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Leadership and Legacy

This Volume 3 of DepED El Salvador City's Gem's Research Journal marks another milestone in the field of research. This represents the commitment of both teaching and non-teaching staff in coming up with scientific bases in introducing innovations. This also manifests the competence of those who really put their hearts and minds in conducting research as they explore various theories and principles formulated by the "giants" in the field of education. Recognizing these researchers' efforts and initiatives, it is just fitting for the DepED El Salvador City to provide a venue for the significant research findings to be communicated and continuously improve the delivery of basic education in the country, thus this Gems' Research Journal is published.

Coming up with the third volume of the journal would not be easy if not for the concerted effort of those who have at stake in education. Firstly, the Department of Education, through the D.O. # 43, s. 2015 provided the guidelines as to the release and utilization of the Basic Education Research Fund, for which a good number of our researchers were able to avail of. Secondly, the RX ADOBE of the Regional Director, Dr. Arturo B. Bayocot, CESO III served as an inspiration to come up with a varied research topics to improve the personnel services and instruction. Thirdly, the Division of El Salvador City's research committee, with the able leadership of OIC-Assistant Schools Division Superintendent, Dionesio L. Liwagon, Jr. and Senior Education Program Specialist, Karen Rose A. Serrania who extended effort and technical assistance to all the School Heads, CID/SGOD personnel and all researchers. Worth acknowledging too, is the continuous support of the Local Government Unit of El Salvador City, Honorable Mayor Edgar L. Lignes, for the reproduction of the Journal.

The entries in these research journals would not be possible if not for all the researchers who really "burned their midnight candles" to come up with these outputs. I sincerely appreciate your significant contributions as an addition to the body of knowledge in the field of education. As this research journal started at the height of the pandemic (Volume 1, 2000), surely, the lessons on resilience, grit and agility will allow you to make a difference in the lives of your co-workers and learners.

As always, the Research Journal of El Salvador city is much treasured in my heart, in my memories with you my GEMS. May God, the source of Truth, our North Star in Research, will continue to enlighten you as the years go by, para sa **Matatag na Buhay!!!**

OLGA C. ALONSABE, PhD, CESO V
Schools Division Superintendent



Republic of the Philippines
DEPARTMENT OF EDUCATION
Region X - Northern Mindanao



I am indeed delighted to see the publication of our research journal for the year 2022. This year's publication encapsulates the substantial value of our researchers' labor, devotion, and intellectual curiosity as well as the voluminous technical assistance extended by the Division Research Coordinator, the members of the Schools Division Research Committee (SDRC), school heads and other division office personnel.

The most recent findings and insights from the facilitators of learning – our teachers, including the school heads, are presented in this journal. I am glad to highlight that the studies in this publication are the results of months of rigorous investigation and analysis, and they stand as the precious prize of the concerted efforts exerted by everyone.

I want to express my sincere gratitude to all of our contributors for their work. Your writings have improved our understanding towards our learners and schools. You have provided insightful analysis of some of the basic and most important issues in the teaching-learning process. You have shown a dedication and I have no doubt that the work you have done will serve as an example for the present and upcoming teachers and school heads.

I also want to express my gratitude to our team of editors, reviewers, and support personnel, who have worked really hard to guarantee that this book satisfies the highest requirements for excellence and quality. Your contributions have been priceless, and I appreciate all of your effort and commitment.

I invite our readers to study this journal's articles and to interact with the concepts and observations offered therein. I am confident that you will find them motivating, educational, and thought-provoking.

Congratulations to everyone involved in the creation of this publication.

Para sa El Salvador na Makabata, at Batang Tagnipan-on na Makabansa

DIONESIO L. LIWAGON, JR., CESE

Chairperson, SDRC

OIC, Office of the Assistant Schools Division Superintendent

CONTENTS

Contextual and Proximal Factors: Implications to Grade Four Pupils' Reading Skills

By: Stella Marie B. Acero

The Use of Feedback Network (FeedNet) Strategy and RoBenj Technique as Interventions to Aid Low Performing GAS Students in Solving Implicit Differentiation Problems in Times of Pandemic

By: Jun Mark Rey O. Nob

Gamified Learning Environment as an Innovative Bichronous Online Learning Assessment through Quizzizz in Teaching Research: Phase One

By: Phoebe Joy M. Pacut-Lopez, Marie Jade A. Cacayan, PhD

Project C.E.L: Implication on Students' Mathematics Performance in the New Normal

Mae Gaid, Richard A. Sabellano

The Psychosocial Challenges of the Student Government in Times of Pandemic: A Basis for the Establishment of Project PAIR

(Peer counselling Assistance to improve the Interpersonal skills among learners and Resolve conflicts in schools)

By: Karen Rose A. Serrania, Jurica Ethel L. Estrada, Cecille Z. Khobuntin, Merogim P. Mugot

The Predictive Role of Teachers Educational Attainment and Training Towards Attitude in Research: A Mixed-Method Research Investigation

John Franklin Dresser, Icel Jane B. Sotacio

Campus Wellness Program Design: The Practice of Public Schools

John Franklin Dresser, Anna Mae M. Atillo, Gladys Grace Cabeltes

Developing 21st Century Teachers with Improved Content, Technology, and Pedagogical Knowledge through Designing eSimulation-Based Lessons in Mathematics: A Perspective in the New Normal

Anabelle M. Mamaclay, PhD, Jun Mark Rey O. Nob, Liza May Duran

An Analysis of the Results-Based Performance Management System in El Salvador City: Basis for Learning and Development Intervention

Merogim P. Mugot

A Psychosocial Needs' Assessment of Junior and Senior High Schools in Selected District Schools of Division of El Salvador City: Basic for Intervention Program

Marilou Y. Descallar, MAEd, RGC

Contextual and Proximal Factors: Implications to Grade Four Pupils' Reading Skills

Stella Marie B. Acero
El Salvador City Central School

ABSTRACT

This descriptive correlational study determined if there is a significant association between contextual and proximal factors with pupils' reading skills. Contextual factors include the use of technology at home and use of reading materials and the proximal factors comprise reading attitude of the parents and the literacy activities at home. The dependent variables delved on the pupils' reading skills in terms of reading fluency which embraces speed, rate and accuracy and the reading comprehension which comprises recalling details and identifying cause and effect. The participants were fifty (50) grade 4 pupils and their parents. A researcher -made instrument on the reading skills and a modified instrument were used to gather the data. Descriptive and inferential statistics were employed to process the data. Findings reveal that the use of technology and reading materials were sometimes used at home. While the parents had neutral attitude towards reading and literacy activities were done often. Moreover, both contextual and proximal factors were not associated with reading skills except on the use of reading materials and their reading comprehension. Parents must engage their child in different literacy activities and manifest the best attitude towards reading to highly encourage their children to read and practice reading that can help develop their reading skills. Likewise, pupils need to be exposed to different reading materials and educational technology and other strategies in reading to uplift their performance in reading and to enhance their confidence to read independently. Project OPPAA: Online Parent-Pupil Asynchronous Activity was proposed to sustain a high quality of education despite of the pandemic specifically designed to guide the learners develop their reading skills. The main goal of this program was to strengthen the learnings and act as a guide to both parents and learners in learning and developing their reading skills. Keywords: contextual factors, proximal factors, reading skills, reading fluency, speed, rate, accuracy, reading comprehension, recalling details, identifying cause and effects

Introduction

Learning how to read is essential for a child's success considering that reading is an indispensable skill and a potent tool for learning. Learning how to read affects the academic performance of the child

because it is absolutely hard to understand something if the reading skill is not developed. Academic achievement will follow if someone knows how to read and understand what he or she reads.

Parent's involvement is very important especially in child's learning development. Parents are highly encouraged to support their child's learning to have a meaningful and successful developmental milestone. Parent's attitude and the child's environment where the pupil is part of also have a big impact on their learning development. Family environment has a pervasive and life-long impact on children, yet, most of the parents enter parenthood without significant preparation or training (Lim, 2016).

Family background greatly influences the development of the early literacy skill of the child. According to Kenndy and Trong (2010), home environment provides a strong foundation for early literacy and acts as an important factor in child's development towards positive attitude, self-concept and reading skills. Children who like to read and believe that they are good readers read more and have higher reading achievements (Guthrie, H. et. al., 2006, Wang and Guthrie, 2004).

Kennedy and Trong (2010) further hypothesized that success in reading begins with a strong support at home. It is usually measured through the contextual factors activity introduced to the child and the presence of technology and different reading materials at home and the proximal factors; which include the attitude of the parents towards reading and parent's reading behavior.

It is essential to develop a strong attitude towards reading especially at young age because positive reading attitude leads the child to positive reading experiences (Ching, 2012). Hence, it is important that reading should be developed at an early stage of life for it is then that the child will be able to put meaning on the importance of reading.

Moreover, Carter (2010) stated that providing a contextual-rich environment at home has a vital importance especially in the development of the children's reading skills. Children must be exposed and have a better access in all types of print and variety of reading materials which are age-appropriate, beginning in their early developing years and extending throughout their school years.

On the other hand, proximal factor which includes the parental involvement is significant in the child's reading success. Parents who read

to their child before the day ends, encourage and develop a good habit and love for reading throughout their life (Bell, 2001). Children who are part of a home that provides and supports literacy have experienced an extensive reading prior to entering their first grade according to Anderson (2000). Moreover, Smith and Dixon (2001) agreed that children's literacy skills greatly influence by the quality and amount of literacy activities introduced to the child.

Developing these skills takes a lot of forms, such as reading to young children and collaborating to make meaning of a shared story, which have been described as "bridges to literacy" (Rosenkoetter & Barton, 2002). The learners' contextual and proximal environments are found to influence greatly their literacy development (Mason & Allen, 2000).

In today's society, however, with technology as abundant among the present generation, and given the fact majority of the parents are already working parents, it is possible that their children may not be given enough time to be assisted in the development of their reading skills at home. Parents work hard to provide for their children, but do not have the time to spend with them; and with that, the reading fluency of their children decreased (Senechal and LeFevre, 2002).

The researcher observed that teaching basic reading skills is a hurdle if parents will not take their part and constantly follow up their children at home. It is at home where strong foundation of learning how to read must start. Parents, considered as the first teachers, must encourage and motivate their children to learn how to read.

It is highly observe that children are motivated to learn reading when their environment is rich with interesting activities. Some home, already have all the resources needed to support the child's reading development; however, these resources were given little attention to children's education (Schunk et. al., 2010). Armbruster, Lehr, & Osborn (2001) stated that failure of building a strong foundation on learning how to read creates a long-term negative consequence for children.

Moreover, the researcher also noticed that some pupils, whose parents are busy, also manifest decrease on their reading skills. Some parents consider that it is the school's obligation to teach their children the reading skills and provide motivation they needed. While acknowledging this responsibility, the teacher also needs the help of the parents to enhance the capacity to develop fully the pupils' reading skills.

With the given scenario, the researcher was prompted to find out if the pupils' contextual and proximal factors are significantly associated with their reading skills specifically reading fluency and comprehension.

Theoretical and Conceptual Framework

This study assumes that the contextual and proximal factors significantly influence the pupils' reading skills specifically on pupils' reading fluency and comprehension. This is anchored with the Ecological System Theory of Urie Bronfenbrenner (2009).

Ecological system theory discusses how everything in a child and its environment affect the child's growth and development (Oswalt; 2017 and Lopez; 2015). Bronfenbrenner according to Roundy (2015) believes that a person's holistic development is very much affected by its surrounding and environment. Bronfenbrenner then labeled different levels of environment that influence the children's development and learning as follows: the microsystem; the mesosystem; the exosystem; the macrosystem; and chronosystem (Oswalt, 2017). The home as a primary context of child's development provides children with diverse experiences that support the child's reading development (Kabali, 2014).

Ashford (2009) posited that the environment where the child is a part of, plays a very important factor on how the child learns and the behavior he or she develops. Human behavior development and even in learning reacts greatly on the environment. This perception has led many families, schools and educators to assume that young children in fact acquire new knowledge by reacting to their surroundings.

Contextual and Proximal factors play a very important role in child's reading development. It is in the home where the child first understands the complexity of the effects of the different context on reading development (Kennedy, A. and Trong, K., 2010). This study focuses more on the contextual and the proximal factors that affect reading skills especially the children's reading fluency and comprehension.

Different researchers (Mullis, Martin, Kennedy, & Foy, 2007; Whitehurst & Lonigan, 2001) agreed how contextual factors (availability of reading materials and exposure to technology) and proximal factors (child's exposure to different reading activities at home and parents' reading attitude) can have a long-lasting consequence on reading achievement and attitude of the child towards reading. These factors support the needs of the child as she or he grows and develops.

According to Hartas, (2011) a contextual factor-rich environment where children have a better access to book and other print materials and when parents actively engage with the child's reading activities and guide them in an age-appropriate learning opportunities can contribute positively to child literacy, emotional and behavioral regulation. Aside from reading, parents can also engage their children in other activities such as reciting nursery rhymes and song, telling stories at bedtime and teaching alphabet, numbers and letter during their spare time.

On the other hand, the excessive use of technology which is considered as to the contextual factor might weaken the purposes of the executive system that create child's reading development (Pagani, 2013). Zenger (2015) argued that it is critical to the child development if the parent sets limitation on using technology at home. Young children are easily attracted and attached to flashy colors, intense sounds and fast moving images on the television screen. Technology can be an exciting medium of learning, but children must use it wisely, they must use it properly and with purpose.

Furthermore, there are technologies that can stimulate the child's imagination and open up the different opportunities life may offer. Interactive books, different educational television programs can extend children's understanding of the world. Thus, modern technology transformed children learning and interaction with their environment. However, Edgar (2008) stressed that media-saturated environment is the most significant context for every child that starts to learn at home. Technology is already part of every individual's life nowadays.

Hamilton (2016) stated that the term proximal factors are used to define the different literacy-related activities and attitudes the child has experience at home. There is a big tendency that learning how to read at the early years creates a stronger foundation for later literacy development and other academic success. It is shown that if parents read to their children regularly from the early age, the child's passion on linguistics increases, allowing more on the effective use of the different strategies to support children's contribution and comprehension.

Proximal factors are generally referred to participation in the different literacy-related activities at home, which include the aspect of exposure on the different printed materials and the child's frequency on reading. The availability and how often the different reading materials are the primary characteristics of the home environment activities that can support child's development. This can also support the child's opportunity to practice reading, promote different literacy activities and

motivate the child to learn better (Morris et. al., 2005) Baker and Scher (2002) as mentioned by Colarocco (2012) that another proximal factor which is the involvement of various reading activities at home has a positive impact not only on reading achievement, language comprehension and excessive language skills but also on the child's interest in reading and attitude towards reading. Studies of emergent literacy have highlighted the importance of the early literacy environment and experience in developing knowledge and skills related acquisition (Levy et.al, 2006).

Serpell, Baker, and Sonnenschein (2005) emphasized that the proximal factor on parents own literacy habit influence their children interest and motivation for reading. Some parents support their children with different reading activities at home because they don't want their child to be like them especially if they have difficulty in comprehending what they have read (Neuman and Dickinson 2002).

Interest for reading must start at home. The proximal factor specifically the parent's attitude towards reading, shown by their reading behavior, has strong effect on the literacy environment they can create for their children. A supportive home environment must start with positive parental attitude towards reading and focuses more on literacy development of the child (Kennedy, A. and Trong, K., 2010). Thus, this can also help prepare the child to the next level of his reading development. Baker and Scher (2002) establish that parents who have a positive belief about reading for pleasure has a higher tendency that their children are also motivated to read.

According to Snow, Porche and Jordan (2000), children whose family are more engaged at school, have a rich literacy environment (contextual factor) and different home activities (proximal factor) made significantly greater gains in developing their reading skills. Thus, proper educational materials, technology present at home and supervision of the pupils' academic work when return from school by parents affect the reading skills development of a child (Obeta, 2014). This practice motivates the pupil to work hard so that their parents will be proud of them and give more efforts in developing holistically.

Furthermore, fluent readers as described by Nouvelle, R. (2010) are readers who can focus their attention on the content they have read and making connection with the words they read on their prior knowledge. These ability affluences the child to understand the content being read. Rasinski (2006) then strongly agreed that fluent reader is someone "who deals with reading words accurately and with appropriate speed, and it

deals with embedding one's voice elements of expression and phrasing while reading" (p. 18). With such, "the ability to read fluently and with adequate comprehension is considered the hallmark of skilled reading" (Mokhtari & Thompson, 2006, p. 73)

Reading fluency is an important skill one must develop to create a connection towards reading comprehension. It is one of the most important and at the same time crucial skill in reading and in understanding the text (Senechal and LeFevre, 2010). If someone is not a fluent reader, they will have difficulty in fully comprehending what they read. Integrating fluency reading strategies can help improved overall comprehension for children. Thus reading fluency by the help of different strategies and interventions can measure one success specifically in reading comprehension (Cotter, 2012).

It is in this context that the researcher would like to firm up her assumption that contextual and proximal factors have its influence to pupils' reading skills specifically in their fluency and comprehension.

Statement of the Problem

This study aims to determine if the contextual and proximal factors influence the reading skills among the grade four pupils in a public elementary school in the division of El Salvador City during the School Year 2021-2022.

Specifically, this study aims to answer the following questions:

1. How are the pupils characterized in terms of the following factors:
 - 1.1 Contextual Factor
 - 1.1.1 Use of technology at home; and
 - 1.1.2 Use of reading materials?
 - 1.2 Proximal Factor
 - 1.2.1 Reading attitude of the parent; and
 - 1.2.2 Literacy activities at home?
2. What is the pupils' level of reading skills along with the following domains:
 - 2.1 Fluency
 - 2.1.1 Speed;
 - 2.1.2 Rate; and
 - 2.1.3 Accuracy?
 - 2.2 Comprehension
 - 2.2.1 Recalling details; and
 - 2.2.2 Identifying Cause and Effect?
3. Are the pupils' contextual and proximal factors significantly associated with their reading skills?

Hypothesis

Problems 1, and 2 are hypothesis free. On the basis of problem 3, the null hypothesis was tested at 0.05 level of significance, to wit:

Ho1: Contextual and proximal factors are not significantly associated with the pupils' reading skills.

Significance of the Study

The result of this study will be beneficial to the following people.

The School Administrators. This study will provide the school administrators and other policy makers baseline information in crafting programs and interventions to help improve the reading skills of the pupils.

Grade IV Teachers. This study will help them be aware of the differences of their pupils in terms of reading. Through this, they will be knowledgeable to develop effective teaching method obtaining pupil's different learning domains.

Pupils. They will be provided with more supportive environment as well as other age-appropriate learning activities that can support their weakness in terms of reading and to make them skillful in reading.

Parents. They will be knowledgeable enough to develop a conducive literacy environment to support their children's need in developing their reading skills

Future Researchers. This study will provide helpful data in the conduct of related study that explores other components of home literacy environment in relation to reading skills.

Scope and Delimitation of the Study

This research dealt on the influence of the contextual and proximal factors to the Grade four pupils' reading skills. Contextual factor in this study included the availability of technology and reading material at home and the proximal factor comprised parents' reading attitude and the literacy activities done at home. On the other hand, reading skills covered the following: reading fluency consisted of speed, rate and accuracy and reading comprehension included the recalling details and identifying cause and effect. This study involved fifty (50) Grade four (4) pupils and parents of public elementary school in the division of El Salvador City for SY 2021-2022.

RESEARCH METHOD

This chapter describes the methods that were employed in the study. It contains a discussion of the research design, participants of the study, sampling procedure, research instrument, validity and reliability of the

instrument, scoring procedure, data gathering procedure and statistical treatment of the data.

Research Design

This study utilized the descriptive correlational design. According to Calmon & Calmon (2007), this research design is used to determine the relationship of two variables, dependent and independent variables. In this study, contextual and proximal factors as independent variables were tested if it is associated with the dependent variable which is the reading skills of the fifty (50) grade four pupils.

Participants of the Study

The study involved the fifty (50) grade four (4) pupils of public elementary school in the division of El Salvador City for the school year 2021-2022. The parents of the pupils were also involved in answering the questionnaire of the contextual and proximal factors.

Research Instrument

The main instrument in this study was the researcher-made comprehension test questionnaire adapted from Phil-IRI (2015) Reading Comprehension Test that elicited responses from the grade four (4) pupils to identify their level of reading skills specifically their reading fluency and reading comprehension. Items from Home Literacy Environment Checklist by Kennedy and Trong (2010) were adapted to find out the degree of usage of technology and home learning materials of the pupils at home, Middleton (2010) survey questionnaire for the parent's attitude towards reading and literacy activities practice at home that were answered by the parents was also adapted by the researcher.

Validity and Reliability of the Instruments

The instruments underwent content validation and reliability testing. To ensure content validity of the instruments, panel members and experts in the field were asked to review the items. After the content validation, the instrument was pilot-tested to the grade four learners who were not part of the actual study.

The instruments yielded the following Cronbach's Alpha Reliability Coefficients: for the Proximal Factors, 0.829 for the reading attitude of the Parents and 0.716 for literacy activities at home. On the other hand, reading comprehension on recalling details had 0.725 while 0.927 for cause and effect.

According to Tavakol (2011), a Cronbach's Alpha Coefficient of 0.7 and above indicates a high tuned consistency. Hence the items of the instruments are considered "reliable".

Scoring Procedure

The scoring procedure below guided the researcher in organizing and interpreting the data on contextual factors (used of technology and reading materials at home), and proximal factor (literacy activities at home)

SCALE	RANGE	DESCRIPTION
5	4.51-5.00	Always
4	3.51-4.50	Often
3	2.51-3.50	Sometimes
2	1.51-2.50	Rarely
1	1.00 -1.50	Never

The data for parents' attitude toward reading as proximal factors were organized and interpreted using the scoring procedure below.

SCALE	RANGE	DESCRIPTION
5	4.51-5.00	Very favorable
4	3.51-4.50	Favorable
3	2.51-3.50	Neutral
2	1.51-2.50	Unfavorable
1	1.00 -1.50	Very Unfavorable

To calculate the pupils' reading comprehension, the researcher adopted the electronic Phil-IRI scoring used by the Department of Education were the number of major miscues divided by the number of words in the passage and multiplied by 100.

Scoring procedure for identifying pupil's level of reading comprehension

Scale	Description
Pupil correctly answered....	
10-8 items	Independent
7-5 items	Instructional
4-2 items	Frustration
1-0 items	Non reader

To calculate the pupils' reading fluency, the formula used was the number of correct words read by the individual pupil, divided by the total number of words in the selection and multiplied by 100.

To organize the data gathered in reading fluency, the Phil-IRI classification scoring procedure was used.

Data Gathering Procedures

Permission to conduct the study was first sought from the School's Division Superintendent Office and the school principal. After approval was granted, a letter of permission was given to the class adviser and the parents of the grade four pupils who were involved in the study.

Then, the researcher administered the survey questionnaire to the grade four parents during the distribution and retrieval of modules along with the reading skills test of the grade four pupils through online considering the safety of the learners.

Ethical standards were observed during the conduct of the study. The researcher got the participants' informed consent and assured them of the confidentiality of their responses and their anonymity. The data were then encoded, organized, analyzed and interpreted.

Statistical Treatment

For problems 1 and 2, descriptive statistics such as frequency, mean, percentages and standard deviation were employed to determine the level of the contextual and proximal factors, the reading skills of the grade four pupils in terms of fluency and comprehension.

In determining if the contextual and proximal factors were significantly associated with the pupils' reading skills, for problem 3, Pearson's R Product Moment Correlation was employed.

Chapter 4

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter embodies the core of the study. From the gathered data, the result of the study are presented, analyzed and interpreted to assess the association of contextual and proximal factors and reading skills of the grade 4 pupils. The presentation of result is organized based on the specific problems stated in chapter 1.

Problem 1: How are the pupils characterized in terms of the following factors:

- 1.3 Contextual Factor
 - 1.3.1 Use of technology at home; and
 - 1.3.2 Use of reading materials?
- 1.4 Proximal Factor
 - 1.4.1 Reading attitude of the parent; and
 - 1.4.2 Literacy activities at home?

Table 1 presents the frequency and percentage distribution of contextual factors in terms of technology used at home. Out of 50 families, there were only 21 families who rarely used technology at home, while 20 families sometimes used technology at home, 6 families who often used technology at home, 2 families who never use technology at home and 1 family who always use technology at home. The overall mean with 2.63 shows that the families sometimes used technology at home.

As to specific technology, it was the television that was often used ($M=3.56$) followed by cellphone ($M=3.30$) and radio (2.66). On the contrary, computer ($M=1.88$) and DVD player ($M=1.76$) were rarely used.

Table 1. Frequency, Percentage and Mean Distributions of Contextual Factors in terms of Technology Used at Home

Range	Interpretation	F	%
4.51-5.00	Always	1	2.00
3.51-4.50	Often	6	12.00
2.51-3.50	Sometimes	20	40.00
1.51-2.50	Rarely	21	42.00
1.00 -1.50	Never	2	4.00
Total		50	100
Mean		2.63	
Interpretation		Sometimes	
SD		1.62	

Specific Technology	Mean	Interpretation	SD
Television (TV)	3.56	Often	1.89
Cellphone	3.30	Sometimes	1.82
Computer	1.88	Rarely	1.37
Radyo	2.66	Sometimes	1.63
DVD Player	1.76	Rarely	1.33

Table 2 shows the frequency and percentage distribution of contextual factor in terms of reading materials used at home. The data show that forty percent of them used reading materials rarely, thirty-four percent sometimes used reading materials at home, fourteen percent often used reading materials at home, eight percent never used reading materials at home and four percent always used technology at home. Thus, the overall mean of 2.65 reveals that most of the families sometimes use reading materials at home.

As to the specific reading materials used at home, it is the book ($M=3.94$) which is often used at home. On the other hand, story books (3.18), dictionary (2.86) and reading chart ($M=2.54$) were sometimes used at home and word puzzle (2.12), newspaper (2.06) and magazine (1.86) were rarely used.

Table 2. Frequency, Percentage and Mean Distributions of Contextual Factor in terms of Reading Materials Used at Home

Range	Interpretation	F	%
4.51-5.00	Always	2	4.00
3.51-4.50	Often	7	14.00
2.51-3.50	Sometimes	17	34.00
1.51-2.50	Rarely	20	40.00
1.00 -1.50	Never	4	8.00
	Total	50	100
	Mean		2.65
	Interpretation		Sometimes
	SD		1.63

Specific Reading Materials	Mean	Interpretation	SD
Book	3.94	Often	1.98
Newspaper	2.06	Rarely	1.44
Magazine	1.86	Rarely	1.36
Reading chart	2.54	Sometimes	1.59
Dictionary	2.86	Sometimes	1.69
Story Books	3.18	Sometimes	1.78
Word Puzzle	2.12	Rarely	1.46

Table 3 shows the frequency and percentage distribution of proximal factor in terms of reading attitude of the parents. The overall mean of 2.94 reveals that the parents manifested a neutral attitude towards reading. Moreover, 70 percent of them were reported to have a favorable attitude towards reading to their children.

Among the attitudes manifested by the parents towards reading, they have favorable attitude when someone gave them a book ($M=4.26$). This was followed by encouraging their children to read books with them ($M=4.00$), enjoy reading book ($M=3.88$) and share the stories they read to other people ($M=3.84$). The least attitude parents' manifested was they think reading was boring ($M=2.24$).

Table 3 Frequency, Percentage and Mean Distributions of Proximal Factor in terms of Parents' Reading Attitude

Range	Interpretation	F	%
4.51-5.00	Very Favorable	5	10.00
3.51-4.50	Favorable	35	70.00
2.51-3.50	Neutral	10	20.00
1.51-2.50	Unfavorable	0	0
1.00 -1.50	Very Unfavorable	0	0
Total		50	100.00
Mean		2.94	
Interpretation		Neutral	
SD		1.71	

Reading Attitude towards Reading	Mean	Interpretation	SD
<i>As a parent, I....</i>	2.54	Neutral	1.59
1. like talking about books with other people.			
2. would be very happy if someone gave me a book.	4.26	Favorable	2.06
3. enjoy reading.	3.88	Favorable	1.97
4. encourage my child to read books with me	4.00	Favorable	2.00
5. share to people the interesting stories I have read.	3.84	Favorable	1.96
6. find reading fun to do during idle time	3.32	Neutral	1.82
7. read only if I need to	2.50	Unfavorable	1.58
8. I feel sad when I see someone reading at home	2.74	Neutral	1.32
9. think reading is boring	2.24	Unfavorable	1.24
10. feel anxious when I see books at our home	2.54	Neutral	1.33

Table 4 shows the frequency, percentage and mean distribution of literacy activities at home. The overall mean of 3.74 indicates that parents often engaged their children in different literacy activities at home.

Among the participants, majority of the families (80%) often engaged their children in different literacy activities and only 2 families (4%) rarely engaged their children in different literacy activities at home.

Meanwhile, among the literacy activity parents always practiced was teaching their child how to read (M=4.52). It were followed by asking their child if he/she understands the stories that he/she is reading (M=4.40), answering their child's question in relation to the story they read (M=4.24), listen to the stories shared by their child (M=4.12), include their child's opinion on their day-to-day conversation (M=4.06) and read books to their child (M=3.52) were often practiced at home.

Moreover, providing more activities opportunities for their child to read ($M=3.46$), read books before and after their child's class at school ($M=3.40$) and play games that help their child to appreciate reading ($M=3.26$) were sometimes practiced. On the other hand, reading a storybook to their child before bedtime ($M=2.44$) was the literacy activity rarely practiced.

Table 4 Frequency, Percentage and Mean Distributions of Proximal Factor in terms of Literacy Activities at Home

Range	Interpretation	F	%
4.51-5.00	Always	4	6.00
3.51-4.50	Often	30	80.00
2.51-3.50	Sometimes	14	28.00
1.51-2.50	Rarely	2	4.00
1.00 -1.50	Never	0	0.00
Total		50	100
Mean		3.74	
Interpretation		Often	
SD		1.93	

Literacy Activities at Home	Mean	Interpretation	SD
<i>As a parent, I....</i>			
1. read books to my child	3.52	Often	1.88
2. listen to stories shared to me by my child	4.12	Often	2.03
3. provide more activities/opportunities for my child to read	3.46	Sometimes	1.86
4. read a storybook to my child before bedtime	2.44	Rarely	1.56
5. play games that help my child to appreciate reading	3.26	Sometimes	1.81
6. I include my child's opinion on our day-to-day conversation	4.06	Often	2.01
7. answer my child's questions in relation to the story we read	4.24	Often	2.06
8. ask my child if he/she understands the stories that he/she is reading	4.40	Often	2.10
9. assist my child in answering his/her reading assignment	4.52	Always	2.13
10. read books before and after my child's class at school.	3.40	Sometimes	1.84

Problem 2 What is the pupils' level of reading skills along with the following domains:

- 2.1. Fluency
 - 2.1.1. Speed;
 - 2.1.2. Rate; and
 - 2.1.3. Accuracy?
- 2.2. Comprehension
 - 2.2.1. Recalling details; and
 - 2.2.2. Identifying Cause and Effect?

Table 5 shows the result of the pupils' reading fluency in terms of speed. The data shows that sixty-six percent of them were categorized as slow readers. This was supported by the total mean of 206.4. On the other hand, twenty-six percent of the pupils were described as average readers and eight percent were "fast" readers.

Table 5 Frequency, Percentage and Mean Distributions of Reading Fluency in terms of Speed

Range	Interpretation	F	%
0-89 sec.	Fast	4	8.00
90 – 110 sec	Average	13	26.00
111 and beyond	Slow	33	66.00
	Total	50	100
	Mean		206.4
	Interpretation		Slow
	SD		14.36

Table 6 shows the frequency, percentage and mean distribution of reading fluency in terms of reading rate. It can be noted that most of the pupils were described as "frustration" reader in terms of rate, word per minute (66%). This was reinforced by the total mean of 85. Thus, it reveals that thirteen pupils were instructional readers, four were independent readers.

Table 6 Frequency, Percentage and Mean Distribution of Reading Fluency in terms of Reading Rate

Range	Interpretation	F	%
140 above WPM	Independent	4	0.00
111-139 WPM	Instructional	13	26.00
110 below WPM	Frustration	33	66.00
	Total	50	100
	Mean		85
	Interpretation		Frustration
	SD		9.2

Table 7 presents that forty-six percent of the pupils were independent readers, while thirty percent of them were instructional readers and twenty-four percent were frustrated readers in terms of their reading accuracy. Thus, the total mean of the 93.00 stated that the pupils were instructional readers.

Table 7 Frequency, Percentage and Mean of Reading Fluency in terms of Reading Accuracy

Range	Interpretation	F	%
95 – 100	Independent	23	46.00
90 - 94	Instructional	15	30.00
Less than 90	Frustration	12	24.00
	Total	50	100
	Mean		93.00
	Interpretation		Instructional
	SD	0	.96

Table 8 shows the frequency, percentage and mean distribution of the grade 4 pupil's reading comprehension's recalling details. The data revealed that the pupils have an instructional level of reading comprehension's recalling details with a total mean of 7.18.

Moreover, almost half of them (46.00%) were on the instructional readers, while 20 percent of them were independent reader, 30 percent were frustrated reader and 4 percent were non-readers. Thus, 2 pupils who are non-reader need more attention to enhance their reading skills.

Table 8 Frequency and Percentage and Mean Distribution of Grade IV Pupils' Reading Comprehension in terms of Recalling Details

Ranges	Interpretation	F	%
8.00 – 10.00	Independent	10	20.00
5.00 – 7.99	Instructional	23	46.00
2.00 -4.99	Frustration	15	30.00
0.00 - 1.99	Non-reader	2	4.00
	Total	50	100
	Mean		7.18
	SD		2.68
	Interpretation		Instructional

Table 9 shows the frequency, percentage and mean distribution of Grade 4 pupil's reading comprehension in terms of identifying cause and effect. The total mean of 5.5 reveals that the pupils were instructional learners. Furthermore, 34 pupils were independent learners and 11 of them were non-readers who needs more support both from the teacher

and the parents to address their needs.

Table 9 Frequency, Percentage and Mean distribution of Grade IV Pupils' Reading Comprehension in terms of Identifying Cause and Effect

Ranges	Interpretation	F	%
8.00 - 10.00	Independent	34	68
5.00 – 7.99	Instructional	4	8
2.00 – 4.99	Frustration	1	2
0.00 – 1.99	Non-reader	11	22
	Total	50	100
	Mean		5.5
	SD		2.35
	Interpretation		Instructional

Problem 3. Are the pupils' contextual and proximal factors significantly associated with their reading skills?

Ho1: Contextual and proximal factors are not significantly associated with pupils' reading skills.

Table 10 shows the correlation coefficients (Pearsons R) indicating the significant association between the grade 4 pupils' contextual factors and proximal factors and their reading skills specifically their fluency and reading comprehension. The values indicate negative significant associations between the use of technology and Reading Comprehension (P= -.055, Sig=.706) and Reading Fluency (P= -.018, Sig= .902), which may imply that the use of technology at home is not significantly associated with their children's reading skills in terms of reading fluency and comprehension.

Moreover, there was a significant association between the use of reading materials at home and the reading comprehension (P= .297, Sig=3.36). This study confirms with Carter (2010) who articulated that exposing ones child in different reading materials would help the child develop his/her reading comprehension skills. However, use of reading materials is not significantly associated with Reading Fluency (P=143, Sig=323).

This affirms Gillaco's (2014) study who said that pupils need to be exposed more in different instructional and reading materials as well as the educational technology to uplift the performance of the pupils in reading and to develop their confidence in reading independently. The pupils must be exposed to varied techniques, strategies, exercises in executing reading activities for them to be able to achieve the highest level of reading according to standards set by the Department of Education.

There was no significantly negative association found between the proximal factors specifically the attitude of the parents towards

comprehension skills ($P=.071$, $Sig= 0.622$) and reading fluency ($P=0.001$, $Sig=0.996$). On the other hand, literacy activities practiced by the family at home were found to have a no significant association with the pupils reading fluency ($P= -0.019$, $Sig=0.898$) and comprehension skills ($P=0.095$, $Sig=0.512$).

Table 10 Result of the Test of Relationship between the Pupils’ Home Literacy Environment and their Reading Skills

Reading Skills	Measures	CONTEXTUAL FACTORS		PROXIMAL FACTORS	
		Technology	Reading Materials	Attitude	Literacy
Comprehension	Pearson Correlation	-.055	.297*	.071	.095
	Sig. (2-tailed)	.706	.036	.622	.512
Reading Fluency	Pearson Correlation	-.018	.143	.001	-.019
	Sig. (2-tailed)	.902	.323	.996	.898

*significant at 0.05 level

The data further imply that the readings skills of the pupils cannot be only attributed to the contextual and proximal factors which are basically the parents, but, along with the teachers. Parent-teacher collaboration was very much needed to develop the reading skills of the child knowing that they spent more of their time at school.

SUMMARY, CONCLUSION AND ECOMMENDATIONS

The study determined the association between the contextual and proximal factors and reading skills. Contextual factors have the following components; use of reading materials at home and use of technology at home. Attitude of the parents towards reading and literacy activities at home were the components of proximal factors. On the other hand, reading skills were measured in terms of the following skills; reading fluency which composes of Speed, Rate and Accuracy and reading comprehension which makes up of recalling details and identifying cause and effect. The participants were fifty (50) grade 4 pupils and their parents of public elementary school in the division of El Salvador City for SY 2021-2022.

The data were obtained using a researcher-made instrument and a standardized instrument of the Department of Education. The

data were analyzed and interpreted using a Pearson's R correlation.

FINDINGS OF THE STUDY

The following are the finding of the study presented according to the problems posed in the earlier chapter.

1. The Grade 4 pupils and their families sometimes used the contextual factors such as technology and different reading materials available at home.
2. Parents manifest a neutral attitude towards reading; however they often practice literacy activities at home.
3. The Grade 4 pupils were slow readers in terms of speed, their reading fluency in terms of rate per minute was on the frustration level and they were instructional readers in relations to reading accuracy.
4. In terms of the participants' comprehension skills, pupils were instructional readers.
5. Contextual factor which includes the use of technology and proximal factors such as parents' attitude towards reading and the literacy activities at home were not significantly associated with their reading skills.
6. The use of different reading materials which was a contextual factor was significantly associated with reading comprehension but not with their reading fluency.

Conclusion

Findings of the study underscore the importance of constant use of reading materials at home to pupils' reading comprehension. However, the use of technology and the proximal factors do not necessarily affect the development of the pupils' reading comprehension maybe because family does not have enough educational technology to support the reading development of their child. On the other hand, proximal factors are not significantly associated with their reading skills. It is because parents must manifest the best attitude towards reading to highly encourage their child to read and practice reading that can help develop their reading skills. Thus, parent-teacher collaboration is very much needed to support the development of pupils' reading skill.

Recommendations

Based on the findings and conclusions of the study, the researcher recommends the following:

1. School administrators may strengthen the home and school partnership through constant communication, regular follow

up on their child's development at school and holding different seminars that can guide them in helping their children to have a well-developed reading skills;

2. Parents may develop a conducive literacy environment and practice a favorable attitude towards reading to encourage and support their child's reading development.
3. Teachers must work hand-and hand with his/her pupils' parents to develop their reading skills. Strong collaboration of the parents and teacher is very much needed for the child to have a strong foundation of learning.
4. Further researchers consider other components of the contextual factors in terms of the use of technology and reading materials at home and proximal factors which comprises the parents' attitude towards reading and literacy activities at home in relation to pupils' reading skills.

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The Use of Feedback Network (FeedNet) Strategy and RoBenj Technique as Interventions to Aid Low Performing GAS Students in Solving Implicit Differentiation Problems in Times of Pandemic

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ABSTRACT

Calculus is commonly considered a difficult subject. Based on the Division Monitoring, Evaluation, and Assessment (DMEA) report SY 2020-2021, solving implicit differentiation (ID) problems appeared as the least mastered competency in Basic Calculus among the general academic strand students. The complexity of the solution and the lengthy process was the common problems that contributed to students' difficulty in learning the topic.

In this study, the researcher utilized the "RoBenj Technique" and the "FeedNet Strategy" as interventions to aid the low-performing students in the topic. The RoBenj Technique is a formula presented by two former STEM students of the same school who discovered it from a usual observation. Moreover, the Feedback Network (FeedNet) Strategy, is an additional intervention presented by the teacher in discussing advanced mathematical concepts embedded in the RoBenj Formula. This research employed a quasi-experimental research design. Ten (10) respondents were selected through purposive sampling by getting the lowest-performing students in the grade 12 general academic class SY 2020-2021. The participants were exposed to one month of intervention, took a post-test, and were analyzed using descriptive and inferential statistics. Students' performance in the post-test using the two methods was recorded in terms of their accuracy and efficiency whereas test scores are compared statistically using Wilcoxon Sign Rank Test.

The result showed that as the level of difficulty increased, the accuracy rate of the students decreased using the conventional method. However, students retained the same high percentage of accuracy using the RoBenj Technique. Moreover, the presented intervention provided an efficient way of solving the implicit differentiation problems in terms of reducing the computational time involved. There was also a significant difference between the students' test scores in solving ID problems favoring the RoBenj Formula with a greater mean score obtained. In general, students also provided positive feedback on the use of the presented interventions. This shows that the use of the RoBenj

Formula and the FeedNet Strategy can be an effective intervention in aiding students' difficulty in learning implicit differentiation.

Keywords: FeedNet Strategy, Implicit Differentiation, RoBenj Technique

Introduction

Calculus is commonly considered as a difficult subject. The concepts of derivative and ideas related to it are just some of the topics students were struggling over the years. However, some derivative topics have not been examined as thoroughly as others. Implicit differentiation, a technique that allows us to differentiate equations that are not explicit in form, is one such topic. In the study conducted (Chu, 2019), findings suggest that implicit differentiation is very challenging for students. Student difficulties with implicit differentiation appeared to be influenced by what they knew about function and derivative. Another study (Kandeel, 2021), determined the two (2) common errors of learners in solving implicit differentiation, namely Algebra Errors (AE) and Calculus Errors (CE). Algebra Errors appeared when learners isolated the common factor, collected similar terms, simplified Algebra fractions, multiplied Algebra terms, dealt with exponentials and roots functions, and found y^{\wedge}' , and Calculus Errors that appeared when learners applied the Chain rule, applied a multiplication rule, found the derivative of any constant, and differentiated functions.

Students' difficulty in solving implicit differentiation problems is true for quite a number of GAS students in one of the Senior High Schools in El Salvador City Division. In fact, in the item analysis conducted in SY 2020-2021, solving implicit differentiation appeared as one of the least mastered skills by the students during the first semester topics of Basic Calculus. When a focused-group discussion was conducted among the select GAS students and asked their difficulties about the topic, the researcher found out that there are two common problems associated with this competency namely the complexity of the solution and the lengthy process involved which resulted in poor performances of students during the major examinations and quizzes.

In this study, the researcher integrated the "RoBenj Technique" as one intervention to aid students' difficulty in solving implicit differentiation problems in Basic Calculus. The technique is named after two (2) former GAS students of the same school who accidentally discovered the formula based from a simple observation. When the students presented

the technique to the teacher, the teacher was shocked because the idea is working yet, he is not familiar with it. The teacher who happened to be the researcher, made a research about the idea if it already existed. Three (3) professors in the college were asked about the idea with one (1) emeritus. All of them were also not familiar with the idea yet one of them tried to prove if it is indeed working as an identity or a conditional equation. Thus, this research is conducted to explore the content of the RoBenj Technique and determine how it can address the problems of low-performing students in solving implicit differentiation problems in basic calculus. This is consistent with the concepts of discovery learning in which students construct their own knowledge for themselves (also known as a constructivist approach).

Aside from the previously mentioned intervention, the researcher also introduced and developed the Feedback Network Strategy to determine and correct students' misconceptions in solving implicit differentiation problems using RoBenj Technique during the one-month online class intervention. This strategy works on the results of Rakoczy, Pinger, Hochweber, Klieme, Schütze, & Besser (2019) that Feedback in a formative assessment (FA) intervention is perceived as useful and Wanner & Palm (2018) where students tend to regard formative self and peer-assessment as beneficial for gaining more insights about the assessment process and for improving their own work.

In general, this research is conducted to see if the use of FeedNet Strategy and RoBenj technique are effective interventions to address the problems of low-performing students in terms of complexity and the lengthy process involved in solving implicit differentiation problems.

Proposed Innovation, Intervention, and Strategy

In this study there are two main problems the researcher would like to address which include the complexity and the lengthy process involved in solving implicit differentiation problems. To address both these problems, the teacher integrated the Feedback Network Strategy and the RoBenj Technique in the online discussions with the said topic.

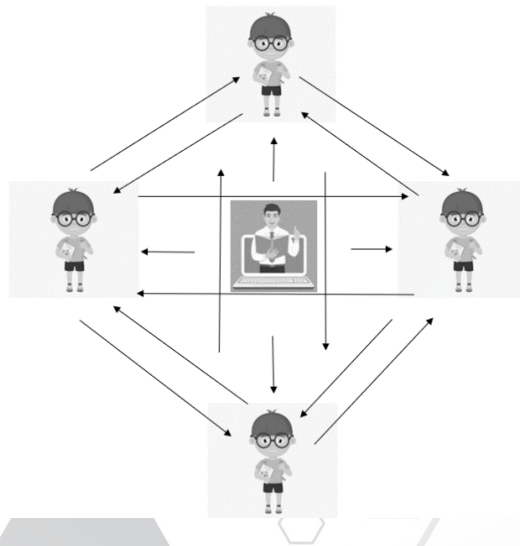
The RoBenj Technique is a formula presented by two former STEM students. Higher derivatives concepts such as partial derivatives are being embedded in the formula. These topics are discussed only in college but the two students accidentally saw the underlying principles and concepts and thus able to form the RoBenj Technique merely from simple observation without mathematical proof. The RoBenj Formula is shown below.

RoBenj Technique

Let $f(x, y) = c$, where c is a real number. Then,

$$\frac{dy}{dx} = \frac{-\frac{\partial}{\partial x}[f(x, y)]}{\frac{\partial}{\partial y}[f(x, y)]}$$

Aside from the previously mentioned intervention, the researcher also introduced and developed the Feedback Network Strategy to determine and correct students' misconceptions in solving implicit differentiation problems using the RoBenj Technique during the one-month online class intervention. This strategy works on the results of Rakoczy et al., (2019) that Feedback in a formative assessment (FA) intervention is perceived as useful and Wanner & Palm (2018) where students tend to regard formative self and peer-assessment as beneficial for gaining more insights about the assessment process and for improving their own work. In the intervention process, half a month is allotted to do remediation on the concepts of implicit differentiation using the conventional method while another half a month is allotted to teach the same concepts using RoBenj Technique and the Feedback Network Strategy wherein after the teacher presented the lesson, a set of tasks is given for them to solve. The feedback network strategy framework is presented in the diagram below.



Feedback Network Strategy Framework

In this framework, after the teacher discussed the process of RoBenj Technique in solving implicit differentiation problems with the students, the teacher will present a set of tasks for students to solve. In each task, the teacher will call a representative to solve the given problem using the same process. Each student is given the chance to provide his/her feedback on his/her classmates' computations, forming a network of feedback. Through the feedback of students, the teacher is able to identify their misconceptions of the topic and correct them instantly.

Research Questions

This action research employing a quasi-experimental research design is conducted to see if the use of the FeedNet Strategy and RoBenj Technique are effective interventions to address the problems of low-performing students in terms of complexity and the lengthy process involved in solving implicit differentiation problems. Moreover, this research would seek to answer the following research questions below:

1. What is the performance of the students in solving implicit differentiation problems using the conventional method and the RoBenj Technique with FeedNet Strategy in terms of the following:
 - a) Accuracy
 - b) Efficiency
2. Is there a significant difference between the test scores obtained by the students using the conventional method and the RoBenj Technique?
3. What are students' perceptions on the use of the RoBenj Technique in solving implicit differentiation problems?

Research Methodology

Research Design

This action research employed a quasi-experimental research design, particularly the pretest-posttest design wherein students are given the pretest to determine purposely the top 10 low-performing students who were then the participants of the study.

Participants

The participants of this study were purposely selected based on the bottom 10 low-performing GAS students in Basic Calculus for the first semester of SY 2021-2022 based on the pre-test results conducted with the topic.

Data Gathering Method

A pretest was conducted to determine the participants of the study. After identifying the participants, the researcher gathered and oriented them regarding the research activity. As part of the ethical consideration, parents' consent was required from each participant. After this, they were exposed to a month of intervention. Half of the month was utilized to conduct remediation of the concept using the conventional method while the other half was utilized to conduct online classes integrating the RoBenj Technique and FeedNet Strategy in solving implicit differentiation problems. After the intervention, students took a post-test for analysis subject for the evaluation of the intervention. One instrument used in this study is the researcher self-made exam on the topic of implicit differentiation. The exam is composed of three (3) items with varying levels of difficulty from easy, average, and difficult. These items were selected from the learning resource of DepEd which are in line with the most essential learning competencies. Another instrument used is a survey questionnaire to gather students' perceptions on the use of the interventions.

Data Analysis Techniques

The data gathered from this research was analyzed quantitatively with qualitative support. Descriptive statistics was used to determine the performance of the students in solving ID problems using the conventional method and the RoBenj Technique in terms of accuracy and efficiency. The same type of statistics is used in determining students' perceptions on the use of the intervention. Inferential statistics particularly the Wilcoxon Sign Rank Test was used to determine if there is a statistical difference between the test scores obtained by the students using the two methods.

Results and Findings

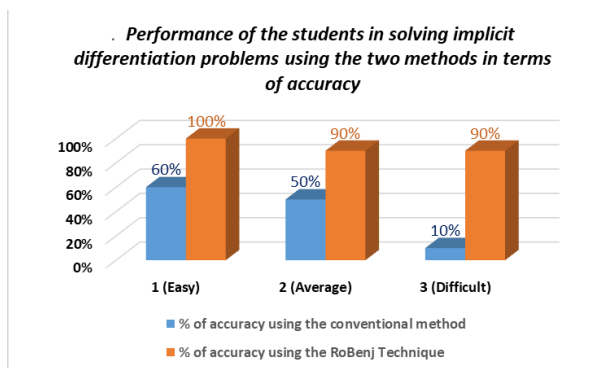


Figure 1. Performance of the students in solving implicit differentiation problems using the two methods in terms of accuracy

As presented, as the level of problem difficulty increased, the percentage of students' accuracy decreased using the conventional method. However, students retained the same high percentage of accuracy in solving problems using the RoBenj Technique with the FeedNet Strategy.

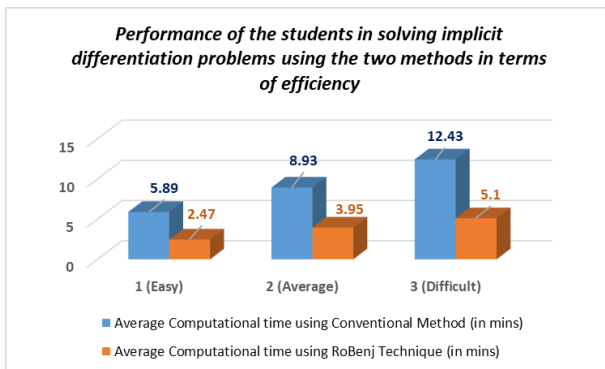


Figure 2. Performance of the students in solving implicit differentiation problems using the two methods in terms of efficiency

In general, it is observed that the average computational time of the students using the conventional method is decreased by more or less half of its value regardless of the level of difficulty to get the average computational time of the students using the RoBenj Technique with FeedNet Strategy. This clearly shows that the use of the RoBenj Technique and the FeedNet Strategy can provide an efficient way of solving implicit differentiation problems in basic calculus. This is consistent with the results of Chen, Breslow, & DeBoer (2018) who studied students' interactions with immediate feedback and how those interactions influence their learning. Results showed that higher engagement of students with feedback tool is positively correlated to their performance.

Methods of Solving	N	Mean	SD	Wilcoxon Statistic	P-Value	Decision
Conventional Method	10	7.2	3.01	0.00	0.014	Reject Ho
RoBenj Technique	10	14.1	2.37			

Table 1. Testing of significant differences between the test scores of students using the two methods

The table above shows the non-parametric Wilcoxon Sign Rank Test between the test scores obtained by the students using the two methods. Note that the mean score obtained using the RoBenj Formula is greater than the scores they obtained using the conventional method.

This difference is statistically significant with p-value equal to 0.014 (less than 0.05). Implying that RoBenj Formula has better accuracy and efficiency than the conventional method.

Statements	Mean	SD
The RoBenj technique is easy to understand and apply.	4.52	1.72
The RoBenj technique provides an efficient way to solve implicit differentiation problems.	4.76	1.64
The RoBenj technique is helpful in understanding the topic on implicit differentiation.	4.52	1.32
I can use my knowledge in the RoBenj technique to check my solution using the conventional method.	4.21	1.56
The FeedNet Strategy allowed me to value and share my ideas in class.	4.47	1.79
The FeedNet Strategy allowed me to correct my misconceptions about the topic.	4.59	1.86
The feedbacks I received from my classmates and teachers are useful in understanding the topic.	4.62	1.98
I am confused with derivatives and partial derivatives concepts.	2.34	1.81
I needed more time in understanding the RoBenj Technique.	2.21	1.32

Legend: 1-1.80=Strongly Disagree; 1.81-2.60=Disagree; 2.61-3.40=Neutral; 3.41-4.20=Agree; 4.21-5.00=Strongly Agree

Table 4. Students' perceptions on the use of the RoBenj Technique and Feedback Network Strategy in solving implicit differentiation problems

As observed from the table, students had a very high level of agreement (Mean=4.76, SD=1.64) to the statement "RoBenj Technique provides an efficient way to solve implicit differentiation problems". This is consistent with the results presented above on the computational time elapsed between the two methods. Meanwhile, students have also a very high level of agreement (Mean=4.62, SD=1.98) to the statement "The feedback I received from my classmates and teachers are useful in understanding the topic". This result is consistent with the results of Wanner & Palm (2018) where students tend to regard formative self and peer-assessment as beneficial for gaining more insights about the assessment process and for improving their own work. Lastly, students have a low

level of agreement (Mean=2.21, SD=1.32) to the statement “I needed more time in understanding the RoBenj Technique”. This suggests that the intervention period may just be enough for them. Given the results presented above, it is very clear that students have a positive overall perception on the use of RoBenj Formula and FeedNet Strategy in general.

Conclusion and Implications

As a synthesis, results showed that the use of the RoBenj Technique with FeedNet Strategy can be an effective intervention in improving students' accuracy, efficiency, and scores in solving implicit differentiation problems. It is also observed from the results that students have a positive overall perception on the use of RoBenj Formula and FeedNet Strategy in general.

Recommendations

As a result, the researcher would like to present the following recommendations:

For future researchers.

- Subject the pre-test/post-test to reliability and validity testing.
- Conduct more research to fully ascertain the effectiveness of the intervention.

For the teachers.

- To value students' ideas in the class. They should encourage students to “think outside the box” and do discovery learning.

For the students.

- To continue learning even during these difficult times in our lives

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Gamified Learning Environment as an Innovative Bichronous Online Learning Assessment through Quizzizz in Teaching Research: Phase One

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ABSTRACT

Learning outcomes assessment is an integral part of learning as an indicator of success in the learning process. Assessment of learning must be conducted effectively in order to determine the level of student success. At the height of the CoVID 19 pandemic, the school implemented the bichronous online learning strategy for learners in the research class where teachers carefully planned lessons including assessments that will best suit to the learners' needs and interests. This study aims to determine the use of Quizzizz as an innovative assessment tool in a gamified learning environment during the pandemic. The researcher employed the descriptive qualitative method through observations and documentation of the Research teacher's classroom discussion, and focused-group discussions (FGDs) with pre-service teachers, in-service teachers, and learners. Results of this study suggest that the use of Quizzizz in a gamified learning environment is an effective and innovative assessment tool. Quizzizz as an assessment medium during online learning can provide an alternative for teachers to conduct distance assessments during pandemic and can be continuously improved in the post-pandemic era.

Keywords: Gamified Learning Environment, Bichronous online learning, Quizzizz, Learning Outcome assessment

Introduction

The CoVID 19 pandemic posed number of education challenges which were undeniably felt around the globe. With the surging number of infected cases in 2020, schools were forced to implement different learning delivery modalities giving teachers the opportunity to go an extra mile in preparing and delivering their lessons. Teachers were able to create instructional materials, bearing in mind the latest trend to match with learner's best interests, habits, and needs as digital natives. Hence, the Research class of the Special Science Class (SSC) in Cogon National

High School implemented the bichronous learning setup where learners were given the lessons through synchronous and asynchronous learning. Today's advancements in digital platforms have made it easier for teachers and learners to engage in online learning. However, teachers must also support the success of online learning by designing learning from the planning, implementation, and evaluation stages [1]. When planning, the teacher must be able to organize more manageable distance learning activities. Teachers are expected to create engaging instructional materials for their students. The term "Instructional Materials" or IMs refers to a collection of resources created by the teacher, both written and unwritten, in order to foster a positive teaching and learning environment. One study offered actual evidence to support the hypothesis that these digital-savvy learners learn most effectively when they are presented with relevant and appropriate teaching strategies based on their achievement level during the pilot testing. As seen by the results of the FGDs, learners were able to select a beneficial medium for a teacher to use in her teaching technique – vlogging [2].

At the implementation stage of online learning, the teacher must also be able to facilitate learners' access to material and establish an engaging learning environment. Teachers can leverage the Google classroom and Meet as a virtual classroom during online learning. Combining synchronous and asynchronous learning processes, or the bichronous learning setup, enables the smooth implementation online learning.

Finally, the teacher must be able to assess learning. This online learning evaluation activity must also be capable of determining the rate of success of online learning implementation. Teachers can use a variety of assessment tools to help with learning evaluation success. There are currently a variety of technical advancements available as medium for carrying out the student assessment procedure. Quizizz is one of the e-learning-based assessment tools. Quizizz also gives data and statistics on student performance which can be obtained in the form of an Excel file. Teachers and even lecturers can keep track of their learners' responses real-time. Quizizz enables teachers to conduct evaluations without regard for location constraints and good appearance with flexible time.

Quizizz is a free educational game-based app that introduces multiplayer activities to the classroom and makes classroom preparation more involved and enjoyable. Through the use of the Quizizz game, learners can complete exercises in class utilizing their mobile devices. Unlike other educational apps, Game Quizizz incorporates game

elements like avatars, themes, memes, and fun music into the learning process. Quizizz also allows learners to compete with one another, which encourages them to learn and improves learning results. Learners take quizzes in class at the same time and track their progress on the leaderboard. Teachers can keep an eye on the process and, once the quiz is finished, retrieve the data to assess learners' performance. Quizizz games can boost learners' motivation. Learners that use this application to play and learn have remarked that the Reward and Leaderboard systems improve their motivation. Learners can monitor their progress on the monitor and their smartphone. They can determine which subtopics they lack. Additionally, when combined with a gamification approach to learning, learners have a deeper understanding of the material. Badges instill a sense of importance in learners, and when material is given in a gamified fashion, they can retain it more easily. Competition enables learners to enhance their time management skills and enables them to grasp difficult-to-understand subjects [3].

Prestyadi, et.al. (2021) conducted a study on the Quizizz' effectiveness as an online learning assessment. Quizizz as an online assessment tool during online learning can provide teachers with an alternate method for conducting distance assessments. With a more appealing appearance, the usage of Quizizz as an evaluation medium can be combined with a more engaging quiz display, creating a more enjoyable experience for learners while they work on questions. Additionally, using Quizizz as an assessment medium has a number of other benefits. For example, teachers can use existing Quizizz capabilities by keeping assessment files in a library that can be utilized and enhanced in the future for performing assessments in other classes or areas of study. Noting on these studies' results of Quizizz as an online learning assessment tool on a gamified learning environment, the researcher is interested in conducting further research on its use in her Research class. This study aims to find out descriptively the use of Quizizz as an innovative student assessment tool in a bichronous learning set up during pandemic by assessing learners' pre-test and post-test scores using quizizz and assessing qualitatively learners, pre-service and in-service teachers' perceptions.

II. Method

The researcher employed the descriptive qualitative method in this study. The data collection method was conducted through observations, documentation, and focused-group discussions (FGDs). Learners' behavior towards the use of Quizizz as an assessment medium in the Research class was observed. Documentation is used to determine

the outcomes of learner's work in answering each question item on Quizizz, which is used in the learning evaluation process. Responses on teachers and learners' perspectives on the use of quizizz as a learning assessment tool were elicited through focused-group discussions (FGDs) conducted through LAC session and reflected on the group chats (for teachers).

III. Result and Discussion

A. Gamified Learning Environment with Quizizz

New emerging technologies present tremendous opportunities to reimagine how students learn. One of these innovative technology-assisted teaching strategies is the gamification incorporating game-design elements in non-game contexts [5]. Gamification is also recognized as "using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems [6]." With its first documented implementation in 2008, Brett Terill (2008) mentioned on his blog post that gamification is the act of "taking game mechanics and applying them to other web properties to increase engagement [7]." Additionally, research indicates that distributed practice facilitates the acquisition of new skills or knowledge, suggesting that it is more beneficial to spread learning throughout several days in tiny time intervals than in one extended session [8][9]. Now, there lies the question as to when and how gamification can be used effectively in the learning environment which will be discussed on the basis of the contextualization of this study. Hence as the latter research suggested, the gamified learning environment focuses on the formative assessments using Quizizz.

Quizizz is a game-based educational app that introduces multiplayer activities into the classroom and makes in-class practice enjoyable and interactive. Learners can use Quizizz to complete in-class exercises on their mobile devices. Quizizz, unlike other educational apps, incorporates gaming elements such as avatars, themes, memes, and fun music into the learning experience [10]. Quizizz generates statistical data from quiz outcomes and is extremely adaptable flexible as teachers can set the time limit [11]. Learners take quizzes in class concurrently real-time and track their progress on the leaderboard. To evaluate student performance, teachers can monitor the process and download reports once quizzes are completed. Utilizing this app helps students become more interested and keep their attention.

Quizizz can be used in a variety of ways because it incorporates time management throughout the quiz, which can be customized by the teacher.

The comprehensiveness of the Quizizz application is very beneficial to the success of online learning and can be used at various levels and subjects. Quizizz assists teachers in the delivery of the lessons in a gamified learning environment through gamified tasks.

B. Quizizz as a Formative Assessment Tool

Assessment is a critical component of all learning processes. Assessment of learning outcomes can be carried out in a variety of ways and media by the teacher. In the online bichronous learning process, teachers can assess students using digital-based media. One of the media that teachers can use to conduct assessment activities is through the use of platforms or programs that assist the conduct of assessment activities.

One platform that teachers can use to conduct assessment activities is one that incorporates gamification, such as Quizizz, which enables teachers to conduct gamified tasks in the form of quizzes. As supported by research, distributed practice facilitates the acquisition of new skills or knowledge, implying that it is more beneficial to spread learning in small time intervals as learners often binge play when given in one long session. Hence, Quizizz should be given as formative assessments in the delivery of the lesson.

Quizizz provides statistical data based on the results of student quizzes, which can be downloaded as an Excel spreadsheet. With this real-time tracking and easy access of scores, teachers will be having more convenient time in monitoring learners' progress in the bichronous learning set-up. This app will be able to assist teachers in conducting assessments in the form of quizzes, making the assessment process more enjoyable for students.

In this study, Quizizz is used for formative assessment of 37 learners in Cogon National High School's Research class of the Special Science Class. All learners have internet access and at least one mobile device with an internet connection.

On the lesson Observation vs Inference, learners are assessed using the Quizizz platform to assess their gained knowledge of the topic. The first step of the teacher is to prepare the quiz to be implemented

using the Quizizz platform. Next is to make questions on the 'Create' button from the homepage.

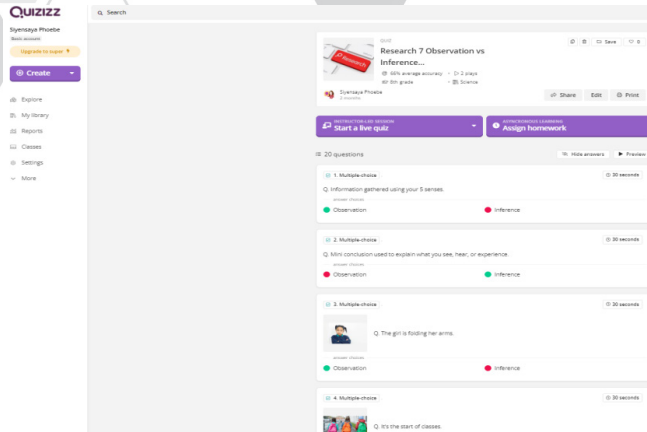


Figure 1. Lists of questions for observation vs inference lesson

The list of questions for the Observation vs Inference lesson are shown in Figure 5. The next step would be sending the game invites by sending the codes to learners through group chats or another messaging/ chatting platform in Figure 6.

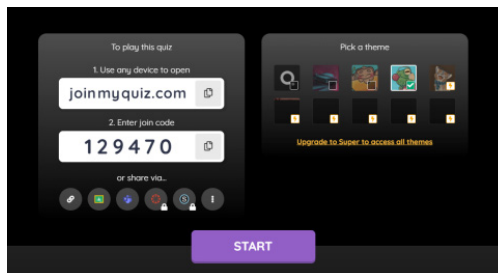


Figure 2. Sending game invites through a live game on quizizz.

Results on Quizizz can be downloaded in an Excel spreadsheet (.xls). Table 1 below shows the results of learners' answers on their Observation vs Inference Evaluation through Quizizz.

No.	Level of accuracy of learners' success in answering questions correctly	Percentage (%)
1	Question 1	87
2	Question 2	81
3	Question 3	81
4	Question 4	75
5	Question 5	68
6	Question 6	75
7	Question 7	51
8	Question 8	62
9	Question 9	75
10	Question 10	75
11	Question 11	93
12	Question 12	65
13	Question 13	56
14	Question 14	61
15	Question 15	63
16	Question 16	67
17	Question 17	61
18	Question 18	63
19	Question 19	54
20	Question 20	52
Average		68
Highest		93
Lowest		51

In the bichronous learning setup, a teacher will have the freedom to choose either to conduct the assessments by synchronous or asynchronous method as planned on her lesson exemplars. For this study, the teacher gave the game invites during the lesson in a timed manner through live games as seen in Figure 6. The last evaluation part of the lesson can be done asynchronous to allow learners have ample time on reflecting their lessons in a flexible manner with a set deadline. This approach will teach learners on the value of time management and responsibility on their work, making them motivated and self-directed [3]. Using Quizizz on a gamified learning environment as an assessment tool in a bichronous learning setup is an innovative approach that can help teachers administer online assessments more efficiently by providing learners a positive influence on learners' interest to keep on answering the questions [12]. Quizizz offers a unique look in the form of quizzes, which are accompanied with avatars and other more relaxed elements, allowing the evaluation process to be carried out in a pleasant manner for students to enjoy themselves while playing.

As reviewed and evaluated by the School's Learning Resources Management and Development System (SLRMDS) Committee using the template for evaluation rating sheet for non-print materials, the Quizizz

material earned 36 points out of 40 for the content quality. Since the questions are not given in order and differ from one learner to another, the content cannot be possibly organized in a logical manner. However, the Research content excels in other criteria, proving its accurateness and alignment to the DepEd competencies free from culture and gender bias and discrimination. For its instructional quality, 38 points out of 40 were scored for the material. One drawback is the target users (learners) cannot control the rate and sequence or order of the given questions because it is time-bounded. On the other hand, other criteria for its instructional quality make a perfect score, excelling all in challenging and creativity stimulation. Lastly, its technical quality garnered the highest score among the three as it earned the perfect score of 59 points verifying its visuals and audio appropriateness and relevance to the learners.

In the bichronous learning setup, a teacher will have the freedom to choose either to conduct the assessments by synchronous or asynchronous method as planned on her lesson exemplars. For this study, the teacher gave the game invites during the lesson in a timed manner through live games as seen in Figure 6. The last evaluation part of the lesson can be done asynchronous to allow learners have ample time on reflecting their lessons in a flexible manner with a set deadline. This approach will teach learners on the value of time management and responsibility on their work, making them motivated and self-directed [3]. Using Quizizz on a gamified learning environment as an assessment tool in a bichronous learning setup is an innovative approach that can help teachers administer online assessments more efficiently by providing learners a positive influence on learners' interest to keep on answering the questions [12]. Quizizz offers a unique look in the form of quizzes, which are accompanied with avatars and other more relaxed elements, allowing the evaluation process to be carried out in a pleasant manner for students to enjoy themselves while playing.

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C. Focused-Group Discussions (FGDs)

The focused-group discussions were conducted through formal and informal interviews. Informal interviews were sent through group chats and/or private messaging.

For pre-service teachers (PT), 100% of the teachers claimed that Quizziz brought convenience to their assessments. Here is one comprehensive response out of all responses on the use of Quizziz in online classes.

“As a pre-service teacher, I like using quizziz when evaluating students' learning because it is very easy and you can manipulate a lot of things like time required to answer per question, deadline of the quiz, and the background of the quiz. In terms of answering quizzes in quizziz, the UI is very user friendly and the design is very colorful which captures the attention of both the students and the teacher itself. You can also add explanation to the answer in every item and monitor the students' performance as well.” (PT1, FGD 5/9/22, 9:00AM)

Also, fifty-five percent (55%) of in-service teachers (IT) have utilized Quizziz in their class and have also given their different responses on verbatim with their experience with Quizziz. Collectively, here are two of the most responses of in-service teachers.

“Quizziz made my life easier especially in giving formative assessment to my students and getting their scores in real time..” (IT1, FGD 5/10/22, 4:30PM)

“Students were motivated to answer since it gives them the vibe of playing while answering. So instead of feeling nervous while answering the exam or quiz, they actually having the feeling of fun and excitement because quizziz offers help lines that will help them to answer or regain their scores.” (IT2, FGD 5/10/22, 5:00PM)

And lastly, here are the honest responses from the learners (L) with some in vernacular and with emojis.

“What I’ve experienced on the quizz app was very interesting because I didn’t know that it was valid for school purposes. It was really... How should I say this, ahh very splendid because it was really easy to use and you can learn stuffs from and my favorite part is that it has power ups that is all.” (L1, FGD 4/12/22, 2:42PM)

“Quizizz is effective in my experience, but there are times when it has a technical error, such as when the choices cannot be clicked or the game will be paused, or when the gifts or powerups are up, the game will be paused and the only way to reconnect is to click pause and resume. sometimes, time is making me panic, but overall it is a great app because it has memes to show, leader boards, and can be played with friends or classmates.” (L2, FGD 4/12/22, 3:04PM)

“Ang sa akona pud ma’am kay kulba jud ni siya samot nag wala pa koy ma answer nya hapit na ang oras maka rattle kaayo ma’am, pero bisag ing-ana ma enjoy japun nako labi na tong mga memes na mo relate jud kaayo sa akona ma’am hehe, mao ra ni ma’am thank you. – For me, the time makes me feels nervous that it sometimes made me panic. But even if it is nerve-wrecking, I still enjoy doing the task especially with memes.” (L3, FGD 4/12/22, 1:51PM)

“Ang experience na ko ma’am kay maka panic gyud ni siya labi na ug hapit na ang time, pero enjoy japon siya ma’am kay tsada ang mga background pictures niya tapos mahatagan pa gyud ko ug chance gamit power ups – My Quizizz experience puts me in panic especially with the time but I still find it enjoyable playing with background pictures and chances through power ups.” (L4, FGD 4/12/22, 3:09PM)

“Base sakong na experience sa quizziz kanang dali ra sya gamiton na app. And chada sya Kay naa syay Power up. And ang timer makakulba usahay. Enjoying Kay nga app Kay pwede ka makig connect sa imong classmates Mao rana ma’am. Thank you – I find quizziz manageable. Its powerups are amazing and the time makes me tense sometimes. It is also enjoyable as I can also connect with my classmates while learning. Thank you.” (L5, FGD 04/12/22, 2:04PM)

The focused group discussions (FGDs) conducted to pre-service and in-service teachers, and learners provide a comprehensive review of their direct experience with the app. Although numbers can have a lot to tell based on the review and evaluation by the School LRMSD committee, it is further strengthened by the reviews of the stakeholders. Seventy-

seven percent (77%) of the whole stakeholder population had direct experience with Quizziz and one hundred percent (100%) of those who had the experience claimed of the effectiveness and relevance of the Quizziz mentioning more on the aspects of instructional, and particularly technical quality.

IV. Conclusions

Based on the FGDs and as discussed in this study conducted at the height of the pandemic with the Research class teacher implementing the bichronous learning setup, it can be concluded and established that the use of Quizziz in a gamified learning environment is an effective and innovative assessment tool during pandemic and can be continuously improved in the post-pandemic era. Quizziz as an assessment tool during online learning can provide an alternative for teachers to conduct distance assessments. With a more interactive quiz display for a more appealing appearance, Quizziz provides learners a fun-filled experience while working on questions. Quizziz can also be used to conduct assessments to other subjects and topics employing a gamified learning environment.

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Project C.E.L: Implication on Students' Mathematics Performance in the New Normal

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I. Rationale

The Covid-19 pandemic has brought an unprecedented global concern and health emergencies. It's an atrocious crisis that caused people to change perspective of how it perceives the world. This predicament became a dilemma not only to the health sectors but also to the education sectors. Hence, to bridge education, the paradigm shifted to a "New Normal". Philippine education system adapted the blended learning modality and capacitated school heads and teachers by providing avenues to become equipped and maintain effectiveness in spite of the sudden change in the learning delivery platform.

In the scheme of the "new normal", educators and learners are compelled to go through a drastic change. Since students are accustomed to face-to-face interaction, many are having difficulty coping. Distance learning surfaced several difficulties to students--- it increased the level of distraction, limit social interaction, surged challenges in resources and technology, and increased difficulty to stay in contact with teachers which interfered with the success in learning (Cao et. al, 2020). Since distance learning requires constant and maintained level of interaction between the teacher and students, Tarek (2016) emphasized that teachers must consider learning problems that students encounter and thoroughly take into account their individual needs and learning styles. Hence, teachers must be creative and resourceful in addressing the needs of the learners to motivate them to actively participate and engage into a deeper learning so that the desired learning goals are met (Tuscano, 2020).

At this time of the global pandemic, all the students are at home and continue their studies through distance learning. However, despite the efforts to bridge education, there are still many challenges that students encounter. In Hinigdaan National High School's context, the aforementioned challenges in the new normal platform are also prevalently encountered. After the first quarter of the School Year, it has been observed that learners' performance falls short in all learning areas, but among the subjects, Mathematics is utmost challenged. To address this observed performance, the school launched an intervention called "Project C.E.L" (Project Communicate and Encourage to Learn). The goal of the project is to provide the learners, specifically the grade 7, with cellphones to facilitate communication between the students and the

teachers. Grade 7 learners are focused in this project since they are the ones most compelled of all the levels in this drastic change--- they are still in the phase of transitioning from primary to secondary education, and they encountered it in a new platform.

The situation in the school in light of the new normal urged the researchers to conduct a study on the implication of Project C.E.L in the students' performance amidst the country's current educational system.

II. Research Questions

The researchers' area of concern is to investigate if Project C.E.L explain the implication of Students' Mathematical Performance among the Grade 7 Students of Hinigdaan National High School for the School Year 2020-2021.

Specifically, the study seeks to answer the following questions:

1. What is the students' performance in Mathematics according to non-inclusion and inclusion in Project C.E.L (free and controlled group)?
2. Is there a significant difference between the students' performance in mathematics between the free and controlled group per quarter?

III. Related Literature

Various related studies and literature included in this study, both foreign and local, has something to do with the relationship between the variables to a greater extent. The researchers' study focused on the implication of Project C.E.L to students' mathematics performance. Salient areas relating to students' performance in the new normal are considered to understand the challenges and difficulties that learners encounter in dealing with the platform of the new normal.

Philippine Educational in the New Normal

Before the advent of the pandemic, few research have been known to exist in relation to COVID-19 from the medical field and other related fields of interest. (Abdulmir & Hafidh, 2020). Not until thousands to millions of cases worldwide has been reported and the surge of problems it brought to many sectors in every nation that this virus had come to the interest of many. What is COVID-19? COVID-19 stands for coronavirus disease and even referred to as the 2019 novel coronavirus or '2019-NCOV' (Bender, 2020). According to the Department of Health, this virus can be transmitted easily from person to person via droplets, contact, and fomites. It can easily spread when one individual talks, sneezes, or coughs producing 'droplets' of saliva containing the COVID-19 virus. Due to this, nobody is immune to this new infectious disease once it hits the body, so all ages are susceptible to its devastating effect. (Meng,

Hua, & Bian, 2020).

Because of the vulnerability even in school settings, many educational institutions worldwide have to implement closure of schools to suppress the spread of the disease, and this did not spare the Philippines. The COVID-19 pandemic brought challenges and massive impact in the education system in our country. With this unprecedented decision, what would the future holds for our learners?

In the midst of the crisis, the call remains the same that education must continue. The Department of Education has aligned several modalities for the children to continue learning despite the threat of Covid 19. Pursuant to DepEd Memorandum No. 7, series of 2020, the agency will adopt the Basic Education Learning Continuity Plan as an alternative delivery mode. Schools shall follow the suggested learning modalities: distance learning, modular- printed instruction, online learning, and radio-based learning.

To provide education continuity and ensure health and welfare of learners and teachers amid the pandemic, Hinigdaan National High School follows the blended learning modality approach. The school was able to demonstrate properly the different modalities despite the limited time of preparation and the challenges brought by the health crisis. The school started the conduct of dry run of various learning modalities that will be utilized in lieu of the traditional face-to-face learning as particularized in the School Based Learning Continuity Plan. All learning modalities offered by the school were properly disseminated to the parents thru various means.

The printed modular instruction contains a self-learning module that includes a complete and thorough learner engagement in the task anchored on the Most Essential Learning Competencies which were carefully deemed essential to be learned. The printed and digital copies of SLMs are K to 12 compliant. They are developed as an Alternative Delivery Mode Learning Resources that were quality-assured to ensure MELCs are achieved at a given period of time. They are developed following the Alternative Delivery Mode Learning Resources Standards. The SLMs have passed quality-assurance. The materials are downloaded, segregated, and distributed to the school heads by the LRMS EPS in Google Drive, CDs or flash drives, and shall provide Technical Assistance in its utilization. Teachers will then print and prepare the modules for the distribution to the learners. Self-Learning Modules or SLMs may also be retrieved in the same manner as it was distributed.

The school also have the Radio-Based Instruction that provides learning opportunities for listeners who are in their homes along with the Television-Based Instruction. It will enable parents/guardians to guide their children in the learning journey. Set of teachers from different grade level were assigned and scheduled to broadcast lessons on TV and in

the radio.

In sum, the self-learning modules prepared by the teachers and the other alternative learning delivery modalities offered by the school are in place to address the needs, situations, and resources of each and every learner and will cover all the bases in ensuring that basic education will be accessible amid the present crisis posed by COVID-19.

Despite the harsh reality of the pandemic we are experiencing right now, we Filipinos have a unique way of finding means to survive and look at it with a different perspective. The Department of Education has been firm on its stand that "Learning must continue". Different learning modalities have been considered and explored making sure that each will be the best fit for student's needs and interests in continuous learning amid the challenges.

Learning in the New Normal

New normal totally has changed the scape of learning and instruction in all educational setting. Department of Education utilized distance learning modality to safeguard the children who are the most vulnerable of the COVID-19 virus. This learning arrangement gave rise to different challenges. Studies conducted early in 2020, internationally and nationally, have shown that teachers were feeling stressed when navigating these changes and were concerned that students' academic and social needs were not being met (Flack, Walker, Bickerstaff, Earle, & Margetts, 2020; Hamilton, Kaufman, & Diliberti, 2020).

Moreover, the sudden shift from face-to-face to online learning platforms also posed challenges to students. Shifting to a distance learning platform requires students to have access to a device, Internet, and physical learning space, and a strong habit of autonomy. For developing countries, intermittent Internet connection, limited resources, and other factors remains a barrier to effective learning (Salac & Kim, 2016). Students from disadvantaged backgrounds are likely to be more at risk of falling behind during remote learning. Results from PISA in 2018 (Thomson, 2020) compared the home learning environments of low and high socioeconomic status (SES) 15-year-olds. While 88% of 15-year-olds reported having a quiet place to study at home, this varied from 78% for low SES to 96% for advantaged students. Similarly, 84% of disadvantaged students reported they had a computer at home to use for schoolwork as compared to 99% for advantaged students. These data did not take into account whether parents and siblings were now working or studying at home, and therefore putting extra strain on students and families to negotiate access to potentially limited devices in the home. Further, parent beliefs and values around the use of technology at home, or students' 'screen time', may add to the complexity of access to devices

IV. Research Methods

This chapter describes methodology of the research study. It comprises the research design, research setting, research respondents, data gathering procedure, data gathering instruments, scoring procedure and the statistical treatment used. In this study, methodologies have been used to examine the implication of Project C.E.L to Students' Mathematics Performance in Hinigdaan National High School in light of the New Normal.

Research Design

The Descriptive Method of research is used in gathering the needed information for this study. According to Best and Kahn (2007), descriptive research is a method of research, which concerns itself with the present phenomena in terms of conditions, practices, beliefs, processes, relationships, or trends invariably. Descriptive research is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. This type of method is not simply amassing and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships. Since this study investigates the implication of Project C.E.L to students' performance in Mathematics, the descriptive research design is best suited.

Research Setting

The study was conducted in Hinigdaan National High School located in Hinigdaan, El Salvador City, Mindanao, Philippines.

Hinigdaan National High School is one of the eight National High Schools of the division of El Salvador City. The school reported Three Hundred Six (306) Junior High School students with One Hundred Sixty-Six (166) male and One Hundred Forty (140) female, exclusive for the School Year 2020-2021.

Respondents and Sampling Procedure

The respondents of this study are the students of Hinigdaan National High School Year 2020-2021. To determine the implication of the Project C.E.L to the learners, the researchers considered a controlled group of respondents. The set of the controlled group were given phones and the free group were not. Both controlled and free group were placed in the same level of instructions and treatment. Forty (40) randomly selected students from Grade 7 were considered in this research--- twenty (20) of which were chosen as the recipient of the Project C.E.L and served as the controlled group of the research and another set of twenty (20) randomly selected students as the free group. These selected students from Grade 7 are considered because they are the representation of

the set who are having most difficulty coping with drastic changes in the phase of transitioning from primary to secondary education and the distance learning modality of the new normal platform.

Data Gathering Procedures

Data gathering preceded a series of phases. Initially, the researchers made a profiling of the students' performance in second to fourth quarter of the School Year 2020-2021 under the implementation of distance learning modality. First quarter was not included because the Project C.E.L and action research has not been conceptualized in this period. Through teachers' assessments and students' initial performance and grades in first quarter, the researchers identified that there are difficulties that some students encountered in the new normal set-up. Hence, the researchers asked a consent from the school's school in-charge, Mr. Richard A. Sabellano, to administer an intervention to address the situation. Upon approval, the researchers identified forty (40) grade 7 students through simple random selection, twenty (20) of which are considered as the recipient of the Project C.E.L and another twenty (20) students are considered as the reference for the free group.

Subsequently, the students were called together with their parents to receive the phones. The researchers explained the objectives of the Project C.E.L and asked the parents' consent to allow their child to be part of the program. Before the respondents participated in the research, each of them filled out an assent form as agreement to give legally valid informed consent to participate in the research. The confidentiality of the data was also elucidated to be kept.

Statistical Instrument/Procedure

In analyzing the necessary data, the researchers used the simple and convenient Descriptive Statistics. This statistical procedure includes tallying of the frequency counts and providing its equivalent percentages in order to arrive at valid and reliable conclusions.

1. Simple Descriptive Statistics such as percentage, frequency, mean and standard deviation was used in this study.

Mean

$$\bar{x} = \frac{\text{sum of the observations}}{\text{sample size}} = \frac{\sum_{i=1}^n \bar{x}_1}{n}$$

Standard Deviation

$$s = \sqrt{\frac{\sum_{i=1}^n (\bar{x}_1 - \bar{x})^2}{n-1}}$$

where,

n= sample size

\bar{x} = mean

\bar{x}_1 = first observation or frequency of a category

2. One way Analysis of Variance (ANOVA) was used to make a comparison of two or more means to draw various results and predictions about two or more sets of data. One way ANOVA is a generalization of the two-sample t test. The F statistic compares the variability between the groups to the variability within the groups:

-where F is the variance ratio for the overall test, MST is the mean square due to treatments/groups (between groups), MSE is the mean square due to error (within groups, residual mean square), Y_{ij} is an observation, T_i is a group total, G is the grand total of all observations, n_i is

V. Discussion of Results

This section involves the collection, organization, presentation, analysis and interpretation of data collected.

1. What is the students' performance in Mathematics according to non-inclusion and inclusion in Project C.E.L (free and controlled group)?

Table 1.1 Distribution of Statistics Mean According to Students' Mathematics Performance

Entrance Exam Results	Frequency (n=40)	Quarter 2	Quarter 3	Quarter 4	Overall (Q2,3&4)
Not Part of Project C.E.L (Free Group)	20	80.10	81.40	82.55	81.50
Part of Project C.E.L (Controlled Group)	20	83.35	84.75	85.30	84.55

Table 1 shows the distribution of statistics mean according to students' mathematics performance. It is revealed that on the average, significant number of students in free group, or those who were not placed in Project C.E.L performed lower than those in the controlled group, or those placed in Project C.E.L. Mobile phone technology that has a huge impact on students' lives in the digital age may offer a new type of learning. In studies about the effects of phones in students' learning, results show that they have positive effects on the learning process (Zhang, Song, & Burston, 2011; Stockwell, 2010).

2. Is there a significant difference between the students' performance in mathematics between the free and controlled group per quarter?

Table 2.1 Test of Statistics on the Respondents Performance in Mathematics when Grouped According to Free and Controlled Group in Second Quarter

Group	Math Performance		F-Stat
	Mean	QD	
Not Part of Project C.E.L (Free Group)	81.10	Satisfactory	F-Value: 24.723
Part of Project C.E.L (Controlled Group)	83.35	Satisfactory	p-value: 0.000* Highly Significant*

Table 2.1 shows the test of statistics on the respondents' performance in Mathematics when grouped according to free and control group in Second Quarter. The p value of 0.000* indicates a highly significant difference in the respondents' mathematics performance when grouped according to the students included and not included in Project C.E.L. Hence, null hypothesis will be rejected. It can be inferred from the data that the average performance of the students who received phones from Project CEL is higher compared to the free group in the Second Quarter.

Table 2.2 Test of Statistics on the Respondents Performance in Mathematics when Grouped According to Free and Controlled Group in Third Quarter

Group	Math Performance		F-Stat
	Mean	QD	
Not Part of Project C.E.L (Free Group)	81.40	Satisfactory	F-Value: 22.618
Part of Project C.E.L (Controlled Group)	84.75	Satisfactory	p-value: 0.000* Highly Significant*

Table 2.2 shows the test of statistics on the respondents' performance in Mathematics when grouped according to free and control group in Third Quarter. Since the p value is less than the established α , then the null hypothesis will be rejected. The p value of 0.000* indicates a highly significant difference in the respondents' mathematics performance when grouped according to the students included and not included in Project C.E.L. It can be observed from the data that the average performance of the students who received phones from Project CEL is still higher compared to the free group in the Third Quarter.

Table 2.3 Test of Statistics on the Respondents Performance in Mathematics when Grouped According to Free and Controlled Group in Fourth Quarter

Group	Math Performance		F-Stat
	Mean	QD	
Not Part of Project C.E.L (Free Group)	82.55	Satisfactory	F-Value: 28.411
Part of Project C.E.L (Controlled Group)	85.30	Very Satisfactory	p-value: 0.000* Highly Significant*

Table 2.3 shows the test of statistics on the respondents' performance in Mathematics when grouped according to free and control group in Fourth Quarter. Since the p value is less than the established α , then the null hypothesis will be rejected. The p value of 0.000* indicates a highly significant difference in the respondents' mathematics performance when grouped according to the students included and not included in Project C.E.L. It can be observed from the data that the average performance of the students who received phones from Project CEL is consistently higher compared to the free group in the Fourth Quarter.

Table 2.4 Test of Statistics on the Respondents Performance in Mathematics when Grouped According to Free and Controlled Group Overall from Second to Fourth Quarter

Group	Math Performance		F-Stat
	Mean	QD	
Not Part of Project C.E.L (Free Group)	81.50	Satisfactory	F-Value: 34.006
Part of Project C.E.L (Controlled Group)	84.55	Satisfactory	p-value: 0.000* Highly Significant*

Table 2.4 shows the test of statistics on the respondents' performance in Mathematics when grouped according to free and control group in the overall grades from second quarter to fourth quarter. Since the p value is less than the established α , then the null hypothesis will be rejected. The p value of 0.000* indicates a highly significant difference in the respondents' mathematics performance when grouped according to the students included and not included in Project C.E.L. Overall, it can be concluded from the data that the average performance of the students who received phones from Project CEL is consistently higher compared to the free group from second to

fourth quarter. According to Cavus (2011), the brisk advancement of new technologies makes change in the educational practice inevitably. Mobile learning or m-learning is identified by Lan and Sie (2010) as a new type of learning model which allows learners to receive learning materials without limitation of time and place through wireless telecommunication network and the Internet. Among many mobile technologies, mobile phones have a potential of improving the teaching and learning processes as they contain useful applications. Learning through mobile phone can occur anywhere and anytime (Brown, 2008). It is very easy to create a more useful learning environment if students either have any form of communication device.

VI. Conclusion and Recommendation

Findings

From the study conducted, the researchers arrived at the following findings:

1. Students who were placed on Project C.E.L displayed higher average all throughout the remaining quarters than those who didn't.
2. In all the quarters of the scope of research, students' performance in mathematics shows a significant difference when compared according to inclusion and non-inclusion to Project C.E.L.
3. At 0.05 level of significance, the data collected provided sufficient evidence to prove that Project C.E.L gives a significant positive implication to students' performance.

The students' "very satisfactory" and "satisfactory" performance in mathematics when placed in Project C.E.L and their performance's positive significant difference when compared to other students supports the following conclusions: (a) In terms of efficiency, Project C.E.L proves to be effective in alleviating the performance of students. Learning aided with mobile phones or other communication devices increases flexibility and gives feelings of freedom to students. As such, the changing roles of teachers in mobile learning are emphasized on the ability to use required mobile tools and technologies, being advisor or facilitator, eliminating the barriers which may occur, and creating materials or activities to increase motivation of learners. (b) Students' performance is significantly better with an analyzed intervention. Although mobile phones are banned in many classrooms since faculty perceive them as intrusive stuffs which may distract the learners from learning, they can be

turned to be a learning device if the faculty know how to use them to accomplish learning tasks wisely especially in the new normal platform where instructions given through distance learning modality.

Overall, Project C.E.L, the integration of mobile phones in school's modular distance learning, have been found to be effective in improving educational outcomes because it (a) improves access to education and (b) promotes learning that is personalized, collaborative, situated, and ubiquitous.

The present study makes several contributions to the area of mathematics instruction. It provides how mobile phone technology can be used for proficiency development. It would be beneficial for concerned people in developing a future course as follows:

- When mobile phone is implemented in his/her instructions, teachers should design the learning tasks that will really suit the capability of the phones that students have purposes.
- Realizing the role technologies are playing in the teaching and learning process, the school administrators should place more importance on the combination of mobile technologies and pedagogy in classes. Teachers should have more training to update their knowledge of how to implement those technologies into their teaching. This will help them to arrange the learning tasks more effectively with good support from mobile technologies.

VII. Advocacy/Work Plan & Utilization

Through the research's positive findings on the implication of Project C.E.L to students' performance, the school advocates to promote and share its significance to other teachers, schools, division, or in the department of education at large.

The school, headed Mr. Richard A. Sabellano and the researchers, will make further plans to maximize the utilization of the Project to the school's education and instruction delivery. Necessary considerations of ideal and practical situations will be deliberated to optimize the purpose of the project.

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The Psychosocial Challenges of the Student Leaders in Times of Pandemic: A Basis for the Establishment of Project PAIR

(Peer counselling Assistance to improve the Interpersonal skills among learners and Resolve conflicts in schools)

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ABSTRACT

The study, "*The Psychosocial Challenges of the Student Government in Times of Pandemic: A Basis for the Establishment of Project PAIR*", identified the challenges encountered and the coping mechanism of the purposively sampled nine (9) student leaders in a public school in Region 10, Philippines during the advent of distance learning in the onset the pandemic. Specifically, the study ought to answer the following questions: What are the psychosocial challenges encountered by Student Government in times of the pandemic?; How do students overcome these challenges?; and What is the recommended intervention to address these challenges encountered by the students? Qualitative in nature, the study was anchored on the Constructivist Grounded Theory and Phenomenology research designs to describe and categorize the challenges and lived experiences of the participants towards their interpersonal skills in the onset of the pandemic. Interview and Focus Group Discussion were conducted to qualitatively describe the lived experiences, challenges and difficulties of the student leaders. As a result, some of the themes concerning their interpersonal challenges are isolation, limitations in communication, dependency and stress due to the overlapping tasks at home and school. However, despite the difficulties, students were able to overcome these challenges by their varied coping mechanisms which resulted to the recommendation of the Project PAIR (a peer mentoring assistance).

Keywords: Psychosocial Challenges, Mental Health, Peer Mentoring

Rationale

The unforeseen detrimental effects caused by the Covid-19 pandemic has struck not only the Philippines but the entire world. Economies, businesses, health services and even the education sector have been greatly affected by its transition and overwhelming upshot.

With this, planning and variations in the provision of services were introduced as ancillary to what has been used to; thus, ensuring the continuous delivery of supposed institutional outcomes.

With the restrictions and limitations caused by the pandemic, educational modifications and changes in modalities have been laid down as an alternative means to continue education despite the present situation. However, like any other change, adjustments and impending challenges have been encountered in the new normal delivery of instruction. Thus, students were directed to take alternative mode of deliveries since face-to-face classes were restricted during the onset of the pandemic.

The sudden shift of learning modalities has taken a toll not just on the students' learning styles but also on their psychosocial attributes which were affected because of such "feeling of isolation" and dependency towards others. According to the study conducted by Pizarra (2022), the Covid-19 outbreak was the most trying time of the students' life coping with their educational situation at home which compromised the overall degree of learning and psychological well-being. The pandemic is not only very harmful for public's physical health, but also for their mental health, especially anxiety (Stafford et al., 2021) and depression. There is a need to emphasize that critical condition is not merely physical need, but for physiological need as well (El-Khani et al., 2016). Variation of up and down in psychological welfare during COVID-19 depends on pace and intensity of COVID-19 outbreak and social distancing of an area (Sønderskov et al.,2021).

Given that prolonged isolation can be quite harmful for individuals when left unaddressed, there needs to be a way to live with implemented public health measures while mitigating their negative effects on one's mental health. To expand the knowledge of learners' distant educational experiences, this research looked at how they dealt with and overcame a variety of psychosocial problems that they encountered while studying from home.

Psychosocial Health

The study looked into the three (3) facets of psychosocial health namely mental, emotional and social well-being of the learners as directly or indirectly affected by the pandemic. The thinking portion of psychosocial health is known as mental health. Your beliefs and values in life, as well as how you relate to others and respond to situations in your life, are a reflection of mental health. Meanwhile, the feeling part of psychosocial health is called emotional health. This includes things like anger, love, hate, and happiness. Oftentimes, emotional and mental health overlap a great deal in some situations. Social health then is the

ability to create and maintain healthy relationships with others (Huns, 2020).

Peer Counselling

Peer Counselling is an interactive relationship between age groups to influence positive change. (Bette 2013). It is a process where the peers, i.e. colleagues, discuss their issues amicably without engaging in reprehensible behaviour and, consequently, improving their academics. According to Mutie and Ndambuki (1999), peers are persons of the same age, rank or capacity. In that case, they are friends or companions of age, who learn, talk, compare ideas and do things together.

A peer is someone you come across in terms of approximate equality, a companion or a companion. Peer Counselling is the process of assisting someone to explore and resolve difficulties they encounter, clarify conflicting issues and helping that person discover alternative ways of managing themselves and situations so that they decide what type of action or behaviour helps them.

Peer Counselling is the best alternative for adolescents' need to identify with their peers. Peers join cliques and groups for the various divergent reasons such as the provision of personal needs of affiliation and companionship, for a reward that is either material or psychological; that is prestige & recognition, enjoyment and excitement, provision of information for raising of their self-esteem and as a means of gaining identity (Lines, 2006). Students discuss issues at home and school during a peer counselling session, substance abuse, and career planning. (Tindi & Silsil, 2008)

Peer counselling has been a crucial part of schools' orientation and counselling programmes for many years in Britain and America. This has been effectively established and managed by training and coaching learners on life skills and basic counselling skills. In their counselling programs, teacher counsellors select peer educators by inviting students to identify two students they are likely to talk to when confronted with difficulties. Subsequently, the named students are trained and empowered with skills and techniques to help them reach other learners (Lepan, 2001). While, in Botswana and Uganda, peer counselling for teenagers is vital as it enables those in the same age bracket to discuss openly and to express personal problems and shortcomings about those in authority, parents, teachers and themselves in a free, relaxed atmosphere (Rutondoki, 2000; UNESCO, 2002).

Not only that, in the recent past, the constitution of Kenya stated that they must be involved in crucial decisions that affect students (Republic of Kenya, 2010; Machogu, 2012). Prefects are young leaders who are empowered by the school (Machogu 2012). Although prefects

contribute positively to the leadership of the public secondary school in Kenya, there is a relentless wave of conflict, hostility and resentment mated on prefects by other students (Ajowi & Simatwa, 2010).

Diversity among student mentors and the ability to embrace all of the various skills and talents students possess is vital for program development. Students have the potential to mentor others, even when it appears they may be weak in certain areas. Students with disabilities can successfully tutor and provide academic support to peers in critical reading-comprehension.

Research Questions

The study aims to identify the challenges encountered and the coping mechanism of the purposively sampled student leaders in the advent of distance learning during the pandemic. Specifically, the study ought to answer the following questions:

1. What are the psychosocial challenges encountered by Student Government in times of the pandemic?
2. How do students overcome these challenges?
3. What is the recommended intervention to address these challenges encountered by the students?

Methods Used

This study is qualitative in nature using the Constructivist Grounded Theory and Phenomenology research designs to describe and categorize the challenges and lived experiences of the participants towards their interpersonal skills in the onset of the pandemic.

This paper utilized a more in-depth method through a descriptive phenomenological design or the Husserlian phenomenology. Langdrige, 2007 explained that phenomenology is concerned with exploring and understanding human discoveries both in philosophy and research. According to Guilbeau (2014), Phenomenology is a type of qualitative research that does not necessarily contradict the quantitative approaches but asks a different question. To further elucidate the phenomenon's meaning, it focuses on answering the 'what is it's rather than the 'how much' and 'how many,' which describes frequency or magnitude. Thus, in this research investigation, the aim was to uncover the meaning of the students' experiences in remote learning that compromised their psychosocial attributes and their strategies to overcome it.

Participants

Participants of this study are purposively sampled nine (9) student government leaders in the secondary level who underwent recorded interview and Focus Group Discussion (FGD).

Furthermore, it should be noted that this sample does not represent the entire population, but it is considered acceptable to demonstrate the purpose of this study. The researchers do not intend to generalize the results but to qualitatively describe the lived experiences, challenges and difficulties of the student leaders in times of alternative learning in light of the Covid-19 situation.

Data Collection

The participants were given the consent form and interview was scheduled after the consent was signed. Five (5) of the participants opted for an online interview using the Microsoft Teams (MSTeams) application while the other four (4) chose the face to face interview. Interview was recorded using the recording feature in the online platform and cellular phone voice memo for face to face interview. The sessions were guided with the approved interview items which were validated and pilot tested. Responses of the participants were transcribed and translated in English and categorized according to the same themes. Further, data gathering was done from the third week of November 2021 to the second week of February of 2022.

Data Analysis

The data were analyzed using coding and content analysis. Interview questions were flexible and the researcher added items [when needed] for follow-up questions and ensure in-depth responses from the participants. After the transcription, responses. The experiences of student leaders in alternative learning modalities were sorted, synthesized and coded according to themes. Common themes were categorized and analyzed based on its content. The researchers then interpreted these responses to represent a theoretical understanding of the studied experience.

Results and Discussion

1. What are the psychosocial challenges encountered by Student Government in times of the pandemic?

Themes

Isolation

Selected Codes

"I felt choked with just being in the four walls of my room"

"I thought of committing suicide because of being alone"

Limitations in communication	<p>"I felt solitude not seeing my classmates and friends"</p> <p>"I can't communicate to others often"</p> <p>"I feel it's very difficult to talk to my friends"</p>
Dependency	<p>"I miss communicating with my friends"</p> <p>"I cannot buy things on my own"</p> <p>"I don't have my vaccination card yet"</p> <p>"I always ask my parents to get things for me"</p>
Overlapping of home and schools tasks	<p>"I got anxious with house and school tasks"</p> <p>"They are sometimes mixed-up"</p> <p>"I got stressed out of the overlapping tasks"</p>

The pandemic is an unexpected circumstance which ignited the feeling of isolation and constrained among the people especially the youth. Since nobody has prepared for it, students were psychosocially challenged which resulted to various problems and anxieties. With the fear of the unknown, students did not know on what to initially do on these concerns leading them to feel such solitude and emotional incarceration. Seeing only the four walls of the house and a number of restrictions, the struggle had taken a toll on their mental health. According to Suresh (2021), worsening mental health has become an increasingly concerning issue in countries instituting measures such as mandated lockdowns. Recent survey studies done revealed that large proportions of the sampled population showed a higher prevalence of stress, anxiety, and depression as a result of lockdowns and physical distancing.

Given that prolonged isolation can be quite harmful for individuals when left unaddressed, there needs to be a way to live with implemented public health measures while mitigating their negative effects on one's mental health. One could argue that individuals should be more proactive in consulting professional mental health services before their mental health declines significantly (Suresh, 2021).

Further, students felt limitations and boundaries in almost everything including their mobility and communication towards others. Being in the school for five to six times a week in the school (including practices and meetings), the pandemic felt surreal and unimaginable at first. According to the interview, face to face chats and talks were comforting unlike calls and texts which they cannot fully express themselves.

Moreover, since they are not allowed to go out in the first wave of

the pandemic, students felt such dependency towards their parents and some adults in the family. These students were in their adolescent stage where they wanted to do things on their own; however, the restrictions caused by the pandemic had made them feel reliant on their parents.

Since they were just at home answering their modules, school tasks and house chores were mixed-up which resulted in overlying priorities. With this, students felt the burden of what primaries should be attended to. This situation made them less productive because of the overlapping tasks and distressed urgencies.

2. How do students overcome these challenges?

Themes/Codes

Verbatim Responses

Joining Online Training

"I attended online trainings and call-ups intended for student leaders"

"I became the Division representative for student leaders in the Regional Peer Mediation Training"

"I applied to become Microsoft Youth Ambassador and be trained every weekend through online"

Creating Campaign

Advocacy

"I joined in the crafting of advocacy campaign video with the given value focus per school"

"I communicated with co-students in planning and making the video campaign"

Attending Limited Face-to-face Division Call-ups for Student Leaders

"I joined the Division Call-up and excited to hear the plan of activities lined up for students"

"I felt delighted having a session with co-student leaders"

Online training is an alternative way to deliver learning modalities. During the pandemic, the platform reached the students to address their needs of learning. The internet has a significant role for the students to access resources materials, interact with other learners and to obtain guidance and support throughout the learning process in order to obtain knowledge and information are valuable.

Advocacy campaigns are organized movements motivated on influencing and driving awareness to an individual and/or group. Most campaigns are crafted to on the values the leaders and the group stand too. The advocacy campaign is a video presentation or documentation assigned per school per week. The student leader are responsible from planning, gathering ideas, video shoots and editing the whole presentation. The final output is posted at the Division Youth Formation Official Facebook page.

Recently this year, with the reduce number of cases and the change of alert levels, conducts limited face-to-face call-up are allowed following the minimum health standard set by the IATF. This Division Call-up with the student leaders started with the planning of action in schools given the current health situation and limitation of other students. This is the application on the series of capacity building conduct online with the student leaders.

3. What is the recommended intervention to address these challenges encountered by the students?

Peer support as a mental health resource has grown exponentially in the last few decades around the world. In the US alone, Goldstrom et al. has reported that services run by, and delivered to, people with mental health issues more than double traditional, professional mental health organizations. This growth is supported by numerous studies that illustrate the safety and efficacy of peer support which include its ability to improve empowerment, hope, quality of life, self-esteem, social functioning, and care engagement for those accessing its services. Peer support entails the social and emotional support offered by an individual in equal standing, founded on respect, shared responsibility, and a mutual agreement of what is helpful.

Given the responses of the students on their coping mechanisms, the office through the Child Protection Committee in partnership with the Human Resource Development established the Project P.A.I.R (Peer counselling Assistance to improve the Interpersonal skills among learners and Resolve conflicts in schools) which aimed to provide students with peer support and mentoring mechanism to improve their psychosocial attributes.

Teacher advisers and student leaders were capacitated first to be able to mentor other learners needing help and psychosocial support. This could be done through the online platform or limited face to face modality with the guidance of the teacher advisers. Ethics and confidentiality were reiterated in the training to maintain the integrity of the mentor. Since the emotional state is a crucial aspect, leaders in

the Student Government were the first to be trained to handle initial clientele. With this, the committee believes that the need for individuals to better support one another becomes apparent, much like first aid training among the general populous. A way to accomplish this would be through the provision of peer support from one individual to another, and unlike physical first aid, this does not require any official certification.

Conclusion and Recommendations

The COVID-19 pandemic has had devastating effects on communities all around the world. Notably, its impact on the mental health of individuals by way of instituted lockdowns and social distancing/isolation measures remains to be sufficiently addressed. Social distancing and lockdown measures have forced many individuals to stay inside, leaving them unable to access mental health services. Student leaders who were interviewed had encountered psychosocial challenges and difficulties in the onset of the pandemic such as isolation, lack of communication, dependency and stress due to overlapping school and home tasks.

However, due to online call-ups and digital advocacies, they had somehow learn to cope up with the challenges and adapt to the changes brought about by the deeming effects of the pandemic. With this, the office through the Child Protection Committee in partnership with the Human Resource Development had thought of an intervention which can be a sustainable support for the learners' well-being and came up with this recommendations:

- a. Establishment of the Project PAIR with localized activities;
- b. Partnership with other agencies for sustainability (such as Department of Health, City Social Welfare and Development, Brgy, Council, Local Government Unit and other NGOs)
- c. Inclusion of this project in priority Office activities for additional funds (for Capacity Development and mentoring sessions)

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The Predictive Role Of Teachers Educational Attainment And Training Towards Attitude In Research: A Mixed-Method Research Investigation

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ABSTRACT

The Department of Education continuously promotes and strengthens the research culture in basic education. The study examined the predictive relationship of educational attainment and training towards research attitude. This study applied sequential explanatory mixed-method design. The 48 teacher of one of the public school of El Salvador City Division were the respondents of this study selected using the convenient sampling. Results showed that research attitude is not predicted by educational attainment and number of training. On the other hand, from the interview results, different perceptions towards research were consolidated which includes the challenges and skills-based requirements of research, relevance to life and profession and research motivation. As suggested in the action plan proposed in this study, the research culture of the school will be further developed and is considered essential since DepEd has emphasized the importance of research in improving aspects including governance, teachers' upskilling, community involvement and the teaching and learning process.

*Keywords: research attitude, educational attainment, research training
Introduction and Rationale*

The scrutiny of scientific investigation is introduced among students in as early as elementary grades until post graduate programs. Given its importance, research has been indispensable even among practicing professionals in various fields and it has been acknowledged to be the root of innovations. The process of research is viewed to develop vital skills and attitude which is considered to have high-impact to educational practices. In fact, Drill, et al. (2013) and Ulla (2018) found out in their study that research is considered a teacher's resort to aid the pressing concerns in education and guarantees teachers' improvement in their practice.

In this effect, research has offered a large database of advancements in education which resulted in research funding programs like the Basic Education Research Fund (BERF) and other research-focus entities. The same reason is attributed to the Department of Education's (DepEd) focus on the continuous promotion and strengthening of

the research culture in basic education as the basis for generation of possible solutions and evidence-based decisions in areas of teaching and learning process, child protection, human resource and governance (DepEd, 2016; DepEd, 2017).

Nevertheless, despite its huge volume, educational research has been criticized on occasion as being neither beneficial nor impactful (Burkhardt & Schoenfeld, 2003) and teachers are confronted with many issues that affect their motivation to undertake research (Ula, 2018). Challenges reported included a lack of research expertise and abilities, large teaching loads, and a lack of financial support from the schools (Ula, Barrera, & Acompaniedo, 2017). Also, the teacher-researchers often have misconceptions and a negative opinion of the usability and usefulness of research in education (van der Linden et al., 2012) which is born from the negative attitude towards research.

Consequently the number of teacher-researchers is still very few because teachers are, most often, afraid of research because they find it difficult (Munir & Bolderston, 2009); Oguan, Bernal & Pinca, 2014) and eventually, developing the negative attitude towards conducting researches amidst vast research experiences from their undergraduate and postgraduate studies.

Attitude towards research, as explained by Khan et al. (2018), plays an important role in the whole process of research and is likely to predict competence. Hussien et al. (2019) believes that poor attitude and low level of engagement towards research may cause problems even in the early steps of conducting research that resulted in minimal number of completed studies despite the efforts of the DepEd and its local offices.

On the other hand, research experience is operationally-defined as any professional or academic research activities acquired in any field in the public or private sector. It is a common truth that research subjects are included in the curriculum because of its reason related to applicability and concrete solution to hypothetical problems. In this way, rigorous training in research was given to learners at schools from primary years until college and in universities. Intensive research principles training and required involvement in research activities can result in considerable content knowledge gains and a beneficial influence on attitudes toward future research (Kyaw Soe et al, 2018). In this research, training refers to seminars, workshops and hands-on activities that require actual and working research outputs.

Further, teachers conducting research are assumed to have undergone undergraduate research which honed and exposed them to the essentials of research. Several literature explained that reading literature teachers are motivated to regularly read literature and resort to research because it is part of their course requirements in academic

institutions hence, making their educational attainment basis in their exposure to research. Hussien, et al. (2019) added that the capability of teachers to conduct research may be attributed to the fact that teachers are graduates of the education sector, professional education and even graduate programs. Teachers with PhD degrees are more research productive than those without a PhD (Nasser-Abu Alhija & Majdob, 2017; Eam, 2015). With this, it is assumed that research productivity is also equated to the teacher's academic degrees since they are more exposed to quality graduate programs that build research knowledge, experience and network and hence, a predictor of a positive attitude towards research.

In this relation, research experiences, educational attainment, teacher's training and attitude are somehow predictive indicators of one another as it is emphasized that research experiences have an impact on student potential in research work and the research attitude particularly in the field of education (Jalal,2016).

Based from the data for the past 4 years, the school where the study will be conducted had produced 1 research study on school year (s.y) 2017-18; 3 research studies on s.y 2018-2019; 7 researches on s.y 2019-2020; and 8 in this school year 2020-21. The presented data relative to the school's research output is increasing but not good enough as to the population of the teachers in the school where the study will be conducted. Researchers observed that the majority of the teachers are hesitant with regards to research, as initial review to the one of the master teachers in the school mentioned that she is motivated to do paperworks and other related tasks but not in research.

Thus, a further aim of this research is to explore if teachers' educational attainment and training predict attitudes towards research in view of the teacher's lived experiences and possibly, design training plans to help develop a positive attitude towards research.

Literature Review

The concept of attributing research skills and knowledge to an individual's attitude towards research has been a focus of some international studies and usually, a number of published studies are directed to medical research or undergraduate programs and participants. Only very few are conducted in the local setting and the same is observed when educational research is involved.

The main concern of conducting research is geared towards uplifting students' achievement across all subject areas, it is important to note what contributed to the success of the students. With this, DepEd has included in their mandate on Sulong Edukalidad and provision of quality education their desire to enable schools and teachers to gather evidence-based findings to possibly provide solutions to problems and in order to address its target (Byre, 2018). Hence, there are a number

of teachers who lead the conduct of research to possibly try out new ideas and share significant results with their colleagues. In consonance, research campaigns were launched to ignite interest among the teachers and imbibe a growing research culture.

With the rise of campaigns to conduct teacher research and its recorded positive impact in the teaching pedagogies and professional growth (Ulla, 2018), many factors come into play in order to determine the depth of the implementation of the campaign to produce quality research. In a recent study conducted by the Yin, et al. (2015), teachers' demographics including age, experience, gender, and educational attainment were among the significant variables. This is also supported by the research of Heng, et al. (2020) that the engagement in research and research productivity are influenced by personal factors related to demographic and professional aspects.

Experience or career stage (as referred in other researches) is defined as the specific length in the job experience. The teachers' experience is also considered a variable in research productivity. Accordingly, the interest to conduct research changes as according to its career stage (Jung, 2014).

Attitudes toward research have been deemed critical throughout the research process (Khan, et al., 2018). According to Hogg and Vaughan (2005), attitude is "a reasonably stable structure of beliefs, sentiments, and behavioral tendencies toward socially significant objects, groups, events, or symbols." Similarly, Jegede et al. (2007) discovered that attitude is associated with and predicts competence.

The emphasis on attitude as a factor in research performance has been confirmed by Walker (2010) as it was observed that deficiency in research skills and relatively long interval between courses and thesis/ dissertation work are two prominent factors related to constraints of research as higher positive attitude is observed among teachers who have gained masteral degree or postgraduate degrees than those who have finished their college studies (Çelebi,2021; Walker, 2010).

Consequently, studies also show that attitude towards research is also affected by the amount of training that an individual gets. Ellis and Loughland (2016) emphasized in their study the crucial role of research training among teachers. They found out that the inadequate training of teachers as researchers were perceived as important constraints to the conduct of research in schools. The scenario is not only true among teachers who were not trained to conduct research but is also extended to the teachers who had received training hence, affecting the attitude towards research. Additionally, it is underlined that the implementation of courses aimed at increasing students' positive views has a detrimental effect on their attitudes toward scientific research (Ayaydn & Kurtuldu, 2010). This is contrary to the findings of Truitt (2011) that there is a direct

relation between training experiences and attitudes.

Additionally, teachers' motivation to conduct research is impacted by a lack of research skills and expertise. Teacher-researchers admitted in this survey that they lack the requisite research abilities and expertise to conduct their own study. Sheikh, Sheikh, Kaleem, and Waqas (2013) stressed the importance of attending research workshops for teachers who are conducting or will conduct research studies. Thus, these educators must be exposed to research training, seminars, and conferences in order to hone their abilities and get the confidence necessary to conduct research projects independently.

The research studies presumed that research plays a crucial role in the improvement of the education system as well as the improvement of the student performances. Varied research conducted internationally and locally also tally challenges in conducting research that include time, research experience, educational attainment and the intrinsic factors like motivation, age and gender. With this, this research would like to focus on the role of educational attainment, lived experiences and training in determining the attitude of the teacher-respondents.

Research Questions

In the study, there are two predictor variables (educational attainment and training attended) and one criterion variable (attitude towards research). Purposely, this research seeks to answer the following questions:

1. What is the demographic profile of the teacher-respondents as to:
 - a. Educational Attainment
 - b. Training in research
2. What is the level of the teacher-respondents as to:
 - a. Research Orientation;
 - b. Rewards Influence Research;
 - c. Personal Interests;
 - d. Mission of School;
 - e. Research Use; and
 - f. Research Anxiety ?
3. Do teachers' educational attainment and research training predict their attitude toward research?
4. What are the perceptions of the respondents towards research?
5. Based on the findings, what action plan can be designed and developed to improve teachers' research attitudes

Methodology

This study applied the sequential explanatory mixed-methods of research design. Creswell (2013) defined this as being characterized in the first phase of research by collecting and analyzing quantitative data, followed in the second phase by the collection and analysis of qualitative data, based on the findings of the initial quantitative results. The quantitative data is usually assigned weight, and the data mix happens when the initial quantitative results guide the secondary qualitative data collection. The two types of data are therefore different but related.

The forty-eight (48) teachers in one of the secondary schools in the Division of El Salvador City in Region involved in this study. The researchers used convenience sampling to select the study's respondents. The Research Attitude Scale developed by Khan et al., (2018) was used in this study with some modifications made to fit the context of the respondents. The Research Attitude Scale contains two parts, the first part will gather the level of educational attainment and research training of teachers and the second part is a four point likert scale consisting of five factors towards research attitude. To gather qualitative data, the researcher-made semi-structured interview questions were asked to the respondents. Since, the semi-structured interview guide offers interviewers with clear instructions and enables the collection of trustworthy, comparable qualitative data. Semi-structured interviews are frequently supplemented by observation, informal, and unstructured interviewing to enable researchers to gain a thorough grasp of the topic of interest in order to formulate pertinent and meaningful semi-structured questions (Cohen & Crabtree, 2006). The questions were contextualized and simplified according to the respondents' basic understanding. It means that researchers used questions using easier and familiar terms.

Considering content validity is crucial for guaranteeing the overall validity of an assessment, a systematic approach to content validation based on evidence and best practices should be taken (Yusoff, 2019). The six steps for content validation are as follows, based on Yusoff's (2019) concept: a) Developing a content validation form; b) assembling an expert review panel; c) validating the material; d) reviewing the domain and items; e) assigning a score to each item, and f) calculating the CVI. Thus, screening the instrument from the experts of research will be done to examine the construct and face validity of the semi-structured interview questions.

The following phases were utilized in gathering the data: Phase I-preliminaries, the researchers sent a request letter to the school head asking permission and approval in conducting the study to the teachers in the school. Phase II-Administration of the research questionnaire to the teachers, then generated the results and analyze the quantitative data.

Phase III- Conduct a Focus Group Discussion and generated the results. With the approval permission by the school head, the researchers invited the respondents to a focus group discussion. The interview questions was administered to the respondents via an online platform by the researchers.

After conducting the survey, the data was gathered, analyzed, and interpreted using the following statistical tools; Problem No.1, and 2 used descriptive statistics (frequency, percentage, mean, and SD). The frequency, mean, and percentage distribution was utilized to present the level of the respondents in terms of educational attainment and training attended as well as the teachers' extent of research attitude. Problem No. 3 used Regression Analysis to determine the predictive relationship of teachers' educational attainment and research training towards research attitude.

This study employed thematic analysis to answer research problem No. 4 and 5. This technique was used to evaluate qualitative data, which comprises searching across a data set for, interpreting, and reporting on repeating patterns (Braun and Clarke 2006). Further, the Colaizzi (1978) seven-step data analysis process was utilized used. The following was the procedure: (1) Read and reread the transcribed responses of the respondents; (2) extracted significant statements about the phenomenon; (3) formulated meanings from significant statements; (4.) grouped formulated meanings into theme clusters and themes; (5.) developed a detailed description of the phenomenon's essential structure or essence; (6.) generated a description of the phenomenon's fundamental structure; and (7.) validated the study's findings through a focus group.

Discussion of Results

The following summarizes the results of this study:

RQ1. What is the demographic profile of the teacher-respondents as to: Educational Attainment and Training in research?

Table 1 shows the frequency and percentage of the teachers' educational attainment. It shows that the majority (66.7%) of the teacher-respondents of this study are holders of bachelor's degrees as their highest educational attainment.

Table 1. Frequency and Percentage Distribution of Teachers' Educational Attainment

Educational Attainment		
	f	%
Bachelor's Degree	32	66.7
Master's Degree	16	33.3
Doctorate Degree		
Total	48	100

The rest of the teacher-respondents obtained a master's degree (33.3%), and no one among the respondents is a graduate of a doctorate. Table 2 presents the frequency and percentage of the teachers' number of research training. It shows that several teacher-respondents (f=8, 16.7%) have not had research training in the past three years.

Table 2. Frequency and Percentage Distribution of Teachers' Educational Attainment

Number of Trainings in Research		
	f	%
No Training	8	16.7
1 Training	12	25
2-3 Training	14	29.2
4-5 Training	13	27.1
More than 5 training	1	2
Total	48	100

However, large number of teacher respondents fall in the categories of 1 training (f=12, 25%); 2-3 training (f=14, 29.1%); and 4-5 training (f=13, 27.1%). Thus, only one teacher respondent responded that the cumulative number of training relative to research in the past three years is more than 5. The number of training among teacher respondents is considered essential to aid the deficiency in research skills which are considered prominent factors related to constraints of research (Çelebi,2021; Walker, 2010; Ellis & Loughland, 2016).

RQ2. What is the level of the teacher-respondents as to: Research Orientation; Rewards Influence Research; Personal Interests; Mission of School; Research Use; and Research Anxiety?

As shown in Table 3, the mean ratings of the Factor-research orientation items (x=2.9; SD=0.07) indicate a teacher-respondents' inclination for research activities. Respondents agreed that the institution should acknowledge faculty members who produce research, but

they are opposed to viewing themselves exclusively as researchers. The acknowledgement may come in forms of different rewards and recognition which confirms the findings of Khan et al. (2018) that the reward system that includes social and academic praise strongly affect behavior and effective professional.

The mean evaluations for the Factor-rewards effect research items were ($x=3.2$; $SD=0.11$), indicating that the reward system had a significant impact on research activities on campus. Respondents believe that remuneration has an effect on faculty research activities, to the extent that if promotions were not conditional on research, the majority of teachers would devote less time and effort to research which was also confirmed by researchers reported that their ranking methodologies invariably emphasize faculty research productivity in order to ascend the rank. In order to enhance their research profiles and get personal benefits, faculty members are incessantly pursuing these realities and gaining benefits (Monroe & Kumar, 2011; Clarke, 2004; Ng & Li, 2000; Tapper & Salter, 2004).

Table 3. Mean and SD distribution of the Teachers' response result on Research Attitude Scale

	Mean	SD
Research Orientation		
1. I view myself primarily as researcher.	2.6	0.6
2. I feel professional satisfaction by conducting research.	2.8	0.6
3. I believe that school should recognize faculty members who exhibit research production.	3.2	0.7
4. I can contribute to my school's rank by publishing research papers.	2.8	0.7
5. I am intellectually challenge by academic research that inspires me to work harder.	3.0	0.5
	Mean	SD
		2.9
		0.07
	Interpretation	Positive Attitude
Rewards Influence Research		
6. I think rewards are effective means of influencing faculty performance in research.	3.2	0.7
7. I think reward influences faculty for research activities.	3.3	0.6
8. I think faculty members must be productive researchers.	3.2	0.4
9. I think that if promotions were not binding on research, most faculties would devote less time and effort to research.	3.1	0.7

10. I can become an effective professional if I am able to have an educated critique about about the quality of research.	3.1	0.6
Mean		3.2
SD		0.11
Interpretation		Positive Attitude
Personal Interests		
11. I think that personal interests are the most important factor in determining the allocation of time to research.	3.3	0.7
12. I feel free to pursue my academic interest (within the context of research).	3.2	0.6
13. I think sharing research results with colleagues is self-satisfying.	3.3	0.6
14. I want to build up my reputation as an academic scholar through research.	3.1	0.5
Mean		3.2
SD		0.08
Interpretation		Positive Attitude
Mission of School		
15. I believe that research is a motivating factor to the mission of my school.	3.3	0.4
16. I believe research and teaching are mutually supportive activities.	3.3	0.6
Mean		3.3
SD		0.09
Interpretation		Positive Attitude
Research Use		
17. I think research should be mandatory for professional training.	2.7	0.7
18. I think research is useful for every professional.	3.4	0.4
19. I think research-oriented thinking plays an important role in everyday life.	3.3	0.6
Mean		3.1
SD		0.14
Interpretation		Positive Attitude
Research Confidence		
20. I feel that research does not make me nervous.	2.6	0.6
21. I feel that research is not stressful.	2.3	0.6
22. I feel secure concerning the analysis of research data.	2.5	0.7

Mean
SD
Interpretation

2.5
0.02

Negative Attitude

Legend: 1-1.8 Highly Negative Attitude; 1.9-2.6 Negative Attitude; 2.7-3.4 Positive Attitude; 3.5-4 Highly Positive Attitude

Additionally, the mean score on the factor-personal interests item ($x=3.2$; $Sd=0.08$) indicates that teachers agree that personal interests play a significant role in conducting research activities. Respondents believe that personal interests drive the allocation of time to study and that sharing research findings with peers is self-satisfying. The same personal interest was also mentioned by van der Linden, et al. (2012) that the affective aspect in research concerns how one feels good about research and see conducting research as an enjoyable task and to perceive it as interesting for them. Additionally, the result in this research conforms to the claim of Khan, et al. (2018) that personal interests greatly influence performance in research activities.

The mean scores of the two variables in the factor-school-mission category ($x=3.2$; $Sd=0.08$) indicate teachers' views toward the school's mission. Thus, the mean score on the factor-research usage questions ($x=3.2$; $Sd=0.08$) fluctuated between 2.7 and 3.4, demonstrating that teachers have a favorable attitude toward the use of research in their professional and personal lives. Similar results have been established in the investigations of Shaukat (2014) who found significantly positive attitudes towards usefulness of research, particularly those who have been involved in some kind of research activities or working in some research projects. Research conduct enable schools and teachers to gather evidence-based findings to possibly provide solutions to problems and to address its target (Byre, 2018).

However, the mean score of factor-research confidence was 2.6, 2.3, and 2.5, respectively. This research succumbed to the interpretation of a pessimistic mindset. This suggests that the findings indicated teachers' concern or fear over the research process and practices. Teacher respondents lacked confidence in conducting research, and a sizable portion of the community views research as a stressful activity which many of the respondents agree in the focused discussion.

RQ3. Do teachers' educational attainment and research training predict their attitude toward research?

Finding shows that educational attainment and the number of research training attended do not predict attitude in research. According to the ordinal regression analysis results of the influence of teachers' educational attainment and research training on attitude

toward research, as shown in table 4, educational attainment and the number of research training attended have no significant influence on attitude toward research in this study.

Table 4. Result of regression analysis of the influence teachers' educational attainment and research trainings towards attitude in research

	Estimates	df	Sig
Bachelor's Degree	-0.287	1	0.609
Master's Degree	0a	0	.
No Training	-2.388	1	0.211
1 Training	-0.505	1	0.785
2-3 Training	-2.172	1	0.244
4-5 Training	-1.198	1	0.524
More than 5 Training	0a	0	.

**significant at 0.05 level

Additionally, the statistics indicate that teacher-respondents favor research regardless of their educational attainment or the number of training sessions related to research activities. With this, the null hypothesis of this study fails to reject.

RQ4. What are the perceptions of the respondents towards research?

The survey showed a general positive disposition towards the conduct of academic research as a scholarly activity and its implication in the professional and personal development of the participants. This is very important as several findings from research suggest that attitude plays a critical role in the completion of a research process (Hussien et al, 2019; Khan et al., 2018; Walker, 2010). On the other hand, the result also tailored high levels of anxiety among the participants as the majority viewed research as a stressor in terms of time allocation, readiness and interests.

Research Challenges and Skills-based Requirements

Teacher-respondents revealed considerable requirements in completing a research task and how they viewed themselves as teacher-researchers. The emphasis on 'time' has been constantly mentioned as both a challenge and a requirement to carry out scholarly works given the laborious nature of the research process and respondents were busy with teaching-related assignments. Such findings were congruent to the studies conducted by Ula et al. (2017) and Ellis and Loughland (2016) that conducting research is an additional workload for teachers given the tight timetables expected among them. Some commented in the interview that they really don't indulge in research because it needs more time, money, and effort as they were already 'bombarded' with

a lot of paperwork which contributed to their consolidated concept of research as causative stressor.

The faculty members' personal interest is also a determining factor to the disposition of teachers towards research as respondents remarked that conducting it is difficult because they are not interested and it is not their priority. Khan et al. (2018) has noted that interest determined the allocation of time to scholarly research and teachers felt free to chase their academic interests and find sharing of research results self-satisfying. However, this is in contrast to what was mentioned in the study of Celebi (2021) that developing the interest and desire did not guarantee enough progress in research and research anxiety and competence level are still continuously pervasive.

Focused training on the skills required in research should also be considered. Majority of the respondents find research difficult in terms of sentence construction, data gathering and interpretation, problem identification, data analysis, and literature review among others. They intend to gradually learn these skills as they prepare to conduct scholarly research. The findings concurred with the study of Imafuku, Saiki, Kawakami, and Suzuki. (2015) that professional skills which covers management of time and resources, self-directed learning and communication skills and research skills, formed and reformed perceptions of research as also evident through the actual research experiences of the participants. According to Henson (2010), Onwuegbuzie (2004), lack of usefulness of research, a lack of understanding or preliminary awareness of research, or self-efficacy issues regarding the capability and inspiration to acquire and apply knowledge.

In addition to the research skills, the research interview highlighted that teachers were having difficulty in the evaluation of literature related to their stud. Some studies support that the lack of access to research was a real problem for teachers as some research articles are often and usually completely unengaging and of no practical value (Borg, 2010; Williams and Coles, 2007). Teachers were reportedly discouraged to conduct further investigation on the problem of interest because of the absence of literature that can support the study, especially that research requires a lot of reading.

Relevance of Research to Life and Profession

The study unearthed that the respondents considered research useful for their professional performance as well as in their daily lives. Nearly half of the total respondents agreed that on top of its adverse challenges such as time and research skills, the conduct of research enables teachers to discover effective strategies for the benefit of their students, improvement of the teaching practice and at the same time, for self-satisfaction and development. Similar results have been established

in the investigations of Shaukat (2014) who found significantly positive attitudes towards usefulness of research, particularly those who have been involved in some kind of research activities or working in some research projects. Majority agreed about the importance of research about improving the ways of teaching and providing solutions to the difficulties faced by the students through research given the changing environmental factors which greatly affect the students and may hamper the academic progress.

Further, research outputs had been the subject of focus in the department (DepEd). This purported the inclusion of research as a one of the basis of teacher appraisal (Ula et al., 2017). However, some respondents were apprehensive about having research as compulsory activity and also, treating it as a basis of the effectiveness of the teacher in one's performance rating. One respondent shared that research should only be required among seasoned teachers or the master teachers which already is embedded in their duties and responsibilities (Deped, 2018). Nevertheless, the efforts of DepEd to produce quality research is not only expected among highly proficient teachers but also with the rest of the functioning units in the department (Deped, 2016).

Motivations in Research

The research process is a tedious and challenging process which are common responses among the respondents. Its demands comprise time, efforts and even money. Hence, when the teachers were asked for the reward to become productive, most of their answers can be grouped according to 1) monetary rewards, 2) administrative support, 3) career advancements and, 4) personal growth.

Rewards, both intrinsic and extrinsic, influenced their research activities and influenced their performance. Khan et al. (2018) in their study mentioned that the reward system may strongly affect academic behavior such as research aside from the social and academic praise and criticism that turned teachers into an effective professional. They further added in their discussion that comprehensive investigations on the reward systems and conclusions suggest that rewards stimulate teachers for more input in research activities. The participants had a consensus agreement that rewards greatly influence research performance.

Teachers have been found to feel unmotivated and unwilling to conduct research studies because of the lack of financial support they receive. Cash incentives, travel allowance and researcher's financial support were some of the motivations to perform the task. These had been acknowledged by DepEd as stipulated in their rationale behind the creation of the Research Management Guidelines (DepEd, 2017) in support to the Department's policy development process and in instituting research This will inspire and motivate teachers to better not

just their teaching practice but also their research skills. (Ula et al. 2017). The teacher-respondents indicated that regardless of the challenges that they faced in researching, they were still enthusiastic about research, as long as their needs were met. To motivate and improve their research skills, they need to take part in a number of research training workshops. In the present study, there is a need for the teacher respondents to be equipped with the necessary knowledge and skills in order to do research. Research seminars, symposiums and courses that could give positive impact to the researchers as they would be exposed to different methodologies, styles and concepts in doing research (Sheikh, Sheikh, Kaleem, & Waqas, 2013).

Research training and seminars should be made available to teachers to which acquisition of knowledge and skills on how to do research will be made available to them since as research skills are absent, success in the research task would also be impossible which is similarly confirmed in the study of Ula et al. (2016). The significance of lectures and activities will enable teachers to develop a scientific attitude and develop a positive attitude that address the physical, practical, conceptual, linguistic and attitudinal barriers noted to teacher engagement with research (Celebi, 2021; Borg, 2010). The close association and integration of practical knowledge and research knowledge requires deeper understanding. This is effective if hand in hand, teachers are also supervised by peers who have experience in conducting research to act out as professional supervisors and guide as purported in the study of Maqsood, et al. (2019) which is considered one of the factors that prevent the conduct of research.

Remarkable results contributed to the general positive attitude of the teachers can be traced to the relevance of research to career advancements such as promotion. Researchers reported that their ranking methodologies invariably emphasize faculty research productivity in order to ascend the rank. In order to enhance their research profiles and get personal benefits faculty members are incessantly pursuing these realities and gaining benefits (Monroe & Kumar, 2011; Clarke, 2004; Ng & Li, 2000; Tapper & Salter, 2004). As such, these teacher-participants desire promotion, and they have taken the first step towards achieving that goal through their research.

RQ5. Based on the findings, what action plan can be designed and developed to improve teachers' research attitudes?

The inclination of the teacher towards research is a common responsibility in every department. The respondents had repeatedly mentioned training and technical assistance from research enthusiasts during their sharing.

The consolidated results on the challenges, motivations and implications of research highlight concerns that require the school administrators and focal persons to provide opportunities for teachers to develop their attitude toward research. Maqsood, et al. (2019) tallied that the problems that prevented the conduct of research include lack of professional supervisors, lack of training courses, lack of time and lack of funding as also supported by a plethora of conducted studies on the challenges and attitudes of research (Oguan, et al., 2014; Khan, et al., Ula, et al., 2017; Celebi, 2021; Imafaku, et al., 2015).

Considering the various concerns raised in this study, the following action plan will be undertaken from the succeeding dates after the consultation and consolidation of the concerns in improving the attitude of the teacher-respondents.

Conclusion

Several studies concluded that research experiences, educational attainment and training could predict the research attitude of an individual. However, this research investigation yielded that the former do not predict the attitude of the respondents towards research. In fact, despite the number of the training attended by the respondents and the level of education they have acquired, the respondents showed interest in conducting research and even would want to be trained and guided by a research enthusiast. As suggested in the action plan proposed in this study, the research culture of the school will be further developed and is considered essential since DepEd has emphasized the importance of research in improving aspects including governance, teachers' upskilling, community involvement and the teaching and learning process.

Recommendations

From the result of the study, the following recommendations are offered: (1.) for the teachers, that they allocate time, improve their interest and positive attitude towards learning and conducting researches; (2.) For the school research coordinators, that they will consider adopting the proposed action plan of this study; (3.) for the school head, that they will utilize their leadership skills to influence teachers in conducting research, create programs that will give rewards and recognition on teachers conducting research and impose school policies regarding conduct of research (4.) for the school division research focal person, that they: heightened extension of technical assistance to the schools for the development of the school research agenda and (5) for the future researchers, that they will explore another predictor variables that will expand the purpose of this study.

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Campus Wellness Program Design: The Practice of Public Schools

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ABSTRACT

The Department of Education mandates and initiates initiatives that encourage student and teacher health, fitness, and wellness. The study examined the practice of public schools in designing campus wellness programs. This study applied qualitative research, specifically a case study design with primary data gathering via interviews. The three elementary and three secondary schools in one of the Divisions in Region X were the study respondents selected using stratified purposive sampling. From the interview results, different strategies emerged and were considered to make the program more effective and successful for the respondents, such as Promoting Healthy Life through Healthy Habits, Wellness Dimension Activities, promoting stakeholders' Engagement, and Stakeholders' Needs for design by content. Whereas Proper Planning, Partnership with the Stakeholders, Monitoring and Evaluation, Result-Based Success Indicators, Capacity Development of Program Holder, and Sustainability were the themes that emerged in the design by the process.

Further, the Limited Resources, Lack of Training, Problems with external stakeholders' Engagement, Negative attitude towards the program, Poor Planning, Unsustainability of the implementation, and Poor accessibility were the respondents' perceived challenges and difficulties in the performance of the campus wellness program. The Department should be serious in looking out for the welfare, specifically the wellness of its learners, employees, and stakeholders, a wellness program should be considered, one of the priority programs to be implemented.

Keywords: Campus Wellness Program, Wellness, Design

Introduction

Schools have always been an effective venue for health promotion (World Health Organization, 1999; Pommier, 2010), especially amidst health crises. In this difficult period of schooling, implementing

a school wellness program is critical. A wellness program is one that is designed to enhance or improve an individual's health or fitness. It may include health screenings, fitness programs, and preventative treatment (Bankrate.com, 2017; Wellness program definition). Additionally, Stoewen (2017) defines wellness as a way of life, a personalized approach to living that enables you to become the greatest person possible given your potentials, circumstances, and fate.

The primary difficulty for the Department of Education (DepEd) is striking a balance between its mandate and ensuring the health and safety of its students and personnel (Dresser, 2020; Dresser et al., 2021). Worldwide, education ministries are innovating to support students' health and well-being during school closures, recognizing the impact of health and social issues on education and connecting school families to critical support services ranging from health-promoting learning resources to counseling (Giannini, 2020). It recognizes that the absence of wellness programs can have a detrimental effect on the lives of teachers and students. It has an effect on learners' academic performance since teachers are unable to offer their all during the teaching- learning process (Khan et al., 2012; Swathi & Reddy, 2015).

Nestlé Philippines and the Department of Education (DepEd) recently inked a memorandum of understanding to bolster the government's execution of the Basic Education Learning Continuity Plan (BE-LCP) throughout the country. However, in the Campus Wellness competition sponsored by Nestle Philippines and the Department of Education, the researchers discovered that not all schools in the Schools Division where the study was conducted participated in the said program. The researchers presumed that some schools do not currently have a campus wellness program. With the aforementioned facts, the researchers were encouraged to explore the practices of the top schools based on the Nestle Wellness Campus (NWC) Division Level ranking results in implementing wellness programs to benchmark best practices and develop general guidelines on practices in a wellness program.

The current study uses program design to ascertain the effectiveness and success of a campus wellness program. This type of program at varied institutions provided data for the development of broad standards for campus wellness programs. The study's participants are division-level exceptional implementer schools of campus wellness programs. The program design method is used to create a program (Bowen, 2012). To be effective, it must first define the program's needs, interests, priorities, and resources, as well as plan for monitoring and evaluation of the program and its participants (Thomet & Voza, 2010). It entails action plans for various activities that must be coordinated and contribute to the achievement of the program's primary purpose. The design of a program is determined by the target or goal being pursued

(Ortillo & Ancho, 2021).

Supporting wellness policies and programs that are based on teachers and staff will more efficiently result in the desired results of a school's population's mental and physical well-being (Frerichs et al., 2015). Based on Hettler's original Hexagonal Model of Wellness, it encompasses the following dimensions: professional (occupational-vocational), social (family, community), emotional (mental), spiritual (values), intellectual, and physical (fitness, nutrition), but later expanded to include two additional dimensions (environmental and financial wellness).

Research Questions

This study explored the practices of the top schools based on the Nestle Wellness Campus Division Level ranking results in implementing wellness programs. Specifically, it sought to answer the following questions:

1. How do the schools design their campus wellness program?
2. What are the challenges encountered by the respondents in implementing the campus wellness program?
3. Based on the findings, what are the campus wellness guidelines to be designed and developed for utilization by the schools in El Salvador City?

METHODOLOGY

Research Design

This study applied qualitative research, specifically a case study design with primary data gathering via interviews. The three elementary and three secondary schools in one of the Divisions in Region X were involved in this study.

Sampling Procedure

The researchers used stratified purposive sampling to select the study's respondents. According to Patton (2002), "a stratified purposeful sample aims to capture significant variance rather than establish a common core, although the latter may arise during the analysis." Each of the strata would represent a pretty homogeneous sample." The selection was based on the following criteria: (1) must confirm the participation in the study; and (2) wellness leaders in the top wellness program implementers based on the NWC Division Level ranking results. Further, wellness leaders are divided into two strata the position (school head and focal person) and school level (elementary and secondary).

Instrument

The researcher-made semi-structured interview questions were asked to the respondents. Since the semi-structured interview guide offers interviewers clear instructions and enables the collection of reliable, comparable qualitative data. Semi-structured interviews are frequently supplemented by observation, informal, and unstructured interviewing to enable researchers to gain a thorough grasp of the topic of interest to formulate pertinent and meaningful semi-structured questions (Cohen & Crabtree, 2006). The questions were contextualized and simplified according to the respondents' basic understanding. It means that researchers used questions using easier and familiar terms. It has six main questions that pertain to the practices of the public schools in designing and managing campus wellness programs.

Considering content validity is crucial for guaranteeing the overall validity of an assessment, a systematic approach to content validation based on evidence and best practices should be taken (Yusoff, 2019). The six steps for content validation are as follows, based on Yusoff's (2019) concept: a) Developing a content validation form; b) assembling an expert review panel; c) validating the material; d) reviewing the domain and items; e) assigning a score to each item, and f) calculating the CVI. Thus, screening the instrument from the experts of Health and Program Designing and Management has found the semi-structured interview questions valid in terms of content construct and face validity of the semi-structured interview questions.

The following phases were utilized to gather the data: Phase I-preliminaries, the researchers sent a request letter to the Schools Division Superintendent asking permission and approval to conduct the study to the select campus wellness focal persons and school heads in the division. Phase II-Conduct a Focus Group Discussion and generate the results. With the approval permission by the SDS, the researchers invited the respondents to a focus group discussion. The interview questions were administered to the respondents via an online platform by the researchers. Phase III-Analyzed the data and triangulation. The interview results were triangulated through submitted documents by the school related to campus wellness program implementation.

Data Analysis

This study employed thematic analysis. This technique is used to evaluate qualitative data, which comprises searching across a data set for, interpreting, and reporting on repeating patterns (Braun and Clarke 2006). The Colaizzi (1978) seven-step data analysis process was used. The following steps were conducted: (1) Reading and rereading the transcript; (2) extracted significant statements about the phenomenon; (3) formulate meanings from significant statements; (4.) grouping

formulated meanings into theme clusters and themes; (5.) developed a detailed description of the phenomenon's essential structure or essence; (6.) generated a description of the phenomenon's fundamental structure; and (7.) validated the study's findings through a focus group.

RESULTS AND DISCUSSION

This section presents the results of the study, to wit:

RQ1. 1. How do the schools design their campus wellness program?

Table 1 presents the core findings and themes gathered from the respondents relative to program design by content. The themes highlighted by the respondents are the promotion of healthy life through healthy habits, wellness dimension activities, promoting stakeholders' engagement, and Stakeholders' current needs.

Table 1. *Program Design by Content*

Program Design	
Core Findings	Themes
a. Promotion of Healthy life	Promotion of Healthy Life Through Healthy Habits
b. Promoting Healthy Habits	
c. Ease depression and anxiety	
d. Physical dimension Activities	Wellness Dimension Activities
e. Environmental related activities	
d. Physical dimension Activities	
f. Mental dimension activities	
g. Availability resources and/or support	Promotion of Stakeholders' Engagement
h. Addressing the Effects of thepandemic	Stakeholders' Needs

Table 2 presents the core findings and themes gathered from the respondents. The themes highlighted by the respondents in program design by the process are the proper planning, involvement of stakeholders, monitoring and evaluation, result-based success indicators, capacity development of program holders, and sustainability. However, the phases of implementation were emphasized.

Table 2. Program Design by Process

Program Design	
Core Findings	Themes
a. Conduct Consultative Meeting	Proper Planning
b. Conduct Planning	
c. Organize committees	
d. Registration/ orientation of parents/community and learners	
e. Conduct of various activities	Involvement of the Stakeholders
d. Partner with stakeholders	
e. Monitor the conduct of activity	Monitoring and Evaluation
f. evaluation of implementation	
g. Satisfaction survey with parents and learners	
h. Accomplishment report	
i. Outputs must be observed	Result-Based Success Indicators
j. Transformation/changed habits among parents and learners	
k. Equipped/capable focal persons	Capacity Development of Program Holder
l. Establish the Program Procedures	
m. Constant monitoring of implementation	Consistency
n. Integration in health subjects	
o. Conduct periodic wellness activities	

Based on the responses gathered, the following are the steps and activities conducted during the wellness program's pre-implementation, actual implementation, and post-implementation. Before implementing the wellness program, the schools conducted consultative meetings with stakeholders, drafted an action plan with committees, timeline, and resources (needed & how to secure or generate it). The necessary permit and consent were also secured before implementing the program, considering the pandemic. Further, the necessary orientation of stakeholders was conducted to ensure the smooth implementation of the program. The schools implemented the activities in their action plan during the actual implementation. Constant monitoring on the conduct of the activities was conducted to ensure that the action plan was followed as scheduled. After the implementation of the activities, the schools made their accomplishment report. They evaluated the program's implementation through group discussions, meetings with stakeholders, and a satisfaction survey with parents and learners.

Based on the data gathered, it was found out that the following are needed to ensure the successful implementation of the wellness program: proper planning, partnership with the stakeholders, capacity

development of the program holders, monitoring and evaluation, establishing results-based success indicators and consistency/sustainability of the implementation.

RQ2. What are the challenges encountered by the respondents in implementing the campus wellness program?

Table 3. *Campus Wellness Program Difficulties and Challenges*

Core Findings	Themes
a. Limited time/short notice	Limited Resources and communication
b. Limited financial resources	
c. Lacking supplies	
d. Equipment needs repair/maintenance	
e. Few stakeholders	
f. New teacher/ focal person has no idea or guide on how to implement the program	Lack of Training
g. Parents and learners find it hard/difficult to understand the modules or the tasks to be performed	Problem on external stakeholders' engagement
h. Late module submission or decreased retrieval rate of modules	Negative attitude towards the program
i. Pressured learners	
j. Initial resistance of teachers as they see it as additional workload	
k. Parents were initially hesitant	
l. Overlapping activities of teachers	Poor Planning
m. Busy schedule of parents	
n. Difficulty in monitoring the community due to lockdowns/pandemic	Unsustainability of the implementation
o. Landscape/ far flung areas	Poor accessibility
p. Unstable connection (e.g. internet) for communication	

In sum, the common challenges faced in the implementation of the Campus Wellness program were the limited resources, lack of competence, program on stakeholders' engagement, negative attitude towards the program, poor planning, unsustainability of the implementation and poor accessibility.

RQ3. 3. Based on the findings, what are the campus wellness guidelines to be designed and developed for utilization by the schools in El Salvador City?

Table 4. Presents the proposed campus wellness general guidelines for the schools of El Salvador city. Further, the design and development of the general campus wellness guidelines were based on the findings of the study.

Table 4. *Propose Campus Wellness General Guidelines for El Salvador City Schools*

Design	General Guidelines
Content	<ol style="list-style-type: none"> 1. Campus Wellness program must adhere to the promotion of healthy life and healthy habits. 2. Provide activities that can ease depression and anxiety among school stakeholders. 3. For selection and implementation of the activities in the campus wellness it should align to the dimensions of wellness (professional, social, emotional, spiritual, intellectual, physical, environmental and financial wellness). All wellness dimensions should be catered and must not focus on 1-2 dimensions only. 4. Integrate the wellness program to the learning experiences of the learners and school life of the teachers. 5. Wellness activities should encourage engagement among the school stakeholders and the community. 6. Provide school activities that address the stakeholders' needs, challenges and difficulties in the current time.
Process	<ol style="list-style-type: none"> 1. Include/integrate the Campus Wellness Program in the School Improvement Plan (and consequently to its AIP and APP) as one of the school programs to be prioritized (with timeline to avoid overlapping of activities) and allocated with budget and funds 2. Strengthen the planning of the program, through the conduct of faculty consultation, and assessment of stakeholders' needs. 3. Set specific objectives and results-based success indicators which are quantifiable/measurable, for easier progress monitoring 4. Formulate activities aligned to the campus wellness content design and objectives. 5. Create committees to manage the different activities and areas of the campus wellness program. 6. Duties and responsibilities of the different committees and personnel should be clearly discussed and relayed to persons involved 7. School head must lead the planning up to the evaluation of the program implementation. 8. Ensure that the teacher and/or other school personnel assigned to serve as focal person of the implementation of the wellness program are competent. 9. Include the capacity building of the campus wellness program holders in the school HRD plan to up skill and reskill the school personnel. 10. Initiate collaboration and partnership with the stakeholders. 11. Conduct regular monitoring on the implementation of the programs through committee meetings and monitoring tools. 12. Conduct quarterly assessment and evaluation on the effectiveness and success of the program through the performance and out-put of the learners, parents, teachers related to the campus wellness activities. 13. Prepare and submit results of monitoring and evaluation and quarterly accomplishment reports to the SDO 14. SDO shall provide technical assistance, as needed 15. Reward and recognize best implementers of the wellness program

CONCLUSION

The study found that most schools' wellness programs aim to promote healthy living through healthy habits. Although the majority aims for the holistic development of learners and their stakeholders, most of the wellness programs implemented by schools are focused only on the intellectual, physical, and environmental dimensions of wellness. Activities may have addressed some problems like limited mobility (physical dimension), but they failed to address depression and anxiety (mental dimension) brought by the pandemic. Furthermore, the study identified that Stakeholders' engagement and support to the wellness program is important for its successful implementation. For most schools, stakeholders helped address the school's challenge of limited resources. Aside from the additional resources they may provide, there must be buy-in on the purpose of wellness programs from stakeholders.

To improve the implementation of wellness programs, there should be proper planning, specific success indicators, capacity development of program holders, monitoring and evaluation, and sustainability. All these may be addressed if the wellness program was integrated into the SIP. For most schools, wellness programs were not integrated into the SIP, AIP, and APP. This is a manifestation that such a program was implemented merely out of compliance and not because the schools identified the health of its learners and stakeholders as one of the priority areas to be addressed/considered.

RECOMMENDATIONS

Based on the results of the study, the following recommendations are proposed: (1.) for the school heads: that they will establish the implementation of the campus wellness program in their respective schools because the principals' leadership style also has a significant impact on the program's conception, implementation, and management. They can motivate and devote teachers to their tasks by influencing or motivating (Ortillo & Ancho, 2021); (2.) School wellness focal persons will consider the proposed general guidelines of this study as a guide for implementing their respective campus wellness programs; (3.) The teachers will become wellness ambassadors to the learners and the community; (4.) Schools Division Wellness focal person will strengthen the monitoring and evaluation of the program implementation in all schools and provides feedback and technical assistance to schools. (5.) The researchers will develop contextualized campus wellness program operation handbooks.

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Developing 21st Century Teachers with Improved Content, Technology, and Pedagogical Knowledge through Designing eSimulation-Based Lessons in Mathematics: A Perspective in the New Normal

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ABSTRACT

Education in the 21st century emphasized the use of technology as a vital tool to enhance the learning of the students. One of the most effective, award-winning, and world's favorite software for learning Mathematics is the GeoGebra Software. The need to integrate GeoGebra applets in presenting math lessons for the Division of El Salvador City was emphasized during the Program Implementation Review for SY 2020-2021 and Strategic Planning for SY 2021-2022 as an effective strategy to maximize the full potential of the software to aid the teaching and learning process, especially amid the changes in the learning setup brought by the COVID-19 pandemic. Thus, this action research employing mixed-method design is conducted to determine whether designing eSimulation-Based lessons using GeoGebra is an effective intervention to improve teachers' content, pedagogical, and technological skills in teaching mathematics as a key component in 21st-century teaching. With this, one hundred (100) math teachers were purposively selected as respondents of the study and were exposed to a 2-day virtual workshop on the use of the software wherein respondents were tasked to design eSimulation-Based lessons and present them for evaluation. Survey questionnaires were also administered before and after the intervention to get teachers' perceived development. The results showed that integrating the GeoGebra software in designing eSimulation-based lessons improved teachers' pedagogical skills, content knowledge levels, and technological skills. Moreover, teachers developed a positive attitude towards promoting the use of ICT in the classroom.

Keywords: eSimulation-Based Lessons, GeoGebra

Context and Rationale

Education in the 21st century emphasized the use of technology as a vital tool to enhance the learning of the students (Fatimah & Santiana, 2017). Moreover, Jan (2017) claimed that the main requirement for providing quality education in the 21st century is the integration of technology in teaching to create a learning environment that fulfills the needs of students. One of the most effective, award-winning, and world's favorite software for learning Mathematics is the GeoGebra Software.

GeoGebra is a dynamic mathematics software for all levels of education that brings together geometry, algebra, spreadsheets, graphing, statistics, and calculus in one engine. In addition, GeoGebra offers an online platform with over a million free classroom resources created by the multilingual community.

In the literature, numerous studies proved the effectiveness of GeoGebra in learning Mathematics among students and teachers. Zengin, (2017) studied the effect of using GeoGebra software on pre-service mathematics teachers' attitudes and views toward proof and proving. Results showed that GeoGebra software was an effective tool in increasing pre-service teachers' attitudes towards proof and proving. Mushipe & Ogbonnaya (2019) studied the Grade 9 learner's achievement in linear functions through the integration of GeoGebra. The results showed that the experimental group ($M = 51.76$; $SD 17.95$) achieved statistically higher scores than the control group ($M = 20.00$, $SD 11.16$) with a large effect of 0.53. Misrom, Muhammad, Abdullah, Osman, Hamzah, & Fauzan, (2020) investigated the potential role of an inductive reasoning strategy using Geogebra in increasing the students' level of HOTS for the topic Graphs of Functions II. Results showed that the overall HOTS level of the students, which included applying, analyzing, evaluating, and creating skills, could be enhanced through this strategy. The findings also showed that there was a positive relationship between HOTS and the inductive reasoning of the students.

Given the research-based evidence that proved the effectiveness of using GeoGebra in the teaching and learning mathematics, the Department of Education (DepEd), particularly the Division of El Salvador City, highlighted the role of this software to cultivate an environment that is conducive for teachers and learners, especially amid the changes in the learning setup brought by the COVID-19 pandemic. The need to integrate GeoGebra applets in presenting math lessons was emphasized during the Program Implementation Review for SY 2020-2021 and Strategic Planning for SY 2021-2022 as an effective strategy to maximize the full potential of the software to aid the teaching and learning process in the new normal. In fact, this free and open-source application is readily installed in all

DepEd-issued laptops for teachers and students to use. However, in the survey conducted among the select math teachers of the El Salvador City Division, 84% of them are not familiar with the software and have not used it before in their Mathematics lessons. Meanwhile, the remaining percentage responded with minimal knowledge about the effective use of the software. This indicates that GeoGebra as a learning resource has not been fully utilized and explored in the teaching field. Furthermore, this also clearly suggests that there is a need for administrators to conduct training on the use of GeoGebra among teachers as a key factor in the 21st century teaching in the new normal.

In this study, DepEd El Salvador through the initiative of the Curriculum Implementation Division conducted a 2-day training workshop on the use of GeoGebra among math teachers within the division from elementary to secondary level. Survey questionnaires were administered before and after the training program to determine teachers' perceptions on the use of the software.

In general, this action research is conducted to determine whether designing eSimulation-Based lessons is an effective intervention to improve teachers' content, pedagogical, and technological skills in teaching mathematics as a key factor in 21st-century teaching during the new normal.

Innovation, Intervention, and Strategy

The Division of El Salvador City under the Leadership of Dr. Olga C. Alonsabe and the supervision of the Mathematics supervisor, conducted a Program Implementation Review for SY 2020-2021 and Strategic Planning in Mathematics cum Workshop on the Integration of GeoGebra Software in Teaching and Learning Grades 1 to 12 Mathematical Concepts through Google Meet last July 28 -29, and August 2, 2021. The first day of the meeting was intended for program implementation review and strategic planning while the last two (2) days were intended for virtual workshops on GeoGebra application. In the workshop, the teachers were provided technical assistance about the basic tools of GeoGebra and the Math concepts embedded per tool and each school was required to present at least one digital simulation of Math concepts of their choice. Each presentation was processed by the resource speakers who were identified as experts of the software. The Division Office through the ASDS and EPS in Mathematics acknowledged the importance of this software as a tool in aiding the teaching and learning process, particularly in the field of Mathematics education, and require each school to implement this intervention in the entire division for the succeeding school years. Thus, Math coordinators were tasked to monitor its successful implementation at the school level.

VI. Action Research Questions

This action research aims to determine teachers' perception and performance in using GeoGebra Software in preparing Math concepts simulations. Specifically, this research would seek to answer the following research questions listed below.

1. What is the profile of participants in terms of the following:
 - a) Gender
 - b) Age Bracket
 - c) Level taught
 - d) Length of Service
2. What is the teacher's awareness level of GeoGebra Software?
3. What are the perceptions of the participants towards GeoGebra before and after the workshop was conducted in terms of the following:
 - a) Attitude towards GeoGebra
 - b) GeoGebra Pedagogical Views
 - c) Applicability of GeoGebra in the Existing Learning Materials
 - d) Perceived GeoGebra use in Enhancing the content
 - e) Teachers' Competencies
4. What are the perceived challenges of mathematics teachers in designing eSimulation-based lessons?

VII. Action Research Methods

Research Design

This action research employed a mixed-method design where research questions numbers 1 and 2 belong to the quantitative component while research question number 3 belongs to the qualitative component.

Participants

The participants of this study were the 100 purposively select Math teachers from Grades 1 to 12 of the El Salvador City Division. All participants responded and completed the survey questionnaires which were administered before and after the webinar workshop. On the second day of the workshop, all Math coordinators per school were tasked to present a digital simulation of a math concept based on his/her year level of assignment.

Data Gathering Method

A questionnaire consisting of 25 items adapted from Agyei & Benning (2015) was used to collect data on teachers' perceptions through a Likert scale about the use of GeoGebra in teaching mathematics before and immediately after the webinar workshop. The

survey questionnaire focused on teachers' experiences and opinions of planning and preparing GeoGebra-based lessons.

Data Analysis Techniques

Research questions numbers 1 and 2 were analyzed using descriptive statistics such as counts, percentages, and means. For research question number 3, thematic analysis was employed.

VIII. Research Results/Findings

1. What is the profile of participants in terms of the following:

For research question number 1, respondents were profiled in terms of gender, age bracket, level taught, and length of service through descriptive statistics such as counts and percentages.

A. Profile of Respondents in Terms of Gender

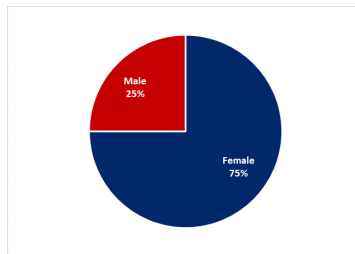


Figure 1. Distribution of Respondents based on Gender

The respondents of this action research were composed of one hundred (100) teachers teaching both primary and secondary levels of which 75% of these were females and 25% were males. As observed, the majority of the respondents were female teachers.

B. Profile of Respondents in Terms of Age

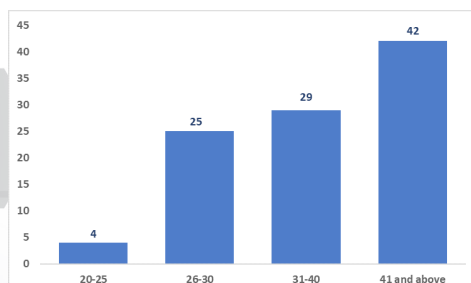


Figure 2. Distribution of Respondents based on Age Brackets

Figure 2 shows that 42% of the respondents were at least 41 years old while only 4% of them belonged to the ages 20 to 25 years old. Moreover, ages from 26 to 40 have a sum of 54% based on the distribution. Hence, it can be said that the majority of the respondents were 41 years old and above.

C. Profile of Respondents in Terms of Level Taught

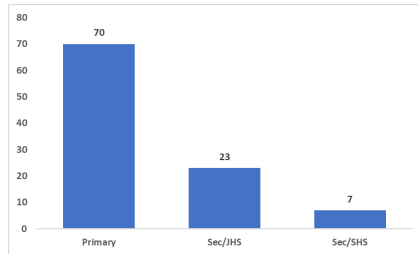


Figure 3. Distribution of Respondents based on Level Taught

Figure 3 above shows that 70% of the respondents were teaching at the primary or elementary level while only 30% were teaching at the secondary level. Hence, the majority of the respondents were practicing their profession in the primary levels (e.g. Grades 1 to 6).

D. Profile of Respondents in Terms of Length of Service

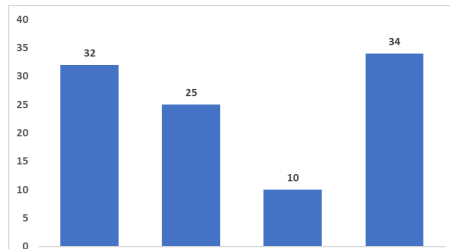


Figure 4. Distribution of Respondents based on Length of Service

Figure 4 shows that 34% of the respondents were teaching at least 10 years while the second-highest percentage of teachers which is 32% were teaching at most 3 years. This shows that the majority of the respondents were in the field for more than a decade which was followed by those who are newly hired teachers.

2. What is the teacher's awareness level of GeoGebra Software?

The second question of this research sought to explore the awareness level of teachers of using GeoGebra in designing eSimulation-based mathematics lessons. Respondents of the study were asked to indicate their levels of agreement of awareness using a five-point Likert scale before the workshop. Table 1 shows the descriptive statistics of their responses using the mean and standard deviation.

Table 1: **Teachers' Awareness level of GeoGebra software** (N=100)

<i>Item</i>	M	SD
I am familiar with the GeoGebra software before I was introduced to it in this webinar workshop.	1.56	0.84
I have used GeoGebra before in my mathematics lesson.	1.30	0.82
The constructing tools in GeoGebra are familiar to me.	1.41	0.76
I have seen other teachers use GeoGebra in the classroom.	1.49	0.66
I have downloaded the software from the internet before this webinar workshop.	1.22	0.55
I know about some exemplary materials of GeoGebra.	1.55	0.77
Overall Awareness level	1.42	0.73

The result shows that the mathematics teachers have a very low level of awareness on the use of GeoGebra before the training workshop ($M=1.42$; $SD=0.73$). This means that the teachers were unfamiliar with GeoGebra software before it was introduced to them. They have neither used it in their teaching ($M=1.56$, $SD=0.84$) nor seen other math teachers use it in mathematics lessons ($M=1.49$, $SD=0.66$).

3. What are the perceptions of the participants towards GeoGebra before and after the workshop was conducted in terms of the following:

A. *Mathematics Teachers' Perceived Attitude Towards the Use of GeoGebra in Teaching*

Table 3: Teachers' Level of Attitude Towards GeoGebra (N=100)

Attitude Towards the Use of GeoGebra	Before the Workshop		After the Workshop	
	M	SD	M	SD
I like using GeoGebra.	1.21	0.76	4.49	0.58
I am open to explorations using GeoGebra.	1.78	0.85	4.55	0.55
I need a lot of time to think before I use GeoGebra software to teach mathematics.	1.62	0.86	4.06	0.96
I will continue to learn and use GeoGebra.	1.70	0.86	4.53	0.58
GeoGebra makes mathematics easy for me to learn and teach it.	1.49	0.84	4.42	0.67
Overall Level of Attitude Towards GeoGebra	1.56	0.83	4.41	0.67

A comparison of mean scores was used to determine the attitudes of the mathematics teachers before and after the training was conducted. The results showed that teachers' attitudes towards the use of GeoGebra have increased in all 5 items that were used to measure the level of their attitudes. The overall level of attitude (Before: $M=1.56$, $SD=0.83$; After: $M=4.41$, $SD=0.67$) also improved from very low to high. This indicates that after the training workshop on the use of GeoGebra teachers were able to develop a positive attitude towards the software and its use in teaching. This result was being consistent with the study of Zengin (2017) among pre-service teachers where GeoGebra software was found to be an effective tool in increasing their attitudes towards proof and proving.

B. Teachers Perceived Pedagogical Views on the Use of GeoGebra

Table 4: Teachers' GeoGebra Pedagogical Views (N=100)

Pedagogical Views	Before the Workshop		After the Workshop	
	M	SD	M	SD
Using GeoGebra can make my lesson practical.	1.48	0.80	4.44	0.62
I can use the GeoGebra to design a lesson to meet the needs of my students.	1.55	0.85	4.44	0.67
GeoGebra software can help me reach out to more students.	1.52	0.84	4.47	0.67
GeoGebra software can help me to design meaningful activities for students.	1.55	0.82	4.47	0.65
GeoGebra motivates me to find an effective approach in teaching mathematics.	1.55	0.82	4.22	0.73
Overall Pedagogical Views	1.53	0.82	4.41	0.67

A comparison of the mean and standard deviation of the perceived pedagogical views of in-service teachers before and after shows a notable improvement for all test items (as shown in Table 4) with the highest point of increase falling on the item 'Using GeoGebra can make my lesson practical' (Before: $M=1.48$, $SD=0.80$; After: $M=4.44$, $SD=0.62$). In addition, the item with the smallest point of increase (Before: $M=1.55$, $SD=0.82$; After: $M=4.22$, $SD=0.73$). was on 'GeoGebra motivates me to find an effective approach in teaching mathematics.'

The overall pedagogical views (Before: $M=1.53$, $SD=0.82$; After: $M=4.41$, $SD=0.67$) also show a remarkable improvement before and after the training workshop. Thus, the results suggest that GeoGebra is very useful to teachers in promoting the positive use of ICT in teaching mathematics. The same positive results were obtained in the study of Agyie and Benning (2014), it was found that participants of the study developed positive attitudes and pedagogical views on the use of GeoGebra pointing to its potential as an instructional tool in developing their experiences in technology integration within an initial teacher education program in Ghana.

C. Applicability of GeoGebra in the Existing Learning Materials

Table 5: **Applicability of GeoGebra in the Existing Learning Materials** (N=100)

Perceived Applicability	M	SD
I can use GeoGebra hand in hand with manipulatives to teach mathematics	4.41	0.64
I can apply GeoGebra to teach mathematics with the existing learning competencies.	4.40	0.64
I can use the GeoGebra with the teachers' mathematics teaching guides.	4.34	0.65
I can apply GeoGebra to teach mathematics with a lesson plan.	4.32	0.64
Overall Applicability of GeoGebra	4.38	0.64

Table 5 shows the mean scores of the teachers' responses in all items after the training workshop. The results show that existing materials such as manipulatives to teach mathematics ($M=4.41$, $SD=0.64$), mathematics teaching guides ($M=4.34$, $SD=0.65$), mathematics curriculum guides ($M=4.40$, $SD=0.64$), and mathematics lesson plans ($M=4.32$, $SD=0.64$) all can be integrated with GeoGebra.

The results show that GeoGebra can be integrated with existing learning materials with a very high level of applicability ($M=4.38$, $SD=0.64$).

D. Perceived GeoGebra Use in Enhancing Teachers' Mathematics Content Knowledge

Table 6: **Perceived GeoGebra Use in Enhancing Mathematics Content Knowledge** (N=100)

Item	M	SD
GeoGebra software helps me relearn some mathematical ideas.	4.41	0.64
GeoGebra software makes mathematics more difficult for me.	2.11	1.23
I have learned some mathematics that would otherwise be difficult to learn.	4.27	0.83
GeoGebra software helps me see mathematics as a consistent system of ideas.	4.30	0.68
I would like to learn more mathematics before using GeoGebra software.	3.15	0.78
I feel that a new kind of mathematics is being taught.	4.30	0.68
Overall	3.76	0.81

The results show that the use of GeoGebra can highly develop the content knowledge of the mathematics teachers ($M=3.76$, $SD=0.81$). In addition, mathematics teachers responded very high ($M=4.41$, $SD=0.64$) that GeoGebra software helps them relearn some mathematical ideas, learned some mathematics that would otherwise be difficult to learn ($M=4.27$, $SD=0.83$), and that the software helps them to see mathematics as a consistent system of ideas ($M=4.30$, $SD=0.68$). Moreover, the respondents have a low level of agreement ($M= 2.11$, $SD=1.23$) that GeoGebra software makes mathematics more difficult. This suggests that GeoGebra as a learning resource enhances teachers' content knowledge on mathematics. The teachers' eSimulation-based lessons confirmed the development of their conceptual understanding of the subject.

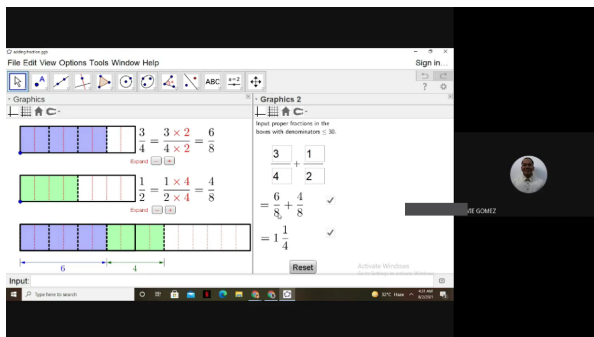


Figure 5. The snapshot of the sample work of MTR 1 in GeoGebra window during Online Training Workshop

In this snapshot, MTR 1 chose the topic in Grade 6 which was 'Adding Dissimilar Fractions'. The presenter was able to demonstrate enhanced understanding and skill in the delivery of the lesson using GeoGebra.

Excerpts of MTR 1 explanation the simulation output:

Kani akong gipili nga topic kay mao kini ang application sa mathematical skills like addition, subtraction, multiplication and division. Kaning GeoGebra dako kayo ni ug tabang nga mapakita ang concept sa similar and dissimilar fractions. So example, $\frac{3}{4} + \frac{1}{2}$. Dri sa left side atong makita ang representation sa matag fraction. Si GeoGebra iyang ipakita kung giunsa ang step by step nga pagkuha sa LCD ug pagcome up sa answer. Pinaagi ni GeoGebra, mas madiscuss nato ang mga concepts sa bag.o nga mga paagi dli pareha sa traditional nga sa board ka magsulat or magdrawing para lang mapasabot.

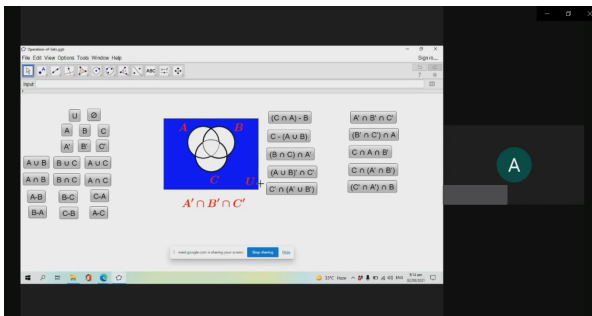


Figure 6. The snapshot of the sample work of MTR 2 in GeoGebra window during the Online Training Workshop

Figure 6 is the snapshot of mathematics teacher respondent 2 output as a participant in the study. The presenter chose the topic 'Operations of Sets Using the Venn Diagram' in Grade 7. The goal of the presentation was to present the visual representation of the concept with the aid of the GeoGebra.

Excerpts of MTR 1 explanation on her simulation output:

'...so dri sa akong simulation mapakita ug masabtan sa atong mga bata kung unsa di ay ang klase-klase nga mga sets. Kung iclick nako ang U-universal set, tanan nga naa sa rectangular box mashaded siya. Pasabot ani, tanang elements nga naa sa box apil sa set. Also, if iclick nako ang \square -null set, ang whole rectangular box ma-unshaded siya which means nga if null ang set pasabot empty, walay element nga sulod sa iya. Nakatabang ang GeoGebra para sa ako nga mas masabtan ang concept sa sets ug mapadali ang pagtudlo sa mga bata.

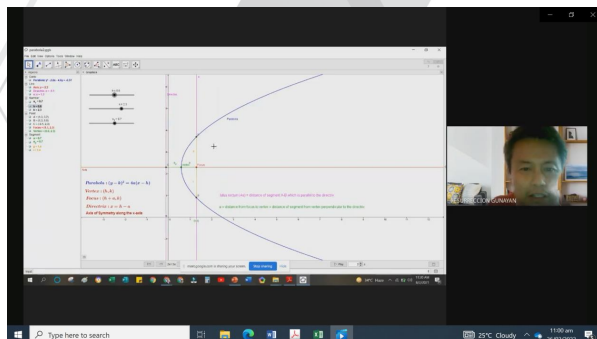


Figure 7. The snapshot of the sample work of MTR 3 in GeoGebra window during the Online Training Workshop

Figure 7 is the snapshot of mathematics teacher respondent 3 output. The presenter chose the topic on Pre-Calculus which was the 'Equation of the Parabola'. The goal of the presentation was to present the visual representation of the different characteristics of the graph of parabola with the aid of the GeoGebra.

Excerpts of MTR 3 explanation on the simulation output:

...As we can see here, using the sliders (h , k , and a) and after inputting the formula, magawas na daun iyang graph. I am able to deepen my understanding about the equation of the parabola. Based sa graph, fixed ni ang directrix, ang focus ug ang vertex. With this simple demonstration about the parabola, mapakita nato sa atong mga students' kung unsa jud ang characteristics sa parabola. By moving the slider h which is the x -coordinate, magmove ang graph along the axis of symmetry which is the x -axis. Likewise, when moving slider k , magmove ang parabola along the y -axis. Sa GeoGebra mas makita ang concept pinaagi sa visual representations and explorations.

In general, it can be observed from the presentations through the sample excerpts and outputs of the respondents that using GeoGebra enhanced their conceptual knowledge about the subject matter.

E. Mathematics teachers' competency in using GeoGebra

Table 7: Mathematics Teachers' Competencies (N=100)

Item	Before Workshop		After Workshop	
	M	SD	M	SD
I can use the GeoGebra to develop a lesson in polynomial functions.	1.52	0.90	4.22	0.73
I can use GeoGebra to teach graphs of polynomial functions.	1.51	0.90	4.22	0.75

I can use GeoGebra to teach fractions.	1.49	0.82	4.49	0.67
I can use GeoGebra to teach histograms.	1.48	0.87	4.25	0.72
I can use GeoGebra to teach operations on integers.	1.47	0.90	4.33	0.73
I can use GeoGebra to teach areas and volumes of solid figures.	1.52	0.85	4.29	0.72
I can use the GeoGebra to teach polygons.	1.51	0.88	4.29	0.74
I can use the GeoGebra to teach differentiation.	1.48	0.87	4.29	0.75
I can use GeoGebra to teach integration.	1.49	0.88	4.34	0.69
I can use GeoGebra to teach circle theorems.	1.48	0.88	4.27	0.77
Overall Competency	1.49	0.88	4.30	0.73

The respondents' competencies in using GeoGebra in designing eSimulation-based lessons were obtained before and after the training workshop. A 10-item questionnaire was used to explore teachers' levels of performing specific tasks with GeoGebra. For each item, they were expected to indicate their ability level to perform the task: excellent (advanced) = 5, good (proficient) = 4, satisfactory (progressing) = 3, learning = 2 or poor (can't use it) = 1. Table 5 shows the mean scores of teachers' competency levels before and after the training workshop.

The results in Table 7 show that the teachers' skills to use GeoGebra after the training workshop is evident in the difference of their mean scores (Before: $M=1.49$, $SD=0.88$, After: $M=4.30$, $SD=0.73$). The responses clearly suggest that after the training workshop, their skills in designing eSimulation-based lessons can be classified as good or proficient. This means that even with the limited time of training, it turned out to be able to hit its objective which is to equip them as 21st century teachers in the new normal in education.

4. What are the perceived challenges of mathematics teachers in designing eSimulation-based lessons using GeoGebra?

The respondents of the study were also given time to list down possible barriers they perceived could hinder their use of the GeoGebra in designing eSimulation-based lessons in the new normal set-up in education.

Table 2: **Perceived Barriers on Using GeoGebra as a Tool in Teaching**

Possible Barriers	Frequency	Percentage
1. Lack of gadgets	46	32
2. Poor internet connection	30	21
3. Low computer literacy skills	21	14
4. Needed more time learning the GeoGebra tool	35	24
5. No barriers perceived	13	9

The results show that lack of gadgets (32%), needed more time learning the GeoGebra tool (24%) and poor internet connection (21%) are the top three possible barriers mathematics teachers perceived in using GeoGebra in their future lessons. Moreover, teachers reiterated that even if they have the gadgets, they will need more time on learning the tool to design lessons using GeoGebra software. That is, teachers needed more training and involvement to develop their skills in designing eSimulation-based lessons using GeoGebra. These perceived barriers are also consistent with the study of Wassie & Zergaw (2019) where it was found that the belief (willingness) and technology fluency (ICT skills) of users were among the challenges for effective integration of GeoGebra in mathematics lessons.

IX. Reflection

As a synthesis, the study has shown that integrating the GeoGebra software in designing eSimulation-based lessons helped mathematics teachers to develop their attitude towards promoting the positive use of ICT in the classroom as a key factor in the 21st century teaching in the new normal. It also improved their pedagogical skills, mathematics content knowledge levels, and technological skills.

The study, therefore, recommends to continue and monitor the implementation of the training program in the Division of El Salvador City. The Division also has to prioritize the provision of gadgets needed as the main barrier perceived in the implementation of the program. The school level management should maximize the duties and responsibilities of the Math coordinators to initiate the roll-out of the program.

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An Analysis of the Results-Based Performance Management System in El Salvador City: Basis for Learning and Development Intervention

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Rationale

Human resources must be properly managed in order to strike a balance between employee needs, the responsibilities and competencies, and the relevance of quality human resources to the organization's growth (Mappamiring et. al, 2020). The performance system gives enough feedback on each person's performance, which may be used to adjust or influence behavior toward more efficient working habits, as well as providing data to immediate supervisors with which they can evaluate future job assignments and remuneration. However, research have shown that individual performance affects organizational performance, or, to put it another way, its development affects organizational performance (Akob et. al, 2020). This means that behaviors of employee, both individually and in groups, gives them control over organizational performance since motivation affects it (Paais et. al, 2020). Thus, leadership plays a critical role in an organization's success, and that administrators/raters are responsible for effectively managing and leading their teachers under direct supervision, particularly during planning and commitment (Razack & Upadhyay, 2017).

At the start of the twenty-first century, performance management has become important to public management reform (Moynihan, 2006). Its transition in focus from rules and input regulation to goal formulation and performance data analysis has been seen as an effort to improve public sector performance (Pollitt and Bouckaert, 2004). In the public sector, performance management is largely regarded to be a successful technique for improving outcomes. However, performance management may be seen as generic approaches such as managing by objectives and results, managing for outcomes, result-based management, and transformational leadership (Moynihan, 2006). Data from performance management systems is fundamental to the process since it informs administrators about where to focus its resources and improvement efforts, as well as providing a mechanism to track progress over time (Sun & Van Ryzin, 2014). Using performance measurements in this way enhances decision-making regarding future plans and managerial practices, thus improving organizational effectiveness and outcomes (Sanger, 2008).

Under CSC Memorandum Circular No. 6, series of 2012, this research on Results-Based Performance Management System (RPMS) was implemented at the Department of Education (DepEd) in accordance with the Civil Service Commission's (CSC) strategic performance management system. The Memorandum follows the four-phase cycle of the Strategic Performance Management System, which strives to guarantee that both teaching and non-teaching professionals work together to achieve the organization's vision, mission, and goals. The cycle's four stages are as follows: (1) Phase I: Performance Planning and Commitment: this shall be done prior to the start of the performance cycle where the rater meets with the ratee to discuss and agree on the office KRAs, Objectives and Performance Indicators as anchored to the overall organizational outcomes; and Individual KRAs, Objectives and Performance Indicators as anchored to the Office KRAs and Objectives. On the second phase, (2) Performance Monitoring and Coaching: this shall commence after the rater and the ratee commit and agree on the KRAs, Objectives and Performance Indicators, and sign the OPCRf and IPCRF. Performance monitoring shall provide key inputs and objective basis for rating. It shall facilitate feedback and provide evidence of performance. This shall be the responsibility of both the rater and the ratee who agree to track and record significant incidents through the use of the Performance Monitoring and Coaching. Significant incidents are actual events and behaviors in which both positive and negative performances are observed and documented. On the 3rd phase, (3) Performance Review and Evaluation: this shall be done at the end of the performance cycle to assess the office and individual employee's performance level based on the commitments and measures as contained in the signed OPCRf and IPCRF. Lastly for the 4th phase, (4) Performance Rewarding and Development planning: the rater shall discuss and provide qualitative comments, observations and recommendations in the individual employee's performance commitment, competency assessment and significant incidents which shall be used for training and professional development. Nonetheless, it is worth noting that just only few researches on the use of RPMS in Philippine education have been conducted since 2016. Then it's high time to investigate the Department of Education program to see how it's being implemented in relation to the four (4) phases that regulate the Results-Based Performance Management System (RPMS).

In this study, the Control Theory of Performance Management System was used. By identifying mechanisms of control between the organization and the systems within, control theory supports in the long-term sustainability of the performance management system (Chetty, 2016). Control theory enhances performance management by analyzing

a system's output for compliance with a set of pre-defined parameters (Chetty, 2016). On the other hand, regular monitoring of subordinates in the workplace by supervisors can be analyzed using the control system (Carver & Scheier, 2012). Similarly, supervisors may also utilize Control theory in a management program to promote the continuous flow of feedback between managers and employees in an organization to track and assess team accomplishments (Chetty, 2016).

Research Questions

This study was conducted to evaluate the Implementation of Results-Based Performance Management System among Master Teachers and School Heads in the Division of EL Salvador City. Specifically, this research would seek to answer the following research questions:

1. To evaluate the level to which the Results-Based Performance Management System has been implemented, as perceived by Master Teachers and School Heads, in the phases of Performance Planning and Commitment, Performance Monitoring and Coaching, Performance Review and Evaluation, and Performance Rewards and Development Planning; and
2. To evaluate the difference in the perceptions of the Master Teachers and School Heads on the extent of implementation of the Results-Based Performance Management System in the four phases.

Research Methods

Sampling Method

The participants of this study were conducted in all public elementary and secondary schools among Master Teachers and School Heads in the Division of El Salvador City for School Year 2020-2021. The total number of respondents was 71 comprising 45 (63.38%) Master Teachers and 26 (36.62%) School Heads. They were purposively chosen since they are the prime mover for performance management system in terms of coaching, mentoring and instructional supervision. The researcher secured a permit conduct research from the Schools Division Superintendent thru the Division Research Coordinator in the Division of El Salvador City. Upon the approval of the request, the researcher conducted school to school technical assistance and administered the online survey questionnaire to the respondents. Then, the researcher

retrieved the questionnaires after which they were tallied, weighted mean was computed, and the data were analyzed.

Research Design

In this study, a qualitative research was employed using thematic design and descriptive approach. To evaluate the level of implementation of the Results-Based Performance Management System (RPMS), the Stufflebeam Context, Input, and Process (CIP) evaluation model was used. In the context stage, the participants must adhere or observe to the Deped objectives, thrust and guidelines in the implementation of Results-Based Performance Management System. However, in the input stage, it covers the implementation of a Results-based Performance Management System for Master Teachers and School heads. Furthermore, the components of the study's paradigm concentrated on the process of evaluating the level of RPMS implementation through a series of methodical processes involving the administration of the survey questionnaire. The paradigm's last component emphasizes the need to improve organizational performance and efficiency in the implementation of RPMS, which Master Teachers and School Heads are involved in.

Statistical Treatment

The study's data was classified, tallied, tabulated, and statistically analyzed. The weighted mean was used to evaluate the level of implementation of the Results-Based Performance Management System in the four phases as well as the implementation challenges, while the Kruskal-Wallis Test was used to compare the perceptions of the two groups of respondents regarding the level of implementation of the RPMS in the four phases.

Research Instrument

The instrument was based from Dizon, et al. (2018) survey questionnaire that had been adapted to match the study's needs. The purpose of the questionnaire is to evaluate the level to which the Results-Based Performance Management System (RPMS) has been implemented. There were two components to the questionnaire: one for Master Teachers and one for School Heads. This included: a.) Performance Planning and Commitment; b.) Performance Monitoring and Coaching; c.) Performance Evaluation and Review; and d.) Performance Rewards and Development Planning from the Results-Based Performance Management System (RPMS). To evaluate the level

of RPMS implementation, a 5-point rating scale was used. The rating scale in evaluating the level of implementation of RPMS were consisted of the following range: (a) 4.50-5.00, Very High level; (b) 3.50-4.49, High level; (c) 2.50-3.49, Moderate level; (c) 1.50-2.49, Low level; and (d) 1.00-1.49, No level at all.

Ethical Considerations

The researcher provided for all participants addressed about the purpose of the research, why they were chosen, all potential risks and benefits and that they could refuse to participate, or could withdraw from the study at any point in time. All digital data was stored in a password-protected folder on the researcher's personal computer, and paper data was kept in a locked cabinet at the researcher's home. Respondents' anonymity was assured by assigning them with a code number for the purpose of analysis only. No incentives or rewards were given to the participants in this study.

Discussions of Results

Performance Planning and Commitment

The perceived evaluation of the two groups of respondents on the level of implementation of RPMS in performance planning and commitment, as shown in table 1, is high level of implementation, with overall mean of 4.39 and 4.26, respectively. However, for the master teachers, indicator 4, 5, 6, and 7 perceived to be the very high-level implementation which obtained the highest mean of 4.57, 4.50, 4.57 and 4.57. Meanwhile, for the school heads, indicator 6 perceived to be the very high-level implementation which obtained the highest mean of 4.58. This demonstrates that raters made certain agreements that RPMS was adequately discussed to ratees at the beginning of the performance cycle.

Table 1. Perceived level of Implementation of RPMS in Terms of Performance Planning and Commitment

explained.				
4. Key inputs about the ratee's performance during the performance monitoring are provided.	4.43	High level	4.32	High level
5. Coaching aimed to improve work and behavior is provided.	4.50	Very High level	4.42	High level
6. Critical incidences of the ratee are noted on the performance monitoring and coaching.	4.36	High level	4.32	High level
7. The ratee is asked to provide evidences	4.50	Very High	4.47	High level

supporting the latter's performance.		level		
What is your over-all evaluation in the implementation of RPMS on the Performance Monitoring and Coaching?	4.36	High level	4.26	High level

Performance Review and Evaluation

The perceived evaluation of the two groups of respondents on the level of implementation in performance review and evaluation, as shown in table 3, is high level of implementation, with overall mean of 4.48 and 4.37, respectively. However, for the master teachers, indicator 1, 3, 6, and 7 perceived very high-level implementation which obtained the highest mean of 4.52, 4.57, 4.50 and 4.52. Mean for the school heads, indicator 1, 2, and 3 perceived to be the very high-level implementation which obtained highest mean of 4.53, 4.58, 4.53. This means that raters consistently encouraged ratees to evaluate own performance, including accomplishments and targets attained.

Table 3. Perceived level of Implementation of RPMS in terms of Performance Review and Evaluation

Indicators	Master Teachers		School Heads	
	Mean	Qualitative Description	Mean	Qualitative Description
1. Self-appraisal is encouraged during performance review and evaluation.	4.52	Very High level	4.53	Very High level
2. Performance review and evaluation are done on certain frequencies; not just once.	4.41	High level	4.58	Very High level

Performance Monitoring and Coaching

The perceived evaluation of the two groups of respondents on the level of implementation of RPMS in performance monitoring and coaching, as shown in table 2, is high level of implementation, with overall mean of 4.36 and 4.26, respectively. However, for the master teachers, indicator 5 and 7 perceived to be the very high-level implementation which obtained the highest mean of 4.50 and 4.50. Meanwhile, for the school heads, all of the indicator perceived to be the high-level. This result demonstrates that raters meet with ratees to discuss feedback and performance gaps, as well as coaching them on how to improve their performance.

Table 2. Perceived level of Implementation of RPMS in Terms of Performance Monitoring and Coaching

Indicators	Master Teachers		School Heads	
	Mean	Qualitative Description	Mean	Qualitative Description
1. Performance monitoring and coaching are done on certain frequencies; not just once.	4.43	High level	4.11	High level
2. Opportunities or improvement of the ratee are clearly defined.	4.45	High level	4.32	High level
3. The impact of the critical evidences on the job/action plan of the ratee is explained.	4.34	High level	4.21	High level
4. Key inputs about the ratee's performance during the performance monitoring are provided.	4.43	High level	4.32	High level

5. Coaching aimed to improve work and behavior is provided.	4.50	Very High level	4.42	High level
6. Critical incidences of the ratee are noted on the performance monitoring and coaching.	4.36	High level	4.32	High level
7. The ratee is asked to provide evidences supporting the latter's performance.	4.50	Very High level	4.47	High level
What is your over-all evaluation in the implementation of RPMS on the Performance Monitoring and Coaching?	4.36	High level	4.26	High level

Performance Review and Evaluation

The perceived evaluation of the two groups of respondents on the level of implementation of RPMS in performance review and evaluation, as shown in table 3, is high level of implementation, with overall mean of 4.48 and 4.37, respectively. However, for the master teachers, indicator 1, 3, 6, and 7 perceived to be the very high-level implementation which obtained the highest mean of 4.52, 4.57, 4.50 and 4.52. Meanwhile, for the school heads, indicator 1, 2, and 3 perceived to be the very high-level implementation which obtained the highest mean of 4.53, 4.58, 4.53. This means that raters consistently encouraged ratees to evaluate their own performance, including accomplishments and targets attained.

Table 3. Perceived level of Implementation of RPMS in terms of Performance Review and Evaluation

Indicators	Master Teachers		School Heads	
	Mean	Qualitative Description	Mean	Qualitative Description
1. Self-appraisal is encouraged during performance review and evaluation.	4.52	Very High level	4.53	Very High level
2. Performance review and evaluation are objective and fair.	4.41	High level	4.58	Very High level
3. The evaluation is evidence-based.	4.57	Very High level	4.53	Very High level
4. Performance review and evaluation focuses on solving problems and or correcting a behavior.	4.48	High level	4.32	High level
5. Joint problem-solving approach is adopted and observed.	4.48	High level	4.16	High level
6. Meetings are well-managed during the performance review and evaluation.	4.50	Very High level	4.26	High level
7. Strengths and improvement needs of the ratee are discussed.	4.52	Very High level	4.42	High level
What is your over-all evaluation in the implementation of RPMS on the Performance Review and Evaluation?	4.48	High level	4.37	High level

Performance Rewards and Development Planning

The perceived evaluation of the two groups of respondents on the level of implementation of RPMS in performance rewards and development planning, as shown in table 4, is high level implementation for school heads and very high-level implementation for master teachers, with overall mean of 4.32 and 4.57, respectively. However, for the master teachers, indicator 1, 2, 3, 4, 5, and 6 perceived to be the very high-level implementation which obtained the highest mean of 4.70, 4.52, 4.57, 4.64, 4.55, and 4.61. Meanwhile, for the school heads, indicator 1 perceived to be the very high-level implementation which obtained the highest mean of 4.53. This demonstrates that the personnel observed their raters discussing and making written remarks such as strengths and improvement requirements for professional development.

Table 4. Perceived level of Implementation of RPMS in Terms of Performance Rewards and Development Planning

Indicators	Master Teachers		School Heads	
	Mean	Qualitative Description	Mean	Qualitative Description
1. The ratee is allowed and supported to attend seminars and workshops for professional development.	4.70	Very High level	4.53	Very High level
2. Qualitative comments, observations, and recommendations are discussed and provided.	4.52	Very High level	4.32	High level
3. Development needs are identified.	4.57	Very High level	4.42	High level
4. Performance rating is linked to the Performance-Based Incentive System specifically to the Performance-Based Bonus and Step Increment.	4.64	Very High level	4.37	High level
5. Ratee's with high performance rating are assigned to task forces, committees or special projects.	4.55	Very High level	4.11	High level
6. High-performance ratings are commended.	4.61	Very High level	4.47	High level
7. Ratees' are asked to prepare action plans in order to meet the development needs.	4.43	High level	4.21	High level
What is your over-all evaluation in the implementation of RPMS on the Performance Rewards and Development Planning?	4.57	Very High level	4.32	High level

Difference between the perceived level of Implementation in the Four Phases of RPMS

Table 4 presents the difference between the perceived level of implementation in the four phases of Results-Based Performance Management System (RPMS). As indicated in the table, all the four phases in the implementation of RPMS were perceived to be different from the two groups of respondents as indicated by the chi-square values ranging from 14.10 to 45.63 with significance level less than 0.05. However, for the master teachers, phases 1, 2 and 4 perceived to be the very high-level implementation which obtained the highest mean of 4.52, 4.55 and 4.50. Meanwhile, for the school heads, all of the indicator perceived to be the high-level. This demonstrates that the personnel observed their raters discussing and making written remarks such as strengths and improvement requirements for professional development. Master teachers had better perceptions of the implementation of the Results-Based Performance Management System (RPMS) in the four stages than school heads, according to these findings. The findings are supported by the studies on performance management systems and their impact on better performance, which states that leadership plays a critical role in an organization's success, and that administrators/raters are responsible for effectively managing and leading their teachers under direct supervision, particularly during planning and commitment (Razack & Upadhyay, 2017).

Moreover, the rater and the ratee are responsible for keeping track of the development needs and goals in the annual performances. Using performance measurements in this way enhances decision-making regarding future plans and managerial practices, thus improving organizational effectiveness and outcomes (Sanger, 2008).

Table 4. Difference between the perceived level of Implementation in the Four Phases of RPMS

Indicators	Master Teachers		School Heads		Chi-square	Sig.
	Mean	Qualitative Description	Mean	Qualitative Description		
1. Performance Planning and Commitment	4.52	Very High level	4.21	High level	19.14*	0.000
2. Performance Monitoring and Coaching	4.55	Very High level	4.05	High level	16.67*	0.000
3. Performance Review and Evaluation	4.48	High level	4.05	High level	14.10*	0.001
4. Performance Rewards and Development Planning	4.50	Very High level	4.26	High level	45.63*	0.000

*significant ^{ns} not significant

Conclusion and Recommendations

According to the findings of the study, the Results-Based Performance Management System was widely used as a tool for performance management in public elementary and secondary schools in the Schools Division of El Salvador City. In general, the four phases of RPMS implementation were progressively well-executed. Furthermore, there were considerable disparities in perceptions about the scope of implementation in the four RPMS stages. It is therefore suggested that both rater and ratee share responsibility and agreement in tracking and documenting critical incidents using the Performance Monitoring and Coaching Form (PMCF), which should be monitored and appropriately recorded on a regular basis. Hence, to further validate the survey conducted among the respondents, focus group discussion will be conducted to determine the implementation of Results-Based Performance Management System in the schools.

Advocacy/Work Plan & Utilization

Program Title: U-Engage Project Learning and Development (L&D) Intervention

Rationale

Human resources must be properly managed in order to strike a balance between employee needs, the responsibilities and competencies, and the relevance of quality human resources to the organization's growth (Mappamiring et. al, 2020). The performance system gives enough feedback on each person's performance, which may be used to adjust or influence behavior toward more efficient working habits, as well as providing data to immediate supervisors with which they can evaluate future job assignments and remuneration. However, research have shown that individual performance affects organizational performance, or, to put it another way, its development affects organizational performance (Akob et. al, 2020). This means that behaviors of employee, both individually and in groups, gives them control over organizational performance since motivation affects it (Paais et. al, 2020). The impact of COVID-19 pandemic on teaching delivery and strategies in education has revealed the weak resilience of the education in learners training; to maintain continuity of delivery of instruction core areas from L&D develop and improve to knowledge, skills and attitude or values. In this, the school accept challenges in adopting any form of technologies and facilitating of learning technology in different platform of training and seminars that teachers develop and improvement. Thus, leadership plays a critical role in an organization's success, and

that administrators/raters are responsible for effectively managing and leading their teachers under direct supervision, particularly during planning and commitment (Razack & Upadhyay, 2017).

General Objectives

This activity aims to capacitate school heads and master teachers on Instructional Supervision and mentoring the beginning teachers. Specifically, this activity targets to:

- a. assume leadership and supervise teachers on the improvement of instructional programs specifically the teaching learning process;
- b. provide professional, technical, and instructional assistance to teachers and school heads; and
- c. develop innovative and effective teaching – learning, approaches, strategies, and techniques.

Success Indicator/s:

- Continuity and Productivity in performing of teachers' data in areas L&D plan.
- Improved teacher performance through teacher satisfaction rate on technical assistance provided.

TIMELINE OF ACTIVITIES

List down and describe the project activities in chronological order.

1	<p>Focus Group Discussion (FGD) and First program planning workshop</p> <p>a. Draft the program and send-out necessary invitations to potential speakers and partners</p> <p>b. Schedules of meetings with partners shall be determined based on this meeting</p> <p>Date: August 2022</p> <p>Key players: DepEd El Salvador, Program Committee (composed of alumni team members, 4 others invited USGAA alumni/ education advocates)</p>
2	<p>Second program planning workshop</p> <p>a. Put some more details on the program based on inputs from registrants' confirmation and meetings with partners</p> <p>b. Finalize the list of confirmed participants</p> <p>Date: September 2022</p> <p>Key players: Program committee</p>
3	<p>Announcement of Events</p> <p>Posting of Memorandum on the website</p> <p>Date: July 2022</p> <p>Key players: Project leader and Program committee</p>
4	<p>Volunteers' Orientation and Technical Preparations</p> <p>a. Finalizing the committees for the Capacity Building</p> <p>b. Scheduling of assignments (printing of hand-outs, nametags, etc.)</p> <p>Date: September 2022</p> <p>Key players: Program committee, partner organizations in DepEd & USTP</p>

5	Mentors' Orientation a. Orientation on the "Interaction" Process b. Training on necessary skills to facilitate Interaction workshops Date: October 2022 Key players: Program Committee, USGAA-CDO alumni, and/or other possible mentors
6	Final program planning workshop Finalize all details of the program, as well as the lists of volunteers, mentors, speakers, and partners Date: October 2022 Key players: Program committee
7	U-Engage Capacity Building Date: November 16-17, 2022 Key players: Program committee, partner organizations, invited speakers

Monitoring Plan and Schedule

Monitoring Phase	M& E Instrument/Approach	Format or Strategy for Data Gathering	Schedule * As agreed with community/organization partner
Before Project Implementation	<i>Trainings Need Assessment</i>	Survey Questionnaire	A week after receiving training request
During Project Implementation	<i>Pretest and posttest Skills Demo or Competency Assessment</i>	Multiple Choice Questionnaire, survey questionnaire, competency checklist	During training proper
After Project Implementation	<i>Effect of Results-Based Performance Management System Intervention Plan</i>	Survey Questionnaire, Interview with Key Informant or FGD	<i>Post-test after a week of project implementation, monitoring research after 1 year of implementation with interview and FGD</i>

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A PSYCHOSOCIAL NEED'S ASSESSMENT OF JUNIOR AND SENIOR HIGH SCHOOL IN SELECTED DISTRICT SCHOOLS OF DIVISION OF EL SALVADOR CITY: BASIS FOR An INTERVENTION PROGRAM

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ABSTRACT

The study was conducted primarily to find out the psycho-social needs of the students, and secondarily to validate the relevance of the current programs of the Guidance and Counseling Services of the Department of Education Division School of El Salvador City. An adapted with permission and revised five need-components postulated by Villar, Imelda VJ (2007): Self-Development (SD), Family Relationship (FR), Social Responsibility (SR) and Studies (S) and Social Issues were measured using a five-point scale. A descriptive survey design in quantitative -qualitative approach was used. There were 843 students who participated randomly during the last months of the school year 2021-2022. Both Junior and Senior High Level considered "Plan my Life" as first priority and Extremely needed by the Senior High Students. Relevant programs maybe crafted as basis on other highlighted needs and salient comment on bullying prevention for both levels.

INTRODUCTION

Guidance services offered by educational institutions are focused on the fast-phased changing world of the younger generations. There is a tendency that guidance and counselling programs purportedly to enrich learning experience are designed for program needs instead for student needs (de la Cruz, 2014).

Needs assessment is a process that helps one to identify and examine both values and information. It provides direction for making decisions about program and resources (Stufflebeam et al 2012). Hence, as a new Guidance Counselor of the Department of Education of El Salvador City, it is crucial to objectively determine the current context the varying developmental needs of the students which entails preparation, information gathering, analysis and reporting. Students of different levels may have varying developmental needs and concerns that needs to be looked into objectively. Psychosocial needs are basically the same among ASEAN societies, what may make them differ is rooted on the environmental complexities and societal dynamicity on how each individual struggle to satisfy them.

This survey specifically aims to determine the needs of the Junior High and Senior High students of selected District School of the Department of Education, Division of El Salvador City and come up with an intervention plan. The survey aims to determine the psycho-social needs' profile of the participants considering their Self-Development, Family Relationships, Social Relationships, Studies and Social Issues. Implication for counselors and educators will also be drawn in coming up with a school's guidance program with the formation team for the upcoming school year. Guidance services of educational institutions play a significant role in the academic success of every student. The sensitiveness of the services offered requires an approved standard Guidance Counselor Program that may include core curriculum experiences and demonstrated knowledge and skills (Kentucky Education Professional Standards Board, 2005).

METHODS

Descriptive survey design in quantitative -qualitative approach was used in this study. Villars needs assessment (5 needs component; 5 point scale) was adapted with permission, revised and translated into online google link survey and paper and pen survey for participants who cannot access online. Data were gathered mainly by the researcher in coordination with the Guidance Counselor of District I and Guidance advocates of participating schools. Participants were (465) junior high student and (378), senior high students randomly selected in schools of the division of El Salvador city with a total of 843. Informed consent & data kept in utmost confidentiality. Weighted Mean (WM) and Percentage descriptive statistical tools were used in qualitative data.

RESULTS & DISCUSSION

The study was conducted primarily to find out the psycho-social needs of the students, and secondarily to validate the relevance of the current programs of the Guidance and Counseling Services of the Department of Education Division of El Salvador City. A descriptive survey design in quantitative -qualitative approach was used. There were 843 students who participated randomly last during the last months (June-July) of the school year 2021-2022, summer of 2022 and early months of SY 2022-2023.

Majority of the participants are from Senior High Grade 11 which comprised 319 respondents (37.84%), followed by Grade 10 of Junior High with 292(34.63), Grade 9 (78 or 9.255), Grade 8 (54 or 6.41%), grade

12 (62 or 7.36%) and Grade 7 (38 or 4.51%) . Participating schools from the Junior High level are Molugan National High School (316 or 67.96), followed by Cogon National High School (64 or 13.76%), El Salvador National City School (58 or 12.47%), Sinaloc National High School (14 or 3.01%), Sambulawan National High School (7 or 1.51%), Kalabayabay Integrated School (5 or 1.07%), Himaya National High School 91 or .22). Participating schools for Senior High level are from Molugan National High School (321 or 84.92%) , El Salvador National City High School (34 or 9%), Himaya National High School (15 or 3.96)and Cogon National High School 98 or 2.92%).

Result shows that in Junior High Level majority of the participants considered the following need indicators as Very Much Needed, "Plan my life" (4.43) followed by, "Develop self-confidence" (4.36) "Understand my lessons"(4.25) "Talk to teacher about difficulty in understanding lessons"(4.21) "Balance between work at home and studies"(4.21) "Develop confidence in recitations and discussions"(4.19). Manage my time (4.17), Improve teaching effectiveness of teachers.(4.12) Learn about abuses/harassment (physical, sexual, emotional, verbal) and how to handle them (4.11) and item indicators "Keep my body chaste and pure"(4.09), "Know and understand myself better"(4.06).

Result shows that in Senior High Level majority of the participants considered the following need indicators as Extremely Needed, "Plan my life" (4.51) followed by, "Develop self-confidence" (4.39) Balance between work at home and studies"(4.31) Talk to teacher about difficulty in understanding lessons"(4.28) " "Develop confidence in recitations and discussions"(4.28). "Manage my time (4.26) "Understand my lessons"(4.25), Learn about abuses/harassment (physical, sexual, emotional, verbal) and how to handle them (4.13) Improve teaching effectiveness of teachers.(4.12) Know and understand myself better(4.05), Keep my body chaste and pure(4.04), Handle financial crisis with the family (4.04) Know how to choose friends (4.02) Improve my relationship with my sibling/s (4.01).

Majority of the participants from both Junior High and Senior High Levels considered "Planning my Life" as extremely to highly needed. Developing confidence in recitations and discussions, managing time, understanding lessons, learning about abuses/harassment and how to handle them, improving teaching effectiveness of teachers, knowing and understanding oneself better, keeping their body chaste and pure, handling financial crisis with the family, knowing how to choose friends, Improving relationships with sibling/s are among the highly needed indicators. It is urgent to create new programs that would address students' extreme psychosocial needs with focus on Career

development and Self-awareness as a foundation for planning one' life: with a variety of curricula and co-curricular activities that would develop their self-confidence, academic learning and address their social issues.

The participants have given enough bases for the Guidance & Counseling Services to come up with a program that would appropriately answer the psycho-social needs of the students this SY. It is recommended that Career Advocacies will be given a priority with emphasis on Career Planning. Formation program will also be strategized with rationalized and dynamic guidelines to be drafted with monitoring based on the significant findings and results. An action plan to prevent prevalence of salient comments on bullying is also a worthy undertaking. Moreover, teachers may also improve their teaching strategies and create remedial and enrichment program to address the learning gap of the students due to the global pandemic.

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