Chat is a virtual room where learners from the same section and teacher can have a free exchange of knowledge and ideas. This study utilized the quasi-experimental design and used two sections of Grade 11 students as participants. One section was randomly assigned as the control group, while the other was assigned as the experimental group. The study results showed that the performance of Grade 11 learners in English Communications was low in the pretest. The performance of the control and experimental group were high and very high, respectively, at the posttests. The result also showed a significant difference in these areas: pretests of the control and experimental groups, posttest of the control and experimental groups, in the pretest and posttest of the control group, and the pretest and posttest of the experimental group. Corresponding recommendations were provided in the latter part of the study.

Keywords : Language education, group chat, inquiry-based approach, performance and motivation, experimentation/intervention, Philippines

1. Introduction

In these changing times, as a researcher and an educator, the searcher was constantly looking for more innovative techniques and continues to strive to provide an interactive and dynamic learning environment for learners that can be used inside the classroom. With the present 21st century learners, the stakes in making sure that classes are dynamic and interactive are high because these attract students to participate. In fact, it encourages them to collaborate and exchange ideas and experiences with peers.

With a massive desire to uncover what dynamism these group chats could bring to the present educational system, the researcher hopes to find its real effect on the level of learners' proficiency in the English language. As a 21st century teacher, the researcher saw the importance of reinventing through technology. Learners nowadays are already too consumed with it. Online chatting is one of the most effective means of providing such rich and versatile learning environments.

As an English Communication teacher, the researcher observed that online technologies had affected almost every aspect of her learners' academic lives. She observed that her Junior and Senior high school classes at Bacolod City National High School have online chatrooms where updates, conversations about class activities, and informal talks quietly happen. There were times when some learners were having issues finding the references for their assignments, and some of them easily assisted their classmates by providing the link to the needed references. The researcher realized how strong a chatroom could support the entire class's academic needs. Through the said chatrooms, learners can easily ask about a copy of their homework or ask anybody about the date of submission of their projects.

The researcher was motivated to conduct an investigative study on the effects of group chats on the English proficiency of learners because she realizes that these have silently trained many learners to be expert conversant. Various social media platforms like Facebook Messenger, Skype, Google Chat, and others offer unlimited opportunities for learners to have online conversations with friends, classmates, and teachers.

As the research was about to finish the study, pandemic made an impact on the kind of modality we are going to give to our learners and this research made a difference on our school and of the teachers since they had no choice but to give online classes to the learners. At the current state, most teachers and schools were now seeing the beauty chatrooms were giving to the teaching styles. In the Philippine setting, on the pandemic time, chatrooms were now used as a modality to reach out to the leaners. Philippine educational was not only restricted to online modality but as well as blended learning modality such as with the used of radio based instruction, offline modality where chatrooms were very common, modular printed modality and limited face to face.

2. Objectives

This study aimed to determine the effects of group chats on the English proficiency of Grade 11 Senior High School Learners of Bacolod City National High School for the first to the third quarter of School Year 2019-2020. Specifically, this study sought to answer the following questions: 1) What is the level of English proficiency of Grade 11 learners in the pretest between the control and experimental groups? 2) What is the level of English proficiency of Grade 11 learners in the posttest between the control and experimental groups? 3) Is there a significant difference in the level of learners' English proficiency in the pretests of the control and experimental groups? 4) Is there a significant difference in the learners' level of English proficiency in the posttest of the control and experimental groups? 5) Is there a significant difference in the level of learners' English proficiency in the pretest and posttest of the control group? 6) Is there a significant difference in the level of learners' English proficiency in the pretest and posttest of the experimental group?

Given the nature of the problem, the following hypotheses are hereby set forth: 1) There is no significant difference in the level of learners' English proficiency in the pretest of the control and experimental groups. 2) There is no significant difference in the level of learners' English proficiency in the posttest of the control and experimental groups. 3) There is no significant difference in the level of learners' English proficiency in the pretest and posttest of the control group. 4) There is no significant difference in the level of the learners' English proficiency in the pretest and posttest of the experimental groups.

3. Related Research

This section presents previously validated studies, which serve as a guide for the researcher in exploring the boundaries of her study. These related concepts have significant bearings on the present study as they provide dynamic and significant inputs as to how and why this study is essential.

Minalla (2018) conducted a study on the effects of whattsApp chat groups in enhancing the EFL learners' verbal interaction outside the classroom context. The study used experimental and descriptive methods to achieve its objective of this study. A questionnaire and pre-and posttests were adopted as tools for data collection. Samples of two groups (experimental & control) were randomly selected. Both groups were taught the same content using the traditional way integrated with WhatsApp Chat groups via text message as communicative platforms for practicing outside classroom contexts for what has been taught in the traditional class. However, the experimental group participants restrictively interacted via voice messages, while the participants of the control group only interacted via text messages.

The data analysis revealed that the participants who underwent the voice messages on WhattsApp treatment significantly outperformed those who underwent text messages on WhatsApp. Hence, utilizing voice messages on WhatsApp chat groups can be recommended as an efficient

technique for enhancing EFL learners' verbal interactions outside classroom contexts because EFL traditional classroom is no longer more appropriate in offering sufficient opportunities for EFL learners' verbal interaction.

Similarly, Bataineh (2014) investigated the effect of text chat assisted with Word Processors on Saudi English major students' writing accuracy and productivity of authentic texts. The study looked at how students' writing skills were affected by using online chat and word processors, including text organization, spelling, punctuation, grammar, phrasal verbs, idioms, idiomatic expressions, pragmatics, creativity, vocabulary growth, content, relational words, conjunctions, authenticity, figures of speech, imagination, coherence, style, socio-cultural aspects, language use, and the production of authentic text. The study group was made up of students from Taibah University's Department of Languages and Translation who enrolled in the Writing Two course in the first semester of the 2012-2013 academic year. Section one was assigned as an experimental group (supported by Facebook and Skype), and section two was assigned as a control group and asked to write their essays with paper and pencil. Every student in the experimental group was given a Facebook and Skype account.

The results revealed that students who worked with Facebook and Skype showed a significant improvement in their writing skills when compared to the control group. In light of these findings, it is recommended that online discussions via Facebook, Skype, and other social media sites should be utilized when teaching writing and other language skills.

On one end, Cunja (2016) also investigated teachers and Facebook, using online groups to improve students' communication and engagement in education. This paper reports how teachers from different cities in Brazil used groups on Facebook and how communication between teachers and students was affected by using such groups. The study was framed under the Cultural Historical Activity Theory (CHAT) perspective and is conceived from a methodological background that invites participants to collaborate during the research. We examined posts from the groups on Facebook from February 2013 to June 2014 by a qualitative approach, coded the open-ended qualitative data and compared their distribution, and analyzed responses to a questionnaire for teachers by the end of the research. Our findings suggest that the teachers used the groups for different purposes, which improved communication between teachers and students—online and in-classroom—and students' classroom engagement.

Another Bataineh (2014) study looked at the impact of audiovisual chat on tenth-grade students' fluency and productivity with real oral English texts in the first semester of the 2013-14 school year. All 10th-grade pupils in Amman's First Directorate of Education were included in the study. The study's sample, however, was made up of 61 students from AL-Shmissani Al-Kharbi Basic School for Girls.

It was a quasi-experimental study because the school was chosen intentionally as it had up-to-date internet-connected laboratories and a number of tenth-grade sections. After reviewing the theoretical literature and the previous studies, the researcher identified the aspects of language fluency to be studied, i.e., authenticity, pragmatics, creativity, non-verbal communication, prosodic aspects, structural accuracy, figures of speech and idiomatic expressions, lexical accuracy, everyday life expressions, and speaking confidently. A pretest was administered to know the actual level of groups, the control group and the experimental one, before being exposed to the new teaching experience. The control group was taught traditionally, while the experimental group was taught via audiovisual chat. Two months later, a posttest was administrated. The study's findings revealed significant differences in the mean scores between the control and the experimental group.The experimental group's performance was superior to that of the control group. Finally, students, researchers, teachers, and curriculum designers were given a number of relevant recommendations.

Edukasyon. ph (2019) said that the internet is definitely an indispensable tool for many Filipino students, but it can also conveniently (and to some extent, anonymously) bring trouble to students. Cyberbullying is a great example of the web's harmful by-product. It's very different from school-based bullying because teachers can't directly intervene online. The internet is empowering, but such power requires great responsibility. With ample and cautious use of the internet and other

online resources, Filipino students gain massive access to learning resources access real-time access to teachers, classmates, groupmates, and more. In fact, group projects, assignments, and homework can be easily dispensed online using group chats.

Student life has evolved because the internet influenced education, communication, and social interaction. Despite the dangers that come out of it, one can't deny the positive impact it has brought on society. For better or worse, the internet has changed how Filipino students live. At present, Filipino students have the opportunity to keep up with daily lessons and assignments even if they are absent, and everyone can join group discussions in real-time even if they are situated in different places.

Go, and Hechanova (2014) conducted a study on internet use and outcome in the Philippines. The study was done in two phases. In the first phase, interviews were conducted to elicit how the internet is used and perceptions of healthy versus problematic Internet use. In the second phase, surveys were administered to 387 respondents from all over the Philippines. Results revealed that purposes or activities could be grouped into seven factors: basic Internet use, entertainment, expression and interaction, e-commerce, school-related, and technological deviance. Although the last three have been cited in other studies, they have not been included in past taxonomies. Positive outcomes of Internet use are greater productivity and personal enhancement.

Negative outcomes can be described in terms of social harm and Internet addiction. Results link specific usage with outcomes—using the internet to express oneself and interact predicted both personal enhancement and problematic Internet use. Basic Internet use and entertainment predicted problematic Internet use. External regulation predicts personal harm and social harm but not productivity and addiction. Self-regulation is associated with greater productivity and unique enhancement and is negatively related to social harm and addiction. Self-regulated was also the strongest predictor of both positive outcomes suggesting that beyond putting controls on Internet use, developing users' ability to self-regulate is more important in enabling the productive use of the internet.

Another study was conducted to determine if the students' academic performance is affected by their Internet usage. The study was conducted among three hundred eighty-six (386) undergraduate students within Mindanao State University – Iligan Institute of Technology. The researchers framed a structured interview and a questionnaire, yearning to gather all the information needed. The data collected from the respondents pointed out that there was no significant relationship between the respondents' academic performance and their Internet usage. The study's findings also revealed that there was no significant relationship between the respondents' academic performance and the place where they have accessed the internet. Another result shows no significant relationship between the respondents' academic performance and their purposes in using the internet, such as gaming, Social Networking, News, and Entertainment. There was, however, a significant relationship between the respondents' academic performance and their usage of the internet for academic purposes. From the results, the researchers recommend that Educators may encourage students to use the internet by giving them assignments, projects, and online quizzes.

According to Gonzales (2019), in the Philippines, time spent online daily soared from 9 hours and 29 minutes last year to 10 hours and 2 minutes this year, the highest. Coming in second is Brazil, clocking in at 9 and 29 minutes, while Thailand is third at 9 hours and 11 minutes. Last year, the Philippines came second to Thailand at 9 hours and 38 minutes. In terms of internet usage in front of a desktop or laptop computer, the Philippines leads the world with 5 hours and 4 minutes a day, far exceeding the global average of 3 hours and 28 minutes. The average fixed internet speed increased from 15.19 Mbps to 19 Mbps. 54.3 Mbps is the global average.

With the pandemic time, schools were given no choice but to opted to chatrooms as a mean to communicate with the leaners and eventually used as a tool to teach. UNICEF (https://www.unicef.org/rosa/media/7996/file/Guidance%20Continuity%20of%20Learning%20during%20COVID-1) last 2020 made a guidelines on using the distance learning modality where chatrooms were showing good used in teaching and not just for chatting.

4. Materials and Methods

This chapter deals with the research design, the subject and the participants of the study, the research instrument, the validity and reliability of the research, the data gathering procedure, and the statistical tools used in analyzing the data.

4.1 Research Design

This study utilizes a quasi-experimental research design to determine the effects of group chat on the English proficiency of Grade 11 senior high school students of Bacolod City National High School for School Year 2019-2020. The research involves pretest and posttest of the control and of the experimental groups. The respondents were established at the start of the school year using the random assignment of the subjects to control and experimental groups. However, the pretest on English Class was administered to all two sections with the same teacher to determine the section with comparable mean value which were then randomly assigned as control and experimental groups. The test provided for both pretest and posttest was the one quality controlled by the Department of Education that was used by all of the students nation-wide. Likewise, it was on the procedure of the English conducted by the researcher that all chatrooms are using full English conversation and not using the jejemon or usual chatrooms lingo.

The manipulation of an independent variable without the random assignment of individuals to conditions or ordering of conditions is known as quasi-experimental research. Nonequivalent groups designs, pretest-posttest designs, and interrupted time-series designs are among the most common (Price, 2017).

4.2 Subjects

The subjects of the study came from the two sections of Grade 11 students of Bacolod City National High School for the School Year 2019-2020. Both sections have 40 students each. The first group (Section A) was designated as the control group, while the second group (section B) served as the experimental group. The school is adopting the heterogeneous grouping. Since the study is quasi-experimental, and the number of subjects is fairly manageable, total enumeration was considered.

4.3 Instruments

The research instrument used in this study was a standardized Senior High 30-item questionnaire fully referenced with the 2nd and 3rd grading lessons for Grade 11 in English. The said instrument has passed the tests of validity and reliability. It was administered both during the pre-and posttests. Since the study is quasi-experimental, the utilization of the pretest was done before the intervention provided for the experimental group. The same questionnaire was administered to both the control and experiment groups after four weeks of immersion in the experimental group to group chatting, where lessons, pointers, class interaction, assessments, and others were posted.

The assessment tool that was used was designed and quality controlled by the Department of Education. Furthermore, the language used in all English Classes are using full English conversation in the chatrooms were students are not allowed to chat in jejemon or chatroom lingo.

The class chatrooms were used as alternative learning tool for enriching the students but during the pandemic time, it was given the different outlook where it was now used as a tool for blending learning and been used all over Philippine Educational system up to this time.

4.4 Procedures

Putting into considerations that all English Classes are strictly using full English language in all their chatrooms and not allowed to use jejemon or chatroom lingo**.** After making sure that all letter requests pertinent to the conduct of the study were approved and the validity of the research instrument was established, the researcher proceeded with the conduct of the aforementioned subjects.

First, the pretest was conducted on both control and experimental groups to determine their level of performance before the conduct of the intervention. During the normal class schedule of the two sections of Grade 11 students, the researcher, being an English Communications teacher

conducted her lesson covering Senior High School Oral Communications Topics as follows: Nature and Element of Communication, Functions of Communication, Communicative Competence, and Strategies in Various Speech Situations and it culminated with the type of speeches. These topics were prorated into four weeks or a span of 1 month.

For the experimental group, an online group chatroom was created and moderated by the researcher. The chatroom created was closed to all members of the experimental group. The chatroom was created free via the Messenger App, which was pre-installed on all of the aforementioned learners' mobile phones. The chatroom served as an electronic platform for the experimental group members to interact with each other, ask or answer questions, communicate directly with the researcher who served as the moderator, in fact, their oral communications teacher.

The chatroom served as the e-classroom of the entire experimental group, where class topics, lecture modules, links, and other learning resource materials were given, including their assessments. For 30 days, the researcher who served as facilitator/moderator of that electronic classroom closely monitored the learners' utilization of the chatroom to ask questions, assist their classmates.

Added to this, as part of their activity, the teacher also assisted the learners belonging to the experimental group on how to utilize google sheets and forms. The Dropbox App was utilized for the deposition of answer sheets. Active utilization of useful links as part of the group's electronic classroom was also utilized.

The control group was given the casual/normal type lectures during their designated class hours by the researcher. In the conduct of the study, only the teacher knew about the study so as to maintain its validity and secrecy. The students were also given a profile to check their weaknesses and strengths at school at the beginning of the school year. Their learning materials were given the traditional way – lectures, handouts, and book details for their reference.

Furthermore, when the study was conducted, it was a month after the pandemic time reached the Philippine boundaries. The researcher found it very effective and then introduced the google classrooms to her school. With the used of the chatrooms in all platforms, chatrooms were no longer seen as a application to communicate with friends but now as an effective tool for blended learning.

4.5 Ethical Considerations

The design and conduct of the study were in accordance with the recognized standards of educational research. The administrators of the institutions were informed about the research methodology, and prior approval for the conduct of the study was secured. The informed consent from the parents was obtained after they were oriented with the purpose and nature of the research. More importantly, the researcher implemented appropriate measures to protect the rights and welfare of the subjects by ensuring their anonymity.

5. Results and Discussion

This section elaborates on the results of the study in accordance with the sequence of the objectives of the study.

5.1 Level of English Proficiency of Grade 11 Learners in the Post-test of the Control and Experimental Groups

Table 1 Level of English Proficiency of Grade 11 Learners in the Post-test of both Control and Experimental Groups

Pretest	Mean Scores	Interpretation
Experimental Group	8.45	Low Level
Control Group	8.70	Low Level

Table 1 shows the level of English proficiency of Grade 11 learners in the posttest of the control and experimental groups.

The experimental group has a mean score of 28.85, interpreted as “very high level,” while the control group has a mean score of 22.05, interpreted as "high level.”

This result was taken after one month–long intervention with the experimental group on English communication subjects. The result proved that both groups' performance increased with the experimental group outperforming the control group, which was academically performing better initially. The development of the posttest indicated a big difference in the scores of the two groups after the experimental group was given massive support using the group chat application.

The choice of communication has varied over history, according to Luong (2015), from Alexander Graham Bell's innovation to wireless landlines to portable cell phones to sending text messages. Group conversations are the most used type of text message today. When you have a group of people you want to get together for something, you may add everyone to a group chat so that everyone can discuss where they want to go or what they want to do, rather than texting everyone individually since someone might get left out. You can start one to stay connected to everyone if everyone lives in a separate location or everyone's doing their own thing, and you want the squad to regroup. It's also helpful when everyone's home for break and people want to communicate with everyone at once. It's great for families spread throughout the world to stay connected.

5.2 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest of the Control and Experimental Groups

Table 2 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest of the Control and Experimental Groups

Pretest	**Mean Scores**	**Interpretation**
Experimental Group	28.85	Very High Level
Control Group	22.05	High Level

Table 2 shows the difference in the level of English proficiency of Grade 11 learners in the pretest of the controlled and experimental groups.

The experimental group got a mean score of 8.45 and 8.70 for the control group; the computed t-test was -0.187. The p-value of 0.853 is higher than the 0.05 level of significance, interpreted as "not significant.” Thus, the hypothesis, "there is no significant difference in the level of English proficiency of Grade 11 learners in the pretest of the controlled and experimental groups," was, therefore, "accepted.”

This implies that the upward trending of scores of each group during the pretest may have no significant difference. Statistically speaking, the performance of the Control group compared to the Experimental group before the intervention was almost the same. Although the control group performed higher, the difference between the two groups is not enough to statistically distinguish the performance of one group from the other.

5.3 Difference in the Level of English Proficiency of Grade 11 Learners in the Post-test of the Control and Experimental Groups

Table 3 Difference in the Level of English Proficiency of Grade 11 Learners in the Post-test of the Control and Experimental Groups

Pretest	**Mean Scores**	***T***	***p*-value**	**Sig Level**	**Interpretation**
Experimental	8.45	-0.187	0.853	0.05	Not Significant
Control	8.70				

Table 3 shows the difference in the level of English proficiency of Grade 11 learners in the posttest of the controlled and experimental groups.

The experimental group got a mean score of 28.85 and 22.05 for the control group; the computed t-test was 9.030. The p-value of 0.000, lower than the 0.05 level of significance, is interpreted as "significant."

Thus, the hypothesis that states, "there is no significant difference in the level of English proficiency of Grade 11 learners in the posttest of the controlled and experimental groups" was, therefore, "rejected."

This implies that the difference in the performance of both groups in the posttest largely indicated a big difference between each group. This also means that the patterns of performance improvement between the two groups are significantly different from each other. The results implied that Group Chatting or the group chat app provided ample assistance to learners belonging to the experimental group during the month-long exposure of learners. Understandably, the presence of a group chat room provided the learners with 24-hour access to their classmates, their teacher, and to the learning materials posted in the chatroom. Learners who may have exercised due diligence in utilizing the chatrooms were the ones who greatly benefitted from this intervention.

According to Weedmark (2019), group chatting provides benefits like room for multi-tasking, saving time and money, offers more room for learning and collaboration, and ease of use.

Multitasking benefit. With group chatting, it is possible to conduct multiple conversations simultaneously with different groups of people. For example, an investment broker can have a separate group chat session open for other people based on different types of investments. On a phone or video conference call, it would be impossible to talk to many persons about multiple issues at the same time. Many companies utilize chatting to supplement conference calls or Web-based presentations because it allows presenters to speak while queries and audience discussions can be handled in a chat window.

Time and money are both valuable commodities. If your company uses group chatting on a regular basis, it can minimize the need for additional phone lines, reduce long-distance calls, and boost productivity. Call centers, for example, can work with several clients simultaneously, reducing the need for additional staff and the frustration of clients who might otherwise be on hold waiting for a live agent.

Ease of Use. Skype, Google, and Facebook are three popular platforms used for group chat. Not only are these services free, most of the people you are interacting with for business are probably using at least one of them already. They can be used on any computer without installing expensive software. In fact, both Google and Facebook are entirely browser-based, requiring no software installation. For small business owners, this translates into virtually no need for tech support.

Learning and Collaboration. Lastly, one advantage of group chatting that is often overshadowed by the needs of clients and the demands for increased productivity is the opportunity for learning and collaboration that comes with group chatting. For example, allowing multiple clients to engage with each other in a group chat environment gives you as a business owner the opportunity to learn from them in terms of their mutual interests and problems. On the other side of this, chatting in a group environment with your suppliers, partners, employees, and peers allows you to share your experiences as you learn from others.

5.4 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest and Post-test of the Control Group

Table 4 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest and Post-test of the Control Group

	Mean Scores	***T***	***p*-value**	**Sig Level**	**Interpretation**
Experimental	28.85	9.030	0.000	0.05	Significant
Control	22.05				

Table 4 shows the difference in the level of English proficiency of grade 11 learners in English in the pretest and posttest of the control group.

Pretest recorded a mean score of 8.70 and 22.05 for posttest, and the computed t-test was -13.26, and the p-value of 0.000, it is lower than the 0.05 level of significance, interpreted as "significant." Thus, the hypothesis that states, "there is no significant difference in the level of English proficiency of grade 11 learners in the pretest and posttest of the control group" was, therefore, "rejected." This implies that the progress in the performance of the Control group indicated sounding progress from Pretest to Posttest. The result suggested that the intervention provided created a marked improvement in the English proficiency of the learners if the posttest is to be compared to the pretest.

Many teachers and learners are familiar with using digital media, for instance, Facebook, for private communication and for participating in groups. The familiarity with the use of groups on Facebook opens the possibility for teachers to create groups for educational purposes to discuss themes related to classroom practices with their students. According to Cunha (2016), the connection between teachers and learners provided by Facebook can potentially be an addition to learning environments where students' engagement is limited by the lack of communication between teachers and learners.

5.5 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest and Post-test of the Experimental Group

Table 5 Difference in the Level of English Proficiency of Grade 11 Learners in the Pretest and Post-test of the Experimental Group

Control Group	Mean Scores	*T*	*p*-value	Sig Level	Interpretation
Pretest	8.70	-13.26	0.000	0.05	Significant
Post-test	22.05				

Table 5 shows the difference in the level of English proficiency of grade 11 learners in the pretest and posttest of the experimental group.

Pretest got a mean score of 8.45 and 28.85 for posttest, the computed t-test was -21.605, and the p-value of 0.000, which is lower than the 0.05 level of significance, was interpreted as "significant." Thus, the hypothesis that states, "there is no significant difference in the level of English proficiency of grade 11 learners in the pretest and posttest of the experimental group" was, therefore, "rejected." This result indicated that there was a substantial difference between the pretest and posttest of the experimental group, and that difference could be translated into "progress" in terms of learning. The significant difference between the pretest and posttest of the experimental group validates the claim that direct peer and researcher support was indeed beneficial for striving learners in pulling up their English proficiency, just as shown in this study.

Using Google Apps for Education solution, the Philippine Daily Star (2015) reported an expressed satisfaction with the technology and shared their experience in discovering better ways to learn and being more productive. Several universities and colleges that have transitioned from their old information management system to Google's new computing solution showed how Google Apps could help Pinoys drive productivity. The schools even provided guides on maximizing such productivity tools that include Gmail, Google Calendar, Google Drive, among others. The suite offers collaboration apps like Google Docs, Sheet, and Slides.

6. Conclusion

The English proficiency of Grade 11 learners of both control and experimental groups was found low during the pretest but was found high and very high, respectively, after the posttest. It did not come as a surprise that the learners could absorb the topic given to them in English Communications at the start of the experimentation. Looking back, the homogeneity of groupings was evident in the pretest scores of both groups. Moreover, a significant difference was found in the level

of learners' English proficiency in the posttest of both groups, as they both showed significant improvements in their English language proficiency scores. The just mentioned results are substantiated by the significant difference in the pre-and post-tests of both control and experimental groups. These results call for advance planning for concerned teachers to promptly distribute related course outlines, syllabi, and other materials at the start of the school year and maintain proven traditional learning methods to sustain the teaching-learning momentum.

Given on the pandemic time, the study was very beneficial to the blended learning. Chatrooms were no longer seen as a application to communicate with friends but a very effective tool for blended learning.

The study was conducted a month before the pandemic time. The researcher found it very beneficial thus was able to share it to her school and to the Division of Bacolod City through Google Classroom chatrooms were no longer for chatting but for learning too.

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Student Satisfaction with Online Learning in General Education Mathematics Courses

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Abstract

One important factor that plays a crucial role in gauging the quality of programs in higher education offering online courses is student satisfaction (Alqurashi, 2019; Kuo et al., 2014; Parahoo et al., 2015). The study investigated the college students' perceived satisfaction with online learning in General Education mathematics courses in terms of types of interaction and general satisfaction. The study sample comprised 304 students enrolled in General Education mathematics courses from one university. Results show that students' overall satisfaction with online learning in mathematics courses was at satisfied level. The learner-content interaction and learner-interface garnered the highest and lowest satisfaction ratings, respectively. Students enrolled in General Education additional mathematics courses reported dissatisfaction with online learning. Statistical analysis revealed that there is no significant difference in satisfaction ratings with online learning in terms of year level. However, students enrolled in General Education mathematics course significantly obtained higher satisfaction rating than those enrolled in additional courses. Although the generality of the results must be established in future research, the findings provided clear support how the students interact with the course content, their teacher, their peers, and the learning management system provided satisfying online experience. Results of this study provided baseline data on student satisfaction with online learning and for planning and policy evaluation of a model of online delivery of education.

Keywords : student satisfaction with online learning, interactions, mathematics course

1. INTRODUCTION

The rise of online learning during the Coronavirus Disease 19 (COVID-19) pandemic is a sudden shift in the worldwide education market (Li & Lalani, 2020). The delivery of education, especially in higher education, has changed drastically whereby teaching is conducted distantly and on online environment to achieve access and continuity to education in times of pandemic. Along this line of development, assessment of the quality of instruction and learning outcomes in various courses in an online environment is deemed necessary for program evaluation. One important factor that plays a crucial role in gauging the quality of programs in higher education offering online courses is student satisfaction (Alqurashi, 2019; Kuo et al., 2014; Parahoo et al., 2015). It must be the utmost goal of higher education institutions to satisfy their students on their learning experiences (Jala et al., 2016).

Even before the emergence of COVID-19 pandemic, online learning has gained its popularity especially in higher education. Issued in the Paris Message, higher educational institutions are encouraged to adopt "online, open, and flexible system practice" as a global response in reinforcing educational systems, effective and quality learning, access to information, and dissemination of knowledge (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2015). It is essential for higher education institutions to strengthen their curricular policies and practices which respond to the students' needs even beyond the traditional delivery mode of education (Tuquero, 2020). Several local universities have offered online learning or distance education to cater students who wish to complete their degrees or graduate programs through a convenient and practical non-traditional

learning (Katigbak, 2018) before the COVID-19 outbreak. For instance, AMA University Online Education is the first full online education in the country, and the University of the Philippines Open University and New Era University established distance education to select programs where students undergo independent study through synchronous and asynchronous online learning (Katigbak, 2018).

With the advent of internet and technology, online learning has become evident as the new paradigm in contemporary education (Sun et al., 2008). In Sarkar (2016), online learning, also known as e-learning, as a form of distance education that takes place with the help of a web-based learning management system and different types of technological gadgets. Online learning may be done synchronously or asynchronously through different online media. Synchronous online learning happens in real time where the instructor and students interact in a specific virtual environment (like video conferencing, live chat rooms, and live-streaming lectures) at a designated time (The Best Schools, 2018). On the other hand, asynchronous online learning occurs without real time interaction. The students have the access to the course materials and requirements provided by teacher and complete these within a flexible time frame (The Best Schools, 2018).

Online learning in higher education may be challenging for various regions. In Li and Lalani (2020), without reliable internet access or technological tools may cause students to struggle to participate in digital learning. For instance, according to the Department of Information and Communications Technology (DITC) in its National Broadband Plan, only 40 percent of Filipinos and 28 percent of households have internet access; and the average broadband speed was 4.2 Mbps (DICT, 2017).

The delivery of instruction during the implementation of the first phase of community quarantine in the country wherein people were advised to stay home has become the biggest challenge for several private and state universities and colleges. As a response to this challenge, higher education institutions have taken different flexible approaches such as online learning and distance education to complete their respective academic calendar (Hernando-Malipot & San Juan, 2020; Tuqero, 2020). However, several student organizations petitioned for termination of current academic semester and suspension of online classes amid the COVID-19 outbreak (CNN Philippines, 2020). Unreliable internet access and lack of learning devices are among the cited reasons for the petition (San Juan, 2020). In anticipation of the anxiety of students would be experiencing and the socio-cultural impact of the pandemic, the satisfaction level of students with online learning may be at stake. Thus, this concern is worth considering for further study.

Student satisfaction is “a short-term attitude resulting from an evaluation of students’ educational experience, services and facilities” (Weerasinghe et al., 2017 p. 533). In this study, student satisfaction is referred to the relative level of experiences and perceived performance of students in higher education course through online delivery of instruction for a period of one semester.

Over the years, several researchers have explored and found significant relationship between student satisfaction with online learning in higher education and a wide range of factors (Ke & Kwak, 2013: Kucuk & Richardson, 2019; Kuo et al., 2014; Parahoo et al., 2015; Simpson, 2012; Sun et al., 2008; Weerasinghe et al., 2017;). These determining factors that influence student satisfaction include teaching presence, cognitive presence, emotional engagement, behavioral engagement, cognitive development (Kucuk & Richardson, 2019), student-student interactions, physical facilities, faculty empathy, marketing construct of university reputation (Parahoo et al., 2015), learner-instructor interaction, learner-content interaction (Kuo et al., 2014), learner evidence, learner relevance, active learning, learner

autonomy, authentic learning, computer technology competence (Ke & Kwak, 2013), learner computer anxiety, instructor attitude toward online learning, online learning course flexibility, online learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments (Sun et al., 2008). Hence, student satisfaction with online learning is a multidimensional construct (Weerasinghe et al., 2017) which is worthy of further research for the improvement in the instructional delivery.

In the light of the empirical evidence and ideas presented and with the rising concerns on effectiveness of online learning amid the pandemic, the present researcher was motivated to conduct an exploratory study on this topic to better understand how college students perceive satisfaction with the online learning in General Education mathematics courses.

In Nortvig et al. (2018), there is a strong interest within the field of educational research to determine which factors affect student satisfaction with online learning in higher education. Although several studies have explored the different factors that influence student satisfaction with online learning, investigation on the reasons why the students are satisfied or dissatisfied is limited (Davis, 2017). In view of this, the present researcher sought to investigate the common online experiences that may influence the satisfaction and dissatisfaction of students with online learning in General Education mathematics courses.

The researcher believes that the results of this study provided baseline data on student satisfaction with online learning and for planning and policy evaluation of a model of online delivery of education. Similarly, the study may assist higher education institutions in identifying approaches to increase student satisfaction with online education and students and parents in making tertiary-education related choices. The study sought to help mathematics teachers in developing their courses in the learning management system and to provide them information on which area of teaching process needs improvement so that student satisfaction with online learning will be cultivated. More importantly, this study may provide a significant contribution in literature regarding the use of online learning and student satisfaction in mathematics courses, especially in higher education.

Migration from traditional or face-to-face learning to online learning environment has important implications the way students learn mathematics courses. This is especially true on how they interact with the course content, teacher, and other students. With their previous learning experiences in mathematics courses, students would prefer to attend classes on campus. At the same time, online course may divert students who prefer face-to-face learning to find online learning satisfying.

Despite the Covid-19 pandemic, CHED has mandated to continue delivery of education through online, open, and flexible system practice of delivering quality education. It is with high hope that university, with its zealous endeavor in developing a model for online education, will remain true to the ‘No Student Left Behind’ advocacy. Consequently, if students are satisfied with their online learning experiences provided by the university, they will manifest loyalty towards the university.

Factors Influencing Student Satisfaction with Online Learning

Over the years, several studies have investigated and found significant relationship between student satisfaction with online learning in higher education and a wide range of factors. These determining factors that influence student satisfaction include teaching presence, cognitive presence, emotional engagement, behavioral engagement, cognitive development (Kucuk & Richardson, 2019), student-student interactions, physical facilities, faculty empathy, marketing construct of university reputation (Parahoo et al., 2015), learner-instructor interaction, learner-content interaction (Kuo et al., 2014), learner evidence, learner

relevance, active learning, learner autonomy, authentic learning, computer technology competence (Ke & Kwak, 2013), learner computer anxiety, instructor attitude toward online learning, online learning course flexibility, online learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments (Sun et al., 2008).

In Kucuk and Richardson (2019), among the abovementioned factors, teaching presence was found to be the dominant determinant of student satisfaction. Additionally, data in Parahoo et al. (2015), student-student interactions, physical facilities, faculty empathy, and marketing construct of university reputation are critical contributors to student satisfaction with online learning in increasing significance.

Five elements of student-centered learning are significantly related to student satisfaction with online courses (Ke & Kwak, 2013). These elements include learner evidence, learner relevance, active learning, learner autonomy, authentic learning, and computer technology competence. In terms of interaction construct, learner-instructor interaction and learner-content interaction coupled with technology efficacy are significant predictors of student satisfaction (Kuo et al., 2014). Learner-learner interaction may be negligible in online setting course.

Learner computer anxiety, instructor attitude toward online learning, online learning course flexibility, online learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments are the factors influencing students' perceived satisfaction (Sun et al., 2008).

Among the factors influencing student satisfaction with online learning which is emphasized is interaction (Alqurashi, 2019; Kuo et al., 2014; Parahoo et al., 2015). Interaction is defined as "the interaction a learner has with the course content, class instructor, and their peers" (Alqurashi, 2019, p. 134). It is considered a vital element in teaching-learning process (Anderson, 2003). Learner-learner interaction, learner-instructor interaction, and learner-content interaction are positively related to achievement outcomes in distance education (Bernard et al., 2009). On the contrary, lack of interaction was the common reason for student dissatisfaction (Cole et al., 2014).

Types of Interaction in Online Learning

The Framework for Interaction Types and Interactive Functions in Online Learning proposed by Chien Chou (2003), which is patterned from the Interaction Equivalency Theorem proposed by Terry Anderson (2003), presents three common types of interactions, namely student-student interaction, student-teacher interaction, and student-content interaction. Interaction in online learning occurs when there the students engage with the course content, the teacher, other students, and the technological medium used in a course (Chou, 2003). It is the central point of the teaching-learning process. It occurs when students are actively doing tasks, communicating, and reflecting with the concepts and people that surround them.

However, considering the notable advent of technology in the delivery of instruction, Hillman, Willis, and Gunawardena (1994) (as cited in Chou, 2003) included a fourth type of interaction to the distance education or online education. This interaction is called learner-interface or learner-technology interaction that occurs between a learner and a technological medium. The descriptions of these types of interaction are adopted from the work of Chou (2003).

Learner-Content Interaction. In an online learning environment, students are mostly supposed to learn on their own. Learner-content interaction is an interaction between a student and the content to be learned. Moore (1989, as cited in Chou, 2003) defines learner-

content interaction as "the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (p. 268). In this type of interaction, students can navigate to other sites that contain related information, access to the learning resource materials, access online quizzes or activities, and receive information directly to their online accounts.

Learner-Teacher Interaction. In learner-teacher interaction, the teacher facilitates the delivery of instruction by stimulating or maintaining students' interest in what to be taught and to be learned. The teacher provides direction to students. This type of interaction is associated with the traditional classroom teaching or face-to-face teaching where students could interact with their teachers through synchronous and/or asynchronous classes. In learner-teacher interaction, students can attend synchronous classes, write an email to their teacher, and consult their teachers.

Learner-Learner Interaction. Learners do not interact only with the content and the teachers, but also with the other students. Learner-learner interaction provides opportunities for students to interact with their classmates. In this respect, Moore (1989, as cited in Chou, 2003) portrays this type of interaction as an interactive process between one learner and other learners, alone or in group settings, with or without the real-time presence of a teacher. In learner-learner interaction, students can communicate with their classmates through email or group chats synchronously.

Learner-Interface Interaction. Lastly, the learner-interface interaction occurs in distance learning when students manipulate various technological tools to achieve a task which eventually enables the students to gain knowledge and skills (Chou, 2003). In this type of interaction, students can learn a course through a learning management system, download and use files of software from a system for learning, and track their performance records.

When we consider interaction in an online environment, the way in which students interact varies. These interactions can influence students' satisfaction with online learning as supported by empirical evidence previously mentioned.

Student Satisfaction with Online Learning

In 2015, a survey on students' satisfaction with online student portal in a distance online learning environment showed that 85 percent of undergraduate students were satisfied or very satisfied with their overall experience with the online portal (Secreto & Pamulaklakin, 2015). Recently, the University Student Council of a university in Pampanga conducted a survey of the satisfaction of students with online learning during summer classes and the survey showed that teachers were prepared to handle online classes and students reported overall satisfaction with online instruction (K. Tolentino, personal communication, June 18, 2020).

As far as student satisfaction with their learning experience in different delivery modes of instruction is concerned, studies have shown that there was no significant difference in student satisfaction in traditional, online, and blended learning of continuing education courses (Goerke, 2018).

General Education Mathematics Courses

Another important concept of this research focuses on the General Education mathematics courses. The indispensable role of mathematics in national development has long been recognized and prompts countries to forward innovative curricular reforms and policies. One major curricular reform in mathematics education in the country, particularly in higher education, is the inclusion of Mathematics in the Modern World or Matematika sa Makabagong Daigdig as one of the core courses in the New General Education Curriculum

because of changes and adjustments introduced in the basic education curriculum (Remo, 2019). As per CHED Memorandum Order No. 20, series of 2013, Mathematics in the Modern World is one of the eight new General Education core courses that deals with "nature of mathematics, appreciation of its practical, intellectual, and aesthetic dimensions, and applications of mathematical tools in daily life" (CHED, 2013). This means that all college students need to enroll this course.

At the university level, the Mathematics in the Modern World in not simultaneously taken up by all college students. Some schools of the university offer this course during first semester, other schools during second semester.

Aside from the Mathematics in the Modern World, the School of Computing is also offering other general education mathematics courses to its students such as Linear Algebra, Probability and Statistics, Analytic Geometry, Calculus, and Integral Calculus this First Semester, School Year 2021-2022. These are additional courses required for General Education mathematics courses. Probably, many mathematics teachers would agree that the last two mentioned mathematics courses are difficult to teach and learn even in a traditional learning environment.

Learning-content interaction, which is a crucial factor in determining student satisfaction with online learning (Kuo et al., 2014), may be problematic for a mathematics course because of course content difficulty. In the study of Remo (2019), first year college students from a state university found mandatory and optional topics in Mathematics in the Modern World difficult. Based on observation, some college students tend to exhibit negative attitude toward mathematics in a traditional learning environment. The present researcher posits that the other General Education mathematics courses are likely not exemption to this concern. Aside from course content difficulty, convenience and lack of interaction are the most cited reasons for students' satisfaction and dissatisfaction with online course (Cole et al., 2014). Thus, the quest to teach mathematical knowledge remains a challenge especially under this "New Normal".

2. Objectives

The main purpose of the study was to investigate college students' perceived satisfaction with online learning in General Education mathematics courses.

Specifically, the study sought to answer the following questions to address the main concern of the study.

1. How may the college students be described in terms of their:
   1.1. year level; and,
   1.2. enrolled General Education mathematics courses?

2. What is the students' level of satisfaction with online learning in General Education mathematics courses in terms of:
   2.1. learner-content interaction,
   2.2. learner-teacher interaction,
   2.3. learner-learner interaction,
   2.4. learner-interface interaction, and
   2.5. general satisfaction?

3. What is the students' overall level of satisfaction with online learning in General Education mathematics courses?

4. Are there significant differences in the students' overall level of satisfaction with online learning in General Education mathematics courses when the respondents are grouped according to their:

4.1. year level taking the General Education core mathematics course?

4.2. enrolled general education mathematics courses?

3. Materials and methods

Research Design

This study employed a descriptive-survey research design since the intention of this study was to describe the college students' satisfaction with online learning in General Education mathematics course. This research design allows the researcher to gather and describe information on the students' demographic data and satisfaction with online learning upon the completion of general education mathematics course through a survey.

Sampling and Setting

The respondents of the study were college students who enrolled at a university in Pampanga during the First Semester, A.Y. 2021-2022 and who have completed General Education mathematics courses during the semester through online learning environment. The School of Engineering and Architecture (SEA), School of Arts and Sciences (SAS), School of Computing (SOC), and School of Nursing and Allied Medical Sciences (SHTM) were offering General Education mathematics courses during the semester.

Consecutive sampling was employed because the study sought to include all accessible respondents who are qualified as part of the sample. In this sampling procedure, the researcher ensured that there is sufficient period to achieve desired sample size of respondents.

The target population of this study was 1,438 college students who were enrolled in general education mathematics courses. With confidence level of 95% and margin of error of 5%, the computed sample size using an online sample size calculator is 304.

Research Instrument

Since student satisfaction with online learning is of concern to higher education institutions, having valid and reliable instruments to measure student satisfaction was necessary. An instrument which was very useful in the present study was developed by Strachota (2006) – the Student Satisfaction Survey. This instrument was developed as a tool that could be used by schools or universities to assess student satisfaction with online learning as a program evaluation outcome. The survey instrument covers the different types of interaction – learner-learner, learner-instructor, learner-content, and learner-interface interactions and general satisfaction.

As far as the psychometric properties of the instrument Student Satisfaction Survey are concerned, questions within each construct were considered to have good internal or construct validity and the instrument was considered highly reliable instrument for affective instrument. The factor loading for learner-content interaction ranged from .604 to .780, learner-instructor interaction factor loading ranged from .594 to .841 and learner-learner interaction factor loading ranged from .588 to .786. While the reliability coefficient of the instrument using Cronbach's alpha is .97 for learner-technology interface interaction, .90 for learner-content interaction and general satisfaction, and .89 for learner-learner interaction and learner-instructor interaction.

A two-part instrument was created to gather the needed data for this study. The first part of the instrument covered individual respondents' data such as enlisted academic

program, year level, and enrolled General Education mathematics courses. The second part considered items that measures the students' general satisfaction with online learning and student satisfaction with online learning based on types of interactions. The items are adapted from the instrument developed by Strachota (2006). Permission to use the instrument was granted by the developer.

Minor modifications such as wording changes were made to assure the suitability of items given the context of this study was within a fully online learning context. The following were the items for each construct: learner-content interaction (item numbers 1-7); learner-teacher interaction (item numbers 8-13); learner-learner interaction (item numbers 14-17); learner-interface interaction (item numbers 18-26); and general satisfaction (item numbers 27-32). Item numbers 10 and 29 are negatively stated.

The revised instrument was subjected to pilot test before administering to the respondents who did not take part in the actual study. The internal consistency test (Cronbach's alpha) was utilized to measure its reliability. The Cronbach's alphas for the subscales of the instruments, namely learner-content interaction, learner-teacher interaction, learner-learner interaction, learner-interface interaction, and general satisfaction are .869, .713, .878, .864, and .794, respectively.

The survey items included a four-point Likert scale of strongly disagree, disagree, agree, and strongly agree. Likert scale entails the assigning of points for each response on a positive statement or negative statement. For positively stated items, the scale (corresponding points) are as follows: strongly agree (4), agree (3), disagree (2), and strongly disagree (1). For negatively stated items: strongly agree (1), agree (2), disagree (3), and strongly disagree (4). Questions specific to each construct were within the Student Satisfaction Survey.

Data Collection

For this study, an online survey developed from Google Form was conducted to gather and collect data via Google Form. The invitation and link of this survey form, together with informed consent, was sent to students who have taken general education mathematics courses. The invitation was forwarded via Canvas Announcement pane during the last week of the intended semester. The students of the researchers did not participate as respondents of the study to avoid the threat of undue influence. The respondents took them 15-20 minutes in answering the survey form.

Data Analysis

To facilitate data analysis of quantitative information of the survey, descriptive statistics such as frequencies, percentages, mean, and standard deviation were processed to describe the demographic profile of respondents and level of satisfaction with online learning. To test the hypotheses, Mann-Whitney U test was employed at 5% level of significance.

The level of student satisfaction with online learning in general education mathematics courses were determined by mean score of the responses. The following score range was used for verbal interpretation: 3.51 – 4.00 (very satisfied), 2.51 – 3.50 (satisfied), 1.51 – 2.50 (dissatisfied), and 1.00 – 1.50 (very dissatisfied).

Ethical Consideration

In conducting this study, the following ethical considerations were ensured for the participants and sought the approval of the HAU Institutional Review Board, with study protocol code 2021-037-LTESTRADA-GENERALMATH. Informed consent from the respondents were obtained. This means that the respondents were oriented or informed about the study to understand what they are taking part in the study and know what is required of

them. They were informed about the purpose of the study and the methods being used. Participation in the study was voluntary and may withdraw anytime without undue consequence.

Privacy and confidentiality of data was safeguarded. The anonymity of respondents, any information obtained from them were protected at all stages of the research process from collection to reporting. The data were kept in a password-protected file and device for five years and would then be destroyed.

The use of secondary source data was acknowledged with appropriate citation. Permission on the use of research instrument that measures student satisfaction with online learning was sought. With online-based data collection, consideration was given to the electronic security of the information and safety of the respondents and the researcher. The study guaranteed that it is not harmful to the respondents.

4. Results

The general aim of the study was to investigate college students' perceived satisfaction with online learning in General Education mathematics courses. The results and analyses of the data were derived and processed from 304 respondents who were enrolled in online General Education mathematics courses during the First Semester, School Year 2021-2022 from one university.

Profile of the Respondents

Table 1 *Distribution of respondents based on year level and general education mathematics courses*

General Education Mathematics Courses	Year Level				
	1st Year	2nd Year	3rd Year		
	Frequency			Total	Percent
Core Course					
2MATHMWORLD	195	49	0	244	80.3
Additional Courses					
2LINALGEB	0	9	1	10	3.3
2PROBSTAT	0	10	10	20	6.6
2CALCULUS	0	7	1	8	2.6
2INTCAL	0	0	22	22	7.2
Total	195	75	34	304	100
(Percent)	(64.1)	(24.7)	(11.2)	(100)	

Note. 2MATHMWORLD – Mathematics in the Modern World, 2LINALGEB – Linear Algebra, 2PROBSTA – Probability and Statistics, 2CALCULUS – Basic Calculus, 2INTCAL – Integral Calculus

As shown in Table 1, 64.1% (195/304) of the respondents come from first year level followed by those in the second year and third year levels at 24.7% (75/304) and 11.2% (34/304), respectively. It can be noted that there are no students enrolled in third year level to fifth year level in General Education core mathematics course. Likewise, there are no students enrolled in first year, fourth year, and fifth year levels in General Education additional mathematics courses.

With regards to the distribution of the respondents according to their enrolled General Education mathematics courses, 80.3% (244/304) of the respondents are enrolled in

Mathematics in the Modern World, which is the General Education core mathematics course. About 80% of the respondents enrolled in the General Education core mathematics course come from the first-year level. Moreover, out of 60 respondents enrolled in General Education additional mathematics courses, 50% of the respondents are enrolled in calculus-related courses.

Student Satisfaction with Online Learning in Terms of Interactions and General Satisfaction

The students' satisfaction with online learning in General Education mathematics courses can be described in terms of 5 subscales using the Student Satisfaction Survey instrument: learner-content interaction, learner-teacher interaction, learner-learner interaction, learner-learner interaction, learner-interface interaction, and general satisfaction. The following score range was be used for verbal interpretation of student satisfaction level: 3.51 – 4.00 (very satisfied), 2.51 – 3.50 (satisfied), 1.51 – 2.50 (dissatisfied), and 1.00 – 1.50 (very dissatisfied).

Table 2 *Descriptive Statistics of Student Satisfaction with Online Learning in General Education Mathematics Courses*

	General Education Mathematics Courses					
	Core Course (N = 244)		Additional Courses (N = 60)		All Courses (N = 304)	
Subscales	M (SD)	Interpretation	M (SD)	Interpretation	M (SD)	Interpretation
Learner-Content Interaction	3.50 (0.51)	Satisfied	2.99 (0.74)	Satisfied	3.40 (0.60)	Satisfied
Learner-Teacher Interaction	3.45 (0.52)	Satisfied	2.91 (0.66)	Satisfied	3.34 (0.59)	Satisfied
Learner-Learner Interaction	3.41 (0.56)	Satisfied	3.03 (0.66)	Satisfied	3.34 (0.60)	Satisfied
Learner-Interface Interaction	3.31 (0.49)	Satisfied	3.01 (0.73)	Satisfied	3.25 (0.56)	Satisfied
General Satisfaction	2.93 (0.59)	Satisfied	2.39 (0.75)	Dissatisfied	2.82 (0.66)	Satisfied

Table 2 summarizes the descriptive statistics on student satisfaction in General Education mathematics courses in terms of the types of interaction and general satisfaction. Among the subscales pertaining to types of interaction, the learner-content interaction garnered that highest mean satisfaction rating (M = 3.40, SD = 0.60) signifying that interacting with the mathematics course content through online is at satisfied level. The same satisfaction level holds true for the other three types of interaction (learner-learner, learner-teacher, and learner-interface) with the mean satisfaction ratings ranging from 3.25 to 3.34.

Furthermore, the respondents who were enrolled in General Education core mathematics course reported highest mean satisfaction rating in terms of learner-content interaction (M = 3.50, SD = 0.51), while the respondents who were enrolled in General Education additional mathematics courses reported highest satisfaction rating in terms of

learner-learner interaction (*M*= 3.03, *SD* = 0.66) indicating the respondents are at satisfied level in terms of their interaction with the course content and with their peers, respectively. On the other hand, learner-interface interaction obtained the lowest mean satisfaction rating (M = 3.31, SD = 0.49) for General Education core mathematics course, while learner-teacher interaction obtained the lowest mean satisfaction rating (M = 2.91, SD = 0.66) for General Education additional mathematics courses. These mean satisfaction ratings are interpreted at satisfied level.

As can be gleaned from Table 2, in terms of general satisfaction with online learning in General Education mathematics courses, the mean satisfaction rating is 2.82 (*SD* = 0.66) which indicates satisfied level. Those respondents who were enrolled in the General Education core mathematics course reported satisfied level as supported by the mean satisfaction rating of 2.93 (*SD*= 0.59). On the other hand, it can be noted that those respondents who were enrolled in the General Education additional mathematics courses reported dissatisfied level as supported by the mean satisfaction ratings of 2.39 (SD = 0.75).

Overall Student Satisfaction with Online Learning in General Education Mathematics Courses

The overall student satisfaction with online learning is the aggregate score of the five constructs in the Student Satisfaction Survey instrument. The overall satisfaction rating with online learning in General Education mathematics courses was determined by getting the weighted mean of corresponding ratings for all responses. Moreover, the level of satisfaction with online learning was interpreted for each respondent using the same score range and verbal interpretation.

Based on descriptive analysis, the overall mean satisfaction rating for all General Education mathematics courses is 3.15 (*SD* = 0.48), indicating that the respondents obtained total satisfaction rating which is equivalent to satisfied level. The overall mean satisfaction rating for core mathematics course group (M = 3.23, *SD* = 0.42) is greater than the overall mean satisfaction rating for additional mathematics courses group (M = 2.81, *SD* = 0.57).

Figure 1 summarizes the distribution of 304 respondents based on their level of overall satisfaction with online learning in General Education mathematics courses. Of the 304 respondents, 81 or 26.6% were very satisfied and 198 or 65.1% were very satisfied with learning the courses in an online learning environment. Moreover, out of 244 respondents who were enrolled in General Education core mathematics course, 74 (30.3%) are at very satisfied level and 158 (64.8%) are at satisfied level with online learning. For General Education additional mathematics courses, 11.7% (7/60) of the respondents are at very satisfied level, while 66.7% (40/60) of them are at satisfied level.

On the other hand, 25 out of 304 (8.2%) respondents are dissatisfied or very dissatisfied with their online learning in General Education mathematics courses. Moreover, 20% (12/60) of the respondents enrolled in General Education additional mathematics courses and 4.9% (12/244) of the respondents enrolled in General Education mathematics core course reported dissatisfied level. It can be noted that no respondent enrolled in General Education core mathematics course expressed very dissatisfied level.

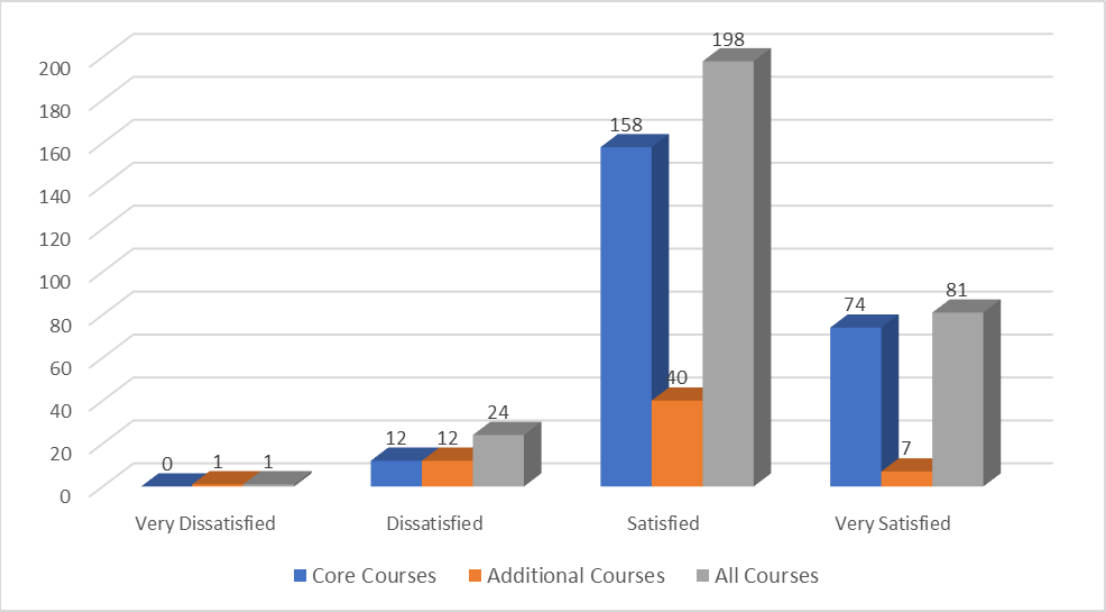

Figure 1 *Overall student satisfaction with online learning in general education mathematics courses*

Differences in Student Satisfaction with Online Learning

Table 3 *Mann-Whitney U test results comparing overall satisfaction with online learning in general core mathematics course by year level*

Year Level	N	Mean	*Median*	*Mean Rank*	*Sum of Ranks*	*U*	Z	p-value
First Year	195	3.24	3.31	125.50	24384.50	4280.50	-1.13	.129
Second Year	49	3.18	3.18	112.38	5505.50			

Based on the Mann-Whitney U test analysis (see Table 3), there was no significant difference in satisfaction rating with online learning in the General Education core mathematics course although first-year students (M = 3.24, *Mdn = 3.31*) reported higher satisfaction rating with online learning than the second-year students (M = 3.18, *Mdn* = 3.18), *U* = 4280.50, z = -1.13, *p* = .129.

Table 4 Mann-Whitney U test *results on comparing overall student satisfaction with online learning in general education mathematics core course and additional courses*

Year Level	N	Mean	*Median*	*Mean Rank*	*Sum of Ranks*	*U*	Z	p-value
First Year	244	3.23	3.26	166.64	40659	3871	-5.65	<.001
Second Year	60	2.81	2.83	95.02	5701			

The difference between the overall mean satisfaction ratings of respondents belonging to core mathematics course group and additional mathematics courses group was examined by employing Mann-Whitney U test analysis. This statistical analysis revealed a significant difference in their overall satisfaction ratings, *U* = 3871, z = -5.65, *p* < .001 (see Table 4). This means that students who were enrolled in General Education core mathematics course significantly had higher overall mean satisfaction rating with online learning (M = 3.23, *Mdn* = 3.26) than the students who were enrolled in General Education additional mathematics courses (M = 2.81, *Mdn = 2.83*).

5. Discussion

The purpose of the study was to primarily gain a better understanding of student satisfaction with online learning in General Education mathematics courses during the current Covid-19 pandemic. This section presents the summary of the study's findings and their implications. The conclusions of the study are then presented, followed by the recommendations for future research.

The year level and nature of General Education mathematics courses were analyzed to provide valuable insights on student satisfaction when learning mathematics courses in an online learning environment based on the demographic profile. Majority of the students are college freshmen who were enrolled in the General Education core mathematics course (Mathematics in the Modern World) since it is a common mandatory course to all undergraduate students regardless of their programs (CHED, 2013). This mathematics course is programmed to be offered to first year and second year levels in the university. The General Education additional mathematics courses are offered to second year and third year students under specified programs only.

Vital to the investigation of student satisfaction with online learning are the four types of interactions in an online learning environment. Based on the results of the study, it appeared that the students were satisfied with their online learning in General Education mathematics courses in terms of learner-content, learner-teacher, learner-learner, and learner-interaction. This indicates that interaction of students with the course content, their teachers, their peers, and the learning management system provides satisfying experiences in learning mathematics course in an online learning environment. This finding provides evidence that the types of interactions substantially influence the student satisfaction with online learning (Alqurashi, 2019; Kuo et al., 2014; Parahoo et al., 2015). Moreover, if students interact actively, they are more likely engaged in learning. When students are fully engaged in learning, they will likely manifest higher student satisfaction with online learning. This idea supports the claim that student engagement positively influences student satisfaction (Muzammil et al., 2020).

Among the types of interaction, learner-content interaction obtained the highest satisfaction rating indicating that the students were satisfied with how they interacted with the course content in General Education mathematics courses. This level of satisfaction can be explained by their awareness that the modular activities, learning resources, assignments, and projects facilitated their learning in mathematics courses. Likewise, activities requiring application of problem-solving skills helped their learning in an online environment. This implies that the course content for the General Education mathematics courses were carefully designed. This finding supports the results of the study of Kumar et al. (2021) which confirmed that the quality of online learning is influenced by online learning content. The quality of online learning between student satisfaction and learning content was found to be significant in this previous study.

In terms of learner-teacher interaction, noteworthy is the students' consensus on the role of the teacher in online class as an active member of the discussion group offering direction to posted comments or announcement. A substantial number of students expressed their agreement on recognition of teacher's function as facilitator and teacher's presence in learning mathematics courses through online environment. The obtained level of student satisfaction in this type of interaction validates the study of Croxton (2014) stating that learner-teacher interaction is a primary variable in student satisfaction with online learning. However, it seemed that the students expressed frustration by the lack of feedback from their mathematics teacher. This finding of the study supports the importance of teacher's presence

in especially in teaching and learning mathematics in online class. Creating an interaction between learner and teacher, either one-on-one interaction or interaction between a teacher and a group of learners, may provide students a sense of belongingness and stability in an online learning environment (Croxton, 2014).

The level of satisfaction among the students in terms of learner-learner interaction is at satisfied level as indicated by their agreement expressing their ability to ask for clarification from a fellow student or peer when needed. It appeared that mathematics online courses encouraged them to discuss ideas and concepts covered with other students. This finding on learner-learner interaction suggests that for a satisfying online learning experience, students should feel a sense of community among them. This is consistent with the prior study that a strong student-student interaction in an online learning environment fosters social presence, in turn, social presence leads to a more satisfying online experience (Strauß & Rummel, 2020).

Learner-interface interaction could also explain the satisfaction level of students in General Education mathematics courses though online learning environment. The students interacted with Canvas as the learning management system or the interface for online learning. The modular learning activities can be accessed by the students in the Canvas. The results of the study revealed that they were satisfied with their interaction with the learning management system. It indicates that the students recognized the functionality of the institutional learning management system. This finding is supported by the students' consensus expressing confidence in their abilities to utilize the learning management system and awareness on making their learning mathematics courses easier using some computer packages embedded in the Canvas. Their satisfaction level with online learning through a learning management system may be explained by their ability to easily use the Canvas and to deal with the difficulties they encounter when using the Canvas and their positive attitude towards the Canvas as a good aid for learning (Strachota, 2006).

Based on the results of the study, it appeared that the four types of interaction contributed to a satisfying online learning experience in mathematics courses. These types of interactions are significant predictors of student satisfaction and positively related to achievement outcomes in distance education (Bernard et al., 2009) although learner-learner interaction may be negligible in online setting (Kuo et al., 2014). However, the learner-interface interaction least contributed to overall student satisfaction with online learning. This finding supports the idea that technology-related factors may impact student satisfaction with online learning (Elshami et al., 2021; Strachota, 2006).

The low students' level of satisfaction per interaction may be explained by their disagreement on items describing a satisfying online learning experience when interacting with the content, their teacher, their peers, and the learning management system. Most of the items that obtained the low mean satisfaction rating are pertinent to learner-interface interaction. Based on the results of the study, the students reported low means satisfaction rating in items expressing the following: (a) the use of learning management system makes online learning more interesting, (b) the learning management system makes students much more productive, (c) enjoyment in working with the learning management system, (d) assessment of students computer skills, (e) ability to deal with difficulties encountered when using the learning management system, and (f) the easiness of working of with the learning management system.

In terms of learner-teacher interaction, items stating students' frustration by the lack of teacher's feedback and the acquisition of individualized attention from their teacher obtained the lowest mean satisfaction rating. The item expressing their feeling in improving

their mathematical skills through online learning obtained the least mean satisfaction rating in the learner-content interaction, while the item expressing timely feedback received from other students. obtained the least mean satisfaction rating in the learner-learner interaction. These findings suggest that there is still room for increasing the level of student satisfaction with online learning in General Education mathematics courses by giving attention to above-mentioned items especially in terms of learner-interface interaction.

In the Weerasinghe et al.'s (2017) literature review, numerous studies revealed that student interaction with fellow students, available online learning tools, teachers, and course material had a significant impact on university student satisfaction. Thus, satisfaction with online learning increases as these types of interaction are applied in within the online learning context. Elshami et al. (2021) highlighted students' suggestions for improving student satisfaction with online learning. Some of these strategies include the integration of other applications that engage students in learning (e.g., games, surveys), scheduling of academic advising and consultation hours, communication with students before synchronous classes, and more online discussion supplemented by timely feedback from teachers.

Further, the general satisfaction was also included to measure if the overall needs of the students in online learning have been met. In general, majority of the students were at satisfied level with online learning in General Education mathematics courses. The level of satisfaction may be explained by their consensus expressing their desire to recommend online mathematics courses to other students. However, predominance of disagreement and strong disagreement on the effectiveness of online mathematics courses as compared to face-to-face courses suggests dissatisfaction with online learning.

Furthermore, the findings reveal that the students who were enrolled in General Education additional mathematics courses were not satisfied with learning the mathematics courses online. Student dissatisfaction with online learning may be due to acquisition of learning needs and their preference with face-to-face learning mode. This finding is coherent with the previous study that mathematics learners prefer face-to-face learning mode (Krishnan, 2016). In face-to-face instruction, students are more comfortable interacting with their peers and the teachers, and they learn and understand the mathematics concepts better.

The results provided supporting evidence that students enrolled in face-to-face learning were generally more satisfied than their online counterparts in higher education context (Tratnik et al, 2017). Students may perceive that online learning is not "real" learning (Formoso, 2018). Based on their responses, majority of them expressed that they would not like to take another online course, the online courses did not meet their learning needs, they did not learn as much in online course as compared to face-to-face learning, and the online courses are not effective as face-to-face learning.

Based on the results of the study, majority of the students were overall satisfied with online learning in General mathematics courses. The distribution of the students' satisfaction ratings in both General Education core mathematics course and additional mathematics courses provided the explanation where most of them were at the satisfied level. This finding is consistent with the claim that students reported overall satisfaction with online instruction (K. Tolentino, personal communication, June 18, 2020). Further, this pattern of results is consistent with the previous literature that reported same level of satisfaction with online learning (Shaid et al., 2021).

On the other hand, the proportion of dissatisfied or very dissatisfied with online learning is larger in the group of students who took up General Education additional mathematics courses. These results suggest that proportion of respondents enrolled in General

Education core course who were at least satisfied with online learning is greater than the proportion of the respondents enrolled in General Education additional mathematics courses.

The present study compared the satisfaction of first year level and second year level students studying General Education core mathematics course since this course is mandated to all undergraduate students. The researcher obtained evidence that, although the freshmen reported higher satisfaction rating with online learning in General Education core mathematics course than the sophomores, there was no statistically significant difference in the overall student satisfaction with online learning in the core course according to the year level.

Further, the present study compared the overall satisfaction with online learning of students enrolled in General Education core mathematics course and students enrolled in General Education additional mathematics courses. A statistically significant difference in the overall satisfaction with online learning was found in favor of General Education core mathematics course students. This finding is supported by the large proportion of students enrolled in General Education mathematics additional course who reported dissatisfaction with online learning. The results of the study showed that in all types of interaction, the students who were enrolled General Education additional mathematics course obtained lower mean satisfaction rating than the students who were enrolled in core mathematics courses. The learner-content obtained the lowest mean satisfaction rating for General Education additional mathematics course group. In terms of general satisfaction, they reported dissatisfied level. This dissatisfaction with online learning may be attributed to course content (Kuo et al., 2014). This may be problematic for mathematics courses such as Linear Algebra, Probability and Statistics, and Calculus because of course content difficulty. Moreover, the significant difference in satisfaction with online learning may be influenced by factors such mathematics curriculum prior to the students' undergraduate education and preference of face-to-face learning mode (Krishan, 2016). Another crucial factor for dissatisfaction could be credited to the sudden shift from face-to-face to online delivery of the instruction due to Covid-19 pandemic (Elshami et al., 2021), accompanied by stressful learning conditions of the pandemic itself.

6. Conclusion

The present study investigated the student satisfaction with online learning in General Education mathematics courses. The sample was limited to one university at one point in time which any generalizations drawn from this study should be considered with caution.

This study revealed that the level of student satisfaction with online learning in General Education mathematics courses could be considered as an important indicator for successful result of online learning initiatives in mathematics education. The study may provide baseline data for planning and policy evaluation of a model of online delivery of education.

This study highlighted the importance of types of interaction in online learning in promoting student satisfaction in learning mathematics. The findings offer clear support how students interact with the course content, their teacher, their peers, and the learning management system provided satisfying online experiences in mathematics courses. Important to the findings of the study is the need for mathematics teachers to design online learning activities in the learning management system to make online learning interesting, productive, and enjoyable. Likewise, identification of appropriate approaches and strategies in increasing the level of student satisfaction with online learning based on the interactivity of online learning is critical in providing satisfying online learning experiences.

It appeared that the students felt that online courses are not as effective as face-to-face courses. Thus, careful attention to general satisfaction with online learning must be paid by mathematics teachers. Mathematics teachers must design activities based on the interactive functions of online learning to increase student satisfaction.

Moreover, the findings revealed that there was no significant difference in satisfaction rating with online learning in the General Education core mathematics course in terms of their year level. It can be concluded that the core course Mathematics in the Modern World may be offered during the first year or second year stay of the students in the undergraduate program. On one hand, a statistically significant difference in the overall satisfaction with online learning was found in favor of General Education core mathematics course students over additional mathematics courses. The sudden shift from face-to-face learning to online learning brought about challenges concerning the effectiveness of delivery of instruction of these additional mathematics courses wherein the nature of course content is more abstract than the core mathematics course. Possible source of student dissatisfaction with online learning in General mathematics courses may be attributed to the content of the course and interactive functions of the learning management system.

Lastly, this study contributes to growing body of evidence regarding the use of online learning and student satisfaction in higher education mathematics courses.

In the light of the findings and conclusion of the study, some recommendations are offered.

First, as this study revealed directions for student satisfaction with online learning, further research examining student satisfaction with online learning through longitudinal study may shed light on how this variable will change over time since the study was limited to one university.

Second, to increase the level of student satisfaction with online learning in General Education mathematics courses, the present study recommends the following strategies relative to the interactivity of online learning: designing course content that will help improve mathematical skills, providing a system for timely feedback from teacher and students, providing activities in the learning management system that make online learning interesting, productive, and enjoyable.

Third, to improve student satisfaction in terms of learner-interface interaction, mathematics teachers are encouraged to attend to further trainings on how to design interactive learning activities in the institutional learning management system.

Fourth, although the present study found out the students enrolled in General Education additional mathematics courses were generally dissatisfied with online learning, the investigation of reasons driving their general satisfaction is not addressed. Future research should investigate possible reasons for student dissatisfaction with online learning in General education additional mathematics courses such as Calculus, Probability and Statistics, and Linear Algebra.

Fifth, it would be useful to extend the current findings by examining the relationship of types of interaction and the overall student satisfaction with online learning and relationship of student satisfaction with online learning and academic performance.

Sixth, further analysis using qualitative approach may be considered to provide an in-depth exploration of this body of knowledge on satisfaction with online learning. In addition to those already mentioned, the present researcher recommends other avenues of research that

may be helpful in extending the body of knowledge on student satisfaction with online learning.

Lastly, future investigation on other factors influencing student satisfaction with online learning in mathematics courses such as content difficulty, learning delivery mode, year level, and attitude towards mathematics may be considered.

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Teachers' Awareness and Effectiveness in Values Integration Program in a High School in Silay City, Negros Occidental

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Abstract

This descriptive study aimed to determine the level of teachers' awareness and effectiveness in the values integration program in a high school in Silay City, Negros Occidental, Philippines. Data needed for this paper were collected from 32 teachers and 30 students of the Senior High School Department using a self-made instrument that has passed the rigorous tests of validity and reliability. The following analyses show that teachers' level of awareness and effectiveness in values integration was "very high." Specifically, the results show that the more aged high school teachers are aware that they faithfully integrate the values of Maka-Dios (Godly), Makatao (Humane), Makakalikasan (Nature lover), and Makabansa (Nationalistic) into their respective lessons. However, an area with a low overall mean needs attention.

Further analysis shows that overall, the level of teachers' effectiveness in values integration borders between "high level" and "very high level," a good indicator of how teacher-respondents could integrate into their lessons those values listed above. Nonetheless, it sounds alarming that among the four core values, the area of Makakalikasan, aka that concern for the environment, got a mediocre verbal rating of "moderate level." A series of comparative analyses showed no significant difference between the teachers' level of awareness and effectiveness in values integration based on those oft-repeated groupings by sex, educational attainment, length of service, and those four core values above. As a final point, data likewise showed no significant relationship between those major variables on teachers' awareness and effective values integration into their lessons. These findings call for continual teacher training to help cultivate that tenacious spirit of values integration and find creative ways to saturate those four core values in their respective classrooms.

Keywords : Department of Education (DepEd)Core Values, Maka-Dios, Makakalikasan, Makatao, Makabansa, Silay City, Negros Occidental

1. Introduction

Department of Education (DepEd) Order No. 41, Series of 2003 emphasizes that values education should not be only a separate, stand-alone subject but should be an integral part of all subjects taught in schools. To properly emphasize every teacher's role in teaching values education, the Department's joint efforts to instill desired values in pupils so that every teacher in every subject may meaningfully incorporate values development into their teachings Paul Richard Kuehn (2017), in his paper entitled, Moral Values for Students: A Necessary Part of the Curriculum, talked about "[t]he neglect of teaching moral values in schools and causing problems in society." If a person has never been taught any moral values, how can they discern the difference between right and wrong? That is the essence of moral values education "(para. 2). This is the essence of being a teacher who needs to develop the awareness to integrate values into their lesson.

Due to the vast obligations that may result in neglecting integrating values in the different subject areas, their focus falls only on the content of the subject they teach. Since the senior high school curriculum does not have values education as its subject, the Department of Education substituted it with Personality Development, Homeroom Guidance, and Introduction to Philosophy of the Human Person, which focus on the values formation of the student. Thus, the researcher was motivated to conduct this study to assess if the DepEd Core Values are well-integrated, implemented, and complied with by the teachers in the Senior High School department of Doa Montserrat Lopez Memorial High School.

It is not enough that students excel only in their academic performance; they must also not sacrifice their morals or values as individuals. As the saying goes, "a tree without its roots is just a piece of wood." It means that focusing on academic performance and neglecting values makes education meaningless. A student's values formation will dictate his/her future behaviors, actions, attitudes, and decisions. High test scores are easy to achieve, but forming a value takes a long time. These are so far the strongest motivations for the conduct of this study.

2. Objectives

This study analyzed the teachers' awareness and effectiveness in values integration in the Senior High School Department of Doña Montserrat Lopez Memorial High School. Specifically, It is seeking responses to the following questions: 1) What is the (teachers') level of awareness of values integration according to the core values of Maka-Diyos, Makakalikasan, Makatao, and Makabansa? 2) What is the level of effectiveness of values integration according to the core, as mentioned earlier? 3) What level (teachers') awareness of values integration when grouped according to the above variables? 4) What is the level of effectiveness of values integration when respondents, when grouped according to the variables mentioned above? 5) Is there a significant difference in the level of awareness of values integration when respondents are grouped and compared according to the aforementioned variables? 6) Is there a significant difference in the effectiveness of values integration when respondents are grouped and compared according to the variables mentioned above? 7) Is there a significant relationship between the level of awareness and the effectiveness of values integration?

In pursuit of the earlier stated objectives, the following hypotheses are hereby formulated: 1) there is no significant difference in the level of awareness of values integration when respondents are grouped and compared according to the aforementioned variables. 2) There is no significant difference in the effectiveness of values integration when respondents are grouped and compared according to the variables mentioned above. 3) There is no significant difference between the level of awareness and the level of effectiveness of values integration.

3. Related Research

This chapter presents some related studies that generally emphasize the need to consider values education, not as a separate or isolated subject in the Senior High School Curriculum. Among others, these pieces of literature stress the wisdom of integrating values education in all subject offerings to imbibe those desirable values among the youth who will one day take over our places in society.

Values education should not be treated as a separate, stand-alone topic but rather as an essential aspect of all courses taught in schools, according to DepEd Order No. 41, series of 2003. To effectively reinforce every teacher's role in teaching values education, the Department's collective efforts in developing desirable values among students must be able to meaningfully integrate values development into the lessons of every teacher in every discipline. Öztürk, Malkoç, and Ersoy's (2016) study reported how participating social studies teachers explained patriotism with love, commitment, and responsibility and perceived themselves closer to blind patriotism. It was recommended that teachers become more aware of active and democratic citizenship, get training to become constructive citizens, and improve their practices.

However, a possible challenge lurks right in every aspect of our educational system. Teachers are forced to retreat into their content areas, which is their comfort zone, and unwittingly neglect to integrate values education into their respective subject assignments. In his work Moral Values for Students: A Necessary Part of the Curriculum, Paul Richard Kuehn (2017) discussed how neglecting moral values in schools produces difficulties in society. How can a person decern the difference between right and wrong if they have never been taught moral values? This is an intriguing question indeed.

Pruitt-Mental et al. (2016) raised several problems for cooperative education practitioners to consider. First, it is vital to determine what fundamental values are necessary for the businesses where students will be put. Second, students must be provided with learning opportunities to practice ethical

decision-making before being placed in the workplace. Furthermore, the researcher believes that graduates should be prepared to acquire existing practices and play a vital role in developing and advancing ethical workplace practices.

Several studies present a rather sad state of our values education program. Firstly, Celikkaya and Filoglu (2014) show in their studies that the teachers were not completely aware of the meaning of value and values education. Secondly, Katilmis (2016) stated that values education was not conducted efficiently in schools despite this positive finding. Participants reported specific deficits in the actual practice of values education, mainly because administrators and parents put more importance on academic achievement. Thirdly, Julia and T. Supriyadi (2018) conducted a study on the implementation of character education at a senior high school in Sumedang Regency, West Java, Indonesia. Their findings revealed that: (1) not all teachers understand the concept of character education; (2) character education has not been implemented systematically or has not had a specific design/model for the teaching and learning process. Most teachers embed character values during the teaching and learning process as a form of character education.

Moreover, Hadi's (2015) findings revealed that teachers could identify character values appropriate for integration with the subject matter; however, the studied respondents appeared limited in skills and were hesitant to apply the correct methods during the teaching-learning processes. Ferreira and Schulze (2014) declared a gap between policy makers' intentions and teachers' perspectives.

Back home, Bueno (2016) reported that the Grades Five and Six Social Studies teachers in the District of Bolinao exercised the core values along Maka-Diyos, Makatao, and Makabansa to a 'moderate extent' while the core value Makakalikasan was exercised to a 'slight extent.' In terms of their integration of the core values, it was found that the core values along Maka-Diyos, Makatao, and Makabansa were integrated to a 'moderate extent." In contrast, the Makakalikasan core value was integrated to a 'slight extent.' Further, the results found evidence of a high or very high relationship between the extent of exercise and the extent of integration of the core values along Maka-Diyos, Makatao, Makakalikasan, and Makabansa by Grades Five and Six Social Studies teachers in the District of Bolinao. Therefore, the teachers further enhance their integration of the core values in the teaching of Social Studies to build their images and abilities as Maka-Diyos (Godly), Makatao (mindful of humanity), Makakalikasan (respectful of nature), and Makabansa (patriotic and nationalistic) members of the society which in turn will be developed and imbibed by their pupils.

Labog (2017), in his study, stated that Although there is an integration of environmental consciousness among students, according to his research, schools, along with instructors, must not just focus on learning and implementing ideas and theories inside the school community. For their part, Roberto and Madrigal's (2019) study showed no significant difference in teaching standards, competence, and performance when the teachers were grouped by sex, educational attainment, marital status, and employment status. However, the overall findings revealed a significant relationship between the level of teaching standards competence and performance. Meanwhile, Rogayan (2018) stated that young Filipino teachers stated that they teach to effect positive change, prepare students for life, inspire, promote values, transform lives, teach with passion, raise the bar of educational excellence, cure social problems, share knowledge and skills, and enable others' dreams. The study thus claims various significant reasons why these educators teach.

Vizcarra (2014) revealed that the top five work values perceived to be necessary by the non-teaching personnel are the following; (1) honesty and integrity, (2) dependability, (3) professionalism, (4) loyalty, and (5) adaptability. Employees' commitment to work was connected to positive work values and worked as a stimulus to perform well at work. The employee's values and the environment in which they work impact work values and dedication. Non-teaching employees tend to form views that may or may not reflect reality, and as a result, their value system is influenced. The school's stakeholders should understand how their actions impact one another when defining work values. It is common knowledge that values are the foundation of our thinking and behavior. We grow up in a home characterized by values ("bad" values are also values). No matter what kind of traditional or modern form of the family we grow up in, we are shaped by it. In addition, peer groups "determine"

what we consider essential and what we are to think and do and play an essential role in shaping our values (Chiong, 2017).

As technological progress accelerates, the Filipino young is confronted with more problems, the majority of which remove the firm basis of values and virtues. This remark is concerning since it represents Filipino children's current condition. Filipino values are slowly diminishing at a young age, which the researchers thought to be very alarming. The researchers were encouraged to develop an educational platform application to promote Filipino values through stories and games among Filipino children. With the aid of the following technological tools, Adobe Photoshop CS5 for the design of the characters and the game interface and Adobe Flash CS3 for the animation, the researchers created the software application. The experiment results show that the multimedia approach proves to be an effective learning tool for students (Dimaano, Ordoño, et al., 2014).

Nonetheless, there is a stubborn stumbling block despite these motherhood statements on the imperative of a profound values education program. Hosain (2016) wrote about a prevailing general observation that excessive workload mainly makes them exhausted at the end of the day, destroying their research capabilities and creating work/life balance problems.

4. Methodology

This section presents the supporting structure to this paper in adherence to research as a scientific process. Specifically, it deals with the research design, subject-respondents, sampling technique, data-gathering instrument, validity and reliability tests, data analysis procedures, and ethical considerations.

4.1 Research Design

The researcher used descriptive research, which, in the words of Weaver (2015), describes "what exists" concerning situational variables. This type of research is appropriate for this study's objectives.

4.2 Subject-respondents

The data source was the 32 teachers teaching both academic and vocational subjects in the senior high school department of the Dona Montserrat Lopez Memorial High School during School Year 2019-2020. Also, 30 students will come from the academic and vocational strands of the senior high school department of the Dona Montserrat Lopez Memorial High School during School Year 2019-2020.

4.3 Data Gathering Instrument

This paper used a self-made research instrument, the formulated questionnaire. It was first presented to the adviser, and then to the panel of experts called "jurors" to examine the individual items for critiquing and validation. The Good and Scates validity form was used with a score of 4.64 as excellent. Using the Chronbach Alpha for the reliability test to determine the consistency, stability, or dependability of the data from the respondents in the level of effectiveness, they got a score of 0.749 and in the level of effectiveness of the respondents, they got a score of 0.715. Both results were interpreted as acceptable.

4.4. Data Collection

Protocols observed in this research phase involved seeking permission from the Division Superintendent of Silay City and the School Principal to administer the questionnaire to the Senior High School Teachers of Doña Montserrat Lopez Memorial High School in Silay City, Negros Occidental. The questionnaires were reproduced, duly prepared, and finally administered to target respondents. After that, the filled forms were retrieved and tabulated using SPSS.

The questionnaire was divided into three sections. The first section contained demographic information such as respondents' name, age, civil status, highest educational attainment, and length of service; the second section contained 20 questions on the first set concerning level of awareness; and the third set contained 20 questions concerning level of effectiveness. Each item was given a score between 1 and 5, with 1 being the lowest and 5 being the highest. The questionnaire will conclude

with a 30-student focus group session. They'll be asked to choose or check two places where they got the values they have.

4.5. Data Analysis

This chapter examines and analyses the data gathered in order to achieve the aforementioned goals. The Makatao received an overall mean score of 4.74, which is considered very high, while the remainder of the core values received a mean score that is interpreted as high, according to the results. This indicates that SHS teachers are fully aware of the importance of incorporating Deped core principles into their classes. On the other hand, when it comes to the amount of efficacy in integrating the Deped core values into the lives of students, the SHS instructors received a good score on all three core values, whereas the Makakalikasan received a score of 3.09 which is interpreted as moderate. The results show that there is ineffectiveness in integrating core values into the students' lives.

Table 11 Level of Teachers' Awareness in Values Integration according to Age

		Younger		Older	
	Maka-Diyos	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1	Assigning a prayer leader before and after the class.	3.89	High Level	3.93	High Level
2	Accepting one's differences in religious belief.	4.56	Very High Level	4.86	Very High Level
3	Politely listens to others to express their religious belief.	4.61	Very High Level	4.64	Very High Level
4	Learned to live in harmony with others regardless of belief and culture.	4.44	High Level	4.79	Very High Level
5	Uses any things in the school, including religious symbols, properly and respects sacred places.	4.50	Very High Level	4.36	High Level
	Overall Mean	**4.40**	**High Level**	**4.51**	**Very High Level**
	Makatao				
1	using courteous words and expressions toward others.	4.61	Very High Level	4.57	Very High Level
2	Congratulates peers/classmates who receive awards/ achievements.	4.67	Very High Level	4.86	Very High Level
3	Accepting defeat in the spirit of goodwill and sportsmanship.	4.72	Very High Level	4.86	Very High Level
4	practice the value of the initiative.	4.72	Very High Level	4.86	Very High Level
5	Friendly with others regardless of sex, cultural background, financial status, and religion.	4.78	Very High Level	4.86	Very High Level
	Overall Mean	**4.70**	**Very High Level**	**4.80**	**Very High Level**
	Makakalikasan				
1	Turn off the lights, faucets, and appliances when not in use.	4.61	Very High Level	4.86	Very High Level
2	clean during his or her cleaning schedule.	4.33	High Level	4.86	Very High Level
3	Keeping one's working area neat and orderly.	4.39	High Level	4.64	Very High Level
4	Taking care of school materials, facilities, and equipment	4.56	Very High Level	4.86	Very High Level
5	Students show the initiative to pick litter without being told.	3.83	High Level	3.64	High Level
	Overall Mean	**4.34**	**High Level**	**4.57**	**Very High Level**
	Makabansa				
1	abide by the rules of the school, community, and country.	4.22	High Level	4.71	Very High Level
2	Sings well the National Anthem with pride and confidence.	4.28	High Level	4.57	Very High Level
3	Following national and local laws.	4.44	High Level	4.57	Very High Level
4	Communicates using Philippine dialects/languages.	4.50	Very High Level	4.71	Very High Level
5	patronize Philippine products.	4.22	High Level	4.71	Very High Level
	Overall Mean	**4.33**	**High Level**	**4.66**	**Very High Level**

Table 11 shows the teachers' general level of awareness in values integration specified by age and three areas of Maka-Diyos, Makatao, Makakalikasan, and Makabansa for both younger and more aged groupings. In the area of Maka-Diyos, the younger group obtained a mean of 4.40 while the more aged group got 4.51; in Makatao, the obtained mean scores were 4.70 and 4.80 for the young and the old, respectively; in Makakalikasan the mean scores were 4.34 and 4.57 for the same age groupings, and in Makabansa 4.33 was the obtained mean score of the younger group while the more aged group obtained 4.66. When examined closely, the more aged group performed remarkably in all four areas scoring consistently with a "very high level" (VHL) of teachers' awareness. Comparatively, the younger group recorded a "high level" (HL) of teachers' awareness, except on Makatao, where the likewise got interpreted at VHL. Zarrintaj et al. (2011) stated statistical significance in the effect of age on overall environmental awareness for all three levels of education groups (BS, MS, and Ph.D.). Results showed that increasing age and levels of education affect increasing environmental awareness and attitude.

Table 12 Level of Teachers' Awareness in Values Integration according to Civil Status

		Single		Married	
	Maka-Diyos	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1	assigning a prayer leader before and after the class.	3.75	High Level	4.17	High Level
2	Accepting one's differences in religious belief.	4.60	Very High Level	4.83	Very High Level
3	Politely listens to others to express their religious belief.	4.60	Very High Level	4.67	Very High Level
4	Learned to live in harmony with others regardless of belief and culture.	4.55	Very High Level	4.67	Very High Level
5	Uses any things in the school, including religious symbols, properly and respects sacred places.	4.30	High Level	4.67	Very High Level
	Overall Mean	**4.36**	**High Level**	**4.60**	**Very High Level**
	Makatao				
1	using courteous words and expressions toward others.	4.60	Very High Level	4.58	Very High Level
2	Congratulates peers/classmates who receive awards/ achievements.	4.65	Very High Level	4.92	Very High Level
3	Accepting defeat in the spirit of goodwill and sportsmanship.	4.70	Very High Level	4.92	Very High Level
4	Practice the value of the initiative.	4.70	Very High Level	4.92	Very High Level
5	Friendly with others regardless of sex, cultural background, financial status, and religion.	4.80	Very High Level	4.83	Very High Level
	Overall Mean	**4.69**	**Very High Level**	**4.83**	**Very High Level**
	Makakalikasan				
1	turn off the lights, faucets, and appliances when not in use.	4.65	Very High Level	4.83	Very High Level
2	clean during her/his cleaning schedule.	4.45	High Level	4.75	Very High Level
3	Keeping one's working area neat and orderly.	4.45	High Level	4.58	Very High Level
4	Taking care of school materials, facilities, and equipment	4.65	Very High Level	4.75	Very High Level
5	Students show the initiative to pick litter without being told.	3.70	High Level	3.83	High Level
	Overall Mean	**4.38**	**High Level**	**4.55**	**Very High Level**
	Makabansa				
1	abide by the rules of the school, community, and country.	4.45	High Level	4.42	High Level
2	Sings well the National Anthem with pride and confidence.	4.30	High Level	4.58	Very High Level
3	Following national and local laws.	4.45	High Level	4.58	Very High Level
4	Communicates using Philippine dialects/languages.	4.60	Very High Level	4.58	Very High Level
5	patronize Philippine products.	4.40	High Level	4.50	Very High Level
	Overall Mean	**4.44**	**High Level**	**4.53**	**Very High Level**

Table 12 shows the teachers' general level of awareness in values integration specified by age and four areas of Maka-Diyos, Makatao, Makakalikasan, and Makabansa for both single and married groupings. In the area of Maka-Diyos, the single group obtained a mean of 4.36 while the married group got 4.50; in Makatao, the obtained mean scores were 4.69 and 4.83 for the singles and the married ones, respectively; in Makakalikasan the mean scores were 4.38 and 4.55 for the same groupings, and in Makabansa 4.44 was the obtained mean score of the singles and the married ones obtained 4.53. When analyzed more closely, an analogous result came out for the married ones, consistently scoring with a VHL of teachers' awareness. Comparatively, the younger group recorded a repeat of "high level" (HL) of teachers' awareness, except on Makatao, where the likewise got interpreted at VHL. This finding implies that when it comes to the level of awareness based on the table, data shows that the married respondents have a high level of awareness in integrating values in their subjects. Odanga et al. (2015) stated that married teachers might work harder and longer to attain set targets.

Table 13 Level of Awareness in Values Integration according to Highest Educational Attainment

		Bachelor		**Masters**	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	assigning a prayer leader before and after the class.	3.94	High Level	3.86	High Level
2	Accepting one's differences in religious belief.	4.61	Very High Level	4.79	Very High Level
3	Politely listens to others to express their religious belief.	4.50	Very High Level	4.79	Very High Level
4	Learn to live in harmony with others regardless of belief and culture.	4.33	High Level	4.93	Very High Level
5	Uses any things in the school, including religious symbols, properly and respects sacred places.	4.44	High Level	4.43	High Level
	Overall Mean	**4.37**	**High Level**	**4.56**	**Very High Level**
	Makatao				
1	using courteous words and expressions toward others.	4.44	High Level	4.79	Very High Level
2	Congratulates peers/classmates who receive awards/ achievements.	4.61	Very High Level	4.93	Very High Level
3	Accepting defeat in the spirit of goodwill and sportsmanship.	4.67	Very High Level	4.93	Very High Level
4	practice the value of the initiative.	4.61	Very High Level	5.00	Very High Level
5	Friendly with others regardless of sex, cultural background, financial status, and religion.	4.67	Very High Level	5.00	Very High Level
	Overall Mean	**4.60**	**Very High Level**	**4.93**	**Very High Level**
	Makakalikasan				
1	turn off the lights, faucets, and appliances when not in use.	4.61	Very High Level	4.86	Very High Level
2	clean during her/his cleaning schedule.	4.61	Very High Level	4.50	Very High Level
3	Keeping one's working area neat and orderly.	4.61	Very High Level	4.36	High Level
4	Taking care of school materials, facilities, and equipment	4.67	Very High Level	4.71	Very High Level
5	Students show the initiative to pick litter without being told.	3.78	High Level	3.71	High Level
	Overall Mean	**4.46**	**High Level**	**4.43**	**High Level**
	Makabansa				
1	abide by the rules of the school, community, and country.	4.22	High Level	4.71	Very High Level
2	Sings well the National Anthem with pride and confidence.	4.28	High Level	4.57	Very High Level
3	Following national and local laws.	4.28	High Level	4.79	Very High Level
4	Communicates using Philippine dialects/languages.	4.50	Very High Level	4.71	Very High Level
5	patronize Philippine products.	4.28	High Level	4.64	Very High Level
	Overall Mean	**4.31**	**High Level**	**4.69**	**Very High Level**

Table 13 illustrates the analysis of the teachers' level of awareness in values integration when analyzed based on groupings by educational attainment and those four areas repeatedly mentioned in this section. In the area of Maka-Diyos, the bachelors' group (BG) obtained a mean score of 4.37 while the masters' group (MG) got 4.4.56; in Makatao, the obtained VHL mean scores were 4.60 and 4.93 for the BG and MG, respectively; in Makakalikasan, the obtained VHL mean scores were 4.46 and 4.43 for the same groupings, and in Makabansa, 4.28 was the obtained mean score of the BG and 4.64 for the MG. A similar result for the MG consistently scored with a VHL of teachers' awareness when analyzed more closely. Comparatively, the BG recorded a repeat of HL of teachers' awareness in Maka-Diyos and Makabansa, but got VHL in Makatao and Makakalikasan. It suggests that respondents with masters' degrees are more aware that they need to integrate values into their subjects. Similarly, the study shows that teachers with higher educational attainment and several seminars attended have higher pedagogical competence than teachers who have less exposure to seminars. Rama (2017) supports this finding by writing that teachers with high content competence have high pedagogical competence and vice versa.

Table 14 Level of Teachers' Awareness in Values Integration according to Length of Service

		Shorter		**Longer**	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	Assigning a prayer leader before and after the class.	3.95	High Level	3.83	High Level
2	Accepting one's differences in religious belief.	4.60	Very High Level	4.83	Very High Level
3	Politely listens to others to express their religious belief.	4.55	Very High Level	4.75	Very High Level
4	Learned to live in harmony with others regardless of belief and culture.	4.40	High Level	4.92	Very High Level
5	Uses any things in the school, including religious symbols, properly and respects sacred places.	4.45	High Level	4.42	High Level
	Overall Mean	**4.39**	**High Level**	**4.55**	**Very High Level**
	Makatao				
1	using courteous words and expressions toward others.	4.45	High Level	4.83	Very High Level
2	Congratulates peers/classmates who receive awards/ achievements.	4.60	Very High Level	5.00	Very High Level
3	Accepting defeat in the spirit of goodwill and sportsmanship.	4.65	Very High Level	5.00	Very High Level
4	practice the value of the initiative.	4.65	Very High Level	5.00	Very High Level
5	Friendly with others regardless of sex, cultural background, financial status, and religion.	4.75	Very High Level	4.92	Very High Level
	Overall Mean	**4.62**	**Very High Level**	**4.95**	**Very High Level**
	Makakalikasan				
1	turn off the lights, faucets, and appliances when not in use.	4.65	Very High Level	4.83	Very High Level
2	clean during his or her cleaning schedule.	4.55	Very High Level	4.58	Very High Level
3	Keeping one's working area neat and orderly.	4.50	Very High Level	4.50	Very High Level
4	Taking care of school materials, facilities, and equipment	4.65	Very High Level	4.75	Very High Level
5	Students show the initiative to pick litter without being told.	3.70	High Level	3.83	High Level
	Overall Mean	**4.41**	**High Level**	**4.50**	**Very High Level**
	Makabansa				
1	abide by the rules of the school, community, and country.	4.20	High Level	4.83	Very High Level
2	Sings well the National Anthem with pride and confidence.	4.25	High Level	4.67	Very High Level
3	Following national and local laws.	4.25	High Level	4.92	Very High Level
4	Communicates using Philippine dialects/languages.	4.45	High Level	4.83	Very High Level
5	patronize Philippine products.	4.25	High Level	4.75	Very High Level
	Overall Mean	**4.28**	**High Level**	**4.80**	**Very High Level**

As shown in Table 14, when it comes to the length of service, the respondents belonging to the longer-tenured group (LTG) got a consistent VHL overall mean of 4.55 in Maka-Diyos, 4.95 in Makatao, 4.50 in Makakalikasan, and 4.80 in Makannsa. The shorter-tenured group (STG) got a rating of HL in three areas of Maka-Diyos, Makakalikasan, and Makabayan, but was rated VHL in Makatao. Engin's (2020) paper validates this result by concluding that teachers in the first years of their careers have a lower level of motivation. This further means that the length of service affects their awareness and effectiveness in integrating core values into their subjects.

Table 15 Level of Teachers' Effectiveness in Values Integration according to Age

		Younger		Older	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	Students engage in worthwhile spiritual activities.	3.44	Moderate Level	3.50	High Level
2	Students respect sacred places.	3.94	High Level	3.71	High Level
3	Students respect the religious belief of others.	4.28	High Level	4.07	High Level
4	Students demonstrate curiosity and willingness to learn about other ways to express spiritual life.	3.89	High Level	3.93	High Level
5	Students tell the truth.	3.67	High Level	3.57	High Level
	Overall Mean	**3.84**	**High Level**	**3.76**	**High Level**
	Makatao				
1	Students take good care of borrowed things.	3.28	Moderate Level	3.36	Moderate Level
2	Students uphold and respect the dignity and equality of others, including those with special needs.	3.89	High Level	4.07	High Level
3	Students volunteer to assist others in time of need.	3.44	Moderate Level	3.86	High Level
4	Students recognize and respect people from different economic, social, and cultural backgrounds.	3.83	High Level	3.93	High Level
5	Students accept defeat and celebrate the success of others.	3.83	High Level	4.00	High Level
	Overall Mean	**3.66**	**High Level**	**3.84**	**High Level**
	Makakalikasan				
1	Students show a caring attitude toward the environment.	3.00	Moderate Level	3.36	Moderate Level
2	Students practice proper waste management.	2.94	Moderate Level	3.14	Moderate Level
3	Students keep their work areas clean and organized during and after class.	2.94	Moderate Level	3.14	Moderate Level
4	Students take good care of school materials, facilities, and equipment.	3.17	Moderate Level	3.21	Moderate Level
5	Students have the initiative to pick litter without being told.	3.00	Moderate Level	3.14	Moderate Level
	Overall Mean	**3.01**	**Moderate Level**	**3.20**	**Moderate Level**
	Makabansa				
1	Students identify themselves as Filipinos.	4.00	High Level	4.21	High Level
2	Students respect the flag and the national anthem.	3.83	High Level	4.14	High Level
3	Students take pride in diverse Filipino cultural expressions, practices, and traditions.	3.94	High Level	4.07	High Level
4	Students abide by the rules of the school, community, and country.	3.78	High Level	4.00	High Level
5	Students enable others to develop interest and pride in being a Filipino.	3.83	High Level	4.00	High Level
	Overall Mean	**3.88**	**High Level**	**4.09**	**High Level**

As presented in Table 15, when it comes to age, the respondents who belong to the "older" group got the following mean of 3.84 in Makatao and 4.09 in Makabansa, which is interpreted as a "high level" compared to the respondents belonging to the "younger" group. In Maka-Diyos, the respondents who belong to the "younger" group got an overall mean of 3.84, interpreted as a "high level." However, in Makakalikasan, the younger group got the lowest mean of 3.01, and the older got 3.20. However, the result might be interpreted as similar. It is still noticeable that teachers belonging to the older group are more diligent than the teachers who belong to the younger group. This claim was supported by Shah and Udgaonkar (2018), who claimed that as age advances, the teacher

becomes an experienced one, and s/he knows where to tap the students' potential and how to make them understand their worth.

Table 16 Level of Teachers' Effectiveness in Values Integration according to Civil Status

		Single		Married	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	Students engage in worthwhile spiritual activities.	3.45	Moderate Level	3.50	High Level
2	Students respect sacred places.	3.85	High Level	3.83	High Level
3	Students respect the religious belief of others.	4.30	High Level	4.00	High Level
4	Students demonstrate curiosity and willingness to learn about other ways to express spiritual life.	3.90	High Level	3.92	High Level
5	Students tell the truth.	3.65	High Level	3.58	High Level
	Overall Mean	**3.83**	**High Level**	**3.77**	**High Level**
	Makatao				
1	Students take good care of borrowed things.	3.20	Moderate Level	3.50	High Level
2	Students uphold and respect the dignity and equality of others, including those with special needs.	3.95	High Level	4.00	High Level
3	Students volunteer to assist others in time of need.	3.50	High Level	3.83	High Level
4	Students recognize and respect people from different economic, social, and cultural backgrounds.	3.95	High Level	3.75	High Level
5	Students accept defeat and celebrate the success of others.	3.80	High Level	4.08	High Level
	Overall Mean	**3.68**	**High Level**	**3.83**	**High Level**
	Makakalikasan				
1	Students show a caring attitude toward the environment.	2.95	Moderate Level	3.50	High Level
2	Students practice proper waste management.	2.85	Moderate Level	3.33	Moderate Level
3	Students keep their work areas clean and organized during and after class.	2.85	Moderate Level	3.33	Moderate Level
4	Students take good care of school materials, facilities, and equipment.	3.00	Moderate Level	3.50	High Level
5	Students have the initiative to pick litter without being told.	2.75	Moderate Level	3.58	High Level
	Overall Mean	**2.88**	**Moderate Level**	**3.45**	**Moderate Level**
	Makabansa				
1	Students identify themselves as Filipinos.	4.10	High Level	4.08	High Level
2	Students respect the flag and the national anthem.	3.95	High Level	4.00	High Level
3	Students take pride in diverse Filipino cultural expressions, practices, and traditions.	4.05	High Level	3.92	High Level
4	Students abide by the rules of the school, community, and country.	3.90	High Level	3.83	High Level
5	Students enable others to develop interest and pride in being a Filipino.	3.90	High Level	3.92	High Level
	Overall Mean	**3.98**	**High Level**	**3.95**	**High Level**

Table 16 reveals that when it comes to civil status, the singles got an overall mean of 3.98 while their married counterparts got 3.95. It may imply that single teachers are effective. Nonetheless, Alufohai and Ibhafidon (2015) stated that on the factor of marital status, student achievement was significantly influenced by teacher marital status. Students of the married teachers achieved the highest scores, followed by those of the single teachers.

Table 17 Level of Teachers' Effectiveness in Values Integration according to Highest Educational Attainment

		Bachelor		Masters	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	Students engage in worthwhile spiritual activities.	3.72	High Level	3.14	Moderate Level
2	Students respect sacred places.	4.17	High Level	3.43	Moderate Level
3	Students respect the religious belief of others.	4.39	High Level	3.93	High Level
4	Students demonstrate curiosity and willingness to learn about other ways to express spiritual life.	4.00	High Level	3.79	High Level
5	Students tell the truth.	3.78	High Level	3.43	Moderate Level
	Overall Mean	**4.01**	**High Level**	**3.54**	**High Level**
	Makatao				
1	Students take good care of borrowed things.	3.56	High Level	3.00	Moderate Level
2	Students uphold and respect the dignity and equality	4.06	High Level	3.86	High Level

	of others, including those with special needs.				
3	Students volunteer to assist others in time of need.	3.78	High Level	3.43	Moderate Level
4	Students recognize and respect people from different economic, social, and cultural backgrounds.	4.11	High Level	3.57	High Level
5	Students accept defeat and celebrate the success of others.	4.11	High Level	3.64	High Level
	Overall Mean	**3.92**	**High Level**	**3.50**	**High Level**
	Makakalikasan				
1	Students show a caring attitude toward the environment.	3.39	Moderate Level	2.86	Moderate Level
2	Students practice proper waste management.	3.28	Moderate Level	2.71	Moderate Level
3	Students keep their work areas clean and organized during and after class.	3.33	Moderate Level	2.64	Moderate Level
4	Students take good care of school materials, facilities, and equipment.	3.44	Moderate Level	2.86	Moderate Level
5	Students have the initiative to pick litter without being told.	3.33	Moderate Level	2.71	Moderate Level
	Overall Mean	**3.36**	**Moderate Level**	**2.76**	**Moderate Level**
	Makabansa				
1	Students identify themselves as Filipinos.	4.28	High Level	3.86	High Level
2	Students respect the flag and the national anthem.	4.28	High Level	3.57	High Level
3	Students take pride in diverse Filipino cultural expressions, practices, and traditions.	4.28	High Level	3.64	High Level
4	Students abide by the rules of the school, community, and country.	4.11	High Level	3.57	High Level
5	Students enable others to develop interest and pride in being a Filipino.	4.17	High Level	3.57	High Level
	Overall Mean	**4.22**	**High Level**	**3.64**	**High Level**

Table 17 reveals the effectiveness of values integration according to educational attainment. As presented in the table, when it comes to the highest educational attainment, the respondents who belong to BG got the following mean of 4.22 in the overall mean, which is interpreted as a "high level" compared to the respondents from the MG who got a 3.64 overall mean score. Tharum (2017) claimed that students are the reflections of a teacher. The teacher acts, behaves, talks, and everything is followed by/her student. After all, it is the result that determines a teacher's success. The result might not be only in terms of marks. However, a student's overall performance does determine the degree of a teacher's success. This implies that the teacher should observe or practice the effectiveness of values integration, especially on Makakalikasan.

Table 18 Level of Effectiveness of Values Integration according to Length of Service

		Shorter		**Longer**	
	Maka-Diyos	Mean	Interpretation	Mean	Interpretation
1	Students engage in worthwhile spiritual activities.	3.75	High Level	3.00	Moderate Level
2	Students respect sacred places.	4.10	High Level	3.42	Moderate Level
3	Students respect the religious belief of others.	4.30	High Level	4.00	High Level
4	Students demonstrate curiosity and willingness to learn about other ways to express spiritual life.	4.05	High Level	3.67	High Level
5	Students tell the truth.	3.75	High Level	3.42	Moderate Level
	Overall Mean	**3.99**	**High Level**	**3.50**	**High Level**
	Makatao				
1	Students take good care of borrowed things.	3.40	Moderate Level	3.17	Moderate Level
2	Students uphold and respect the dignity and equality of others, including those with special needs.	4.20	High Level	3.58	High Level
3	Students volunteer to assist others in time of need.	3.75	High Level	3.42	Moderate Level
4	Students recognize and respect people from different economic, social, and cultural backgrounds.	4.05	High Level	3.58	High Level
5	Students accept defeat and celebrate the success of others.	4.15	High Level	3.50	High Level
	Overall Mean	**3.91**	**High Level**	**3.45**	**Moderate Level**
	Makakalikasan				
1	Students show a caring attitude toward the environment.	3.30	Moderate Level	2.92	Moderate Level

2	Students practice proper waste management.	3.20	Moderate Level	2.75	Moderate Level
3	Students keep their work areas clean and organized during and after class.	3.25	Moderate Level	2.67	Moderate Level
4	Students take good care of school materials, facilities, and equipment.	3.40	Moderate Level	2.83	Moderate Level
5	Students have the initiative to pick litter without being told.	3.20	Moderate Level	2.83	Moderate Level
	Overall Mean	**3.27**	**Moderate Level**	**2.80**	**Moderate Level**
	Makabansa				
1	Students identify themselves as Filipinos.	4.20	High Level	3.92	High Level
2	Students respect the flag and the national anthem.	4.20	High Level	3.58	High Level
3	Students take pride in diverse Filipino cultural expressions, practices, and traditions.	4.20	High Level	3.67	High Level
4	Students abide by the rules of the school, community, and country.	4.10	High Level	3.50	High Level
5	Students enable others to develop interest and pride in being a Filipino.	4.10	High Level	3.58	High Level
	Overall Mean	**4.16**	**High Level**	**3.65**	**High Level**

Table 18 reveals the teachers' effectiveness in values integration according to the length of service. As presented in the table, when it comes to the length of service, the shorter-tenured group (STG) got the following mean of 3.83 in Maka-Diyos, 3.91 in Makatao, and 4.16; in Makabansa, which is interpreted as "high level." However, in the area of Makakalikasan, both STG and the longer-tenured group (LTG) got the lowest mean of 3.27 and 2.80, which was interpreted as a "moderate level." According to Hosain (2016), there is a general observation by most of them that excessive workload mainly makes them exhausted at the end of the day, which in turn destroys their research capabilities and creates problems in their work/life balance. This implies that because of the workload given to the teachers by the school heads also affects their performance in integration values in their subjects.

Level of Teachers' Awareness in Values Integration in the Area of Maka-Diyos according to Selected Variables

The comparative analysis of the difference in the teachers' level of awareness in values integration in Maka-Diyos resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured longer-tenured groups. The resultant analysis came out uniform across variable groupings by age, civil status, education, and length of service. Those four null hypotheses are henceforth accepted. Odanga et al. (2015) stated that male and married teachers might be concluded to work harder and longer to attain set targets because they have higher self-efficacies than female and unmarried teachers have, respectively. This means that when it comes to values integration, the more aged, married masters' degree holders and longer-tenured groups are more aware of the need to integrate Maka-Diyos into their lessons.

Level of Teachers' Awareness in Values Integration in Makakalikasan according to Selected Variables

Another comparative analysis was done on the difference in teachers' level of awareness in values integration in Makakalikasan resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings by age, civil status, education, and length of service. Those four null hypotheses are henceforth accepted.

Shah and Udgaonkar's (2018) study stated that students did not feel gender or age was a barrier in teaching until the teacher was active and interested in teaching. They felt that experience has a positive influence on teaching. This implies that when it comes to values integration, the respondents belonging to the older, married, master's degree, and longer length of service group show a high level of awareness in integrating Makakalikasan into their lessons.

Level of Awareness of Values Integration in Makatao based on Selected Variables

An additional comparative analysis was done on the difference in teachers' level of awareness in values integration in Makakato resulted in almost identical scores for both young and more aged,

single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. Joye and Wilson (2015) concluded that age and gender bias likely impact student evaluations of teaching. This is understood to mean that when it comes to values integration, respondents who belong to the older, are married, with master's degree, and have a longer length of service show a high level of awareness in integrating Makakalikasan into their lessons compared to the other groups. Students tend to look at seasoned teachers who are effective in class.

Level of Awareness of Values Integration in Makabansa based on Selected Variables

Another comparative analysis was done on the difference in teachers' level of awareness in values integration in Makabansa resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. Overall, the result shows that an increase in age and levels of education affect increasing environmental awareness and attitude. This is understood to mean that when it comes to values integration, the respondents belong to the group of older, married, with master's degree, and with longer length of service have a high level of awareness in integrating Makabansa into their lesson compared to the other group.

Level of Teachers' Effectiveness in Values Integration in the Area of Maka-Diyos according to Selected Variables

Another comparative analysis was done on the difference in teachers' level of awareness in values integration in Maka-Diyos resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. Overall, the result shows that respondents who are younger, single, bachelor's degree holders, and with shorter length of service are tenacious in integrating Maka-Diyos in the senior high school students compared to the other group. Young teachers are more effective than older ones. First of all, young teachers are more accessible for students to understand. Furthermore, old teachers speak or write in an old manner, making it more difficult to understand on the part of the students. Moreover, old teachers are quite strict.

Level of Teacher's Effectiveness in Values Integration in the Area of Makakalikasan based on Selected Variables

Another comparative analysis focused on the difference in teachers' level of awareness in values integration in Makakalikasan resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. Alufoha and Ibhafidon (2015) reported that students' academic achievement is significantly influenced by teachers' age and marital status, whereas teachers' gender did not significantly influence student academic achievement. This implies that both respondents effectively integrate Makakalikasan in the senior high school students compared to the other group.

Level of Teachers' Effectiveness in Values Integration in the Area of Makatao according to Selected Variables

Another comparative analysis focused on the difference in teachers' level of awareness in values integration in Makatao resulted in almost identical scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. According to Markman (2015), results suggest that changes in values probably reflect the tasks people need to perform at different life stages. Early on, people need to figure out what they want to do in life, so they need to explore life's possibilities. This implies that respondents from the older and married

group effectively integrate Makatao into their subject. As the person advances in age, his or her awareness of life perspective his/ her values are more aware and more mature in life.

Level of Teacher's Effectiveness in Values Integration in the Area of Makabansa according to Selected Variables

Another comparative analysis focused on the difference in teachers' level of awareness in values integration in Makabansa resulted in almost analogous scores for both young and more aged, single and married, lower and higher educational attainment, shorter-tenured and longer-tenured groups. The resultant analysis came out uniform across variable groupings like age, civil status, education, and length of service. As a result, those four null hypotheses are henceforth accepted. According to Howard (2014), experienced faculty presumably have a positive effect on student performance, yet graduate instructors appear to be as effective in teaching macro principles. Different sets of skills may be involved: experienced faculty may have a greater understanding of the material, more self-confidence, and a more critical approach. On the other hand, graduate instructors may be able to grasp what students do not understand and may make up in enthusiasm and approachability what they lack in understanding. This implies that when it comes to the effectiveness in integrating values to the subjects, it does not vary on the length of service, highest educational attainment, or even the civil status of the respondents.

Relationship between the Levels of Teachers' Awareness and Effectiveness in Values Integration

Finally, a relational analysis was done on the levels of teachers' awareness and effectiveness in values integration resulting in the p-value of 0.206, which was found not significant. The earlier stated null hypothesis is henceforth accepted. WH Magazine (2019) presents that several factors must be considered for students to learn. Most of these factors are external; they deal with social or cultural values. Also, it may be determined by the school's environment and the teachers and administrators that teach them. Still, another critical factor falls upon the student's ability and willingness to learn. This implies that although senior high school teacher is aware of integrating values in their subject. Still, the student's participation or willingness to accept these values will depend on the student's perception of whether it is applicable or not. According to Massey, the ages 8 to 13 are the modeling period. The child begins to consciously and unconsciously model basic behaviors between these ages.

6. Conclusion

It is somewhat surprising that the results showed contradictory findings: On the level of awareness of values integration in Maka-Diyos, Makakalikasan and Makabansa showed a high level of awareness. In contrast, the area of Makatao showed a very high level of awareness. Most of the respondents are aware that they need to integrate values in their subjects and believe that values should be developed together as well in the academic performance of the students. The effectiveness of values integration in Maka-Diyos, Makatao, and Makabansa showed high effectiveness in integrating values to their subjects. However, the area of Makakalikasan showed a moderate level of integration of values to their subjects. Despite the high level of effectiveness in the other area, teachers also need to utilize various programs or student involvement to increase the effectiveness of values integration, especially in Makakaliksan. There was no significant difference in the awareness of values integration when respondents were in a group compared to Maka-Diyos, Makatao, Makakalikasan, and Makabansa. It implies that the teachers, whether of age, civil status, highest educational attainment, and length of service, are already aware that they are teaching to develop the students' academic and values.

Teachers should also understand that they are not only content tutors but are also leaders. They guide students and show them the path to a better future. (5 Core Values Teacher Should Demonstrate, by Milan Kumar Sardar Tharum, 2017). There was also no significant relationship in the effectiveness of values integration when respondents were grouped and compared to Maka-Diyos, Makatao, Makakalikasan, and Makabansa. Findings indicate that aside from the teachers' awareness that they need to integrate values into their subjects, another essential factor is the student's ability and willingness to learn. In addition, there was no significant difference between the level of awareness and effectiveness of values integration of the senior high school teachers. It may be concluded that

teachers' level of awareness in integrating values into their subjects may be high but may fail in the effectiveness of integration. One factor that the researcher observes is the working load of the teachers. Teachers have a hard time balancing the working load and the teaching load given to them by the Department of education.

Moreover, another factor is that the teacher cannot fully implement or effectively integrate values because of the child protection policy. The Department of Education aims to ensure exceptional protection from all forms of abuse and exploitation and care necessary for a child's well-being. DepEd reiterates a zero-tolerance policy for any act of child abuse, exploitation, violence, discrimination, bullying, and other forms of abuse. The previous findings called for the need to conduct training and seminars for schoolteachers on teaching strategies and values integration in different subject areas.

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Teachers' Organizational Commitment and Job Satisfaction in the New Normal

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Abstract

This descriptive-correlational study analyzed whether a significant relationship exists between the organizational commitment and job satisfaction of 133 public secondary school teachers in the new normal in District II, Division of Bacolod City for the School Year 2020-2021. A researcher-made questionnaire that had undergone validity and reliability testing was used to gather the needed data. Descriptive, comparative, and relational analytical schemes were utilized, with mean, Mann-Whitney U test, and spearman rho as the statistical tools. Findings revealed that teachers' commitment in the areas of affective (*M=4.10, SD=0.459*), continuance (*M=4.39, SD=0.435*), and normative (*M=4.34, SD=0.583*), and level of job satisfaction of teachers in the areas of compensation and benefits (*M4.02, SD=0.597*), and career growth and development (*M=4.23, SD=0.454*) were all in high level. Whereas, significant difference was found in the level of organizational commitment in the area of affective when grouped and compared according to age (*p=0.043*) and normative on the variables age (*p=0.000*), highest educational attainment (*p=0.028*), and length of service (*p*=0.000), while continuance commitment revealed no significance. Also, no significant difference was found in the level of job satisfaction of teachers in the area of compensation and benefits, while a significant difference was revealed in the area of career growth and development when grouped and compared according to highest educational attainment (*p= 0.005*). Finally, organizational commitment was found to be significantly correlated with the level of job satisfaction (*p=0.000*). Training implications were drawn to further empower teachers and encourage them to pursue their quest for professional advancement.

Keywords : Education, organizational commitment, job satisfaction, descriptive correlational, new normal

1. Introduction

The nation's health crisis raises difficulties in teaching where teachers are part of the current normal education system. These problems include the preparation of modules and teaching the learners where it is difficult for teachers to get through to all the learners at home. Even the teachers are making use of different forms of communication. There are times when teachers are stressed from time to time because of many things to do. As a result, in the words of Canonizado (2021), they withdraw from group talks with their friends.

Teachers' work commitment during the COVID-19 crisis is very important. In response to this crisis, teachers needed to abruptly transition their lessons from physical classrooms to distance learning platforms. Though they are encountering many challenges in their efforts to meet the development needs of their students, they stay committed to their learners' education and emotional, social, cognitive, physical, and spiritual well-being. Besides, during a crisis like this, teachers must demonstrate greater commitment to their job and consequently increase their engagement at work (Baloran & Hernan, 2020).

Job satisfaction is not only closely connected to teacher retention, but it also contributes to the well-being of teachers and their students, overall school cohesion, and the enhanced status of the teaching profession (Toropova et al., 2019). Conducive working

conditions, promotional opportunities, fair remuneration, support from headteachers, colleagues, and the community, teacher empowerment, and friendships were the major factors affecting teachers' job satisfaction (Sahito & Vaisanen, 2019).

The researcher had observed that despite stable salaries and numerous benefits that public school teachers are receiving, they still complain of pressures such as immediate submission of reports, overlapping of jobs, additional workloads ending up with too many salary loans. They even engage in part-time employment, which may lack satisfaction and affect teachers' commitment. Teachers' ultimate goal in teaching is to promote learning. Despite many difficulties that teachers face, they continue to serve their purpose of providing education to students, by all means, to ensure that students get the knowledge they need, especially in these trying times.

These instances motivated the researcher to conduct this study to determine the organizational commitment and job satisfaction of public secondary school teachers. Furthermore, give recommendations that could help them boost their enthusiasm for continuously providing education to students in the new normal, where education is needed to save lives and the economy.

1.1. Theoretical Framework

This study is anchored on Meyer and Allen's (1997) three-component model of organizational commitment and Herzberg's Motivation-Hygiene Theory (1959).

The employee experiences commitment towards the organization as three simultaneous mindsets encompassing affective, normative, and Continuance organizational commitment. Affective commitment shows devotion based on the emotional ties that the employee develops with the organization, primarily through positive work experiences. This model was based on the worker's enthusiastic, positive work dedication. Normative Commitment denotes commitment based on perceived obligation towards the organization, for example, rooted in the norms of reciprocity. This model reflected duty in light of the apparent monetary and social expenses of leaving the association. Continuance Commitment reflects dedication based on the perceived economic and social costs of leaving the organization. Scientists have utilized this model to foresee critical worker results, including turnover and citizenship practices, work implementation, absence, and lateness (Meyer et al., 2002).

Herzberg's Motivation- Hygiene Theory in 1959 came up with the two-factor theory called Herzberg's motivation. The theory stated that work motivation and job satisfaction could provide valuable insights into an individual's needs and factors contributing to happiness or dissatisfaction (Su, 2004). The theory suggests that every worker has two sets of needs or requirements. The two-motivational opposite is "motivation factors and hygiene factors. Motivation factors are concerned with the motivation coming from inside, such as 100 recognitions, work itself, and personal growth and advancement, and hygiene factors are concerned with the motivation of people from the outside, such as interpersonal relations, salary, and working conditions (Lunenburg & Ornstein, 2008).

The theories served as the foundation of this study to provide concepts that justify factors and guide the understanding of how the teachers are committed towards their duties, supporting the goal of the organization—satisfied with how the educational institution takes care of them and their challenges in the new normal.

In this time of uncertainty, organizational commitment helps teachers define their attitude towards their work. With the new educational setting, teachers need to adjust and take responsibility to help the educational institution achieve its goals of providing education

amidst the pandemic. Committed teachers firmly believe in the goals and purposes of the institution and hence, are effective and positive advocates of the institution.

In addition, the success or failure of an organization is closely related to the effort and motivation of its employees. People are more inspired when they are satisfied with their job and are motivated from within. Efficacy and performance are increased through satisfaction and inspiration in the workplace, such as recognition, remuneration, rewards, and promotion. As teachers feel connected, economically secure, and grow personally and professionally, they perform better and are more efficient and supportive of the organization's policy.

1.2. Objectives

This study aimed to determine the level of organizational commitment and level of job satisfaction of Public Secondary School Teachers in the New Normal, in District II, Division of Bacolod City for the School Year 2020-2021. Specifically, this study sought to answer the following questions. (1.) What is the level of Organizational Commitment of Public Secondary School Teachers in the New Normal according to the following areas? a. Affective, b. Continuance, c. Normative. (2.) What is the level of Job Satisfaction of Public Secondary School Teachers in the New Normal according to the following areas? a. Compensation and Benefits, b. Career Growth and Development. (3.) Is there a significant difference in the level of Organizational Commitment of Public Secondary School Teachers in the New Normal when grouped and compared according to the aforementioned variables? (4.) Is there a significant difference in the level of Job Satisfaction of Public Secondary School Teachers in the New Normal when grouped and compared according to the aforementioned variables? (5.) Is there a significant relationship between the level of Organizational Commitment and the level of Job Satisfaction of Public Secondary School Teachers in the New Normal?

1.3. Hypotheses

In view of the preceding objectives, the following null hypotheses were framed for testing. (1) There is no significant difference in the level of Organizational Commitment of Public Secondary School Teachers in the New Normal when grouped and compared according to the aforementioned variables. (2) There is no significant difference in the level of Job Satisfaction of Public Secondary School Teachers in the New Normal when grouped and compared according to the aforementioned variables. (3) There is no significant relationship between the level of Organizational Commitment and the level of Job Satisfaction of Public Secondary School Teachers in the New Normal.

2. Related Research

This chapter presents related studies that have significant bearings on the topic investigated. These pieces of literature have provided the researcher with the theoretical and practical insights necessary to develop this investigation. Finally, this literature contributed much to the completion of the study.

The study of Ahluwalia and Preet (2017) concluded that older teachers are intrinsically motivated, more committed, and externally oriented. On the other hand, young teachers have shown their inclination more for monetary gains. Also, the finding indicates that Continuance Commitment rises among the teacher as they grow older, whereas, at a young age, they feel more obligated to their organization. For Normative Commitment, the trend changes over time.

Padmanaban (2016) revealed in his study on Organizational Commitment of Higher Secondary School Teachers that organizational commitment is more for teachers when they

are enrolled in the teaching profession but decreases slightly and then increases with increased inexperience.

The study of Sarafidou and Chatziioannidis (2013) revealed that a multidimensional approach to measuring teacher participation in decision making revealed relatively high actual involvement in decisions concerning students' and teachers' issues but low levels of involvement in managerial decisions. The discrepancy between the actual and desired levels of participants showed significant deprivation across all decision-making domains. Greater participation in decisions concerning teacher issues and lower levels of deprivation of participating in managerial issues were associated with teachers' perceptions of better leadership and higher collegiality in schools.

The study of Baloran and Hernan (2020) vividly emphasized the importance of teachers' work commitment during the COVID-19 crisis. With the immediate transition at work, such as shifting from physical classroom contact to distance and online, blended modality, teachers must remain committed to delivering accessible and quality education for all learners across cultural, social, economic, and geographical backgrounds.

McKinnon (2016) stated that one of the main reasons new teachers don't stay is because they do not get the support and mentoring they need. This lack of support isn't because other teachers are lazy and bad or school principals don't care. It's an old argument, but still, a valid one – teachers do not have time to do additional work, including mentoring. On average, teachers spend more than 47.5 hours per week on school-related activities. That can be hard to do when many aspects of the job are unattractive. For decades, researchers have cited heavy workloads, classroom management issues, and a lack of collaboration and support as the main reasons teachers leave the profession.

Danley (2019) stated that one of the most important things an administrator can do to boost morale within a school is to be appreciative. According to US News, 60% of employees say they have quit a job because they did not feel appreciated. Verbal appreciation is one of the effortless ways to express gratitude to your employees. The study of Fatima and Ali (2016) found that when teachers feel opportunities for recognition, decision power about their work; planning of tasks; their contribution to productivity, and especially when teachers receive helpful suggestions and guidance from their supervisor, they will be more satisfied.

A successful educational system lies in high-quality teaching staff. Teachers make the most significant portion of human capital in the school system. It is imperative in every organization to retain its employees and make them feel satisfied with their job. Understanding the factors that contribute to teachers' job satisfaction is essential to the success of the organization. Teachers understand the long-term strategy of their school. When teachers understand what they should accomplish and what is expected from them, it would be easier for them to determine what to contribute to improving the school's productivity (Bona, 2020).

Tindowen (2020) studied the job satisfaction of senior high school teachers. It can be shown from the results that, specifically, teachers are very highly satisfied with the nature of work and school administrator-teacher relationships. Along with the nature of work, teachers believe that their work gives them enjoyment, challenges, and fulfillment. At the same time, they also have avenues to adequately apply the knowledge they learned from their formal education and other continuous professional development activities to their work assignment. At the same time, their current work does not prevent them from growing in their profession. Results of previous studies revealed that the high satisfaction with the nature of work,

especially among teachers, creates a positive school culture since teachers know their boundaries and limitations.

One might conclude that these professionals are not actually underpaid. They simply lack financial literacy. This is a common view but a dangerous assumption to apply to all teachers in the country. Some of them are single with no kids, but even they admit that their salaries are barely enough to cover their own needs. For teachers with families, making ends meet is a monthly miracle. The grueling workload is just a start. Many teachers have shared that they are often left with no choice but to spend from their own pockets for needs they shouldn't be shouldering—from school activities to classroom posters to furniture. "Classroom beautification" is a big deal in public schools; teachers have to handle it themselves, or it would dent their ratings (Tagupa, 2018).

Tindowen (2020) conducted a study to determine secondary school teachers' organizational and professional commitment in the Northern Philippines concerning their job satisfaction. The study showed that secondary school teachers have a high level of organizational and professional commitment. They also have a high level of satisfaction with their job. In addition, their high level of organizational commitment and professional commitment lead to their high level of satisfaction towards their work and job satisfaction.

3. Methodology

This chapter presents the methodology of the study. It discusses the research design, locale of the study, subject and the participants of the study, the data-gathering procedure, which includes the research instrument and the test of its validity and reliability, the data-processing procedure, the analytical schemes, and the statistical tools.

3.1. Research Design

The study utilized the descriptive research design. Descriptive research aims to accurately and systematically describe a population, situation, or phenomenon. It can answer what, where, when, and how questions, but not why questions (McCombesM, 2019). The descriptive research design was appropriate for this study as it helped the researcher in obtaining information concerning the current status of the phenomenon and to describe what exists with respect to variables or other conditions or situations. It also helped in the elaboration of the data gathered and in making a professional judgment.

3.2. Respondents

The respondents of the study came from the 3 Secondary Schools of District II in the Division of Bacolod City with a total population of 202. Since the number of respondents is quite large to handle, stratified sampling and random sampling techniques were used, and a sample size of 133 teachers was identified using the Cochran formula.

3.3. Instruments

The researcher gathered the needed data for this study through constructing a research-made survey questionnaire which had undergone validity (validity index = 4.87 interpreted as "Excellent") and reliability (reliability index = 0.972 and 0.956 interpreted as "Excellent" for commitment and job satisfaction, respectively) to determine the level of Organizational Commitment, and level of Job Satisfaction of Public Secondary School Teachers in the New Normal.

The questionnaire was divided into three parts, wherein part I deals with the profile of respondents in terms of age, sex, highest educational attainment, and length of service. Part II of the questionnaire covers 32 items for Organizational Commitment with eight items each area of Affective, Continuance, and Normative, and 20 items for Job Satisfaction with ten

items each for areas of Compensation and Benefits and Career Growth and Development. Each item was rated on a scale of 1 to 5, using a 5-point Likert scale rating with 5 as always, 4 as often, 3 as sometimes, 2 as rarely, and 1 as almost never.

3.4. Procedure

After the approval of the questionnaire by the panel members, the validity of the research instrument was established. After which, the authority of the Schools Division Superintendent and School Heads were sought by submitting a request or a letter of communication asking for permission to establish the reliability and conduct the study. In the conduct of the study, the researcher explained the purpose of the survey, personally administered the questionnaire to the respondents, and guided them in answering. The research assured the respondents of the confidentiality of the data gathered.

3.5. Analysis

A descriptive-analytical scheme was used to determine the level of organizational commitment and level of job satisfaction of public secondary school teachers in the new normal with mean as the statistical stool. The following rating scale and description were utilized in interpreting the results: 4.50-5.00 = Very High Level, 3.50-4.49 = High Level, 2.50-3.49 = Moderate Level, 1.50-2.49 = Low Level, 1.00- 1.49 = Very Low Level. Moreover, the comparative analytical scheme was used to determine the significant Difference in the level of organizational commitment and level of Job Satisfaction grouped and compared according to variables with Mann-Whitney U Test as the tools. Finally, the relational analytical scheme was used to test the significant relationship between the level of organizational commitment and level of job satisfaction with spearman rho as the tool.

3.6. Ethical Considerations

The study ensures that respondents have the free will to be involved in the study, their identity will not be disclosed, and confidentiality of the data gathered from them is assured. After completion, all data stored in electronic gadgets will be discarded in order to protect against unauthorized access or use of information.

4. Results

This chapter presents the findings, statistical analysis, and interpretation of the data gathered in connection with the objectives of the study.

4.1. Level of Organizational Commitment of Public Secondary School Teachers in the New Normal according to the following areas of Affective, Continuance, and Normative

Table 1 Level of Organizational Commitment of Public Secondary School Teachers in the area of Affective

Items	Mean	SD	Interpretation
1. Very happy to spend the rest of my career in this organization.	4.25	0.829	High Level
2. Willing to put in a great deal of effort beyond what is normally expected in order to help this organization be successful.	4.54	0.657	Very High Level
3. Enjoying attending meetings and engage myself in facilitating organizational activities	3.47	1.172	Moderate Level
4. Comfortable sharing my opinions and suggestions whenever we encounter difficulties and feel as if the organization's problems are my own.	4.23	0.735	High Level
5. Given enough authority to make the decisions I need to make.	3.42	1.009	Moderate Level
6. Happy with how my job provides me with a sense of meaning and purpose.	4.22	0.899	High Level
7. Feeling a strong sense of belongingness to this organization.	4.64	0.607	Very High Level

Items	Mean	SD	Interpretation
8. Able to maintain a reasonable balance between work and my personal life.	4.02	0.961	High Level
Overall Mean	**4.10**	**0.459**	**High Level**

Level of Organizational Commitment of Public Secondary School Teachers in Affective obtained the overall mean of 4.10 interpreted as "High Level." Moreover, it was revealed that item 7, "Feeling a strong sense of belongingness to this organization." obtained the highest mean of 4.64, interpreted as "Very High Level." In contrast, item 5, "Given enough authority to make the decisions I need to make." got the lowest mean of 3.42, interpreted as "Moderate Level."

This implies that teachers' affective commitment was influenced by not having the freedom to make necessary decisions. This had been an issue where teachers were not given enough opportunity to get involved in the organization's decision-making. This hinders them from making authentic decisions to cater to the specific needs of students.

Findings conform with Sarafidou & Chatziioannidis (2013), where the multidimensional approach to measuring teacher participation in decision making revealed relatively high actual involvement in decisions concerning students' and teachers' issues but low levels of involvement in managerial decisions. The discrepancy between the actual and desired levels of participants showed significant deprivation across all decision-making domains. Greater participation in decisions concerning teacher issues and lower levels of deprivation of participating in managerial issues were associated with teachers' perceptions of better leadership and higher collegiality in schools.

Table 2 Level of Organizational Commitment of Public Secondary School Teachers in the area of Continuance

Items	Mean	SD	Interpretation
1. Contented with the quality of training provided to do my job effectively	4.28	0.752	High Level
2. Willing to accept almost any type of job assignment in order to keep working for this organization	4.08	0.930	High Level
3. Thinking that it would take many changes in my present circumstances to make me to leave this organization	4.25	0.773	High Level
4. Satisfied with how the job fully uses my skills	4.59	0.664	Very High Level
5. Confident that there’s so much to be gained by staying with this organization indefinitely.	4.37	0.701	High Level
6. Comfortable asking help from my colleagues if I have a problem at work.	4.56	0.656	Very High Level
7. Very happy that my colleagues treat me with respect.	4.56	0.595	Very High Level
8. Planning to continue my career with this organization until I am eligible for retirement.	4.40	0.706	High Level
Overall Mean	**4.39**	**0.435**	**High Level**

Table 2, in the Level of Organizational Commitment of Public Secondary School Teachers in Continuance, revealed the overall mean of 4.39 interpreted as "High Level." Moreover, the highest mean of 4.59 interpreted as "Very High Level" was obtained by item 4, "Satisfied with how the job fully uses my skills," while the lowest mean of 4.08, interpreted as "High Level," was obtained by item 2 "Willing to accept almost any type of job assignment to keep working for this organization."

This implies that teachers have been more cautious and more concerned with their physical and mental well-being, considering the type of task given to them. They are fully aware of their strengths and weaknesses; thus, accepting job assignments not aligned with their goals and capabilities might not work successfully on their end.

Findings conform with the study of Tindowen (2020), which revealed that teachers are very highly satisfied with the nature of work and school administrator-teacher relationships. Along with the nature of work, teachers believe that their work gives them enjoyment, challenges, and fulfillment. At the same time, they also have avenues to adequately apply the knowledge they learned from their formal education and other continuous professional development activities to their work assignment. At the same time, their current work does not prevent them from growing in their profession. Results of previous studies revealed that the high satisfaction with the nature of work, especially among teachers, creates a positive school culture since teachers know their boundaries and limitations.

The study of Baloran and Hernan (2020) vividly emphasized the importance of teachers' work commitment during the COVID-19 crisis. With the immediate transition at work, such as shifting from physical classroom contact to distance and online, blended modality, teachers must remain committed to delivering accessible and quality education for all learners across cultural, social, economic, and geographical backgrounds.

Table 3 Level of Organizational Commitment of Public Secondary School Teachers in the area of Normative

Items	Mean	SD	Interpretation
1. Positive that students can succeed and it is my mission to ensure their success.	4.54	0.609	Very High Level
2. Consistently making progress at work.	4.49	0.735	High Level
3. Confident that my job contributes to the organizations goals and objectives	4.34	0.976	High Level
4. Certain that the organization deserves my loyalty.	4.31	0.889	High Level
5. Aware of my responsibilities, and have a clear understanding of my job and what is expected of me.	4.59	0.652	Very High Level
6. Greatly satisfied with all the opportunities that the organization has given me.	4.17	1.143	High Level
7. Appreciated and recognized every time I made accomplishment in my job.	4.02	0.985	High Level
8. Fortunate because the organization has created an environment where I can do my best work.	4.29	0.744	High Level
Overall Mean	**4.34**	**0.583**	**High Level**

As shown in Table 3, Level of Organizational Commitment of Public Secondary School Teachers in the Normative area revealed the overall mean of 4.34 interpreted as "High Level." In addition, the highest mean of 4.59 interpreted as "Very High Level" was obtained by item 5, "Aware of my responsibilities, and have a clear understanding of my job and what is expected of me.". In contrast, the lowest mean of 4.02 was interpreted as "High Level" was obtained by item 7, "Appreciated and recognized every time I made accomplishment in my job.".

The result implies that teachers often receive an acknowledgment from their school heads or co-teachers. They believe in their capabilities. However, they need to feel more valued, especially when making contributions to the organization. Teachers believe that simple words and gestures of appreciation when they accomplish something could be a great factor to boost their dedication to their job.

Finding conforms with Danley (2019), stating that one of the most important things an administrator can do to boost morale within a school is to be appreciative. According to US News, 60% of employees say they have quit a job because they did not feel appreciated. Verbal appreciation is one of the effortless ways to express gratitude to your employees. Moreover, Fatima and Ali (2016) confirm that they feel opportunities for recognition, decision power about their work; planning of task; their contribution to productivity; and

especially when teachers receive helpful suggestions and guidance from their supervisor, they will be more satisfied.

4.2. Level of Job Satisfaction of Public Secondary School Teachers in the New Normal according to the following areas of Compensation and Benefits, and Career Growth and Development

Table 4 Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the area of Compensation and Benefits

Items	Mean	SD	Interpretation
1. I am well compensated with my current salary	3.44	1.184	Moderate Level
2. Medical security such as PhilHealth Benefits (Hospitalization, annual Physical Examination) are readily available.	4.05	0.932	High Level
3. Benefit packages such as GSIS Benefits (Retirement and Life Insurance Premiums) are secured by the institution.	4.40	0.748	High Level
4. Cash allowance (Chalk allowance, clothing allowance) suffices teacher's needs.	4.26	0.895	High Level
5. My salary helps me support my family and afford my wants.	4.11	0.828	High Level
6. I enjoy the leave privileges (Maternity, Paternity, study leave)	3.47	0.826	Moderate Level
7. Performance-Based Bonus are received yearly.	4.17	0.955	High Level
8. Vacation service credits are enough to take some time for leisure.	4.21	1.076	High Level
9. Service credits were earned through attending events, seminars and other school activities.	4.13	0.783	High Level
10. Tangible gifts such certificate, trophy, medals etc. were given as a recognition of my performance	4.00	0.749	High Level
Overall Mean	**4.02**	**0.597**	**High Level**

The level of Job Satisfaction of Public Secondary School Teachers in the New Normal in Compensation and Benefits showed the overall mean of 4.02 interpreted as "High Level." Moreover, item 3, "Benefit packages such as GSIS Benefits (Retirement and Life Insurance Premiums) are secured by the institution." obtained the highest mean of 4.40, interpreted as "High Level." In contrast, item 1, "I am well compensated with my current salary," got the lowest mean of 3.44, interpreted as "Moderate Level."

This denotes that with the shift in the educational system, teachers' workload seemed to be harder. They spend much of their time attending to students' queries, risking their health and safety because of the pandemic, facilitating programs, and accomplishing reports which often require them to do overtime and even spend weekends doing school work. Also, teachers are spending their personal allowance to supply lacking resources in their classrooms. Hence, teachers believe that they deserve a better salary rate to equate to the dedication, effort, and services they render the organization.

Findings confirm with Tagupa (2018), stating that one might conclude that these professionals are not actually underpaid. They simply lack financial literacy. This is a common view but a dangerous assumption to apply to all teachers in the country. Some of them are single with no kids, but even they admit that their salaries are barely enough to cover their own needs. For teachers with families, making ends meet is a monthly miracle. Many teachers have shared that they are often left with no choice but to spend from their own pockets for needs they shouldn't be shouldering—from school activities to classroom posters to furniture. "Classroom beautification" is a big deal in public schools; teachers have to handle it themselves, or it would dent their ratings.

Table 5 Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the Career Growth and Development

Items	Mean	SD	Interpretation
1. The School provides a healthy working environment for its members.	4.23	0.706	High Level
2. My teaching assignment is aligned with my qualification	4.53	0.646	Very High Level
3. Workload demands are manageable	3.35	1.213	Moderate Level

Items	Mean	SD	Interpretation
4. The Institution encourages teachers' involvement in shaping the curriculum.	4.32	0.669	High Level
5. Meetings are done regularly to communicate the organization's goals, plans, and strategies.	4.45	0.679	High Level
6. Seminars and workshops for enhancing the skills of teachers and innovation of teaching strategies are provided.	4.62	0.600	Very High Level
7. Class observation is being conducted, and feedback for improvement is given.	4.49	0.635	High Level
8. The School provides a venue for members to share difficulties encountered and collaborate on solutions.	4.29	0.672	High Level
9. Persons in authority take actions to rectify misconducts of its members	3.48	1.228	Moderate Level
10. Administrators encourage and support members to pursue post-graduate education and conduct research.	4.57	0.581	Very High Level
Overall Mean	**4.23**	**0.454**	**High Level**

Table 5 reveals the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the Career Growth and Development got an overall mean of 4.23, interpreted as "High Level." in addition, the highest mean of 4.62, interpreted as "Very High Level" was obtained by item 6 "Seminars and workshops for enhancing skills of teachers and innovation of teaching strategies are provided.", while the lowest mean of 3.35 interpreted as "Moderate "Level was obtained by item 3 "Workload demands are manageable."

This reflects that teachers have been affected by heavy workload assignments, which causes stress, burnout, and sometimes hinders them from engaging in other activities which could improve their personal and professional growth. This shows that the school could not properly designate tasks for teachers considering their skills and specializations, which should have helped teachers manage their time and have work and life balanced.

The study's findings conform with McKinnon (2016), stating that one of the main reasons new teachers don't stay is because they do not get the support and mentoring they need. This lack of support isn't because other teachers are lazy and bad or school principals don't care. It's an old argument but still valid – teachers do not have time to take on any additional work, including mentoring. On average, teachers spend more than 47.5 hours per week on school-related activities. That can be hard to do when many aspects of the job are unattractive. For decades' researchers have cited heavy workloads, classroom management issues, and a lack of collaboration and support as the main reasons teachers leave the profession.

4.3. Comparative Analysis in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the areas of Affective, Continuance, and Normative when grouped and compared according to variables

Table 6 Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Affective when grouped and compared according to Selected Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger	65	60.11	1762.000	0.043		Significant
	Older	68	73.59				
Highest Educational Attainment	Lower	85	63.43	1736.500	0.153	0.05	Not Significant
	Higher	48	73.32				
Length of Service	Shorter	79	63.51	1857.500	0.205		Not Significant
	Longer	54	72.10				

The Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Affective revealed no significant differences when respondents were grouped and compared according to highest educational attainment and length of service, with the computed p-value of 0.153 and 0.205 respectively, which are greater than the level of significance 0.05. Therefore, the null hypothesis stating that there is no significant difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Affective when grouped and compared according to highest educational attainment and length of service is accepted. However, when the respondents were grouped and compared according to age, the computed p-value of 0.043 was less than the level of significance of 0.05, indicating that the null hypothesis stating no significant difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Affective when grouped and compared according to age, is rejected.

This implies that years of existence affect teachers' devotion to their duties and responsibilities. Older teachers demonstrate a higher level of enthusiasm and activeness to the organization. Thus, experience in life is a factor that could help teachers become more responsible, engaged, and eager to strive to become an integral part of the organization.

The study results conform with Ahluwalia and Preet (2017) that older teachers are intrinsically motivated, more committed, and externally oriented. On the other hand, young teachers have more inclination for monetary gains. Also, the finding indicates that Continuance Commitment rises among the teachers as they grow older, whereas, at a young age, they feel more obligated to their organization. For Normative Commitment, the trend changes over time.

The Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Continuance when grouped and compared according to variables.

The Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Continuance, when grouped and compared according to variables, showed no significant differences as the computed p-value of 0.812, 0.286, and 0.830 are greater than the level of significance 0.05. Thus, the hypothesis stating that there is no significant difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Continuance when grouped and compared according to variables is accepted.

This implies that age, highest educational attainment, and length of service do not affect teachers' desire to stay in the organization. Regardless of grouping variables, teachers feel attached both mentally and emotionally to the organization. They are willing to give their best to be part of the organization and build strong relationships among their co-teachers.

Table 7 Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Normative when grouped and compared according to Selected Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger	65	52.75	1283.500	0.000	0.05	Significant
	Older	68	80.63				
Highest Educational Attainment	Lower	85	61.52	1574.500	0.028		Significant
	Higher	48	76.70				
Length of Service	Shorter	79	56.87	1332.500	0.000		Significant

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
	Longer	54	81.82				

The Difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of normative, when grouped and compared according to variables, revealed significant differences as the computed p-value of 0.000 for age and length of service and 0.028 for highest educational attainment were less than the level of significance 0.05. Thus, the hypothesis stating no significant difference in the Level of Organizational Commitment of Public Secondary School Teachers in the New Normal in the area of Normative when grouped and compared according to variables is rejected.

This implies that age, highest educational attainment, and length of service affect teachers' perspective towards their sense of obligation as facilitators of learning. Length of existence shows the maturity of performing one's duties and responsibilities. Whereas engaging oneself in continuing professional education provides a deeper understanding of the goals and objectives of the organization, especially in the field of education. Furthermore, long years in service provide experiences that help teachers adjust and adapt to changes, making them more confident and committed to their jobs.

Padmanaban (2016) concluded in his study on Organizational Commitment of Higher Secondary School Teachers that organizational commitment is more for teachers when they are enrolled in the teaching profession but decreases slightly and then increases with increased inexperience.

4.4. Comparative Analysis on the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the areas of Compensation and Benefits and Career Growth and Development when grouped and compared according to Age, Highest Educational Attainment, and Length of Service

The Difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in Compensation and Benefits when grouped and compared according to variables.

Results in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the area of Compensation and Benefits, when grouped and compared according to variables, showed no significant differences as the computed p-value of 00.786, 0.060 and 0.651 are greater than the level of significance 0.05. Thus, the hypothesis stating that there is no significant difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in Compensation and Benefits when grouped and compared according to variables is accepted.

This implies that the aforementioned variables did not affect teachers' satisfaction with compensation and benefits. Thus, the number of years the teacher has existed, educational background, and the number of years in service showed that teachers have the same perspective on how the organization provides for their needs and monetizes their efforts. A high level of satisfaction reflects that teachers' needs and welfare should also be given priority as there are the prime movers of learning. When teachers are well compensated, feel secure, and their efforts are valued, they perform better, engage themselves more to support the organization's goals, and focus more on providing students quality education.

Table 8 Difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the area of Career Growth and Development when grouped and compared according to variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	*Sig. level*	Interpretation
Age	Younger	65	67.38	2185.500	0.912		Not Significant
	Older	68	66.64				
Highest Educational Attainment	Lower	85	60.00	1445.000	0.005	0.05	Significant
	Higher	48	79.40				
Length of Service	Shorter	79	67.26	2112.500	0.925		Not Significant
	Longer	54	66.62				

The Difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the area of Career Growth and Development when grouped and compared according to variables to age and length of service, with the computed p-value of 0.912 and 0.925, respectively, were greater than the level of significance 0.05. Therefore, the null hypothesis stating that there is no significant difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in Career Growth and Development when grouped and compared according to variables of age and length of service is accepted. However, when the respondents were grouped and compared according to highest educational attainment, the computed p-value was 0.005, which is less than the level of significance of 0.05, indicating that the null hypothesis stating no significant difference in the Level of Job Satisfaction of Public Secondary School Teachers in the New Normal in the area of Career Growth and Development when grouped and compared according to variables to highest educational attainment, is rejected.

This implies that age and length of service are not factors that could affect teachers' satisfaction with career growth and development. On the other hand, educational background greatly affects one's satisfaction with personal and professional growth. Obtaining a higher academic degree helps teachers become more active in supporting the organization's goals and gain more skills, experiences, and innovations that help them manage their tasks. Therefore, they are more appreciative of the organization's effort to help them improve themselves and cope with the changes in the educational system.

The study's findings conform with Bona (2020), stating that a successful educational system lies in high-quality teaching staff. Teachers make up the largest portion of human capital in the school system. It is imperative for every organization to retain its employees and make them feel satisfied with their job. Understanding the factors that contribute to teachers' job satisfaction is essential to the success of the organization. Findings showed that teachers agree that they are satisfied with training, development, and resources. Teachers understand the long-term strategy of their school. When teachers understand what they should accomplish and what is expected from them, it will be easier to determine what to contribute to improving the school's productivity.

4.5. Relational Analysis between the Level of Organizational Commitment and Level of Job Satisfaction Public Secondary School Teachers in the New Normal

Table 11 Relationship between the Level of Organizational Commitment and Level of Job Satisfaction Public Secondary School Teachers in the New Normal

Variable	rho	p-value	*Sig. level*	Interpretation
Level of Organizational Commitment	0.631	0.000	0.01	Significant
Level of Job Satisfaction				

An analysis of the Level of Organizational Commitment and Level of Job Satisfaction among Public Secondary School Teachers in the New Normal revealed a significant relationship with the computed p-value of 0.000, which is less than the significance level of 0.01. In addition, the rho of 0.631 showed a moderate positive correlation. Hence, the null hypothesis stating that there is no significant relationship between the Level of Organizational Commitment and Level of Job Satisfaction among Public Secondary School Teachers in the New Normal is rejected.

This implies that teachers' commitment to the organization is a significant predictor of teachers' job satisfaction and vice versa. When teachers are more engaged in their job, they are more appreciative and positive toward the organization's goals. Meanwhile, it is also revealed a moderate positive relationship between organizational commitment and teachers' job satisfaction. This means that teachers who are more committed to the teaching profession have higher satisfaction with their job.

The study's finding conforms with Tindowen (2020), which revealed that secondary school teachers have a high level of organizational and professional commitment. At the same time, they also have a high level of satisfaction with their job. Their high level of organizational and professional commitment leads to their high level of satisfaction with their work.

5. Conclusion

The study's findings revealed that despite the shift in learning modality, teachers are still highly motivated to perform their duties. However, their affective commitment was affected by not having enough authority to make necessary decisions. Teachers felt inferior to other teachers, which concerns them from getting themselves involved in the decision-making. Whereas, changes in the educational system brought by the pandemic influenced teachers' dedication towards staying in the organization as to physical and mental well-being, making them more cautious considering the type of task given to them. Moreover, teachers seek more value and appreciation to boost their self-confidence and give their best to every task assigned to them. In addition, job satisfaction of the teachers in the new normal remains high in terms of compensation and benefits and career growth and development, showing gratefulness for the opportunity of having a job in a time of crisis. On the other hand, teachers' moderate satisfaction with their current salary was emphasized by a heavy workload, lack of on-hand budget to facilitate programs, and the need to supply lacking resources in their classrooms, making them spend their allowances for expenses. Also, teachers spend much of their time attending to schoolwork and queries of students and parents online, which requires them to work overtime, causes stress, burnout, and sometimes hinders them from engaging in other activities that could improve their personal and professional growth. Likewise, length of existence, continuing professional education, and

experiences reflect a deeper understanding of the goals and objectives of the organization and help teachers adjust and adapt to changes making them more confident and committed towards their duties and responsibilities. Thus, teachers' commitment to the organization is a significant predictor of teachers' job satisfaction. When teachers are more engaged, appreciative, and positive toward the organization's goals, they have higher satisfaction with their job. The foregoing findings call for workshops and training for skills improvement and innovation, involvement of teachers in the decision-making, planning, and team-building activities, encouragement of teachers to pursue continuing professional education, and constant monitoring of schools for assessment and enhancements. Finally, further research is recommended using the findings of the study or the use of other variables, to help teachers adapt to the new normal improve themselves, and facilitate better learning for students.

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Preference and Utilization of Media Channels as Communication Instruments of Local Public Administrators in Bacolod City, Negros Occidental

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Abstract

This descriptive-correlational study sought to determine whether significant relationship exists between the level of preference and extent of utilization of media channels as communication instruments of local public administrators (LPAs) of Bacolod City. Needed data were collected from all 85 middle-level managers holding positions as department head, assistant department head, division chief, and assistant division chiefs in the local government unit (LGU) using a survey questionnaire that has passed both validity and reliability test. Subsequent analyses reveal that public administrators' level preference and extent of utilization of social media as information sources and feedback instruments concerning their functions on the areas of Facebook and Newspaper were at moderate level and extent, while television/radio is at high level and great extent. Meanwhile, in the level of preference, significant differences were revealed in the area of Facebook when grouped and compared according to age and length of service, and in the areas of television/radio and Newspaper on length of service. Moreover, significant differences were revealed in the extent of utilization in the area of Facebook when grouped and compared according to age and length of service, television/radio on the variable length of service, and Newspaper on the variables length of service and position. Finally, significant relationship exists between the LPA's level of preference and extent of utilization. It has been established that respondents' preference led to their utilization of a specific medium. These findings call for a review and possible modification of departments' and divisions' communication strategies for relevance, transparency, and responsiveness.

Keywords : Public Administration, mainstream/social media, television/radio; newspaper, descriptive correlational

1. Introduction

Media, whether print, broadcast or social media, are communication channels that allow public administrators to relay significant information to and get feedback from their constituents. The institution has evolved over the years.

But as Owens (2018) puts it, there are more communication channels today than there were 50 years ago, where print and radio were the main vehicles of information.

Today, social media is regarded as a common thread that is connecting millions of people worldwide. Some say, with the advent of social media, people and organizations need no longer time to work through the mainstream media to relay messages (Owen, 2018).

Social media offers great opportunities for transparency in public administration since its birth in 1997. Criado et al. (2013) wrote about how social media like Facebook, is becoming one of the major trends in global e-government research and practice. And through this communication channel, in the words of Olsson and Eriksson (2016), public policies, plans, and programs are increasingly put under the virtual microscope for the public to see and this, which has the potential to change organizational practices, processes, and cultures.

This claim is supported by evidence from Mickoleit (2014) who pointed out that social media offers new opportunities to reduce political exclusion and enables governments to design public policies and services in more interactive, collaborative, and responsive ways.

One of the crucial communication tasks public administrators must embark on, is the careful and wise selection of a communication channel. A communication channel is a medium or means to send a message to intended receivers. The primary channels are written (hard copy print or digital formats), oral or spoken, and electronic and multimedia (Bruton, Bruton, & Lumen Learning). There is a dearth of literature that focus on preference and utilization of public administrators of information and communication channels they utilize in public service the reason why this paper sought to determine the level of preference and extent of utilization of media channels as communication instruments during the Third Quarter of Calendar Year 2019.

1.1. Theoretical Framework

This study is anchored on Mankins' Theory of Utilization of Resources which involves the use of technology to utilize the scarce resources in order to meet the needs of the society members. Tkatchova (2013) said, Mankins presupposed that the planet is a better place whenever cheap and cost-effective technology is in application to meet the needs of individuals within the society, which is through the utilization of natural resources in space to change the living conditions of citizens in areas where the technology in context takes full execution.

Mankins (2014) further explained that in order to illustrate this importance, it is essential to evaluate the effects, costs, and benefits of the use of technology according to prescription from the body which according to the theorist would offer clear indication of the significance of technology in eradicating poverty, increasing income rates, minimizing economic disparities, and enhancing the well-being of the society.Such theory is applicable also to how public administrators and their constituents make choose and utilize available media channels to be able to communicate and collect information for the achievement of their respective goals.

This study is also anchored on the Diffusion of Innovations Theory of Everett Rogers which seeks to explain how, why and at what rate new ideas and technology spread. Halton (2021) explained such theory as a hypothesis that outlines how technological and other advancements spread throughout societies and cultures, from introduction to widespread adoption, citing innovativeness or the degree to which an individual adopts a new idea.

Roger's theory is applicable to public administration and the importance of government leader's capacity to utilize and maximize the power of media channels in performing their functions.

This study is also anchored on McLuhan's theory on the medium being the message argues that "the personal and social consequences of any medium -- that is, of any extension of ourselves -- result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology."

Public administrators and local governments are expected to be transparent. That is why government officials must at all times, report to the public updates on policies, programs, projects and most especially government spending. Public administrators are expected to promote innovation in communicating to constituents using technologies available, bringing it into mainstream government practice.

This study can be linked to the Diffusion of Innovations theory because Integrated digital communications strategy speaks of how a specific communication channel can affect

the rate at which a new idea or technology is spread. McLuhan's theory on the other hand, can be linked to this study because it postulates the importance of communicators, media practitioners or public administrators, to wisely choose the channel or channels they will use in delivering content to audiences. And, Mankins' Theory of Utilization of Resources is also linked to this study as it also involves the use of technology to utilize the scarce resources in order to meet the needs of the society. The extent of utilization of media channels as communication instruments can be determined by extracting data from the answers to be given by respondents who will be public administrators at the Bacolod City Government Office.

1.2. Objectives

This paper aimed to determine the level of preference and extent of utilization of LPAs of media channels. Specifically, it sought answers to the following questions: 1. What is the level of preference of LPAs for media channels in social media, television/radio, and newspaper? 2. What is the extent of utilization of LPAs of media channels according to the aforementioned areas? 3. Is there a significant difference in the level of preference of LPAs of media channels when grouped and compared according to variables? 6. Is there a significant difference in the extent of utilization of LPAs of media channels when grouped and compared according to variables? 7. Is there a significant relationship between the level of preference and the extent of utilization of LPAs of media channels?

1.3. Hypotheses

In pursuit of the just-mentioned objectives, the following hypotheses were hereby formulated: 1. There is no significant difference in the level of preference of LPAs of media channels when they are grouped and compared according to the aforementioned variables. 2. There is no significant difference in the extent of utilization of LPAs of media channels when they are grouped and compared according to the aforementioned variables. 3. There is no significant relationship between the level of preference and the extent of utilization of LPAs of media channels.

2. Related Research

Communication has an exceptional role in public administration. Public administrators must develop strategies and wisely utilize available technology to be able to communicate directly with citizens. Digital technology places even more pressure on change in the traditional role of public service communicators as communication channels have increased with the emergence of social media, unlike 50 years ago, where TV, radio and print were the main information vehicles. As Ifigeneia and Dimitrios (2018) puts it, now that social media connects millions of people worldwide, some even say, with the advent of new media, mainstream media is already irrelevant.

In governments today, social media is utilized as complementary information dissemination, communication, and participation channels enabling citizens to access government data to make informed decisions (Song and Lee, 2015). According to Reddick et al. (2017), Facebook shows higher engagement levels of citizens with local governments. The potential of social media use during disasters and crisis situations has also been emphasized and researched (e.g., Liu et al., 2016). But a separate study revealed that social media is not being used as a platform for citizen-government interaction but only for information dissemination or not for involving the citizens in the decision-making process (Roengtam, 2017).

Public administration is regarded as the dynamic organ of government that keeps on moving and responding to change in conditions, occurrence, and time in solving problems

that the state encounters.It must be adaptable to changes like technological innovations that impact the way community members receive and retrieve information.

TV and radio broadcasting include the production and transmission of informative, educational and entertaining content that utilizes audio and visual technologies. Both are conventional mass media channels public administrators utilized before the Internet.

Conventional or mainstream media is famous for agenda-setting, focusing on public issues and influencing public opinion. McCombs (2014) wrote that the agenda of a news organization is found in its pattern of coverage on public issues over some period of time. Newton (2015) pointed out that in spite of the revolution brought about by the new digital means, watching television news is still the main way in which most people keep up with current affairs.

Meanwhile, radio is regarded as a pervasive mass medium. Chron Contributor (2021) reported that according to the University of Florida, 90 percent of cars have radios, and 95 percent of people in cars listen to radio. People who do not watch TV or read newspapers still listen to radio. Community radio, in particular, has proved to be a sustainable and interactive medium for poor and marginalized populations to be heard and informed, shape knowledgeable opinions, learn the give-and-take of informed dialogue, and become more decisive agents of development (Wabwire, 2013).

Finally, Munch and Gobel (2012) defined a newspaper as a printed publication consisting of folded unstapled sheets, containing news, feature articles, advertisements, and correspondence which carry topics concerning community events, government policies, projects and public affairs issues.

3. Methods

This section illustrates the practical approach needed to carry out the study in observance of research as a scientific study. It discusses the research design, research environment, subjects of the study, data gathering instrument and its tests of validity and reliability, the data gathering procedure, data analysis, and corresponding statistical tools used in data analysis.

3.1 Research Design

This study is descriptive, a research design that can accurately and systematically describe a population, situation, and phenomenon which can answer what, when, where, and how questions. However, the said design cannot possibly explain why questions. In the words of McCombs (2019), a descriptive research design is capable of using many quantitative as well as qualitative research methods to investigate several variables.

3.2 Subject-Respondents

This study used a heterogeneous population comprising of middle managers, specifically department heads, division chiefs, and their assistants who were all detailed in the local government of Bacolod City. Since the total population of middle managers in the said LGU was only 85, this paper used total enumeration, a type of purposive sampling technique that involves examining the entire population that has a particular set of characteristics.

3.3 Data-Gathering Instrument

The study used a self-made survey questionnaire which had undergone validity (validity index = 4.81 interpreted as “Excellent”) and reliability (reliability index of 0.901 for preference and 0.931 for utilization both interpreted as “Excellent”) to gather the necessary data that will answer the objectives of the study.

The questionnaire was divided into two parts. The first part deals with the demographic profiles of the respondents while the second part offered them a venue to reveal their level of preference and extent of utilization of specific media channels, including activities they engage in using the said media. Each item was rated on a scale of 1 to 5, using a 5-point Likert scale rating with 5 as always, 4 as often, 3 as sometimes, 2 as rarely, and 1 as almost never.

3.4 Data Gathering Procedure

At the onset, approval was sought from the office of the City Mayor of Bacolod to conduct the research consistent with research protocols. After getting the green light for the study, questionnaires were distributed to respondents who were identified with the help of the Human Resource Department of the Local Government Unit (LGU). The actual survey was conducted and completed in two weeks in the month of October 2019.

3.5 Data Analysis

This paper used the mean to determine the level of preference and extent of utilization of media channels. The following rating scale and description were utilized in interpreting the results: 4.50-5.00 = Very High Level, 3.50-4.49 = High Level, 2.50-3.49 = Moderate Level, 1.50-2.49 = Low Level, 1.00- 1.49 = Very Low Level, for level of preference and 4.50-5.00 = Very Great Extent, 3.50-4.49 = Great Extent, 2.50-3.49 = Moderate Extent, 1.50-2.49 = Low Extent, 1.00- 1.49 = Very Low Extent, for extent of utilization. Mann Whitney U test was used to determine whether or not a significant difference exists between the major variables, and the Spearman's rho to determine whether or not a significant relationship exists between the level of preference and extent of utilization of media channels.

3.6 Ethical Considerations

Prior to the conduct of the survey, the respondents were assured that their identities would be kept confidential. Hence, their names were not included in the data presented, nor were they asked to write their names on the questionnaires.

4. Results and Discussion

This section presents data gathered in relation to the objectives listed in the introductory section of this paper.

4.1. Level of preference of LPAs for media channels in social media, television/radio, and newspaper

Table 1 Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Social Media

Items	Mean	Interpretation
1. Uses Facebook to get news and information	3.68	High Level
2. Regularly checks FB news feed to know the latest happenings in Bacolod	3.62	High Level
3. Communicates to constituents using FB messenger	3.41	Moderate Level
4. Posts updates regarding programs, projects and other undertakings on FB	3.29	Moderate Level
5. Monitors feedback of taxpayers on various endeavors of the LGU through FB comments and posts	2.87	Moderate Level
6. Prefers to announce and relay important projects and programs through social media, preferably Facebook	3.08	Moderate Level
7. Sees social media like Facebook as a more effective tool in reaching out to constituents.	3.58	High Level
8. Uses Facebook to regularly monitor problems in barangays.	3.00	Moderate Level
9. Utilizes Facebook to bring to the attention of the public important services that can be availed in the LGU	3.09	Moderate Level
10. Chooses to post on FB first important announcements of class suspension, traffic re-routing, etc.	3.56	High Level

Items	Mean	Interpretation
Overall Mean	**3.32**	**Moderate Level**

This sub-section summarizes the analysis on the level of LPAs' preference on media channels (MCCI) when grouped by social media, which recorded an overall mean of 3.32, interpreted as "moderate level" (ML). When items are taken individually, item 1, which reads, "Uses Facebook to get news and information," obtained the highest mean score of 3.68, interpreted as "high level" (HL) of preference.

This implies that majority of respondents choose to get information from Facebook. Those who rely less on FB as news source exhibit higher levels of perceived knowledge about politics than those who rely more on it for news. Controlling for traditional news use, following political officials or institutions on social media are associated with higher levels of political interest and engagement, those with more politically active friends on FB have higher levels of exposure to political content online, and there is a positive correlation between FB being a source of information about politics and discussing politics more often with others (David, San Pascual & Torres, 2019).

Comparatively, the lowest mean score is 2.87, obtained by item number 5, which says, "Monitors feedback of taxpayers on various endeavors of the LGU through FB comments and posts," duly interpreted as ML of preference.

This would imply that LPAs did not see social media as an effective tool in gathering feedback. This also gave the researcher an idea that LPAs employed other means to monitor opinions or feedback of taxpayers.

Table 2 Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Television/Radio

Items	Mean	Interpretation
1. Watches television and listens to radio to get news and information	4.28	High Level
2. Regularly monitors news and current affairs programs on TV and radio to know the latest happenings in Bacolod	4.15	High Level
3. Communicates to constituents through television and radio news and current affairs programs	3.38	Moderate Level
4. Updates constituents regarding programs, projects and other undertakings through television and radio advisories and newscasts.	3.44	Moderate Level
5. Monitors feedback of taxpayers on various endeavors of the LGU through TV and radio commentaries with phone-in participation of listeners and viewers	3.38	Moderate Level
6. Prefers to announce and relay important projects and programs through television and radio.	3.55	High Level
7. Sees television and radio as more effective tools in reaching out to constituents more effective tool in reaching out to constituents	3.88	High Level
8. Tunes in to local television and radio programs and commentaries to regularly monitor problems in barangays	3.74	High Level
9. Utilizes television and radio programs to bring to the attention of the public important services that can be availed in the LGU	3.68	High Level
10. Chooses to make important announcements of class suspension, traffic re-routing, etc., on local television and radio public service segments	3.72	High Level
Overall Mean	**3.72**	**High Level**

Table 2 breaks down data in relation to the objective which is to determine the "Level of Preference of Local Public Administrators of Media Channels as Communication Instruments" in the area of Television and Radio. Data given by respondents through survey questionnaires provided them revealed item number 1, "Watches television and listens to radio to get news and information", got the highest mean score of 4.28 interpreted as "high level" of preference.

This gives the implication that most local public administrators relied on conventional media like television and radio as sources of news and information probably because they saw such traditional sources as more credible compared to other channels like social media.

Item number 3, "Communicates to constituents through television and radio news and current affairs programs" and item number 5, "Monitors feedback of taxpayers on various endeavors of the LGU through TV and radio commentaries with phone-in participation of listeners and viewers" having mean scores of 3.38 each interpreted as "moderate level" of preference both obtained the lowest mean scores.

This implies that local public administrators who were surveyed prefer other channels or communication instruments to be able to send relevant and useful information to constituents and at the same time solicit feedback from the same people. Other channels or communication instruments could be social media, an example of which is Facebook. Mass media has a very important role in public communication. Depending on how the message is received, the effects of communication will be different. They consist in the emergence of actions, attitudes, behaviors or mentalities that manifest among the public, being partially measurable and having a long term (positive or negative) impact on the receptors (Ranta, 2011).

Table 3 Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Newspaper

Items	Mean	Interpretation
1. Reads local newspapers to get news and information	3.89	High Level
2. Regularly monitors news and current affairs by reading newspapers to know the latest happenings in Bacolod	3.79	High Level
3.Communicates to constituents through articles, community news published in local dailies	3.19	Moderate Level
4.Updates constituents on programs, projects and other undertakings through newspapers' public service pages	3.22	Moderate Level
5. Monitors feedback of taxpayers on various endeavors of the LGU through newspaper Op-Ed pages	3.22	Moderate Level
6. Prefers to announce and relay important projects and programs through local dailies	3.35	Moderate Level
7. Sees newspaper as a more effective tool in reaching out to constituents	3.52	High Level
8. Makes newspapers as useful sources of information regarding problems in barangays	3.46	Moderate Level
9. Utilizes newspapers to bring to the attention of the public important services that can be availed in the LGU	3.52	High Level
10. Chooses to make important announcements of class suspension, traffic re-routing, etc., on public service or community news pages	3.40	Moderate Level
Overall Mean	**3.46**	**Moderate Level**

Table 3 presents the "Level of Preference of Local Public Administrators of Media Channels as Communicators in the Area of Newspaper", item number 1, "Reads local newspapers to get news and information", obtained the highest mean score of 3.89 interpreted as "high level" of preference. Such mean score implies that respondents of the survey preferred newspapers as sources of news and information probably because they have been used to such mass medium as a primary source of public affairs topics and news. Local government units like Bacolod City, subscribe to local and national dailies which most probably made newspapers accessible and cheap information and news sources for local public administrators.

It is also noteworthy that the recent growth of the community newspaper industry, particularly in rural communities, seems to be driven by same factors that drove Filipino community newspaper success in the past: citizens' need to know what is happening in local communities, educated readers in a country whose families value education, and participatory interest in the community (Community Journalism, 2014).

The lowest mean score however, was obtained by item number 3, "Communicates to constituents through articles, community news published in local dailies" with a mean score of 3.19 interpreted as "moderate level" of preference. It implies that newspapers are among the least preferred media channel of local public administrators in reaching out to their constituents. It further implies that less articles related to public affairs or activities of the LGU sent by local public administrators can be found in community news pages of local dailies.

Perhaps the most significant common thread over the past decade is that the digital world has changed the way government officials (like corporate executives) communicate with constituents (customers). And the PR world is on the brink of another breakthrough, as in Gini Dietrich discusses in her recently published book, Spin Sucks. It used to be you'd hire communications professional to help messaging or media training or publicity or reputation management. Today, the entire industry has been flipped on its head. No longer do the controlled messages and interviews work (Public Relations Society of America, 2012).

4.2. Extent of utilization of LPAs of media channels in social media, television/radio, and newspaper

Table 4 Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Social Media

Items	Mean	Interpretation
1. Uses Facebook to get news and information	3.47	Moderate Extent
2. Regularly checks FB news feed to know the latest happenings in Bacolod	3.44	Moderate Extent
3. Communicates to constituents using FB messenger	3.36	Moderate Extent
4. Posts updates regarding programs, projects and other undertakings on FB	3.16	Moderate Extent
5. Monitors feedback of taxpayers on various endeavors of the LGU through FB comments and posts	2.88	Moderate Extent
6. Prefers to announce and relay important projects and programs through social media, preferably Facebook	3.12	Moderate Extent
7. Sees social media like Facebook as a more effective tool in reaching out to constituents.	3.41	Moderate Extent
8. Uses Facebook to regularly monitor problems in barangays.	2.86	Moderate Extent
9. Utilizes Facebook to bring to the attention of the public important services that can be availed in the LGU	3.06	Moderate Extent
10. Chooses to post on FB first important announcements of class suspension, traffic re-routing, etc	3.31	Moderate Extent
Overall Mean	**3.21**	**Moderate Extent**

This sub-section analyzes the extent of LPA's utilization of MCCIs when grouped by social media, which recorded an overall mean of 3.21, and correspondingly interpreted as "moderate extent" (ME). As expected, item 1 scored the highest 3.47, interpreted to mean moderate extent (ME) of utilization. Surprisingly, all items got interpreted as "moderate extent."

This implies that social media has reached popularity in use even in local governance. LPAs are aware of the help social media can extend to local governments in getting important and useful information and in monitoring community news as well.

As of March this year, SWS said 99% of adult internet users have Facebook accounts. "This is equivalent to 45% of the total adult population (est. 30.5 million individuals)," it said. By area, Metro Manila had the highest number of adults with FB accounts at 64% (or about 5.8 million individuals). The rest of Luzon was at 48% or about 14.4 million individuals, followed by Mindanao at 39% or 5.8 million individuals, and the Visayas at 33%or 4.2 million individuals.

Table 5 Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Television/Radio

Items	Mean	Interpretation
1. Watches television and listens to radio to get news and information	4.09	Great Extent
2. Regularly monitors news and current affairs programs on TV and radio to know the latest happenings in Bacolod	3.94	Great Extent
3. Communicates to constituents through television and radio news and current affairs programs	3.14	Moderate Extent
4. Updates constituents regarding programs, projects and other undertakings through television and radio advisories and newscasts.	3.21	Moderate Extent
5. Monitors feedback of taxpayers on various endeavors of the LGU through TV and radio commentaries with phone-in participation of listeners and viewers	3.26	Moderate Extent
6. Prefers to announce and relay important projects and programs through television and radio.	3.38	Moderate Extent
7. Sees television and radio as more effective tools in reaching out to constituents more effective tool in reaching out to constituents	3.67	Great Extent
8. Tunes in to local television and radio programs and commentaries to regularly monitor problems in barangays	3.51	Great Extent
9. Utilizes television and radio programs to bring to the attention of the public important services that can be availed in the LGU	3.54	Great Extent
10. Chooses to make important announcements of class suspension, traffic re-routing, etc., on local television and radio public service segments	3.61	Great Extent
Overall Mean	**3.54**	**Great Extent**

This part of this paper analyzes LPA's extent of utilization of MCCIs in terms of TV/radio obtaining an overall mean of 3.54, duly interpreted to mean "great extent" (GE). When viewed closely, Table 7 scored the highest at 4.09 (GE), implying that TV and radio, still top the list of channels LPAs regularly use. Radio is very appealing because aside from being interactive, it also can provoke dialogue and solicit participation of locals with lower production costs and extreme versatility. Omenea (1997) observed that radio programs are usually timely and capable of extending messages to the audience no matter where they may be as long as there is power (Familusi & Owoeye, 2014). As Deane (2016) points out, even with Internet and mobile phone access rapidly rising, radio and TV remain key sources of information for most people.

contrast, Item number 3, "Communicates to constituents through television and radio news and current affairs programs", obtained the lowest mean score of 3.14, interpreted as ME of utilization. This implies that LPAs opt for other communication means like face-to-face or interpersonal communication than relaying messages through broadcast media. One implication of this would be that LPAs utilized other channels like FB in order to communicate to constituents because social media is interactive, providing new engagement possibilities like user involvement (Karakiza, 2015).

Table 6 Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Newspaper

Items	Mean	Interpretation
1. Reads local newspapers to get news and information	3.60	Great Extent
2. Regularly monitors news and current affairs by reading newspapers to know the latest happenings in Bacolod	3.61	Great Extent
3.Communicates to constituents through articles, community news published in local dailies	3.05	Moderate Extent
4.Updates constituents on programs, projects and other undertakings through newspapers' public service pages	3.04	Moderate Extent
5. Monitors feedback of taxpayers on various endeavors of the LGU through newspaper Op-Ed pages	3.04	Moderate Extent
6. Prefers to announce and relay important projects and programs through local dailies	3.11	Moderate Extent

Items	Mean	Interpretation
7. Sees newspaper as a more effective tool in reaching out to constituents	3.28	Moderate Extent
8. Makes newspapers as useful sources of information regarding problems in barangays	3.22	Moderate Extent
9. Utilizes newspapers to bring to the attention of the public important services that can be availed in the LGU	3.34	Moderate Extent
10. Chooses to make important announcements of class suspension, traffic re-routing, etc., on public service or community news pages	3.16	Moderate Extent
Overall Mean	**3.24**	**Moderate Extent**

This sub-section analyzes the extent of LPA's utilization of MCCIs when grouped by newspaper, which recorded an overall mean of 3.24, and correspondingly interpreted as "moderate extent" (ME). When analyzed more closely, item 8, "Regularly monitors news and current affairs by reading newspapers to know the latest happenings in Bacolod", obtained the highest mean score of 3.61, interpreted as GE of utilization, implying that newspaper is a popular medium to LPAs. This patronage for newspapers could have stemmed from a high level of trust respondents have on the medium being a mainstream medium which has a strong influence on the public because of its ability to set the agenda which become prominent in the public mind (McCombs, 2014).

Meanwhile, item 4, "Updates constituents on programs, projects and other undertakings through newspapers' public service pages" and item number 5, "Monitors feedback of taxpayers on various endeavors of the LGU through newspaper Op-Ed pages", both obtained the lowest mean score of 3.04, interpreted as ME of utilization. This implies that LPAs did not use newspapers to relay information and get taxpayers' feedback because they used other channels for such purpose. Voice mechanism could have been used by respondents. Samuel Paul and others extended the application to the public sector, arguing that the force of public 'voice' is imperative in influencing public organizations to be accountable, responsive and efficient in their service provision. Paul (1992: 1048) defines 'voice' as "the degree to which they (the public) can influence the final outcome of a service through some form of participation or articulation of protest/feedback (Hirschman, 1970).

4.3. Comparative analysis in the level of preference of LPAs for media channels in social media, television/radio, and newspaper when grouped and compared according to variables

Table 7 Comparative Analysis on the Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Social Media According to Variables

Variable	Category	Mean	Mann Whitney U	p-value	Sig level	Interpretation
Age	Younger	3.60	620.0	0.014		Significant
	Older	3.08				
Sex	Male	3.44	751.0	0.209		Not Significant
	Female	3.22				
Civil Status	Single	3.47	559.5	0.348		Not Significant
	Married	3.27			0.05	
Educational Attainment	College	3.33	841.5	0.953		Not Significant
	Masters	3.31				
Length of Service	Shorter	3.62	594.5	0.007		Significant
	Longer	3.04				
Position	High	3.33	719.5	0.650		Not Significant
	Low	3.31				

This sub-section tackles the results of the comparative analysis on the level of LPA's preference in MCCIs based on groupings by social media and those six oft-repeated selected variables. As shown on the last column, no significant difference was observed based on variable groupings by sex, civil status, education, and office positions; hence, the null hypotheses are accepted. On the contrary, a significant difference was found when respondents were grouped by age and length of service, resulting in the rejection of the null hypotheses.

This implies that sex, civil status, education, and office positions are not factors that could affect local administrators' preference in the use of social media as communication instruments. While in terms of age, majority of those who preferred social media in relation to the jobs were younger local public administrators, with a mean score of 3.60. Older respondents got a small share of the pie with a mean score of 3.08 only. The implication is that younger local public administrators are more techie or tech savvy compared to their older counterparts as revealed in their high level of preference for social media.

Social networking giant Facebook continues to dominate the social media penetration of online Philippines, where of the approximately 33.6 million Filipinos on the Internet, 29.9 million of those are Facebook users.The breakdown of users according to age are as follows: 38% are young adults aged 18 – 24, 24% are 25 – 34 years old, 10% are older teens of 16 – 17 years old, 10% are more mature adults of 35 – 44 years old and 9% are young teens aged 13 – 15% (Get Hooked 360, Inc., 2019).

Older respondents could also have social media accounts but when it comes to work-related concerns, they still prefer performing their tasks the conventional way, which is off Facebook. Although social media platforms and Web 2.0 technology are available for public organizations to adopt and incorporate into their daily routine, research finds that organizational cultures are not changing at the same rate and thus slow to embrace large amounts of public feedback (Knox, 2016).

Moreover, local public administrators who were in government service in less than 19 years, comprised majority of respondents who exhibited high level of preference for social media over respondents who have been in public administrators beyond 19 years. The highest mean score garnered by the first group of respondents is 3.62 while the minority group of respondents obtained a mean score of 3.04. The significant difference in the level of preference of respondents according to length of service could mean that those in government work for a long period could be not so into social media like Facebook or has been comfortable with following the conventional routine that they have been used to in relation ot their functions.

The digital divide between older adults and younger people still exists. Older adults use significantly fewer digital applications and spend less time online than younger adults. Following interviews with older adults, researchers from Lancaster University have discovered that resistance to using digital technologies is not primarily rooted in accessibility issues, as widely believed.

Researchers found that personally held values to do with the desirability of technology, wider concerns regarding its impact on society, and fears of getting things wrong when using software are also significant factors holding back technology use among older adults. Some older people are put off using online tools because they see them as being arduous and time consuming (Knowles & Hanson, 2018).

Table 8 Comparative Analysis on the Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Television/Radio According to Variables

Variable	Category	Mean	Mann Whitney U	p-value	Sig level	Interpretation
Age	Younger	3.80	841.0	0.621		Not Significant
	Older	3.65				
Sex	Male	3.74	882.5	0.926		Not Significant
	Female	3.70				
Civil Status	Single	3.67	604.5	0.637		Not Significant
	Married	3.74			0.05	
Educational Attainment	College	3.76	787.5	0.583		Not Significant
	Masters	3.65				
Length of Service	Shorter	4.04	574.5	0.004		Significant
	Longer	3.42				
Position	High	3.66	677.5	0.393		Not Significant
	Low	3.87				

In Table 8, presents the comparative analysis on the level of preference of local public administrators according to the six variables used in the research. However, it is only in the length of service of respondents that a significant difference in the level of preference for television and radio is noted. The said variable's *p*-value is 0.004, with a mean score of 4.04 obtained by respondents who have been in government service for a short period. Meanwhile, longer-staying respondents obtained a mean score of 3.42, signifying a significant difference in the level of preference of two groups of respondents.

This implies that sex, civil status, education, and office positions are not factors that could affect local administrators' preference in the use of television for communication. On the other hand, length of service affects preference of respondents as majority of them who preferred television and radio as communication instruments were those who have been in their jobs for a short period or have been in government service for 19 years and beyond. This shows that shorter length in service believe that television/ radio is reliable and are more accessible source of information. is It goes to show that despite the fact that people are embracing digitalization, still, there is a fraction of the population that chooses mainstream media over new media which is highlighted by the study results revealing that television remains popular not just in households but also in local governments.

This can be linked to data gathered by (Kantar Media, 2016) through its Media Habits Survey that found out that while Filipinos "are increasingly embracing the digital wave due to more affordable mobile access," TV is still king in most households, radio patronage is still "stable," and newspapers are still viewed as a credible sources of information.

When it comes to radio, the survey found that "listening figures remained stable in 2016 with an average of three out of 10 consumers tuning in on a daily basis." Most tuned in between the hours of 5 and 10 a.m., when daily morning newscasts are usually aired (Kantar Media,
2016).

Table 9 Comparative Analysis on the Level of Preference of Local Public Administrators of Media Channels as Communication Instruments in the Area of Newspaper According to Variables

Variable	Category	Mean	Mann Whitney U	P-value	Sig level	Interpretation
Age	Younger	3.62	771.0	0.266		Not Significant
	Older	3.32				
Sex	Male	3.52	849.5	0.700		Not Significant
	Female	3.41				
Civil Status	Single	3.55	637.0	0.893		Not Significant
	Married	3.43			0.05	
Educational Attainment	College	3.48	822.5	0.817		Not Significant
	Masters	3.42				
Length of Service	Shorter	3.76	605.5	0.009		Significant
	Longer	3.18				
Position	High	3.37	646.0	0.248		Not Significant
	Low	3.65				

This sub-section discusses the results of the comparative analysis on the level of LPA's preference in MCCIs based on groupings by newspaper and those six oft-repeated selected variables. As shown on the last column, no significant difference was observed based on five variable groupings by age, sex, civil status, education, and office positions; hence, the null hypotheses are accepted.

This implies that age, sex, civil status, education, and office positions are not factors that could affect local administrators' preference in the use of newspaper as communication instrument.

On the other hand, a significant difference was found when respondents were grouped by age and length of service, resulting in the rejection of the null hypotheses. The mean scores obtained, 3.76 based on responses derived from respondents with shorter period of service in government and 3.18, obtained from answers of respondents who have been in public service for a longer period, respectively made notable the difference in the level of preference of these two groups of respondents. Such variable obtained a *p*-value of 0.009.

This implies that LPAs who have been in public service for a shorter period of time perceived newspapers as credible sources of information. There which can be linked to results of studies that showed government officials are discouraged to rely on news and information on social media due to circulating disinformation and misinformation (Benkler et al., 2018; Kavanagh & Rich, 2018). Some public administrators are also afraid that they would be misquoted or caught giving misinformation through social media (Stromback et al., 2020).

Low to moderate level of preference for newspaper as a communication instrument on the other hand can be attributed to the decline in the popularity of the print medium which could be linked to (Kantar Media Philippines, 2018) data describing print as a "dying" medium. The survey found that despite increase in readership levels across the whole country in the last two years, from 45 to 48 percent, howeve, a significant decline in readership levels was noted when respondents were asked about their daily reading habits.

4.4. Comparative analysis in the extent of utilization of LPAs for media channels in social media, television/radio, and newspaper when grouped and compared according to variables

Table 10 Comparative Analysis on the Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Social Media According to Variables

Variable	Category	Mean	Mann Whitney U	p-value	Sig level	Interpretation
Age	Younger	3.49	626.0	0.017		Significant
	Older	2.97				
Sex	Male	3.32	748.5	0.201		Not Significant
	Female	3.11				
Civil Status	Single	3.43	539.0	0.250		Not Significant
	Married	3.14			0.05	
Educational Attainment	College	3.17	818.5	0.789		Not Significant
	Masters	3.26				
Length of Service	Shorter	3.57	550.5	0.002		Significant
	Longer	2.87				
Position	High	3.17	765.0	0.985		Not Significant
	Low	3.29				

This sub-section now tackles the results of the comparative analysis on the level of LPA's preference in MCCIs based on groupings by social media and those six oft-repeated selected variables. As shown on the last column, no significant difference was observed based on four variable groupings by sex, civil status, education, and office positions, resulting in the acceptance of the null hypotheses. In contrast, a significant difference was found when respondents were grouped by age and length of service, resulting in the rejection of the null hypotheses. This implies that sex, civil status, education, and office positions are not factors that could affect local administrators' utilization of social media as communication instrument.

However, utilization of local public administrators of social media, in terms of age and length of service varies as significant differences were noted. The *p*-value of 0.017 for age showed significant difference. Younger public administrators having obtained a mean score of 3.49 over older respondents whose responses resulted in a mean score of 2.97 imply that younger public administrators were more active users of social media, specifically Facebook while there could be resistance on the part of older respondents when it comes to use of modern technology.

Moreover, results were also related to respondents who have been in government for a shorter period and those who have been in public administrators for over 15 years. In the aspect of length of service, the *p*-value is 0.002. The highest mean score obtained was 3.57, derived from respondents who were in their posts for a short period while, the mean score of 2.87 was derived from answers of respondents who have been in position for a longer period. This implies that respondents who are longer in the service are used to what they have been using and are quite hesitant to use social media, while those who are shorter in the service are adopting the use to technology to make their work easier and to disseminate and acquire information faster.

Researchers found that personally held values to do with the desirability of technology, wider concerns regarding its impact on society, and fears of getting things wrong when using software are also significant factors holding back technology use among older adults. Some older people are put off using online tools because they see them as being

arduous and time consuming. They feel that the trend toward online services such as comparison websites places a greater burden on themselves to become experts in all manner of things, whereas previously one could seek out trained professionals to assist with decision making (Luijkx, et al., 2016).

Table 11 Comparative Analysis on the Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Television/Radio According to Variables

Variable	Category	Mean	Mann Whitney U	p-value	Sig level	Interpretation
Age	Younger	3.56	879.0	0.874		Not Significant
	Older	3.51				
Sex	Male	3.63	781.5	0.323		Not Significant
	Female	3.46				
Civil Status	Single	3.55	624.5	0.791		Not Significant
	Married	3.53			0.05	
Educational Attainment	College	3.55	803.0	0.683		Not Significant
	Masters	3.51				
Length of Service	Shorter	3.80	669.5	0.040		Significant
	Longer	3.29				
Position	High	3.41	606.0	0.124		Not Significant
	Low	3.83				

This sub-section brings the spotlight on the analysis of the level of LPA's preference in MCCIs based on groupings by TV/radio and those six oft-repeated selected variables. As shown on the last column, no significant difference was observed based on five variable groupings by age, sex, civil status, education, and office positions; hence, the null hypotheses are accepted. This implies that age, sex, civil status, education, and office positions are not factors that could affect local administrators' utilization of television/radio as communication instrument.

In contrast, the data shows that the computed p-value is 0.040 for the variable length of service showing a significant difference resulting in the rejection of the null hypotheses. Notable are the mean scores obtained, 3.80 and 3.29, which were derived from the answers of respondents with shorter stay in government and those public administrators who have been in position for a longer time, respectively. Such data implies that respondents who have been in government service for a shorter period have higher utilization of television and radio over those respondents who have been working in government for a longer period. Those having high level of utilization television and radio could be attributed to the popularity of the media and also the trust in the said mass media and the news organizations as well.

The poll, conducted from March 28 to 31, found that 21 percent of Filipino adults, or an estimated 13.9 million individuals, use Facebook daily as a source of news. Only 15 percent or about 9.7 million Filipino adults consume news by listening to radio while 2 percent or only a million read newspapers daily.

Television, according to the survey results, is the top source of news in the country--with 60 percent of Filipino adults or about 40 million individuals getting news through it.
SWS said news consumption through Facebook is "positively related to educational attainment. "Half of adult Facebook members who are college (49%) and high school graduates (49%) read the news daily using the social media site. This is higher compared to 37% among elementary graduates and 36% among non-elementary graduates (Social Weather Station, 2019).

It could also mean that those who have been in government service for a shorter period chose television and radio less as communication instruments because of the mass media's pervasiveness. It could also be that for them, the said medium is not the most appropriate to help them attain their goals.

Table 12 Comparative Analysis on the Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments in the Area of Newspaper According to Variables

Variable	Category	Mean	Mann Whitney U	p-value	Sig level	Interpretation
Age	Younger	3.46	713.5	0.105		Not Significant
	Older	3.07				
Sex	Male	3.38	759.0	0.236		Not Significant
	Female	3.13				
Civil Status	Single	3.44	574.5	0.433		Not Significant
	Married	3.19			0.05	
Educational Attainment	College	3.23	839.0	0.935		Not Significant
	Masters	3.26				
Length of Service	Shorter	3.55	611.0	0.010		Significant
	Longer	2.96				
Position	High	3.07	523.5	0.020		Significant
	Low	3.65				

This sub-section brings the spotlight on the analysis of the level of LPAs' preference in MCCIs based on groupings by TV/radio and those six oft-repeated selected variables. As shown on the last column, no significant difference was observed based on five variable groupings by age, sex, civil status, education, and office positions; hence, the null hypotheses are accepted. This implies that age, sex, civil status, education, and office positions are not factors that could affect local administrators' utilization of newspaper as communication instrument.

In contrast, a significant difference was found when respondents were grouped by length of service and position, resulting in the rejection of the null hypotheses. Data shows that the computed *p*-value of variable length of service which is 0.010, and the *p*-value obtained by variable position which is 0.020, are both lower than the significant level which is 0.05. Mean scores obtained were 3.55 and 2.96 respectively. The same holds true with respondents holding high and low-level positions in the local government surveyed, with mean scores of 3.07 and 3.65 for high-ranking officials and respondents holding low-level positions respectively. This shows that respondents who were in government service for both with shorter length of service and lower position have higher utilization of newspaper as a communication instrument.

This implies that with shorter length of service and with lower position perceived newspapers are highly credible and reliable sources of information and news as newspaper journalists are perceived to be the least biased. This agrees with (Institute of Public Relations' Disinformation in Society Report, 2019) data citing local newspapers as the most trustworthy source of news today because conversations around the state of contemporary media seem to lead to a particular social or political agenda which make it biased (McCorkindale, 2019).

The specific factors that lead people to trust and rely on a news source also vary by topic, the study finds. How much consumers value a specific component related to trust depends, for instance, on whether they are seeking news about politics or traffic and weather, let alone lifestyle. On some topics, consumers rate in-depth reporting and expert sources more highly. In others, ease of use is of higher value. For still others, being entertained is

more important. And in social media, consumers are fairly skeptical of content and want cues of trustworthiness such as clear identification of the original reporting source (Media Insight Project, 2016).

4.5. Relational analysis between the level of preference and the extent of utilization of LPAs of media channels

Table 13 Relationship Between the Level of Preferences and Extent of Utilization of Local Public Administrators of Media Channels as Communication Instruments

Variables	rho	p-value	Sig level	Interpretation
Level of Preferences Extent of Utilization	0.874	0.000	0.05	Significant

Finally, this sub-section brings the discussion on the correlation between LPA's level of preferences and extent of utilization of media channels as communication instruments both as receiver or transmitter of information. The computed Rho was 0.874 with a p-value of 0.000, interpreted as "significant," implying that the preference of media channels of LPAs was a key factor in their utilization of certain media channels relative to their duties as public administrators. Their preference led to the use of a specific medium so that their goals will be achieved. It implies that whatever was on top of respondent's mind, was the medium that he or she was most likely use to fulfill a task.

This finding can be linked to the Uses and Gratifications Theory of Mass Communication Research. The said theory, says McQuail (1987), is founded on the basic assumptions that some audience of a given medium of communication select among the various items of the content which they want. The reason for media usage, as Katz et al. (1974) indicated, can be found in social and psychological circumstances that pose a problem for which eventual media uses result in their solution. The uses of the gratification perspective in communication research are out of the realization that the audience of mass communication is not a passive recipient of its contents Blumber (1979). The approach argues that the audience, rather than being passive, is active, possessing particular needs and knowingly selecting communications channels and messages most likely to fulfill their needs (Lometh, Reeves, & Bybee, 1979).

5. Conclusion

Public sector organizations are moving toward the concept of open governments, making use of modern information and communication technology to better their operations and service to the public at the same time through transparency and responsiveness. Social media are platforms on which governments and constituents can interact directly; a clear paradigm shift from the traditional methods of interacting with customers as more than one customer can be reached easily and cheaply as well with just a click of the button. Governments benefit from the use of new communication and engagement channels because using it improves the effectiveness of public service delivery, generates information and data and helps build trust-based relationships that help restore confidence in local government. But many organizations within the public sector have not modified their operations to include the use of social media platforms or researched the impact of how such phenomena can be beneficial to developing trust, engagement, and a credible reputation as revealed in the results of the study showing how age influences preference and utilization of respondents of social media in relation to public service. Only younger public administrators were keen on using social media in order to serve constituents better. Respondents who have been in public service for a long time still prefer traditional media, revealing that their length of service of

respondents influenced also both their preference and utilization of media channels. The lack of technical skill in social media usage is among the possible reasons why LPAs were not maximizing the utilization of said channels in their jobs. However, it is also possible that the local government has not fully adopted the said innovation that is social media, even if it is not blind to the fact that the most modern technology can help local governments become more transparent and responsive to constituents. In conclusion, there is a need to revisit local governments' communication strategies with regard to the use of media to ensure its relevance and effectiveness. It is imperative for LPAs to learn and relearn the many ways media can be helpful to public administration. Resources, motivation, determination and necessity are among factors that influence the decision of an individual or organization to adopt new media technologies. In this digital age, people use a certain technology to socialize, reach target audiences, obtain feedback and send important files or letters to others, thereby, revolutionizing the communication process. This emphasizes the challenge for governments' communication strategies and data gathering procedures to evolve, along with technology. Local governments and those serving the public must be adaptable and ready to embrace features of both the conventional and new media that, when maximized, can help bring government closer to people and make government understand the people, to serve them better. Finally, further research is recommended to deeply explore and investigate other variables related to the study, or the use of media channels as communication instruments.

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Servant Leadership Practices of Administrators in Holy Angel University

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Abstract

This paper presents insight view on the concept of Servant-Leadership as practiced in the educational system; particularly, by college administrators in Holy Angel University, as based from the five (5) Practices of Exemplary Leader-Ship (Kouzer & Posner, 2001). Methodologically, it is a Quantitative Descriptive-Comparative Research, employing frequency, percentage distribution, mean, Kolomogor-Smirnov Test, and Mann-Whitney U Test; in addressing the research problems as to the profile of the Administrators and College Faculty; the extent of servant leadership practices; significant difference in the extent of servant leadership practices; and, implication of the results and finding to Enhancement of servant leadership in Holy Angel University. Interestingly, the extent of servant leadership of both administrator and college faculty is defined as strongly agree (administrators=3.60; faculty=3.28). Notably, among the exemplary practices, administrators scored fairly high on all, but for the faculty, the exemplary practice of Leaders Enabling Others to Act is not rated as high compared with the others (table 2). Among the five exemplary practices of servant leadership, the item about Leaders Enabling Others to Act is not significantly different between administrators and faculty (.187>α), while the others denoted statistical difference. This study affirms that Holy Angel University has this kind of Servant-Leadership culture, which reflects organizational culture and is in line with Holy Angel University's Vision, Mission, and Goals. Yet, there is a need to enhance one attribute of servant-leadership, which is Kouzes & Posner's Enabling Others to Act; in order, to promote inclusivity among all members of Holy Angel University.

Keywords : Leadership, Servant, Administrator, Faculty, University

1. Introduction

In the world of leadership, no concept has had considerable impact as that of servant leadership. Yet, no concept has been greatly misunderstood and misapplied. The people in this world have been used and wrongfully introduced to the notion that leaders are elected primarily to be served. This may not be consciously manifested, but the prevalent news says otherwise.

On the other hand, servant leadership means what it says. It is a kind of leadership that thrives on the attitude of service, the kind that really lives up to the name that a leader ought to be serving more than being served. This is the kind of leadership that uses conscience for the good of mankind. This is the style of leadership that shows compassion to the weak and the ignorant, those that need genuine help, and those that cry out for justice.

Servant leadership is based on the premise too, that the leader is indeed endowed with the needed talents and skills to stir those under him/her. In other words, competence. A truly competent leader empowers those under him/her and makes them think that they too can be of service one day. It is an all-encompassing idea that transcends all cultures and races. This includes everyone that wishes to know how to be a legitimate servant leader. For, a qualified leader is one who has learned to serve.

The mark of true, godly leadership is not power and privilege, but humble service. In another essence, Greenleaf (1993) view leadership as serving others including employees, customers, and community as a priority. He further state, that the increased services to others, the use of a holistic approach to service, the development of a strong sense of community and shared decision-making power are requisites of effective leadership.

The servant leader could then be said an exemplar leader who can transform the elements of an organization towards attaining its mission and vision. In essence, servant-leaders are transformational leaders who can create positive change and actively induce change (Hogg, et al,

2003). They further emphasized that it is characterized by idealized behavior, inspirational motivation, intellectual stimulation and individualized consideration.

A leader must be a servant first (Greenleaf, 2000). It begins with the natural feeling that one wants to serve. Furthermore, servant leadership is a lifelong journey that includes discovery of one's self, a desire to help others and a commitment to lead. Comparing traditional leadership with servant leadership, the former generally, involves acts or exercise of power by one at the "top of the pyramid", while the latter shares power, puts the need of others first and helps people develop and perform as highly as possible. Putting it more lightly, pitting a leader-first against a servant-first kind of leadership are shadings and blending that are part of the infinite variety of human nature.

The researcher strongly agrees that servant-leaders did not exist by chance. They are God chosen – leaders to lead and serve according to His purpose and will. The Bible and other references describe various characteristics of a leader, but Christ is the model of servant leadership who humbly serves God and the human-race. God's people ought to honor, obey and respect the leader God has placed over them. Therefore, linking these biblical truths to school administration, God is expecting school leaders to serve the same as what Jesus Christ did during His administration here on Earth. It must be a kind of a leader with a servant heart and spirit. Feeling that one wants to serve; one should serve first as proposed by Spears (2002). He meant that, in these days of massive institutional failure, there is a need to have leaders who can harness the true power and moral authority to lead. This philosophy will help those served become healthier, wiser, free, and more autonomous. Likewise, it offers long-lasting change, not temporary fix, and extends beyond business for leaders of all types of groups.

In applying the concept of servant-leadership, it is expected that leaders of the educational system practice, follow, emulate and abide by the provisions and other details that encompass the essence of a leader as modeled by Christ. As administrators seek to lead others, Christ is so clear how He wants the servant-leader to lead. He wants the administrators to make a difference in the school where they work, by being effective servant leaders. Anchored upon those precepts, this study determined the extent of servant-leadership practices among administrators of Holy Angel University, starting from coordinators, chairs and up to the deans, because of the reason that full-time college faculty professors who are part of the academic cluster serving the clients or students directly reports to them.

Purposively, the study was set to challenge the administrators to be servant-leaders in thought, words, and in deeds. It is prayed and aspired that doing and finishing this study will provide additional insight in strengthening and enhancing their personal journey as servant leaders of the university. – "To lead like Jesus''.

Review of Related Literature

The theory on the five (5) practices of exemplary leadership pointed to the following: challenging the process, inspiring a shared vision, enabling others to act, modeling the way and encouraging the heart. Their description is quoted directly as follows:

Challenging the Process

Leaders search for opportunities to change the status quo. They look for innovative ways to improve the organization. In doing so, they experiment and take risks. And because leaders know that risk taking involves mistakes and failures, they accept the inevitable disappointments as learning opportunities. The commitments under this principle are: (1) Leaders find their voice by clarifying their personal values; (2) Leaders set the example by aligning actions with shared values.

In the educational landscape, this will open opportunities in determining new and effective ways in enhancing instruction.

Inspiring a Shared Vision

Leaders passionately believe that they can make a difference. They envision the future, creating an ideal and unique image of what the organization can become. Through their magnetism and persuasion, leaders enlist others in their dreams. They breathe life into their visions and get people to see exciting possibilities for the future. The commitments under this principle are: (1)

Leaders envision the future by imagining exciting and enabling possibilities; (2) Leaders enlist others in a common vision by appealing to shared aspirations. Under this category, educational institutions will encourage both administrators and faculty to work together toward attainment of educational goals and objectives geared towards Christ-centered quality education.

Enabling Others to Act

Leaders foster collaboration and build spirited teams. They actively involve others. Leaders understand that mutual respect is what sustains extraordinary efforts; they strive to create an atmosphere of trust and human dignity. They strengthen others, making each person feel capable and powerful. The commitments under this principle are: (1) Leaders foster collaboration by promoting goals and building trust; (2) Leaders strengthen others by sharing power and discretion.

With respect to this principle, educational administrators empower faculty in the process of designing, implementing, and evaluating objectives aligned to the educational thrust of the university.

Modeling the Way

Leaders establish principles concerning the way people (constituents, colleagues, and customers alike) should be treated and the way goals should be pursued. They create standards of excellence; and then, set an example for others to follow. Because the prospect of complete change can overwhelm people and stifle action, they set interim goals, so that people can achieve small wins as they work toward larger objectives. They unravel bureaucracy when it impedes action; they put up signposts when people are unsure of where to go or how to get there; and they create opportunities for victory. The commitment under this principle are: (1) Leaders search for opportunities by seeking new and innovative ways to change, grow and improve; (2) Leaders experiment and take risks, by constantly generating small wins and learning from mistakes. Educational leaders serve as examples in undertaking all aspects related to the conceptualization and execution, and assessment of various tasks, in order to encourage and motivate the other members of the academic family.

Encouraging the Heart

Accomplishing extraordinary things in organizations is hard work. To keep hope and determination alive, leaders recognize contributions that individuals make. In every winning team, the members need to share in the rewards of their efforts, so leaders celebrate accomplishments. They make people feel like heroes. The commitments under this principle are: (1) Leaders recognize contributions by showing appreciation for individual excellence; (2) Leaders celebrate the values and victories, by creating spirit of community. Under this concept, all members of the academic circle, both administrators and faculty share a common heart, savoring the essence of victory and the motivation to face challenges. Their hearts beat as one in carrying out the noble and sacred duty of nurturing the academic and spiritual life of students, as well as, in fostering professional and personal growth of one another. The outcome of this study serves as reflections on the part of the administration relating to their leadership style, which is deemed connected to servant leadership. On the part of the faculty members, this study could serve as avenue through which they could share their insights on how they are being led. Under the pretext of servant-leadership, it is assumed that any gap that may exist between the responses of the administrators and faculty members could depict the strength and weaknesses in the aspect of servant-leadership.

The relationship between teachers' perceptions of the leadership behaviors of secondary school principals in a large urban school district and their perceptions of the level of shared decision making practiced in their schools. Leadership behavior was operationalized by the responses to each of the five practices on the leadership practices framework of Kouzes and Posner. Findings of said study inform the practice of school principals as they create empowering cultures in their schools, and the need to develop programs that provide enhancement of leaders' skill in creating learning organizations (Leech & Fulton, 2008).

The differences in middle-school and high-school teachers' perceptions of the leadership practices of principals or educational leaders was examined, where each participant was administered Kouzes and Posner's leadership practices inventory, which identified the teachers' perceptions of their principals' leadership practices in each of five dimensions; namely (1) challenging the process; (2) inspiring a shared vision; (3) enabling others to act; (4)modeling the way; and (5) encouraging the

heart. With 95 percent level of confidence, study results showed no significant differences between the means of the responses of middle-school and high-school teachers for any of the five practices. Additional analysis showed that both middle-school and high-school principals most often exhibited the practices of "enabling others to act" and "modeling the way" and least often demonstrated the behavior of "encouraging the heart" (Leech & Fulton, 2008).

In Richardson (1992) teachers' perceptions of the most desirable characteristics of principal behavior, where an instrument used to measure employees' perceptions of business manager characteristics according to the five basic leadership practices of Kouzes and Posner was adapted to the educational setting. Findings indicated that teachers' rankings of their principals were similar to business employees' rankings of their managers. Both groups stated that honesty was the most desirable and necessary characteristics for managers and principals. Other highly rated characteristics were "forward-looking", "inspiring", "caring", and "competent".

In Cruz (2016), a study about transcendental leadership of administrators in the College of Education in Region III. Administrators covered by said study were deans, assistant deans, and chairpersons. The study focused on vision, faith, altruistic love, spiritual development and spirituality in the workplace. Whereas, the present research covers only the deans, chairs, and coordinators from all schools of Holy Angel University and utilizes Kouzes and Posner's five basic leadership practices in ascertaining the extent of servant-leadership practices of Holy Angel University administrators.

In Lopez (2012), servant leadership is a philosophy that needs to be practiced and not just understand. He further claimed, that a servant – leader put more emphasis on the concerns of his followers or subordinates than his own; and with humility could attain greater chance of achieving the targeted goals and objectives on time without sacrificing the quality of the outcome, and without exhausting more energies than necessary. Bickemer (1998) aptly discerned this concern for the followers with humility by noting sacrifice and love for service, which is a requisite of the servant - leader model. He viewed that a leader should manifest love and emphasized that "where there is no self-love there can be no love of neighbor; and where love of self is low; then, so too will the love of neighbor''. This, as he puts it, preserves the self-integrity, esteem, and self-love of both leaders and followers.

Thus, the philosophy of servant–leadership manifesting concern for followers and humility (Lopez, 2012), and, sacrifice and love for service (Bickerman, 1998) is integrated into the five (5) practices of exemplary leadership (Kouzer & Posner, 2001).

2. Objectives

Statement of the Problem

The focus of the study was to explore the five (5) practices of exemplary leadership integrating the philosophy of servant-leadership. The outcome sought was to strengthen the stewardship of the department heads of Holy Angel University through servant-leadership. The following specific problems were posited to answer the main objective of the study:

1. What is the profile of the Administrators and College Faculty members in terms of:
   1.1 Age;
   1.2 Civil Status;
   1.3 Gender;
   1.4 Highest Educational Attainment;
   1.5 Department / Office;
   1.6 Number of years in the University;
   1.7 Seminars / Trainings;
   1.8 Position; and,
   1.9 Teaching / Administrative Status
2. How may the Administrators and College Faculty members describe the extent of servant leadership practices in terms of the following?
   2.1 Leaders Challenging the Process;

2.2 Leaders Inspire a Shared Vision;
2.3 Leaders Enable Others to Act;
2.4 Leaders Model the Way; and.
2.5 Leaders Encourage the Heart?

3. Is there a significant difference in the extent of servant leadership practices based on the responses of the Administrators and College Faculty members?
4. What is the implication of the results and findings of the study to the enhancement of servant leadership in Holy Angel University?

Hypothesis

1. There is no significant difference in the extent of servant leadership practices.

3. Materials and methods

Research Design

A descriptive-comparative research design was used to describe and compare the extent of the respondents' servant leadership practices.

Sample and Setting

A total 206 calculated using RaoSoftTM (n=292, CI=95%) comprised the sample of the study. Breakdown included, 31 college administrators and 175 full-time college faculty members across schools and colleges, who were randomly selected, the college administrators were only limited to the levels of Deans, Chairs, and Coordinators, due to the fact that College Faculty are under the academic cluster and are in direct contact with the aforementioned Administrators most of the time, in the performance of their tasks and during their stay at Holy Angel University.

Research Instrument

A researcher -made questionnaire, anchored upon the five practices of exemplary leadership as stipulated in Kouzes and Posner (2001). The first part of the questionnaire involved the enumeration of the selected variables of age, civil status, gender, highest educational attainment, school / college, and number of years in the university. The second part involved the understanding of the leadership practices of the Administrators by the Faculty member-respondents and those from the self-perceived leadership practices by the Administrators. The third part is an open-ended-recommendations from the respondents to better know their insights.

The survey questionnaire had an accompanying informed consent form, soliciting their willful and knowledgeable consent in participating in the study as respondents. It assured respondents of the confidentiality of their answers / responses and that they are free to withdraw their participation anytime. This is in compliance to ethical standards and RA 10173, otherwise known as Data Privacy Act, especially when dealing with human subjects.

The preliminary draft of the questionnaire was face validated by experts in questionnaire construction and some former administrators from Holy Angel University. Their suggestions, comments, and recommendations were considered and incorporated in the improvement of the survey questionnaire. It was subjected to further validation via pilot testing and passing the reliability test using Cronbach's Alpha with a rating of .94(see appendices - table 1). The interpretation of the mean is: 3.26-4.00(strongly agree), 2.51-3.25 (agree), 1.76-2.50 (disagree) and 1.00-1.75 (strongly disagree).

Data Collection

A permission to administer the questionnaire was sought from the office of the Vice-President for Academic Affairs of Holy Angel University. After the letter request was approved, it was attached to the letter for the Administrators, which were further requested to inform their faculty members. The respondents were given ample time, at least one-whole day to answer the twenty-five (25) item-survey, after which it was retrieved the same day (see appendices).

Data Analysis

Frequency and *percentage distribution* and *mean* were used to describe the profile and extent of servant leadership of the respondents, in that order. *Kolomogor-Smirnov Test* was used to determine the normality of score distribution. *Mann-Whitney U Test* determined the differences on the respondents' extent of servant leadership.

4. Results

Table 1 Profile of the Respondents

Administrators[a]			**Faculty**[b]		
		Age			
26 to 30 years old	6	19.4	25 years old and below	24	16.7
31 to 40 years old	8	25.8	26 to 30 years old	26	18.1
41 to 45 years old	8	25.8	31 to 40 years old	37	25.7
		Gender			
Male	16	51.6	Male	71	49.3
Female	15	48.4	Female	73	50.7
Civil Status					
Single	13	41.9	Single	66	45.8
Married	18	58.1	Single-Parent	3	2.1
			Separated	3	2.1
			Married	71	49.3
			Widow / Widower	1	.7
		Department/Office/School			
SAS	9	29.0	SAS	41	28.5
SEA	6	19.4	SEA	31	21.5
SBA	3	9.7	SBA	29	20.1
SNAMS	3	9.7	SNAMS	10	6.9
CCJEF	1	3.2	CCJEF	3	2.1
ICFSI	1	3.2	ICFSI	11	7.6
CICT	2	6.5	CICT	6	4.2
SED	4	12.9	SED	1	.7
SHTM	2	6.5	SHTM	12	8.3
		Highest Educational Attainment			
With MA units	1	3.2	College Degree	6	4.2
MA Degree	9	29.0	With MA units	30	20.8
with Doctorate units	10	32.3	MA Degree	49	34.0
Doctorate Degree	11	35.5	with Doctorate units	43	29.9
			Doctorate Degree	16	11.1
		Number of Years in the University			
Less than 3 years	7	22.6	Less than 3 years	59	41.0
4 to 6 years	5	16.1	4 to 6 years	22	15.3
7 to 9 years	5	16.1	7 to 9 years	15	10.4
More than 13 years	14	45.2	10 to 12 years	12	8.3
		Seminars/Trainings			
More than 1	31	100.0	In-house Training / Seminar	19	13.2
			Provincial Training / Seminar	1	.7
			Regional Training / Seminar	5	3.5
			National Training / Seminar	8	5.6
			More than 1	111	77.1
		Position			
Department Head / Administrator	31	100.0	Instructor	53	36.8
			Assistant Professor	78	54.2
			Associate Professor	9	6.3
			Professor	4	2.8
		Teaching/Administrative Status			
Contractual / Fixed-Term	1	3.2	Contractual / Fixed-Term	32	22.2

Administrators[a]			Faculty[b]		
		Age			
Full-time Probationary	8	25.8	Guest lecturer	1	.7
Full-time Regular Permanent	22	71.0	Full-time Probationary	50	34.7
			Full-time Regular Permanent	61	42.4

[a]n=31; [b]n=144

Majority or twenty-nine percent (29%) of the administrator-respondents (n=31) are from the age bracket of 46 years old and above, are males (51.6%) and married (58.1%) are from the School of Arts and Sciences (29%), are doctorate degree holders (35.5%), served the university for more than 13 years (45.2%), attended more than 1 seminar/training (100%), assigned as department head/administrator (100%) and holds a full-time regular/permanent status (71%) (table 1). The faculty members (n=144) are mostly in the age bracket of 31 – 40 (25.7%), females (50.7%) and single (45.8%), are from the School of Arts and Sciences (28.5%), with MA degree (34%), stayed in the university for more than 13 years (25%), has attended more than 1 seminar/training (77.1%), held an assistant professor rank (54.2%), and classified as full-time regular/permanent employee (42.4%) (table 1).

Table 2 Extent of Servant Leadership Practices of the Administrators and Faculty

Five Exemplary Principles of Servant-Leadership	Administrators[a]		Faculty[b]	
	Mean	**Interpretation**	**Mean**	**Interpretation**
Leaders challenging the process	3.70	Strongly Agree	3.40	Strongly Agree
Leaders inspiring a shared vision	3.71	Strongly Agree	3.37	Strongly Agree
Leaders enabling others to act	3.45	Strongly Agree	3.25	Agree
Leaders modeling the way	3.59	Strongly Agree	3.31	Strongly Agree
Leaders encourage the heart	3.57	Strongly Agree	3.28	Strongly Agree
Weighted Mean	3.60	Strongly agree	3.28	Strongly agree

[a]n=31; [b]n=144

The extent of servant leadership of both administrators and faculty is defined as strongly agree (administrators = 3.60; faculty = 3.28). Among the exemplary practices, administrators scored fairly high on all, but for the faculty, the exemplary practice of leaders, leaders enabling others to act is not rated as high compared with the others (table 2).

Table 3 Differences in the extent of servant leadership of administrators and faculty

Five Exemplary Principles of Servant-Leadership	***Sig.***
Leaders challenging the process	$.003^{*MW}$
Leaders inspiring a shared vision	$.005^{*MW}$
Leaders enabling others to act	.187
Leaders modeling the way	$.032^{*MW}$
Leaders encourage the heart	$.029^{*MW}$

n=206; MW=Mann Whitney U
**p<α*
α=.05

Among the five exemplary practices of servant leadership, the item about leaders enabling others to act is not significantly different between administrators and faculty (.187>α), while the others denoted statistical difference: leaders challenging process(.003<α), leaders inspiring vision (.005<α), leaders modeling the way (.032<α)and, leaders encourage the heart (.029<α) (table 3).

5. Discussion

Administrators and faculty members view the practice of *enabling others to act* similarly, which goes to show that through their exemplar in serving and leading, others are acting. On the other hand, the result from the other factors yields a result leading to statistically significant difference between the respondents' idea of Servant -Leadership and its extent as practiced here in the

University. This is validated by the study of Tamara (2012), which determined differences between self –perceptions of principals in relation to the five (5) leadership practices (Kouzes & Posner, 2001) and the perceptions of their teachers on their (principal) leadership across the same five (5) dimensions, which showed that there was significant difference only in one (1) leadership domain, which is enabling others to act. However, there were no significant differences found in the other four (4) leadership domains, which the administrators highly depict.

The findings for enable other to act suggest that this leadership behavior have a little significance to the faculty. One (1) explanation may have to do with the perception of that behavior. Cooperative goals, information and power sharing should lead to role clarity. But in Holy Angel University, administrators being true servant leaders sometimes, take on to themselves great responsibilities that they often try to carry the burden alone, so as not to overburden others, as much as they can. This affects the faculty's belief that he or she can perform tasks effectively. Thus, sometimes forgetting that the faculty are ready partners, willing to cooperate and share in the information and power, so as to be empowered to plan their own work, make their own decisions and consequently, gain greater control and understanding of what needs to be done and why. For, greater communication and trust reduces uncertainty in relationships (Morgan & Hunt, 1994) and that, task-specific self-esteem may be enhanced by greater participation in decision making (Teas, 1980). Said importance of enabling others to act is supported by the study of Smith (2011), that showed the pre-service school librarians' assessment of leadership potential during program selection process had a positive correlation with the leadership practices inventory (LPI) subscale for enabling others to act.

Implications of the Study

This study is an affirmation that Holy Angel University has this kind of servant-leadership culture, which is a good sign, in relation to HAU's Vision, Mission, and Goals. Moreover, it is an affirmation that at least, in the Higher Education or college level that culture of Servant-Leadership already exists in Holy Angel University. It is something that HAU should sustain and pass on.

In addition, the culture of Servant-Leadership in Holy Angel University collegiate departments reflects organizational culture and must be enhanced by programs intended for Administrators in relation to Servant-Leadership. On top of that, there is a need to enhance one attribute of servant-leadership, which is Kouzes and Posner's Enabling Others to Act, in order, to promote inclusivity among all members of Holy Angel University.

On the whole, strengthening practice of Servant-Leadership is in line with being faithful to the Vision, Mission, and Goal of the university. For, Servant-Leadership is directly proportional to HAU's core values; especially, Christ-centeredness. In short, practice of Servant-Leadership promotes faithful Catholic education, where it is a good sign or indicator that Holy Angel University, being the largest Catholic university in Central Luzon practices servant-leadership, whose greatest epitome is Christ.

6. Conclusion

Among the four exemplar practices of servant leadership, leaders challenging process, leaders inspiring vision, leaders modeling the way, and, leaders encourage the heart, administrators are found to possess the more compared to the faculty members. However, the item leaders enabling others to act, both execute such practice similarly.

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8. Appendices

Appendix A
Reliability Statistics

Table 1 Scale Equivalent for Verbal Interpretation
4 Point Likert scale

Scale	Range	Verbal Interpretation
4	3.26 – 4.00	Strongly Agree
3	2.51 – 3.25	Agree
2	1.76 – 2.50	Disagree
1	1.00 – 1.75	Strongly Disagree

Table 2 Age (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26 to 30 years old	6	19.4	19.4	19.4
	31 to 40 years old	8	25.8	25.8	45.2
	41 to 45 years old	8	25.8	25.8	71.0
	46 years old and above	9	29.0	29.0	100.0
	Total	**31**	**100.0**	**100.0**	

Table 3 Gender (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	51.6	51.6	51.6
	Female	15	48.4	48.4	100.0
	Total	**31**	**100.0**	**100.0**	

Table 4 Civil Status (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	13	41.9	41.9	41.9
	Married	18	58.1	58.1	100.0
	Total	**31**	**100.0**	**100.0**	

Table 5 Department / Office / School (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SAS	9	29.0	29.0	29.0
	SEA	6	19.4	19.4	48.4
	SBA	3	9.7	9.7	58.1
	SNAMS	3	9.7	9.7	67.7
	CCJEF	1	3.2	3.2	71.0
	ICFSI	1	3.2	3.2	74.2
	CICT	2	6.5	6.5	80.6
	SED	4	12.9	12.9	93.5
	SHTM	2	6.5	6.5	100.0
	Total	**31**	**100.0**	**100.0**	

Table 6 Educational Attainment (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	With MA units	1	3.2	3.2	3.2
	MA Degree	9	29.0	29.0	32.3
	with Doctorate units	10	32.3	32.3	64.5
	Doctorate Degree	11	35.5	35.5	100.0
	Total	**31**	**100.0**	**100.0**	

Table 7 No. of Years in the University (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3 years	7	22.6	22.6	22.6
	4 to 6 years	5	16.1	16.1	38.7
	7 to 9 years	5	16.1	16.1	54.8
	More than 13 years	14	45.2	45.2	100.0
	Total	31	100.0	100.0	

Table 8 Seminars / Trainings Attended (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 1	31	100.0	100.0	100.0

Table 9 Position (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Department Head / Administrator	31	100.0	100.0	100.0

Table 10 Teaching / Administrative Status (Administrators)

Administrators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Contractual / Fixed-Term	1	3.2	3.2	3.2
	Full-time Probationary	8	25.8	25.8	29.0
	Full-time Regular Permanent	22	71.0	71.0	100.0
	Total	31	100.0	100.0	

Table 11 Administrative Position

Administrative Position	Number	Percentage
Dean	7	22.58%
Program Chair	12	38.71%
Subject Coordinator	12	38.71%
Total	31	100%

Appendix B

Table 12 Age (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 years old and below	24	16.7	16.7	16.7
	26 to 30 years old	26	18.1	18.1	34.7
	31 to 40 years old	37	25.7	25.7	60.4
	41 to 45 years old	23	16.0	16.0	76.4
	46 years old and above	34	23.6	23.6	100.0
	Total	**144**	**100.0**	**100.0**	

Table 13 Gender (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	71	49.3	49.3	49.3
	Female	73	50.7	50.7	100.0
	Total	**144**	**100.0**	**100.0**	

Table 14 Civil Status (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	66	45.8	45.8	45.8
	Single-Parent	3	2.1	2.1	47.9
	Separated	3	2.1	2.1	50.0
	Married	71	49.3	49.3	99.3
	Widow /Widower	1	.7	.7	100.0
	Total	**144**	**100.0**	**100.0**	

Table 15 Department / Office / School (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SAS	41	28.5	28.5	28.5
	SEA	31	21.5	21.5	50.0
	SBA	29	20.1	20.1	70.1
	SNAMS	10	6.9	6.9	77.1
	CCJEF	3	2.1	2.1	79.2
	ICFSI	11	7.6	7.6	86.8
	CICT	6	4.2	4.2	91.0
	SED	1	.7	.7	91.7
	SHTM	12	8.3	8.3	100.0
	Total	**144**	**100.0**	**100.0**	

Table 16 Educational Attainment (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	College Degree	6	4.2	4.2	4.2
	With MA units	30	20.8	20.8	25.0
	MA Degree	49	34.0	34.0	59.0
	with Doctorate units	43	29.9	29.9	88.9
	Doctorate Degree	16	11.1	11.1	100.0
	Total	**144**	**100.0**	**100.0**	

Table 17 No. of Years in the University (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3 years	59	41.0	41.0	41.0
	4 to 6 years	22	15.3	15.3	56.3
	7 to 9 years	15	10.4	10.4	66.7
	10 to 12 years	12	8.3	8.3	75.0
	More than 13 years	36	25.0	25.0	100.0
	Total	**144**	**100.0**	**100.0**	

Table 18 Seminars / Trainings Attended (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In-house Training / Seminar	19	13.2	13.2	13.2
	Provincial Training / Seminar	1	.7	.7	13.9
	Regional Training / Seminar	5	3.5	3.5	17.4
	National Training / Seminar	8	5.6	5.6	22.9
	More than 1	111	77.1	77.1	100.0
	Total	**144**	**100.0**	**100.0**	

Table 19 Position (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Instructor	53	36.8	36.8	36.8
	Assistant Professor	78	54.2	54.2	91.0
	Associate Professor	9	6.3	6.3	97.2
	Professor	4	2.8	2.8	100.0
	Total	**144**	**100.0**	**100.0**	

Table 20 Teaching / Administrative Status (Faculty)

Faculty		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Contractual / Fixed-Term	32	22.2	22.2	22.2
	Guest lecturer	1	.7	.7	22.9
	Full-time Probationary	50	34.7	34.7	57.6
	Full-time Regular Permanent	61	42.4	42.4	100.0
	Total	144	100.0	100.0	

Appendix C

Table 21 Descriptive Statistics (Administrators)

Administrators					
Five Exemplary Principles of Servant-Leadership	**N**	**Minimum**	**Maximum**	**Mean**	**Verbal Interpretation**
Leaders Challenging the Process	31	3.00	4.00	3.70	Strongly Agree
Leaders Inspiring A Shared Vision	31	3.00	4.00	3.71	Strongly Agree
Leaders Enabling Others to Act	31	2.80	4.00	3.45	Strongly Agree
Leaders Modeling the Way	31	2.40	4.00	3.59	Strongly Agree
Leaders Encourage the Heart	31	2.40	4.00	3.57	Strongly Agree
Valid N	31			3.60	Strongly agree

Table 22 Descriptive Statistics (Faculty)

Faculty Members					
Five Exemplary Principles of Servant-Leadership	**N**	**Minimum**	**Maximum**	**Mean**	**Verbal Interpretation**
Leaders Challenging the Process	144	1.20	4.00	3.40	Strongly Agree
Leaders Inspiring A Shared Vision	144	1.00	4.00	3.37	Strongly Agree
Leaders Enabling Others to Act	144	1.20	4.00	3.25	Agree
Leaders Modeling the Way	144	1.00	4.00	3.31	Strongly Agree
Leaders Encourage the Heart	144	1.00	4.00	3.28	Strongly Agree
Valid N	144			3.28	Strongly agree

Table 23 Test of Normality

Five Exemplary Principles of Servant-Leadership	**Kolmogorov-Smirnov[a]**			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Leaders Challenging the Process (Admin)	.229	31	.000	.807	31	.000
Leaders Inspiring A Shared Vision (Admin)	.210	31	.001	.824	31	.000
Leaders Enabling Others to Act (Admin)	.179	31	.013	.881	31	.003
Leaders Modeling the Way (Admin)	.290	31	.000	.829	31	.000
Leaders Encourage the Heart (Admin)	.239	31	.000	.846	31	.000
Leaders Challenging the Process (Faculty)	.164	31	.033	.896	31	.006
Leaders Inspiring A Shared Vision (Faculty)	.234	31	.000	.830	31	.000
Leaders Enabling Others to Act (Faculty)	.158	31	.046	.902	31	.008
Leaders Modeling the Way (Faculty)	.213	31	.001	.856	31	.001
Leaders Encourage the Heart (Faculty)	.222	31	.000	.818	31	.000

Table 24 Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Leaders Challenging the Process is the same across categories of Position.	Independent-Samples Mann-Whitney U Test	.003	Reject the null hypothesis
2	The distribution of Leaders Inspiring a Shared Vision is the same across categories of Position	Independent-Samples Mann-Whitney U Test	.005	Reject the null hypothesis
3	The distribution of Leaders Enabling Others to Act is the same across categories of Position	Independent-Samples Mann-Whitney U Test	.187	Retain the null hypothesis
4	The distribution of Leaders Modeling the Way is the same across categories of Position	Independent-Samples Mann-Whitney U Test	.032	Reject the null hypothesis
5	The distribution of Leaders Encouraging the Heart is the same across categories of Position	Independent-Samples Mann-Whitney U Test	.029	Reject the null hypothesis

Asymptotic significances are displayed. The significance level is .05.

Appendix D

Forgiveness and Resilience Among Early Adult College Students

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Abstract

Forgiveness is the release of the feeling of resentment from the self, others, or situations. Resilience is the capacity to bounce back from adversities. Early-adult college students experience transition as they prepare. This sought to know the level of and relationship between forgiveness and resilience and the sex difference between the two variables. This is quantitative and used descriptive, correlational, and comparative analyses. Purposive sampling was utilized. A total of 185 freshmen early-adult college students enrolled during the Summer-Term of School Year 2018-2019 participated in answering Heartland Forgiveness Scale and the Brief Resilience Scale. The administration was done in a day, with 10 to 15 minutes. It shows a moderate level of forgiveness while their resilience was found to be on a normal level. The results showed a significant relationship between forgiveness and resilience of early-adult college students, $r(183) = .515$, $p < .01$. The two variables were positively and strongly correlated. This result suggests that an increase in dispositional forgiveness may mean an increase in the level of their resilience. There was significant sex difference in forgiveness, $t(183) = 2.36$, $p < .05$, while sex difference is not significant with respect to resilience, $t(183) = 1.48$, $p > .05$. This study presents that moderate dispositional forgiveness yields normal resilience. As they show a moderate level of forgiveness which is a positive emotion, they were seen to be resilient. It can therefore be concluded that early adult college students should learn how to forgive as this can promote the development of their resilience.

Keywords : forgiveness, resilience, early adults, early-adult college students

1. INTRODUCTION

Early adults who happen to be in the transition between adolescence and adulthood make exploratory choices in life. Levinson (1986, p.5) discusses that Early Adult Transition occurs from the age of 17 to 22. It is the period when emerging adults learn to change their relationship with the family as well as with other components present in the world of pre-adult. It gains distance from the family both physically and psychologically, and it captures the occurrence of early adults' dreams.

As individuals get older, the scope of their development widens as their responsibility broadens. Things they want to achieve may or may not progress. Pronin (2008, p.1180) concluded that people are in a position to see themselves and others differently, and from that point of view, misunderstanding or conflict may evolve. Misunderstanding can be avoided if individuals can be mindful that it is not only their behavior that is sensitive to the restraints of the situation but others as well. Aligned with this awareness, this study investigated to know how forgiving early adult college students are and if forgiveness can make them more resilient or less.

There is a dearth of empirical research which focuses on forgiveness and resilience. Forgiveness, in most studies, is associated with the well-being of individuals while resilience is usually linked to stress. Moreover, psychology and spirituality stand to benefit from increased collaboration. Understanding the construct of forgiveness can play a significant role in spiritual and psychological intervention. It can be then a powerful force in the process of healing. Thus, it leads to improved physical, psychological, and societal outcomes. Psychology and spirituality, by working together, can serve a vital function in the promulgation of the salutary effects of forgiveness (Webb, Toussaint, & Conway-Williams, 2012).

Haddadi and Besharat (2010) found out that psychological health and vulnerability indices are influenced by different levels of resilience through self-esteem, personal competence and tenacity, tolerance of negative affect, control and spirituality. Hartley (2011) found out that the demands in college are significant and there is a need for more research on the concept of resilience as it relates to college health and academic persistence. Persistence in the first year at university is a phenomenon that has been studied many times. However, most researchers have taken a very linear view of the persistence process and little research has attempted to understand persistence or strength by taking into account its full complexity. The process of persistence is punctuated by striking events and critical moments that may interact with the characteristics of the student and his environment and then have some influence on it (Roland, Frenay, Boudrenghien, 2016).

During young adulthood, individuals transitioning to adulthood experience unique challenges that require appropriate adaptation to survive and maintain optimum functioning (Anasuri and Anthony, 2018). The emerging adulthood years which are commonly defined as the late teens and twenties represent a period of significant variability and change for much of the population. Thus, the field needs to consider pathways of at-risk youth as they move through this key window of development (Burt and Paysnick, 2012).

Psychologists generally define forgiveness as a conscious, deliberate decision to release feelings of resentment or vengeance toward an individual or a group who has harmed him or her, regardless of whether they deserve his or her forgiveness (Westfall, 2018). It can also be presented towards self, others, and situations according to Thompson, Synder and Hoffman (2005). Bush (2014) concluded that forgiveness is a developmental process that changes all over the lifetime of the adult learner. This process requires an extent of maturity and an understanding of the benefits for the individuals, their relationships, and the maintenance of social order.

Forgiveness is conceptualized as a process, which involves changes in cognitions, emotions, motivations, and behaviors regarding the transgressor (Ho and Fung, 2011). According to McCullough (2001), it is a suite of prosocial motivational changes that occurs after a person has incurred a transgression. People who are inclined to forgive their transgressors tend to be more agreeable, more emotionally stable, and, some research suggests, more spiritually or religiously inclined than people who do not tend to forgive their transgressors. It can be experienced as a behavior, from ‘‘moving on’’ to ‘‘reconciling’’; as an emotion, whether negative, such as ‘‘letting go of hard feelings’’ or positive, such as ‘‘regaining the trust’’; and as a thought, whether specific to the event and offender, such as ‘‘forgetting what happened’’ or ‘‘letting the event be in the past’’, or a general attitude, such as “understanding that no one is perfect”(Lawler-Row, Scott, Raines, Edlis-Matityahou and Moore, 2006).

There are several types of forgiveness. Forgiveness of others is about having been offended or wronged. Self-forgiveness is more about the experience of self-condemnation and being able to relieve it. Intergroup forgiveness is about giving up resentment toward an offending outgroup situated in a specific socio-political or cultural context (Toussaint and Worthington, 2017).

Forgiveness can be a powerful means of healing, but it does not come naturally for both sexes. Men have a harder time forgiving than women do, but that can change if men develop empathy toward an offender (Case Western Reserve University, 2008). Moreso, the findings of Kirmani (2015) indicated significant differences in boys and girls on the measures of forgiveness. Girls scored higher on forgiveness measures from which it can be inferred that they are more forgiving than that boys. With the meta-analytic review done by Miller,

Worthington and Mcdanie (2008), the mean d is .281 indicating that females are more forgiving than males by a bit more than a 1/4 of a standard deviation.

On the other point, in the study of Batik et al in 2007, the results indicated that the level of forgiveness of university students did not significantly differ in terms of sex. This was also the same with the study of Touissaint and Webb (2005). Regardless of the forgiveness models, sex has the potential to influence forgiveness. Kohlberg and Gilligan theories of moral reasoning provide support for women being expected to forgive more than are men. Sex differences in forgiveness are also likely influenced by sociological factors, religion, and culture.

Resilience is the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development (Masten, 2011, as cited in VicHealth, 2015). It can occur by moving towards a goal beyond themselves, transcending pain and grief by perceiving bad times as a temporary state of affairs (Marano, 2003). It is the process of adapting well in the face of adversity. It means "bouncing back" from difficult experiences (American Psychological Association, 2018). For emerging adults, resilience may be particularly important, as their stage of development leads them to face new challenges for which they may not be fully prepared (Rogers, 2013, p.548).

A dynamic system can adapt successfully to disturbances that threaten system function, viability, or development (Masten, 2011, as cited in VicHealth, 2015). Yeager and Dweck (2012) found out that what students need the most is mindsets that represent challenges that they can overcome with effort, new strategies, learning, help from others, and patience. When we emphasize people's potential to change, we prepare our students to face life's challenges resiliently. Challenges are ubiquitous, resilience is essential for success in school and in life. Resilience theory discusses that it is not the nature of adversity that is most important, what is more important is how people deal with it, and according to this theory, when people face adversity, misfortune, or frustration, resilience is what helps to bounce back (PsychReel, 2022).

Though there is clear evidence that resilience in young people is highly dependent on other people and multiple systems of influence, there is limited knowledge of how these multiple levels of influence operate synergistically and how best to incorporate the biological, psychological, interpersonal, and cultural levels of analysis into our research and models for clinical intervention (Wright, Masten and Narayan, 2012). The Challenge model is a model of resilience theory where stressor improves adjustment but not at very low or very high levels. Some stresses are helpful for young people as they can lead to constructing coping skills (VicHealth, 2015).

Males have higher levels of resilience than females among university students of Kashmir. Therefore, there is a significant sex difference in resilience (Tantry and Singh, 2017). Research by Newsome et al (2016) indicated that males tend to show greater vulnerability to risk compared to females which exhibit greater resilience. It was also discussed by Erdogan, Ozdoganb and Erdogan (2015) that male students showed significantly higher resilience level than did female students. Along the same lines, McLafferty, Mallet, and McCauley (2012) found no difference in sex in regard to resilience.

Worthington and Scherer (2004) pointed out that there is experimental evidence that suggests that when people are transgressed interpersonally, they often react by experiencing unforgiveness. Unforgiveness is conceptualized as a stress reaction. Forgiveness is one of many ways people reduce unforgiveness. Forgiveness is conceptualized as an emotional placement of positive emotions against the negative emotions of unforgiveness. Thus,

forgiveness can be used as an emotion-focused coping strategy to reduce a stressful reaction to a transgression. As discussed by Worsley (2013), forgiveness appears to be a necessity, not a choice, if one is to move forward in life free, weightless, and resilient.

In the interview made by Aten (2019), Dr. Everett Worthington stated that forgiveness is often difficult, and when people are tested and rise to the challenge, it strengthens them. That strengthening helps to bounce back in the wake of disasters and trauma. Forgiveness can help people become more resilient. Anderson (2006) found out that total resilience significantly correlated with total forgiveness as well as total anger. Kumar and Dixit (2014) found that there is a statistically significant positive correlation among forgiveness, gratitude, and resilience. However, they have investigated that there was no sex difference in forgiveness and resilience. The result indicates a positive relationship between resilience and forgiveness and there is no sex difference between the two variables among adults (Divvyalakshmi and Indumathy, 2018).

In the study of Jaufalaily and Himam (2017), the inclusion of resilience results in increased happiness suggesting that to some extent resilience functions as a pathway to explain why individuals who are dispositionally more forgiving tend to be happier. The tendency to forgive appears to significantly influence one's ability to rebound from adversity, which in turn engenders happiness. Moreover, in the study of Gupta and Kumar (2015), results supported the hypothesis and revealed that acceptance, forgiveness, and gratitude appear to be significant predictors of resilience among undergraduate students. The three predictors contributed 66% of the total variance of the student's resilience model, whereby gratitude illustrates the highest predictive value for resilience, followed by forgiveness and acceptance. The result implies that forgiveness is the key factor to resilience in which forgiveness is essential for acceptance to be statistically correlated to resilience. The important factors of psychological resilience were identified by Kravchuk (2021). High levels of challenge, personal growth, sociability, control, a tendency to forgiveness, personal self-efficacy, commitment, self-acceptance, and management of the environment increase psychological resilience.

This study is governed by the theory of positive psychology. Positive Psychology is an area of psychology that focuses on how to help human beings prosper and lead healthy, happy lives (Cherry, 2021). The Broaden and Build Theory explores the function of positive emotions in building resiliency. It is based on a belief that positive emotions can have the effect of broadening awareness and response to events by building resiliency and coping skills (Susman, 2021). Forgiveness is conceptualized as an emotional juxtaposition of positive emotions against the negative emotions of unforgiveness. It can be used as an emotion-focused coping strategy to reduce a stressful reaction to a transgression (Worthington & Scherer, 2004).

2. Objectives

This study sought to know the relationship of forgiveness to the resilience of early-adult college students. This sought to answer the following: (1) How may the respondents be described in terms of (a) forgiveness and (b) resilience?; (2) is there a significant relationship between the two variables?; and (3)is there a sex difference between the two variables?

The independent variable is forgiveness which has three dimensions, namely: forgiveness to self, others, and situations. Resilience is the dependent variable and sex acts as moderating variable. Therefore, the following hypotheses were tested: (1) there is no significant relationship between forgiveness (total forgiveness, forgiveness to oneself,

forgiveness to other people, and forgiveness to situation) and resilience, and (2) there is no sex difference between the forgiveness and resilience among the early adult college students.

As mentioned earlier, forgiveness has three dimensions. However, the totality of the forgiveness of the three dimensions was referred to as dispositional forgiveness but for this study, the word forgiveness was used to mean dispositional forgiveness. In the discussion section, the word forgiveness was used. On the other hand, with the presentation of results, dispositional forgiveness was used to mean the total sum of the three dimensions.

This study was seen to be beneficial to college students, especially to freshmen who formerly underwent senior high school to college transition. This was thought to let them understand and be aware of forgiveness (towards self, others, and situation) and how forgiveness connects to their ability to bounce back. Moreover, this could help teachers and guidance counselors to assist students in knowing and improving their resilience especially since they are early adults who are facing different difficulties in life. It was also seen to be of help to all individuals of all walks in life who interact with early adults. This could help them understand and help out the early adults to understand how to forgive and become stronger through life adversities. In the findings of Stephens (2013), the development of resilience through an intentional, focused learning effort can also assist individuals in helping others who are facing adversity.

3. Materials and methods

The study is quantitative and used a descriptive method as well as correlational and comparative analyses. The correlation between forgiveness and resilience was analyzed and a comparison was made to find out the sex difference in terms of forgiveness and resilience.

Purposive sampling was used in the study. The participants were 185 out of 458 college freshmen students of a University in Angeles City, Pampanga, Philippines. The age ranged from 18 to 22 years old who were enrolled during the Summer Term of School Year 2018-2019. The researcher was given a list of students per subject during the said summer term. This 458-figure does not represent that there were 458 enrolled students since there were some students in that number who enrolled in two subjects. Thus, one student who enrolled in two subjects was counted as two in the 458-figure.

Using the sample size calculator of Creative Research Systems with the following details: the population is 458 with a confidence level of 95% and confidence interval of 5, the computed sample size is 209. The researcher conducted the test on 215 students. After data cleaning was made, the researcher obtained 185 participants who completely and correctly answered the questionnaire. Though the computed sample size was not met due to the availability of the class, correlation coefficients should be based on an “adequate” number of pairs of observations. As a rule of thumb, “adequate” means 30 or more (Spatz, 2011). Thus, this shows that the sample size was adequate.

After securing the permission of the concerned deans of the different colleges or schools in the University, the class schedule of the target respondents was given. The administration of the questionnaire was done room-to-room with the permission of the faculty handling the class. Since classes were simultaneously held, data gathering was done by the researcher together with one volunteered faculty member. The questionnaire and informed consent were given and explained to the respondents. The nature and objective of the study were also explained before accomplishing the questionnaire. The target respondents were given informed consent that involves the purpose of the study, the procedure to be undergone, the potential risk and benefits of participation, and the rights of the respondents. The gathered data were kept confidential and the researcher secured the safety of the respondents.

Data gathering happened in one day and it lasted from 10 to 15 minutes per class. The accomplished questionnaire was retrieved immediately. Data cleaning was made a day after the administration.

The following instruments were utilized in this study:

The Heartland Forgiveness Scale (HFS). It is an 18-item, self-report questionnaire designed to assess a person's dispositional forgiveness (i.e., one's general tendency to be forgiving), rather than forgiveness of a particular event or person. It consists of items that reflect a person's tendency to forgive him or herself (items 1-6), other people (items 7-12), and situations (items 13-18) that are beyond anyone's control. One's score on the Total HFS indicates how forgiving a person tends to be of oneself, other people, and uncontrollable situations. Higher scores indicate higher levels of forgiveness, and lower scores indicate lower levels of forgiveness. A score of 18 to 54 on the Total HFS indicates that one is usually not forgiving to oneself, others, and situations. If one scores 55 to 89 on the Total HFS, he or she is likely to forgive, and he or she is usually forgiving if he or she scores 90 to 126 on the Total HFS.

On Heartland Forgiveness Scale Subscale, a score of 6 to 18 on HFS Forgiveness of Self, HFS Forgiveness of Others, or HFS Forgiveness of Situations indicates that one is usually unforgiving of oneself, other people, or uncontrollable situations, respectively (low forgiveness). A score of 19 to 29 shows that one is about as likely to forgive as to not forgive the three dimensions (moderate forgiveness). Moreover, a score of 30 to 42 shows that one is usually forgiving of the three dimensions (high forgiveness). It has demonstrated desirable psychometric properties: convergent validity. Satisfactory internal consistency reliability, strong test-retest reliability (Thompson et al, 2005).

Scores for items 1, 3, 5, 8, 10, 12, 14, 16, & 18 are the same as the answer written by the person taking the HFS. Scores for items 2, 4, 6, 7, 9, 11, 13, 15, and 17 are reversed. To calculate the Total HFS, HFS Forgivenesss of Self, HFS Forgiveness of Others, and HFS Forgiveness of Situations, sum the values for the items that compose each scale or subscale (with appropriate items being reverse scored). Scores for the Total HFS can range from 18 to 126. Scores for each of the three HFS subscales can range from 6 to 42. The Cronbach's alphas for HFS were acceptable. The correlations between the HFS total, Self, Other, and Situation subscales administered across were .83, .72, .73, and .77, respectively, indicating acceptable test-retest reliability (Thompson, Snyder, Michael, Rasmussen and Billings, et. Al (2005).

Brief Resilience Scale. According to Smith et al (2008), BRS is a likert scale composed of six items. Items 1, 3, and 5 are positively worded. Items 2, 4, and 6 are negatively worded, thus they are scored reversely. The statements are rated using the following scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree." The BRS was reliable and measured as a unitary construct. It was predictably related to personal characteristics, social relations, coping, and health in all samples. If the mean score falls from 1.00 to 2.99, it means low resilience; 3.00 to 4.30 means normal resilience, and 4.31 to 5.00 means high resilience.

The data were tallied and scored according to the instruments. Data were encoded into Microsoft Excel Program and run to the Statistical Package for the Social Sciences (SPSS). The researcher utilized bivariate Pearson correlation to assess the relationship between forgiveness and resilience. Given that all variables are continuous and the hypotheses seek to assess the relationships, Pearson *r* correlations are the appropriate bivariate statistic (Statistics Solutions, 2013).

Moreover, an independent sample t-test was used to compare the level of forgiveness and resilience of the respondents in terms of their sex. The Independent Samples *t*-Test compares the means of two independent groups to determine whether there is statistical evidence that the associated population means are significantly different. The Independent Samples *t*-Test is a parametric test (Kent State University, 2018).

4. Results

As presented in Table 1, the participants' dispositional forgiveness (*M*=86.51, *SD*=12.52) is within a moderate level. Moreover, as per dimension, the results show that participants' forgiveness towards self (*M*=27.98, *SD*=4.91) and to situations (*M*=28.39, *SD*=5.70) fall within the level of moderate forgiveness. On the other hand, their forgiveness to others (*M*=30.15, *SD*=5.66) is determined to be high. Concerning their resilience, the results show that the participants have normal resilience (*M*=3.27, *S*=0.53).

Table 1 Descriptive Statistics of the Participants' Dispositional Forgiveness and Resilience (N=185)

Variables	*M*	*SD*	Descriptive Interpretation
Dispositional Forgiveness	86.51	12.52	Moderate; one is about as likely to forgive, as one is not to forgive oneself, others, and uncontrollable situations
Forgiveness towards Self	27.98	4.91	Moderate; one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively
Forgiveness to Others	30.15	5.66	High; one is usually forgiving of oneself, other people, or uncontrollable situations, respectively)
Forgiveness to Situations	28.39	5.70	Moderate; one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively)
Resilience	3.27	0.53	Normal

To see the forgiveness and resilience of male and female participants, Table 2 presented the descriptive statistics per sex. It shows that male participants displayed moderate dispositional forgiveness (*M*=87.86, *SD*=12.50), forgiveness towards self (*M*=28.51, *SD*=4.84), and situations (*M*=28.80, *SD*=5.62). Furthermore, they are observed to have high forgiveness to others (*M*=30.55, *SD*=5.67). The male participants' resilience was observed to be at a normal level (*M*=3.31, *SD*=0.55).

Female participants, on the other hand, showed a moderate level of dispositional forgiveness (*M*=83.08, *SD*=12.04), forgiveness towards self (*M*=27.60, *SD*=4.89), others (*M*=29.13, *SD*=5.56), and situations (*M*=27.35, *SD*=5.83). Their resilience (*M*=3.18, *SD*=0.46) was also normal same as the male participants.

Table 2 Descriptive Statistics of Male and Female Early-Adult College Students (N=185)

Variables	*M*	*SD*	Descriptive Interpretation
Male			
Dispositional Forgiveness	87.86	12.50	Moderate; one is about as likely to forgive, as one is not to forgive oneself, others, and uncontrollable situations
Forgiveness towards Self	28.51	4.84	Moderate; one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively
Forgiveness to Others	30.55	5.67	High; one is usually forgiving of oneself, other people, or uncontrollable situations, respectively.
Forgiveness to Situations	28.80	5.62	Moderate: one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively
Resilience	3.31	0.55	Normal
Female			
Dispositional Forgiveness	83.08	12.04	Moderate; one is about as likely to forgive, as one is not to forgive oneself, others, and uncontrollable situations
Forgiveness towards Self	26.60	4.89	Moderate; one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively
Forgiveness to Others	29.13	5.56	Moderate; one is about as likely to forgive as to not forgive oneself, other people, or uncontrollable situations, respectively
Forgiveness to Situations	27.35	5.83	Moderate; one is about as likely to forgive as to not forgive

Variables	*M*	*SD*	Descriptive Interpretation
			oneself, other people, or uncontrollable situations, respectively
Resilience	3.18	0.46	Normal

Dispositional forgiveness and resilience were strongly positively correlated, $r(183) = .515$, $p < .01$. Moreover, the three dimensions of forgiveness were all positively correlated. Forgiveness towards self and resilience ($r(183) = .366$, $p < .01$) and forgiveness to others and resilience ($r(183) = .300$, $p < .01$) displayed medium correlation. However, strong correlation was shown between forgiveness to situations and resilience, $r(183) = .518$, $p < .01$.

Overall, there was a strong, positive correlation between dispositional forgiveness and resilience. An increase in forgiveness was strongly correlated to an increase in resilience. Since it was found out there was a significant relationship between the variable, the study was assumed to have enough evidence to reject the null hypothesis.

Table 3 Correlation of Forgiveness and Resilience among Early-Adult College Students

	Dispositional Forgiveness	Forgiveness towards Self	Forgiveness to Others	Forgiveness to Situations
Resilience	.515**	.366**	.300**	.518**

** Correlation is significant at the 0.01 level (2-tailed).

The results in Table 4 showed that there was a significant sex difference in forgiveness, $t(183) = 2.36$, $p < .05$. Males (M=87.86, SD =12.49) were reported to be more forgiving than females (M=83.08, SD=12.04). It showed that there is no significant difference between sex and resilience, $t(183) = 1.48$, $p > .05$. Males (M=3.31, SD =.55) were reported to be more resilient than females (M=3.18, SD=.46).

Table 4 Sex Difference in Forgiveness and Resilience among Early-Adult College Students

	N	*M*	*SD*	*t*	df	*p*	Sig
Forgiveness							
Male	133	87.86	12.49	2.36	183	.019	Yes
Female	52	83.08	12.04				
Resilience							
Male	133	3.31	.55	1.48	183	.142	No
Female	52	3.18	.46				

5. Discussion

The forgiveness of the early-adult college students is on a moderate level. Thus, it means they are about as likely to forgive, as they are not to forgive themselves, others, and uncontrollable situations. Looking at the dimensions of forgiveness, they have a moderate level of forgiveness towards self and situations. On the other hand, they appeared to have a high level of forgiveness to others. It may suggest that they are usually forgiving of themselves, other people, or uncontrollable situations, respectively.

In measuring the dispositional forgiveness of male and female early adults, it was seen that male early adults have a moderate level of dispositional forgiveness towards self and situations. Moreover, they appeared to have high-level forgiveness of others. On the other hand, female early adults have moderate dispositional forgiveness as well with its three dimensions.

Though early adults' dispositional forgiveness is moderate, it is important to note that male early adults in this study are found to be more forgiving of others than female early adults. The results in the level of forgiveness contradict the study of Western Reserve University (2008), Kirmani (2015), and that of Miller, Worthington, and Mcdanie (2008) which says males have a harder time forgiving than females. This part also explains the answer to the last problem of the study. The results show that there was a significant sex difference in forgiveness. Males are found to be more forgiving than females.

On the other hand, early adults are found to have normal resilience. This may suggest that early-adult college students can moderately bounce back from a stressful event. It may be perceived that whatever difficulties they may face or experience, they can still go through them. Moreover, this study presents that there is no significant difference between sex and resilience. This result is supported by McLafferty, Mallet, and McCauley (2012) that there is no sex difference in resilience. However, this negates the study of Tantry and Singh (2017), Newsome et al (2016) and Erdogan, Ozdoganb and Erdogan (2015). Males have higher levels of resilience than females among university students of Kashmir. Therefore, there is a significant sex difference in resilience. Research by Newsome et al (2016) indicated that males tend to show greater vulnerability to risk compared to females which exhibit greater resilience. On the other hand, McLafferty, Mallet, and McCauley (2012) found no difference in sex in regards to resilience.

The results of the research show a significant relationship between dispositional forgiveness and resilience of early-adult college students. The two variables were positively and strongly correlated. This result suggests that an increase in dispositional forgiveness may mean an increase in the level of their resilience. This finding is consistent with the study of Anderson (2006) which found that total resilience significantly correlated with total forgiveness among adolescents. This is also supported by the findings of Kumar and Dixit (2014) as they have seen that there is a statistically significant positive correlation between forgiveness and resilience among the youth. Aten (2019) also discussed that forgiveness is often difficult, and when people are tested and rise to the challenge, it strengthens. That strengthening helps in bouncing back in the wake of disasters or traumas.

This study contributes to the knowledge of forgiveness and resilience among early adults. With the data presented, forgiveness and resilience were strongly and positively correlated. Thus, the more forgiving they are, the more resilient they become. Their forgiveness shows significant sex difference and males were found to be more forgiving than females. Moreover, normal resilience was shown by the early adults and sex has no significant difference in resilience.

There is a potential limitation that concerns the study. The involved participants were those college freshmen who were enrolled during the Summer Term of the School Year 2018-2019. The number of enrollees during the Summer Term is lesser as compared to during the first and second semesters. Despite the limitation, the relationship between forgiveness and resilience suggests that as individuals learn to forgive, they also learn to be resilient. Thus, it may be important for the University to acknowledge how much students relieve themselves from the stressors coming from within, other people, and current situations and how much they recover from different agents of stress or difficulties. Knowing how they forgive and get resilient may give the teachers and guidance counselors an understanding of individuals' ability to deal with unfavorable situations. It may not be a thorough understanding of the students, but it may help them create a caring environment in the school. Given the fact that early-adults transition from being adolescents to young adults, there may be a lot of adverse situations on their part.

Taken together, the findings are supported by Broaden and Build Theory. This study presents that moderate dispositional forgiveness yields normal resilience. As the early adults show a moderate level of forgiveness which is a positive emotion, they were seen to have established resilient skills. Based on the assumption of the theory, forgiving can promote resilience among early adults in this study.

6. Conclusion

This study shows that there is a moderate level of forgiveness and normal resilience among early adults and there is a significant relationship between the two variables. There is a sex difference in forgiveness while there is no significant difference between sex and resilience. It can therefore be concluded that early adult college students should learn how to forgive as this can promote the development of their resilience.

As stated before, this is assumed to be of importance to college students, especially freshmen, teachers and guidance counselors, and to all individuals of all walks in life who have an interaction with the early adult college students. It is therefore recommended to early adult college students to sustain their resilience and understand more about the process of forgiving as a strength that could help them flourish in their lives. Teachers can also include different student engagement activities that could foster forgiveness and resilience. Though this is not new, students can role-play and have reflection-writing (Bright Hub Education, 2019). Teachers can look into Henderson and Milstein (1996) as cited in Krovetz (2008) five categories of caring under the profile of a resilience-building school: Members have a sense of belonging; Cooperation is promoted; Celebration of successes is practiced; Leaders spend lots of positive time with member and Resources are obtained with a minimum effort. This is not to mean that these five are not being implemented in the classroom set up but the research is emphasizing strengthening these five.

Moreover, the guidance office can consider activities like programs and seminars or webinars that could improve their forgiveness towards themselves and situations. Another factor that could be suggested is a list of activity that promotes and sustains resilience among the students.

Possible future studies in this research could include a bigger sample size of students during the regular semester (first and second semesters) and the implementation of a cluster-sampling technique to have a sample per school or college. They can also consider the number of males and females, it is recommended to have them in the same sample size if possible in measuring the sex difference. Moreover, it would be suggested to utilize instruments that are not self-report questionnaires.

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A narrative review on the common errors of students when solving fractions

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Abstract

Understanding fractions is among the most difficult skills to master in the math curriculum. Despite this, such competency is highly needed to explore higher mathematical concepts. With the implementation of the K-12 curriculum, which espouses vertical articulation of concepts, learners who do not have strong foundational knowledge and skills in fractions can face greater challenges in the higher grade levels. The present review documents empirical evidence of the common difficulties of learners pertinent to solving fractions, as reported by different studies, and how the topic is situated in the curriculum. Implications of this are likewise hinted, especially its potential influence in the promotion of science and math related strands and courses.

Keywords : fractions, error analysis, mathematical problems

1. Introduction

One important concept of mathematics is fractions. Fractions are being used for hundreds of years and are taught and used in a variety of real-life situations yet, fractions are still deemed to be difficult to learn and grasp (Hansen et al., 2017). It may not be realized by many, but the processing of fractions is greatly involved in our daily activities such as following a recipe or in telling time. Studies conducted in Belgium, China, and the United States revealed clear association in both fraction knowledge and students' overall mathematics performance (Torbeyns et al., 2015). Understanding fractions and general mathematical achievement are shown to be directly related; a high level of fractions understanding means high mathematical achievement in general. Moreover, in those aforementioned countries, fraction knowledge is the best predictor of mathematics achievement scores (Torbeyns et al., 2015). Additionally, Siegler et al. (2012) argued that the fraction knowledge of elementary students indicates their algebraic knowledge, and when compared to higher-achieving students, those who do not excel in algebra are less likely to pursue college. They are less likely to finish because an understanding of fractions is underscored by larger or higher mathematics cognitive processes which include proportional reasoning and spatial reasoning (Gabriel et al., 2013). Therefore, an unsteady foundation of fractions can inhibit students from pursuing advanced mathematics because fractions play a vital role in understanding other mathematical concepts as mentioned above. Worse, unstable grounding can block students off from a variety of careers in the future since science, technology, engineering, and mathematics involve considerable understanding of fractions (C. D. Bruce & Ross, 2009).

Since the study of fractions entails concepts that are both hard to teach and learn, this poses educational threat to the mathematical education community. Complications that includes fractions start early in the elementary levels (Russell et al., 2011) and carry on until secondary and tertiary education (Orpwood, et al., 2011 as cited in C. Bruce et al., 2013). Furthermore, the National Council of Teachers of Mathematics (NCTM) explained that mastery of fractions is a vital foundation in studying higher mathematics (Fennell, 2007). As such, , it is critical that students receive the best introduction to fractions during their elementary and middle school years. The NCTM also suggests having curriculum reform

perspectives in mathematics education to deepen and increase every learner's mathematical learning and achievement. One of which is to shift to a learner-centered approach where teaching must be directly responsive to the difficulties experienced by learners such as mathematical errors and misconceptions. In this way, the teacher can make suitable and reasonable accommodations to increase access and achievement for all learners (Zakariyya et al., 2018) so their misconceptions and errors that hinder them from acquiring new concepts will be identified and analyzed.

2. Learning Fractions in the Math Curriculum

2.1 Learning Fractions

Shellenbarger (2013) mentioned that a lot of students are doing well in math until grade 4 then fractions interfere. At this level, fractions are regarded as vantage point towards mathematical advancement. Math concepts like fractions that students have not yet mastered at an early age can result a great deal of math anxiety and shake their future careers (Grossberg, 2019). With such a principle, De Ramos-Samala (2018); Sundiam & Ferolino (2021) verified that the mathematics teaching process has horizontal and vertical articulation of competencies. Vertical articulation, sometimes called seamless progression, improves coherence – the organization of contents is according to the sequence and continuity of learning within a given domain over time while horizontal articulation develops integration between and across subjects and disciplines within a specific grade level. So, stable foundation of fractions in elementary will greatly help students in processing higher math subjects as they progress in their education. So, from arranging a set of fractions on the number line at third grade, students have to deal with simplifying rational expressions at seventh grade, performing operations on rational algebraic expression at eighth grade, working with trigonometric ratios (sine, cosine, tangent, etc.) for angle of elevation and depression at ninth grade, solving problems involving probability at tenth grade, and addressing partial fractions for analytic geometry and calculus subjects. Nonetheless, learners need to know how to work with fractions so that they can apply this knowledge to tasks they need to accomplish in higher-level math (Soyke, 2017).

Students all over the world have difficulties in learning fractions. According to Vukovic et al. (2014), the average student in several countries has a difficult time gaining a conceptual knowledge of fractions. In fact, based on a national test conducted by NCTM, only half of the total population of 8th graders in America can arrange at least three fractions in ascending order correctly (Fennell, 2007), which is a basic understanding of fractions. Since fractions are acclaimed to be a hurdle in learning further mathematics, Kilpatrick et al., (2002), in the book, Adding It Up: Helping Children Learn Mathematics, documented five strands crucial for anyone to effectively grasps the concept of fractions and of mathematics in general. In the development of mathematical competency, these strands are interconnected and interrelated: conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition, thus, essential in learning fractions to comprehend higher mathematics and encourage critical thinking and problem-solving, the twin objectives of mathematics in the K-12 curriculum's basic education level. Conceptual understanding is defined as learners' knowledge of mathematical ideas such as fractions, operations, and relationships (Kilpatrick et al., 2002). Fostnot (2021) mentioned that for learners to possess this strand, they ought to know more than facts and methods alone. They should not only know what numerators and denominators are but what they represent in a fraction. To have a good conceptual understanding, one must be able to solve problems with the use of multiple representations, can identify and explain which of these is the most useful (Carpenter and Lehrer, 1999 as cited in Pienaar, 2014). This strand can be achieved by

polishing teaching approaches and accurately scheming series of activities aligned with the ability of the learners. Secondly, procedural fluency is the capacity to accomplish procedures competently, flexibly, precisely, and suitably (Kilpatrick et al., 2002). Procedural fluency and conceptual understanding must upkeep each other. To possess this strand is to have a upright conceptual understanding. Advanced concepts in mathematics are well learned if the simple concepts are deeply understood and accomplished. With procedural fluency, learners can distinguish significant facets required to solve problems in a rational and efficient manner (NCTM, 2014). With such, learners have the ability to check their answers using alternative strategies. One example is dividing five apples equally to two learners. This problem can be answered arithmetically, or they can take turns in getting one apple each and divide the remaining apple among them, or cut all the apples in half and divide the pieces by two. If the learners work appropriately and competently, no matter the method used, they will arrive at two and a half apples. Next is the strategic competence. It is the skill where students construct, represent, and solve mathematical problems (Kilpatrick et al., 2002). The said strand is very similar to problem-solving. Learners who can formulate their own, create their personal strategies, and are exposed to a variety of problems are better than those who can merely solve problems. By doing so, they are demonstrating their knowledge of the lesson. An example of strand is to let students represent fractions as part of a whole by using their own model. Learners may be asked to craft their individual math problems then let their peers solve them and vice versa (Pienaar, 2014). Following that strand, Kilpatrick et al., (2002) labeled adaptive reasoning as being able to carry out logical thought, reflection, explanation, and justification. With this, students can explain easily how and why they use a specific way and diverse illustration models in solving a certain problem. Learners can justify adaptably or explain their own thinking when solving fractions problems (National Research Council, 2001 as cited in Pienaar, 2014). Going back to the previous example, sharing five apples equally with two friends and sharing five apples equally with three friends yield different answers. With adaptive reasoning, learners should easily identify that dividing five apples equally to two friends will give them bigger shares than with three friends because there are fewer people to consider. It is critical for students to understand this logical thought in order to progress to complex math concepts with more difficult problems. Finally, the strand productive disposition is defined as the likelihood to view mathematics as reasonable, beneficial, and meaningful, combined with faith in an individual's persistence and efficiency (Kilpatrick et al., 2002). In other words, this last strand is the capacity to view mathematics as sensible, hence, maintaining positive attitudes toward mathematics. In this strand, teachers play a critical role in instilling the learners the motivation to continue pursuing higher mathematics.

In summary, these strands of mathematical proficiency are connected and must upkeep each another. All of them should be used in collaboration with one another for effective learning to occur. Soyke (2017), on the other hand, reiterated that the study of fractions forces students to start working more fluently with numbers and think more abstractly than they have before. Learners who become competent with fractions progress fundamental mathematical reasoning skills. As a result, these skills can be applied to even more intellectual concepts in the higher levels of math and in solving hypothetical and real-world problems. Aside from proficiency in mathematics, students should master as well the process of problem-solving. Even though there exists multiple definition of problem-solving, math word problems require understanding as well as analysis. (Cawley & Miller, 1986 as cited in Kingsdorf & Krawec, 2014). Additionally, the model of Mayer's (1985) problem-solving indicates that the process contains four main phases. Mayer explains that problem solving follows a series of translation, integration, planning, and execution. The translation phase happens when students identify the relevant numbers to use to represent the problem.

Here, linguistic and factual knowledge is established. Another part of the problem representation is the integration phase. The student will determine what operation to use to answer the problem so schematic knowledge is needed. The last two phases are part of the solution execution. First of which is the planning phase. In this phase, strategic knowledge is used to determine the number and sequence of steps to answer the problem. Lastly, is the execution phase where algorithmic knowledge is recognized. The skill required here is completing the computations to finally arrive at the correct answer. Acquiring this problem-solving process will benefit the learners by being able to do self-monitoring and self-corrections as the solving progresses (Kingsdorf & Krawec, 2014). This process shows that problem-solving is indeed sequential even though not always linear.

2.3 Problems in Learning Fractions

The history of the study of fractions dates back to ancient civilizations, specifically the Babylonian and Egyptian civilizations 4000 years ago, yet until now, fractions still pose a great problem in learning mathematics. One of the main reasons for this ambiguity is that fractions are constructed from five key sub-constructs: part-whole, ratio, operator, quotient, and measure. Fractions have traditionally been difficult to teach and learn. In fact, it is well recorded that fractions are among the most difficult math concepts to grasp. that students experience throughout elementary years and that high school and college students struggle to understand (Aksoy & Yazlik, 2017).

To make teaching fractions easier, teachers must be fully cognizant of the errors that students make, take precautionary measures to eliminate these mistakes, and set up the teaching atmosphere accordingly (Soylu & Soylu, 2005) for these errors and misconceptions do not only contrarily influence students' learning but also adversely shakes their future education.

The study pushed by Soylu & Soylu (2005) revealed that students in grade 5 misunderstand the process of several concept of fractions such as putting them in order and the four fundamental operations. It was also shown that numerators and denominators are seen differently when they are being multiplied. Haser & Ubuz (2002) discovered in a separate study that grade 5 learners overlooked the statute of separating two portions in terms of definition of fractions and that the process of solving natural numbers instead of fractions was used for the four fundamental operation. Also, Aliustaoğlu et al., (2018) found out that students in grade 5 had three misunderstandings about fraction addition: adding the numerator and denominator independently, utilizing expansion only to the numerator, and finding the sum of the numerator and denominator’s coefficient. The majority of fifth-grade students were found to have false beliefs about fraction ordering and fundamental operations. Another research by Aksoy & Yazlik (2017) recognized that secondary school students have errors on finding the equal parts of complex and compound factions as well as finding their products and quotient, part-whole relationship, and understanding the discourse of fractions in general. Since problem-solving is procedural, having errors early on of the solution will lead to an incorrect answer. From the result of these studies, it can be said that students must use proper modeling on the operations of fractions since most errors revolve around them. Similarly, studies have shown that teachers and pre-service teachers alike also experience difficulties on the division and concept of fractions comparable to those face d by students (Toluk-Uçar, 2009). It was perceived that factual knowledge is occasionally being misrepresented in the application of procedural knowledge when presented with word problems. Learners become confused by muddling arithmetic procedures containing fractions with simple knowledge on arithmetic (Zakariyya et al., 2018). For example, when calculating 1/5+2/3, many learners write down 3/8 instead of 13/15. In the same way, they solved 1/3÷1/6=1/2 instead of 2. In another study by Kar (2012), he concluded that students under

education program were perceived to neglect the conceptual aspect of the division operation, especially solving problems that include fraction division. Therefore, the results of these studies unveil the necessity for improving the approach in teaching fractions since difficulty on fractions is very evident from elementary to college students.

Mathematics is a required subject for students pursuing advanced degrees in science, technology, and engineering (STEM). Specialized subjects included in the STEM track of the DepEd curriculum are general mathematics, statistics and probability, pre-calculus, and basic calculus. The main foundation of these subjects is algebra and fractions are found to be essential in algebra (Torbeyns et al., 2015). Correspondingly, mathematics skills learned in high school can significantly help predict skills and experience, work performance, and income (Rivera-Batiz, 1992 as cited in Coetzee & Mammen, 2017). However, according to the study of Coetzee & Mammen (2017), entry-level students enrolled in science and engineering courses underperformed in a mathematics skills test. The average score of 47.8 percent was deemed concerning, particularly considering that the given test was geared toward eight-graders. As a result, students' performances show an inadequacy of conceptual knowledge of the subjects.

2.3 Fraction in the K-12 Math Curriculum

The Department of Education (DepEd) emphasizes five content areas in its K-12 basic education curriculum. Knowing and understanding; estimating, computing, and solving; visualizing and modeling; representing and communicating; conjecturing, reasoning, proving, and decision-making; and applying and connecting are all DepEd key skills and methods that must be established. So, in order to achieve holistic development in students, skills, beliefs, and perceptions such as accuracy, creativity, objectivity, perseverance, and productivity must be refined along with these skills, beliefs, and perceptions (DEPED, 2013).

In the Department of Education's (DepEd) K-12 basic education curriculum, it is mentioned that to ensure mastery of knowledge and skills, the curriculum will use a spiral progression approach stipulated in the competencies from grade school to junior high school. Teachers will begin with the most basic concepts in grade school then gradually increase the complexity at every next grade level (Gatdula, 2016). With such a principle, De Ramos-Samala (2018); Sundiam & Ferolino (2021) stated that the mathematics teaching process has horizontal and vertical articulation of competencies. Vertical articulation, sometimes called seamless progression, improves coherence – the organization of contents is according to the sequence and continuity of learning within a given domain over time while horizontal articulation develops integration between and across subjects and disciplines within a specific grade level. So, stable foundation of fractions in elementary will greatly help students in processing higher math subjects as they progress in their education.

Critical thinking and problem solving, as the main goals of mathematics, will be achieved by having a systematic and rigorous curriculum content as cited by Sundiam & Ferolino (2021). By taking into account the five content areas set by DepEd in mathematics learning, dealing with fractions is one of the main competencies that is very evident to appear from primary to secondary level. With that, proper scaffolding is essential for students to support their knowledge and skills with fractions as their complexity and sophistication progress. Hence, a common loophole in learning mathematics is merely solving without proper understanding of the steps and underlying concepts making it hard for students to connect what they learn with real-life setting (Wiese & Koedinger, 2014). In addition, fractions have multifaceted notions that cause major difficulty (Meert et al., 2010). Normally, a fraction is often focused and is frequently introduced as the part-whole concept or relationship. This single interpretation, along with the overemphasis on proper fractions,

prevents learners from profoundly comprehending fractions that are bigger than one, Charalambous et al.,(2010) argued. This is the reason why educators are encouraged to highly underscore the multiple definitions of fractions throughout instruction to improve students' fraction understanding which is already included in the competencies in second grade, third quarter, under the number sense area. As said by C. D. Bruce & Ross (2009), students who experienced difficulties involving fractions in their primary years are perceived to seclude from a number of careers in later adult life since science, technology, engineering, and mathematics require substantial understanding of fractions. Respectively, Bailey et al. (2012) found out that the lack of competence in fraction computation, decimal, and percent concepts, all learned in grades four to six, students will surely be troubled in algebra – the foundation of learning higher-math like trigonometry, analytic geometry, linear and abstract algebra; pre-calculus and basic calculus; set and number theory; and differential equations. Therefore, it is absolutely critical that fractions are taught well, interestingly and importantly. On the other hand, when learners can solve creatively by themselves they have acquired the mathematical proficiency strands and the twin goals of the K-12 curriculum: critical thinking and problem solving, then they are ready for higher mathematics and life-long learning (Sundiam & Ferolino, 2021).

3. Conclusion

According to the Programme for International Student Assessment (PISA) 2018 outcomes, the Philippines placed second-lowest in mathematics out of 79 participating countries. In terms of mathematical literacy, the Philippines received 353 points which is under the average points of 489. In a news statement, Leonor Magtolis Briones, secretary of the Department of Education, said that Philippines joined the PISA in 2018 for the first time to implement the Quality Basic Education Reform Plan which talks about globalizing the value of Philippine basic education (Mocon-Ciriaco, 2019). The DepEd, by taking part in PISA, wishes to launch a reference point relative to global standards and the efficacy of its modifications. It believed that the results, together with the assessments and studies of DepEd, will support its policy construction, preparation, and programming. In another report, Trends in International Mathematics and Science Study (TIMSS) 2019, the Philippines gained 297 points in mathematics which is lowest of the 58 countries that took part in the fourth-grade math and science tests. TIMSS showed that only 19% of students in the Philippines belong to the low benchmark – have some knowledge on basic math, while 81% of the students fail to reach the said level (Magsambol, 2020). Both PISA and TIMSS contain fraction understanding as part of the assessment. Since mastery of fractions is one fundamental concept in mathematics, Fennell (2007) clarified that mastery of fractions is an imperative foundation in studying higher mathematics. Thus, students must be given a full fraction understanding in the elementary and high school level as part of an aggressive reform pointed by secretary Briones. In support of this, the National Council of Teachers in Mathematics (NCTM) also proposes having curriculum reform perspectives in mathematics education to deepen and increase every learner’s mathematical learning and achievement. A shift to an approach focusing on the learners is one of the reforms where teaching is directly responsive to the difficulties experienced by learners such as mathematical errors and misconceptions. In this way, the teacher can make suitable and reasonable accommodations to increase access and achievement for all learners (Zakariyya et al., 2018) so the misconceptions and errors that hinder them from acquiring new concepts will be identified and analyzed. The numerous forms of errors made by the students throughout the assessment could be the source of the PISA and TIMSS math results. Subsequently, the goal of this research is to identify and examine the most prevalent mistakes students make when solving fractional problems. To make teaching fractions easier, teachers must be fully cognizant of

the errors that students make, take precautionary measures to eliminate these mistakes, and set up the teaching atmosphere accordingly (Soylu and Soylu, 2005) for these errors and misconceptions do not only contrarily influence students' learning but also adversely shakes their future education. This study is carried out to identify students' errors in solving mathematics problem involving fractions, describe and classify them, then propose scaffolding techniques to address such errors by integrating them to the modules of the students.

Recommendations for Further Studies

Future research studies may use the analysis of errors committed by grade 10 students in solving word problems involving fractions to further design teacher instructions, set up teaching atmosphere accordingly, and provide remediation based on where students have consistent errors or misconceptions. By focusing on such, curriculum planners may consider refining the progression of curricula to eliminate the errors made by the students. Future research studies may also implement scaffolding techniques integrated in the modules for distance learning students that would help them do independent learning. Future research studies may also look into how students learn and apply their knowledge on fractions by doing an in-person interview with both teachers and students. This will make a way for future studies to clarify students' errors and misconceptions on fractions.

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"Being Curious, Innovative, and Committed": Private College Students' Reflected Entrepreneurial Traits

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Abstract

University students' entrepreneurial character profile needs to be investigated to determine various follow-up regulations at institutions in terms of development planning of entrepreneurship education and student business or start-up initiation. The objective of the present study was to figure the entrepreneurial characteristics out of students seen from three components: curiosity, innovation, and entrepreneurial commitment. The data from questionnaires distributed to students who participated in the recently customized entrepreneurship workshop hosted by a private university in West Java, Indonesia, and were interested in becoming entrepreneurs. Student participants were identified into two groups, those who already had businesses and those were not yet engaged in this field. The data analysis indicated that almost students have high entrepreneurial curiosity in the high category with the highest percentage being dominated by students who already have businesses. Moreover, student trait indicating entrepreneurship innovation was found to dominant in the medium category for these both aforementioned groups. The research also implies the academic need to develop curiosity, innovation, and entrepreneurial commitment in entrepreneurship education and student business development plans.

Keywords : entrepreneurial curiosity, entrepreneurial commitment, entrepreneurial innovation

1. INTRODUCTION

Entrepreneurs ideally have got various fundamental characteristics for acquiring their success both in conventional and digital business. To do so, some previous literatures related to this field emerged for defining main distinctive characteristics of best practices to be successful entrepreneurs. Curiosity, creativity, and commitment are the three keys to successful entrepreneurship (Raine & Pandya, 2019). This means that one's curiosity affects good atmosphere in developing or starting new business before having business plan. The creativity then also plays significant role for avoiding monotonous product which of course be influenced on the customers' boredom and dissatisfaction. The commitment has a great deal in running of up and down the business to be survived of achieving goal as planned on the business plan. Without long lasting and heartfelt endurance, the business can be bloomed in the beginning, but this swift vacuum appears toward encountered thunderstorm such as customers, employee, products, and capital. Besides, skills and motivation are supporting innovation performance as characteristics of successful entrepreneurs (Olivari, 2016) so the professional development is highly recommended in running business. Lastly, ability, support, knowledge, and opportunity are forms of salient beliefs that successful entrepreneurs should have (Kakouris, 2019). In short, these beneficial characteristics must be maintained through professional development and creating good business atmosphere for accomplishing business success.

There have been many studies on the characteristics and measurement of entrepreneurial character. For example, study to determine student entrepreneurial interest and the factors that influence it (Pujiastuti & Filantrovi, 2018). A person's personality traits for entrepreneurship: achievement motivation, innovation, risk-taking, and autonomy can be

measured by the Entrepreneurial Character Scale (SK-WIRA) (Husna et al., 2018). Research on individual entrepreneurial intentions, positive shifts that occur in their lives, and negative shifts for business creation in young graduates were found to be determinants of entrepreneurial triggers (Maâlej & Cabagnols, 2020).

Students need to have a successful entrepreneurial character as a provision to welcome an independent life that can be promoted through entrepreneurship education and business development guidance for students. The successful character of student entrepreneurs can be developed in university. However, preliminary research is needed to find out the entrepreneurial characters of students before university regulation. This research generally aims to determine the entrepreneurial characters of students seen from three components, namely curiosity, innovation, and commitment. These three components are important by Galuh University for setting entrepreneurship education policies and developing student business plans.

The essence of the concept of curiosity lies in the perspective of open thinking, optimism, and inquiry (Raine & Pandya, 2019). The main factors of curiosity are the internal drive to explore, learn and acquire more information, as well as the intrinsic motivation to resolve uncertainty and gain more knowledge (Sher et al., 2019). An entrepreneur's curiosity is an independent measure or a special dimension of entrepreneurial practice with other factors such as social, epistemic, sensory, and curiosity involvement (Jeraj & Antoncic, 2013). Optimism, entrepreneurial pre-curiosity, and entrepreneurial curiosity are the three determinants of entrepreneurial psychology (Jeraj, 2014). The results showed that entrepreneurial curiosity had a positive effect on innovation. In this context, entrepreneurial curiosity is important for innovation (Raine & Pandya, 2019).

Identification of the nature of entrepreneurial innovation is carried out in different contexts depending on the ecosystem and existing resources (Autio et al., 2014). Entrepreneurial innovation has different perspectives depending on the analytical focus approach such as antecedents, events, and journeys (Garud et al., 2014). The perspective taken in this study focuses on events, namely the emphasis on discovery and creation.

Entrepreneurial commitment is formed by the affective, normative, and sustainable components of entrepreneurs (Tasnim & Singh, 2016). Entrepreneurial commitment is related to resilience (internal and external) which involves self-efficacy, perseverance, enthusiasm, persistence, networking, and support (Raine & Pandya, 2019). Commitment is one of the competencies and skills in personality aspects that are important for entrepreneurs (Amalia & von Korflesch, 2021).

Entrepreneurial curiosity, innovation, and commitment are three components of entrepreneurial character that are important by students to achieve a successful independent life. Through this study, the three components of entrepreneurial character were explored as samples of student entrepreneurial character profiles.

2. Objectives

This study aims at investigating college students' entrepreneurial characteristics as self-reflected by students of a private university in West Java, Indonesia, who are interested in entrepreneurship development seen from three components, namely curiosity, innovation, and entrepreneurial commitment.

3. Materials and methods

This survey research involved a medium-sized private university students participating in the entrepreneurship workshop. These students had an interest in developing their entrepreneurship. The student participants from various study programs of the university (*N*=128) conveniently joined the survey.

The data was obtained from the participants' responses to the questionnaires filled out. The data is divided into two parts, initial and main data. Through the initial data, we wanted to know the percentage of students who already had had a business and had not. Preliminary data also identifies business fields that have been carried out or are of interest to students which are categorized into nine business fields, namely trade, agriculture, raw material production, manufacturing, construction, communication, services, finance, and transportation.

The main data in the questionnaire correspond to the entrepreneurial character representing the characteristics of the components of curiosity, innovation, and commitment. The questionnaire was framed by the conception of entrepreneurial character (Peljko et al., 2016; Raine & Pandya, 2019). In this study, curiosity is characterized by exploration, open-mindedness, and optimism. Innovation is characterized by original ideas and creativity. Commitment is characterized by persistence, persistence, networking, and support. The questionnaire on entrepreneurial curiosity has ten items, entrepreneurial innovation eight items, and entrepreneurial commitment eight items. Entrepreneurial curiosity is explored more because it becomes the basis for innovation and entrepreneurial commitment.

4. Results and Discussion

The results of data analysis consist of initial and main data. The initial data describes the quantity of students who already have a business and the field of business they are involved in as well as the data of students who do not yet have a business and their field of business interest. The main data describe students' curiosity, innovation, and commitment.

As initial data, Figure 1 below shows the percentage of students who already had had businesses and those who had not.

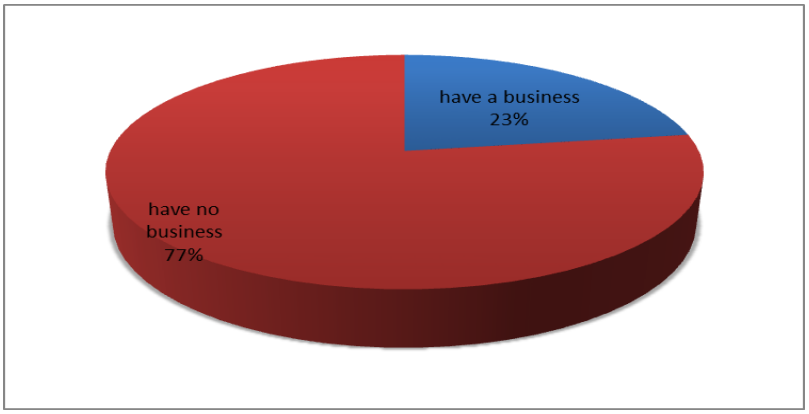

Figure 1 Percentage of Students Who Had Got Businesses and Had Not

Furthermore, based on the results of the analysis of the business fields that students are doing, the percentages are obtained as shown in Figure 2. Of the nine fields classified in the questionnaire, trading is the dominant business field that has been carried out by students. Another field that is quite a lot done by students is services. Communications and agriculture

have been little done. The fields of finance, construction, manufacturing, and the production of raw materials are still not carried out by students.

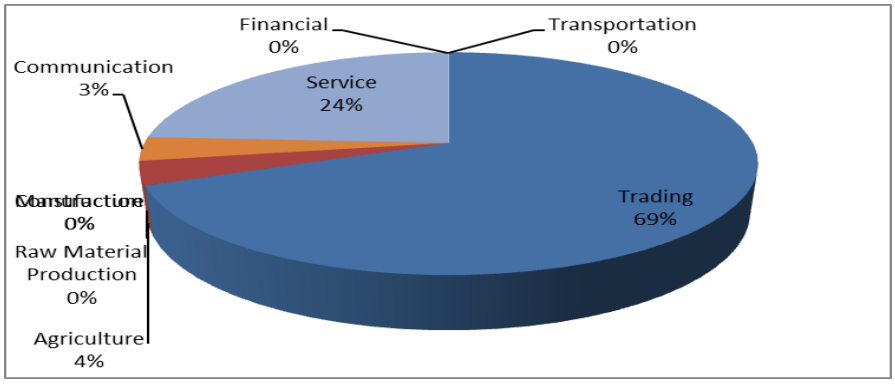

Figure 2. Business Fields being Run by Students

On the other hand, students who have not yet had a business also tend to have a lot of interest in the trade sector. The service sector is quite attractive. The fields of finance, communications, construction, manufacturing, raw material production, and agriculture are still of little interest. The field of transportation is a field that is not of interest to students. Figure 3 below shows the percentage of each field that students are interested.

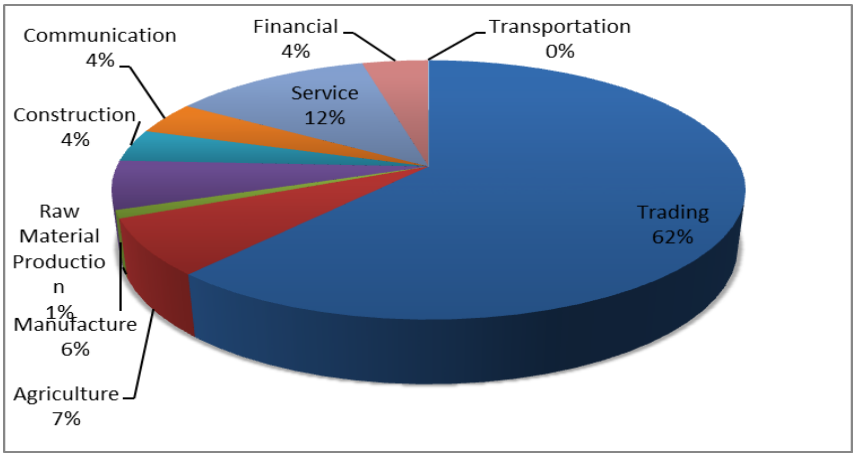

Figure 3 Business Fields Interested by Students Who Did not Have Businesses

Based on the initial data, further data analysis was carried out on the components of entrepreneurial curiosity, innovation, and commitment. Table 1 below describes the frequency and percentage of students' entrepreneurial curiosity which is categorized into three groups, namely high, medium, and low.

Table 1 Students Entrepreneurship Curiosity

Cayegory	Interval Score	Frequency	%
High	31-40	65	51
Medium	21-30	63	49
Low	10-20	0	0

Table 1 shows that overall, more than half of students have entrepreneurial curiosity in the high category. The highest percentage of entrepreneurial curiosity comes from students who already have a business as described in Figure 4.

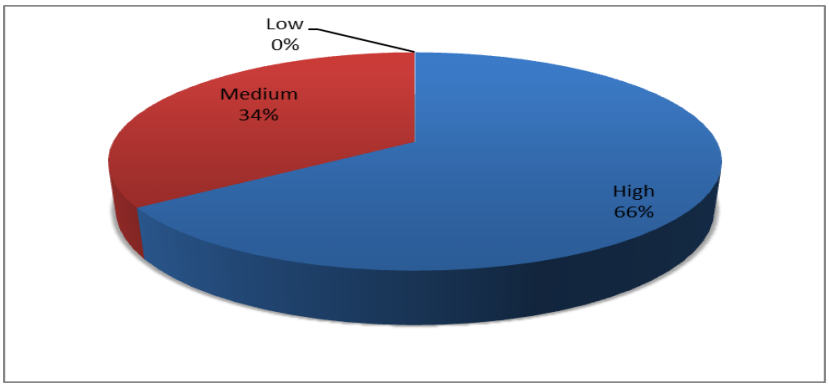

Table 4 Curiosity of Students Who Already Had a Business

The curiosity of students who do not have a business in the medium category is slightly more than the high category as illustrated in Figure 5 below.

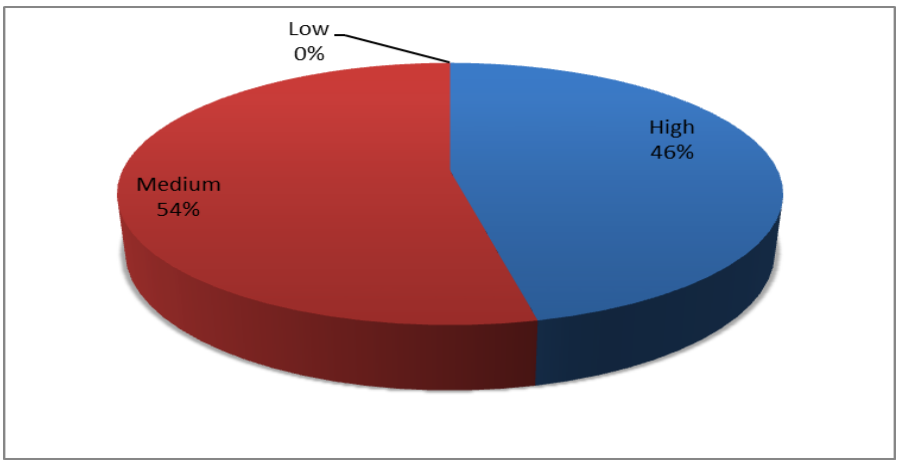

Table 5 Students Entrepreneurship Curiosity Who Had not Had Businesses

The entrepreneurial curiosity explored in this study is related to exploration, open-mindedness, and optimism. In this sense, Jeraj (2014) argues that a higher level of optimism affects a higher level of pre-entrepreneurial curiosity, causing a higher level of entrepreneurial curiosity. In this study, pre-entrepreneurial curiosity is characterized by exploration and openness, while entrepreneurial curiosity is characterized by exploration, open-mindedness, and optimism. By knowing the profile of student entrepreneurship curiosity, universities can encourage the development of entrepreneurship education curriculum that can activate student entrepreneurship. This is in accordance with the opinion of Jeraj & Antoncic (2013) which states that with a measure of entrepreneurial curiosity, every individual can be tested and encouraged to be active in entrepreneurship.

Furthermore, the description of student entrepreneurial innovation as a whole is in Table 2. The character of student entrepreneurial innovation is dominant in the medium category.

Table 2 Students' Entrepreneurship Innovation

Cayegory	Interval Score	Frequency	%
High	25-32	17	13
Medium	17-24	109	85
Low	8-16	2	2

The medium category in the student entrepreneurship innovation component occurs in students who already have jobs and students who do not yet have them. This condition can be seen in Figure 6 and Figure 7 below.

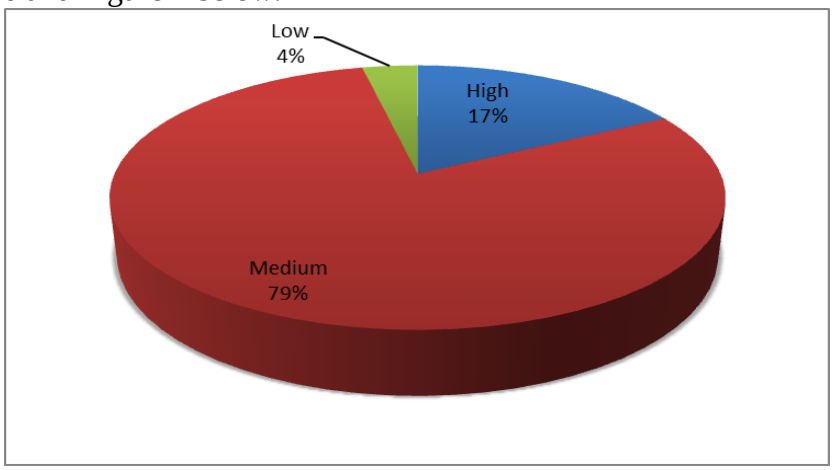

Table 6 Students' Entrepreneurship Innovation Who Already Had a Business

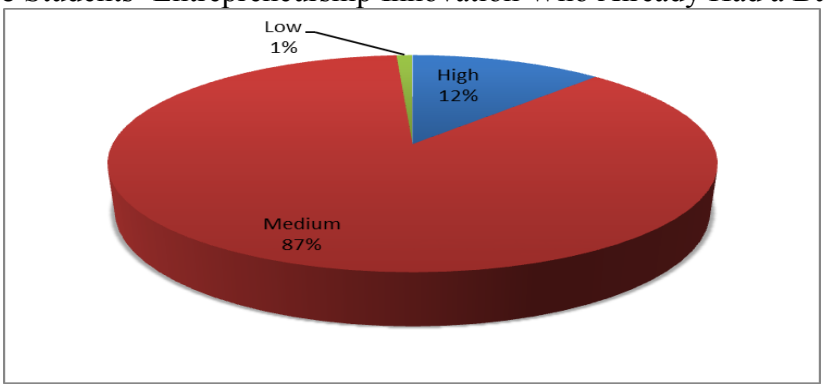

Table 7 Students' Entrepreneurship Innovations Who Did not Have Businesses

Furthermore, the description of student entrepreneurship commitment as a whole is in Table 2. The character of student entrepreneurship commitment is dominant in the medium category. Innovation is characterized by original ideas and creativity. Novelty is the most important element of innovation. Creativity is formed from imagination which often produces novelty. The results of the study explain that either or both creativity and innovation have an effect on entrepreneurship, and innovation has the greatest influence on entrepreneurship.

Innovation is characterized by original ideas and creativity. Novelty is the most important element of innovation. Creativity is formed from imagination (Raine & Pandya, 2019) which often produces novelty. The results of the study (Hadiyati, 2011) explain that either or both creativity and innovation have an effect on entrepreneurship, and innovation has the greatest influence on entrepreneurship.

Furthermore, the description of student entrepreneurship commitment as a whole is in Table 2. The character of student entrepreneurship commitment is dominant in the medium category.

Table 3 Students' Entrepreneurship Commitment

Category	Interval Score	Frequency	%
High	25-32	19	15
Medium	17-24	108	84
Low	8-16	1	1

The medium category in the component of student entrepreneurship commitment occurs in students who already have jobs and students who do not yet have them. This condition can be seen in Figure 8 and Figure 9 below.

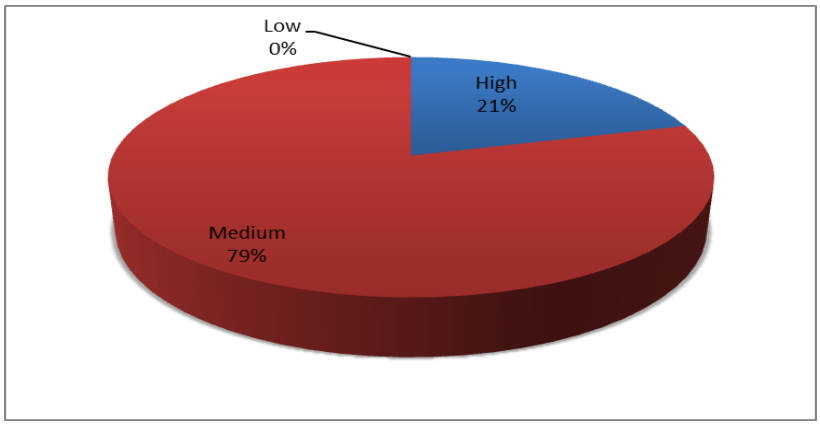

Table 8 Students' Entrepreneurship Commitment Who Had Already Had a Business

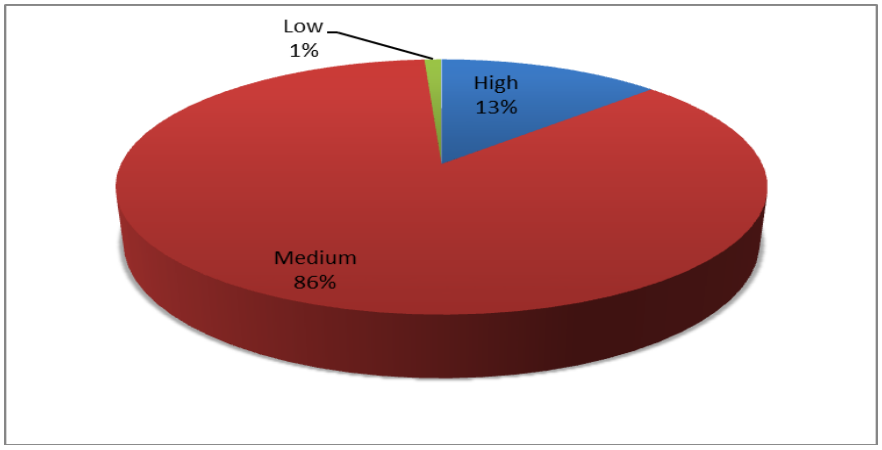

Table 9 Students' Entrepreneurship Commitment Who Had not Had a Business

In this study, commitment is characterized by persistence, persistence, networking, and support. Entrepreneurial commitment is an important part of business performance. The results of Sahabuddin (2015) research show that entrepreneurship commitment has a significant effect on business performance. Entrepreneurial commitment can also be seen from achievement motivation accompanied by persistence and perseverance.

The profiles of entrepreneurial curiosity, innovation, and commitment that have been described can be used as reference materials for the development of entrepreneurship education. Furthermore, Raine & Pandya (2019) stated that the measurement of entrepreneurial character can be a guide for the development of intervention programs for educators, administrators, and entrepreneurship coaches.

5. Conclusion

The entrepreneurial curiosity of more than half of the students falls at the high category. The entrepreneurial curiosity of students who already have a business is higher compared to students who do not have a business. Student entrepreneurship innovation is dominant in the medium category, which is represented by both students who already have

businesses or not. The entrepreneurial commitment of students is dominant in the moderate category, represented by both students who already have a business or not.

Further research is needed on entrepreneurial curiosity, innovation, and commitment related to the selection of majors in the field of study which will have implications for the development of entrepreneurship education that is tailored to the competencies of graduates of each study program.

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Weighing the Threats: Current Trends in Cyberattacks

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Abstract

The advent of advanced computer technology and the expansion of cyberspace has a two-pronged impact. On the one hand, it is increasingly useful for undertaking private and government activities in this digital era. On the other hand, the users of these advanced technologies are equally exposed to cybersecurity threats and attacks. This paper discusses the problem of the expanding threat of cyberattacks. It specifically discusses the nature of the trends of attacks especially during the pandemic, and also considers the role of cyber threat intelligence in helping to mitigate them. The discussion of trends shows that the cyber threat landscape is becoming more complex, becoming more resilient to traditional cyber security defences, and adapting faster to take advantage of new trends such as cloud computing and IoT. Therefore, more research into ways of improving cyber threat intelligence is required.

Keywords : cybersecurity, cyber threat intelligence, cyber security trend, threat actors

1. Introduction

Since the turn of the century, the world has witnessed a shift in the way daily life activities such as commercial, cultural, social and governmental activities and communications are carried out due to the advent of advanced technology and expansion of cyberspace (Li & Liu, 2021). However, in tandem with the cyberspace expansion there has been a significant increase in global cyberattacks in recent years. It is evident that both private companies and government organizations are facing challenges of cyberattacks and the threats of wireless communication (Lee, 2019). The targets of these attacks have included critical infrastructure, financial institutions, and government agencies (Kumar, 2016). There has been a trend from attacks that are only disruptive to those that are designed to cause physical damage or steal data. Further, the attackers are becoming more sophisticated and using more complex tools (Li & Liu, 2021; Ukwandu et al., 2022). Consequently, the attacks also are becoming more sophisticated and more likely to cause greater damage to the users affected by them. Thus, it is necessary to understand the nature of the trends of attacks, so users can have ways to mitigate them. To understand each trend of cyberattack at a deep level, it is essential to have effective cyber threat intelligence (CTI). Therefore, this paper discusses cyber threat intelligence in relation to some current trends of cyberspace attacks: Exploitations of Vulnerabilities, Phishing and Spear Phishing attacks, Cyber Espionage, Distributed Denial of Service (DDoS) attacks and Botnets. (Diwan, et al, 2021).

2. Objective

The goal of this research study is to discuss some common trends of cyberattacks and consider the role of cyberthreat intelligence in understanding and mitigating them.

3. Trends of Cyberattacks

It should be noted that not all cyberattacks fall neatly into one of the following types. Many cyberattacks are complicated, combining methods from more than one trend to achieve their goal. For example, in the case of espionage, cyber attackers may use various methods to penetrate a computer system in order to access government information. For all of the types, I am especially interested in the role of cyber threat intelligence in helping us to understand not only how the cyberattack is executed but also the behaviour and motives of the cyber attackers or threat actors. Cyber threat intelligence can usefully be divided into three overlapping levels: tactical which is technical intelligence that could lead to the identification of threat actors, operational which is details of the motivation of threat actors and strategic which concerns the high-level strategy to respond to threats (Bank of England, 2020),

3.1. Exploitation of vulnerabilities

This type of attack exploits a vulnerability, which is a flaw in a computer system that weakens its security. An example is the set of attacks that exploited Log4Shell (CVE-2021-44228) which was a zero-day vulnerability in Log4j, a popular Java logging framework. A zero-day vulnerability is a vulnerability that has been disclosed but not yet patched. The Log4Shell vulnerability was disclosed on 24 November, and a patch became available on 6 December.

Apache then gave Log4Shell a CVSS severity rating of 10 which is the highest available score (Apache Software Foundation, 2021). Even though Log4Shell is no longer a zero-day vulnerability, it is still a severe threat because of the huge number of devices that run Java, many of which have not yet been patched. Charlie Gero, CTO of Akamai Technologies, emphasizes the severity of the threat posed by the Log4Shell vulnerability: "To understand just how bad this vulnerability is, we must consider that Java runs on billions of devices around the world, and that Log4j is one of the most widely used logging libraries for it." (Akamai Blog, 2022 March 8). These devices include not only web servers but embedded and IoT devices. The severity rating also reflects the harmful activities that follow an exploit. After an attacker exploits the vulnerability to execute arbitrary Java code on a server or other computer, they can use the victim's computer for cryptocurrency mining, creating botnets, sending spam, and ransomware attacks.

3.2 Phishing and Spear Phishing

Phishing is a type of social engineering where a hacker creates a fake email that appears to be from a legitimate source such as a bank. The email contains a link to a fake website that prompts the recipient to enter personal data, or an attachment that, when clicked, downloads malware onto the victim's computer. The malware then allows the hacker to gain access to the victim's personal data, such as passwords or financial information. Spear phishing is a sub-type of phishing where an attacker directly targets a specific person or organization with customized fake communications. Phishing appears to be the type of cyberattack that has benefitted most from the trends resulting from the Covid-19 pandemic, especially remote working and the increasing number of people whose economic situation was adversely affected by the pandemic. One of the many examples catalogued by Laille (2021) is an email purporting to be from the UK government, offering job retention payments.

3.3. Cyber Espionage

Cyber espionage is the activity of stealing information or trade secrets from another person or organization by using computers and the internet. Usually this is done by hacking into the target's computer system and accessing their files. The hacking methods are various, including the use of proxy servers, cracking techniques and malicious software including Trojan horses and spyware. Corporations and governments are most likely to be affected by this kind of cyberattack. Threat actors may be individuals or groups working independently, but the sophistication required for a successful cyberattack against a government usually requires the backing of another government. In December 2020, FireEye, a cybersecurity consulting firm, discovered and disclosed the massive "SolarWinds operation." Hackers inserted malicious code into an update for Orion, a network management platform provided by Solar Winds. Customers downloaded what they thought was a legitimate update to the Orion software but in reality downloaded a virus that infected their computer. This cyberattack, suspected to have been planned and executed by a group backed by the Russian government, affected many corporations besides Solar Winds and led to data breaches of many branches of the United States federal government (Emerald Expert Briefings, 2020). Regarding cyber threat intelligence, various public and private sector organizations, such as Mandiant, accumulate their own intelligence data relating to cyber espionage and release it in publicly available reports.

3.4. Denial of Service attack or Distributed Denial of Service (DDoS) attack

As the words imply, a Denial of Service attack has the objective of making a network service temporarily or permanently unavailable. The attacker achieves this objective by launching a large number of requests to the target machine, typically a website or online service. thus overwhelming it with traffic. Consequently, the target machine becomes slower and less responsive, and users may be unable to access it while the attack is ongoing. There are different types of DDoS attack depending on

which of the seven layers of the network connection is targeted. A distributed denial of service (DDoS) attack has the same objective as a DoS attack, but uses a network of multiple compromised systems to implement the attack. These systems could include computers and IoT devices. They are coordinated by the attacker to overwhelm the target machine. This network of machines is known as a "botnet."

There appears to have been an increase in DoS and DDoS attacks globally during the COVID-19 pandemic. The number of Denial of Service attacks in the UK increased by 28.57% from May 2019 to May 2020 (Buil-Gil et al, 2021).

3.5 Botnets

A botnet is a network of computers that are infected with a bot, which is a type of malware that allows an attacker to send commands to the computers and control them remotely. A botnet may be used for launching DDoS attacks as described in the previous section, or for other purposes such as sending spam. Regarding cyber threat intelligence, the tactical level is of most relevance here. Various network tools and technical data such as IP addresses or server logs can be used to help in the identification of cyber attackers behind a botnet. It must be emphasized that this is a very complex process which could lead to false identification, especially in the case of a botnet, since the IP addresses will probably belong to machines that have been hijacked by the cyber attacker. If the nature of the attack was not understood, the organization that owns the computer would be wrongly implicated in the attack.

4. Conclusion

The above survey of current trends in cyberattacks shows that the cyberthreat landscape is becoming more complex as it exploits new trends in computing, especially IoT (internet of things) and cloud computing. Owing to the coincidence of these trends with the COVID-19 pandemic, the negative impacts of cyberattacks have accelerated over the last two years. Even though the COVID-19 pandemic appears to be waning in most countries, the trends of cloud computing and IoT will continue. Also, new trends are emerging which may threaten computer security. An example is quantum computing, which might be used in the future to break encryption algorithms that are currently unbreakable with classical computers. Therefore, the importance of cyber threat intelligence has never been greater. However, the quality of cyber defence is only as good as the quality of the available threat intelligence. The growing number of attacks during the pandemic indicates that more research needs to be done in improving the quality of CTI at the tactical, operational and strategic levels. In this context, I am interested in the innovative approach of CrowdSec, which uses tens of thousands of users throughout the world to "identify bad cybersecurity actors and create a database of rogue IPs for all community members to block, generating a real-time crowdsourced CTI (cyber threat intelligence database)" (CrowdSec, 2022). So I plan to critically assess the effectiveness of a crowdsourcing strategy in mitigating cyberattacks.

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