



ISSN: 2984-925X



The Potter

CCC OFFICIAL RESEARCH JOURNAL

Volume 2, Number 1
April 2023

City College of Calamba

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**Published Annually by: Edu Heart Book Publishing ©2023
Block 1 Lot 54 Verandas Villas @, Buhay na Tubig, Imus City
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ISSN: 2984-925X

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Faculty Researchers



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Maryann H. Lanuza, LPT, MSc is a candidate for the degree Doctor of Philosophy in Mathematics Education at the Philippine Normal University, Manila which she is now finishing her dissertation writing with a working title “using study and research paths (SRP) for designing didactical framework in teaching mathematics in the modern world in a flexible learning”. She is holding the Vice President for Research and Innovation designation in the City College of Calamba, and an Assistant Professor III in the Mathematics Cluster. She is an NRCP Associate member, a country ambassador of FOE, a research scholar, a licensed teacher, and a civil service professional licensee.



Neil Perez Aligam, LPT, Ed.D. is the current Vice President for Extension and Linkages of the City College of Calamba (CCC). Before occupying the second top position in the college, he was designated as the Program Coordinator and Acting Director of the Department of Arts, Sciences, and Teacher Education of CCC. With 13 years of teaching experience combined with his exposure to various management posts, Dr. Aligam has been a very dynamic and transformational leader, inspiring Science teacher, and researcher. Also, he was appointed as the Regional Director of the International Cross-Cultural Exchange and Professional Development (ICCEPD) based in Thailand. He received several awards and citations from various organizations. He is a researcher, presenter, convener, administrator, and licensed professional teacher whose passion for teaching is undying and unwavering. He believes that educating the youth is the first pivotal step to a more sustainable and sustainable and liveable world and environment.



Elvinard R. Reyes, MAEd is a permanent employee of the City College of Calamba as an Administrative Officer II and he is currently the designated College Registrar during the time this is written. He is also a part-time instructor for 10 years teaching BS Information Technology Courses in the same institution.



Maricris G. Unico, EdD With twenty-four years of supervisory experience in educational settings with particular skill in establishing rapport with people from diverse backgrounds; an educator with strong exposure in organizational diagnosis, marketing, management, and human resource management; facilitator; life coach; and able to adapt to changing priorities/environments and maintain a positive attitude and strong work ethic. Before her present appointment as Associate Professor II, she held various positions: Vice President for Administration, Vice President for Extension and Linkages, Dean of School of Business, Dean of Arts and Sciences, Dean of Graduate School, HR Director, Research and Planning Director, NSTP and NSRC Director, Academic Assistant to the School President and other relevant positions.



Jesse Ann M. Salvador, MMIT was a City College of Calamba (CCC) alumnus with a Bachelor of Science in Information Technology degree in 2013. She is a Junior Lecturer and a Sustainable and Consistent Performance Awardee in 2021 in the same collegiate institutions' the Department of Computing and Informatics. Through perseverance and hard work, she received her Master's in Management, majoring in Information Technology Management at Colegio de San Juan de Letran-Calamba in 2022. As part of her brave attempt to explore and navigate the research arena, she presented research papers during the 5th International Conference on the Future of Education 2022 and the 1st CCC's Institutional Conference on Education, Business, Information, and Technology 2022.



Emelda V. Exciminiano, LPT, MBA has been a Mathematics professor for almost 30 years. She is a licensed teacher, real estate broker, and appraiser. She holds a BS in Statistics, a Master's degree in Business Administration, and is currently pursuing an Executive Master's degree in Information Technology. She runs her real estate brokerage.



Danica R. Millario, Danica is a transformational licensed professional teacher who views herself as developing marketable and internationally-competitive professionals by achieving personal and professional growth without jeopardizing academic competency by implementing the ideals of a true Filipino educator. She earned a Bachelor of Elementary Education from City College of Calamba and a Master of Arts in Education with a major in Administration and Supervision from Laguna College of Business and Arts. She is now pursuing a Doctor of Education with a major in Educational Management at Laguna State Polytechnic University-Los Baños Campus.

Student Researchers



Gerra Mae A. Batalla has been involved with research studies since 2018. She was awarded “Best in Thesis” during SHS while “Best Research Paper” and “Best Presenter” in college. She has presented at several local and international research conferences and has published her thesis in the institutional conference booklet of the City College of Calamba. She also gives pride in her institution for being a presenter at the first International Research Conference and was awarded “Best Abstract in Mathematics”.



Fern F. Reyes participated in research studies during her college and received the "Best Research Paper" award. She has also joined several local and international research conferences and represents her institution with pride as she was one of the "Best Abstract in Mathematics" award recipients at an international conference.



Hannah Camille T. Decena has been engaged in research since 2021, and her study was acknowledged as the "Best Research Paper". She recently took delight in representing her institution as a presenter at the first international research conference and was motivated by receiving the "Best Abstract in Mathematics" award.



Jessa B. Sotero has been part of the Department of Teacher Education which helps her hone her knowledge as a future educator since 2019. In 2021, they developed a research study that was recognized as “Best Research Paper”. She also presented at the first international research conference and was awarded "Best Abstract in Mathematics."



Abegail B. Carullo is a BSED English student whose objective mainly focuses on gaining literacy and competencies with an emphasis on her area of specialization. Believing in the importance of reading led her to the challenge of conducting this Lesson Study as a gateway to determining effective teaching of literature.



Diether S. Caponpon, taking Bachelor of Secondary Education major in English in City Colleges of Calamba share learning and impart knowledge to his students is what a pre-service teacher should do. You are not just giving them the information they needed but also proffer them the best learning experiences that they will use in life.



Kenneth M. Doctora develops an interest in mastering the English language in different components when he started college as it was also related to his course. Also, explore different academic tasks related to his specialization. Moreover, he strives harder to become proficient in English and Literature as preparation for his teaching career.



Mayann Jacky T. Tesoro is a BSED Science student who is fascinated by the influence of research on her experience and area of specialization. She believed that research is a tool for change to provide quality Science teaching, promote scientific literacy, and make a difference in a child's life every day.



Emmeline C. Lopez, as a child who is captivated by science, Emmeline once dreamed of becoming a food technologist, but she was not able to get in there for some reason. However, she was brought into the field of teaching, which was found to be a science subject.



John Ronald G. Guevara, as a prime mover of Education, pledged to be a positive teacher and positive influence on his fellow educators, students, and school. When he is surrounded by pessimism, he will choose optimism. When he experiences a challenge, he will look for opportunities to learn and grow, and help others.



Angelika Fae A. Babadilla is currently a 4th-year student at City College of Calamba taking the Bachelor of Secondary Education- Major in Mathematics. Angelika Fae participates in different school activities thus; she is a member of the academic organization in the said department.



Jennilyn E. De Castro is currently a 4th-year student at City College of Calamba taking the Bachelor of Secondary Education- Major in Mathematics. Jennilyn De Castro is a member of the academic organization under the said department.



Christine Nicole M. Mendoza is currently a 4th-year student at City College of Calamba taking the Bachelor of Secondary Education- Major in Mathematics. Christine Mendoza joined and lead the different organizations in the City College of Calamba, she also became an active volunteer outside the institution.



Jenalaine C. Quintero, is currently a 4th-year student at City College of Calamba, taking a Bachelor of Secondary Education major in Mathematics. Jenalaine is a 4th-year representative of their academic organization (uM³P). She also joined and participate in different organizations in the institution.



Jalen G. Castillo is a 22-year-old, 4th year Bachelor of Secondary Education major in Mathematics student at City College of Calamba. She is presently residing at 022 Purok 1 Brgy. Burol Calamba City Laguna was born on January 31, 2001. She is the current Auditor of the CCC Supreme Student Council.



Caila Katrinne T. Palma is a 21-year-old, 4th year Bachelor of Secondary Education major in Mathematics student at City College of Calamba. She is presently residing at Blk6 Lt8 Village Brgy. Laguerta Calamba City Laguna. She is the current Treasurer of Ugnayan ng mga Math Majors para sa Makabuluhang Pagtuturo.



Janeen Faye C. Umandap is a 21-year-old, 4th year Bachelor of Secondary Education major in Mathematics student at City College of Calamba. She is presently residing at 232 Brgy. Bunggo Calamba City Laguna. She is the current Vice President of Ugnayan ng mga Math Majors para sa Makabuluhang Pagtuturo (uM3p).



Judea Claire M. Alcaraz, Judea has been involved in creating research papers since she was in Senior High School. With her experience during high school, she continues to create the best paper during college. She was awarded “Best Research Paper” and “Best Presenter” in college. She has presented at several local conferences and has published her thesis in the institutional conference booklet of the City College of Calamba.



Raisa A. Buggay, Raisa has been engaged with research during Senior High School. She had created a paper during her Research 1 and 2 and competed with other sections. As she turns to college, they strive harder together with her group mates to defend their title, and as a result, they finish it and are awarded “Best in Research Paper”.



Neharika S. Lavarez, Neharika was engaged with research during Senior High School. She then continues to participate in research papers during college. She received an award for “Best in Research paper” along with her groupmates. She already presented her paper at the local conferences held at the City College of Calamba.



AG A. Lofamia, AG has participated in Research writing during college. He was awarded with “Best in Research Paper”. He already presented his study with the local conferences held in City College of Calamba.

External Researchers



JO ANNE M. GRANADA received the degree of Bachelor in Elementary Education in 2007 and finished her Master of Arts in Educational Management in 2009 from Lipa City Colleges. Currently, the author is enrolled in the course Doctor of Philosophy, Major in Educational Management at Batangas State University – Main Campus. She holds a Teacher III at the Department of Education, Division of Lipa City where she is affiliated since 2010. She is also a Senior Wood Badge Holder of the Boy Scout of the Philippines.



DIONALLY M. DELA CRUZ received the degree of Bachelor in Elementary Education in 2005 and finished her Master of Arts in Educational Management in 2015 from Lipa City Colleges. Currently, the author is enrolled in the course of Doctor of Philosophy, Major in Educational Management at Batangas State University-Main Campus. She holds Teacher III at the Department of Education, Division of Batangas Province where she is affiliated since 2007.

FOREWORD



Dr. Raymund Arcega

President and Executive Director, Commission on Accreditation for Local
Colleges and Universities (ALCUCOA)
Chairman, National Network of Quality Assurance Agencies

Research is indispensable for any higher educational institution to achieve academic advancement and excellence. Higher learning involves production of quality and relevant research outputs made by the faculty of instruction, research teams, and even students which are useful and contributory for the progress of the society. Without research, there will be no innovations and development. This is the reason why research is an imperative for all HEIs to ensure that generation of knowledge will continue and that scientific solutions will always be available.

With high regards, I am honored to celebrate knowledge with the City College of Calamba for this another breakthrough of publishing the Volume 2 Number 1 of “The Potter” research journal. This compilation of scholarly works proves that the institution is actively fulfilling its vision of providing quality learning not just only through instruction but also by research publication and dissemination. This new issue contains significant studies across disciplines that are noteworthy as reference for further research endeavors, teaching, as well as basis of decisions for various sectors and organizations. The journal as its title “The Potter” connotes is definitely like shaping a useful vessel which requires skillful art in order for it to be formed. This work is a by-product of an intense effort of discovering, reviewing, and organizing of knowledge by the researchers of CCC.

This is a dedication and commendation to the exceptional service and skills of all people who tirelessly and committedly worked for the completion of this project. Therefore, I invite all to an advanced learning experience by reading the researches included in this publication.

Salute to all members of the research team and I wish for a sustainable and progressive research life of the City College of Calamba!

MESSAGE



Dr. Ronald A. Gonzales, LPT

Editor-in-Chief, CCC The Potter
Officer-in-Charge, Office of the College President

My warmest felicitations to the members of the CCC Community as we release the Second Edition of “The Potter”, the CCC Official Research Journal.

On June of 2018, we witnessed the launching of “The Potter” Volume 1 which includes 11 researches from the faculty members across academic departments. This year, we proudly present to the whole community “The Potter” Volume 2 Number 1 that showcases five (5) Faculty Researches and six (6) Student Researches that were presented during the First Institutional Conference on Business, Education, Information and Technology, and Social Sciences held in November 2022 via hybrid platform. To ensure quality of publication, researches in this volume have been thoroughly screened, scrutinized, and critiqued by peer reviewers, internal reviewers, and two (2) international external reviewers from Vietnam and Czech Republic.

Because of this another milestone and success in the area of research, the whole CCC community is celebrating and inspired to produce more publishable researches of quality and integrity that are at par with the international standards bringing innovations and development in the local setting. This another step towards a stronger research culture of CCC will not be possible without the effort, initiatives, and support from the Office of the Vice President for Research and Innovation headed by the CCC VPRI, Prof. Maryann H. Lanuza.

To the readers of this research journal, may you have a happy, productive, and meaningful reading time. May you also be inspired to do research and contribute to the body of knowledge we have been enriching for the next generations’ brighter and better future.



ONLINE PLATFORMS: PORTAL TO PROFESSIONAL DEVELOPMENT AMONG TEACHERS IN THE NEW NORMAL

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Abstract

Advancement of education calls for the advancement of technology. There is a continuous revolution not only in technology but also in education as a whole. To keep pace with the 4th Industrial revolution, education must be in haste when it comes to the utilization of technology. However, due to some limitations and inadequacies, some teachers have not fully capacitated themselves with the use of technology in teaching. Several faculty development programs in schools have centered on ICT integration in teaching-learning to provide additional opportunities to teachers as they continue to update and upgrade their instructional competencies. The shift of teaching-learning modality to online or blended learning brought about by COVID-19 Pandemic necessitated teachers to learn, relearn and unlearn technological tools and platforms. Whether individually or institutionally, teachers have resorted to certain online platforms to aid their pedagogical obligations. Through this shift, an opportunity for development among teachers has become relevant and imperative. This descriptive study aimed to evaluate the extent of the utilization of online platforms in achieving teachers' professional development. The 122 purposive-conveniently sampled teachers from the Department of Education-Lipa Division were asked to assess how online platforms boost their professional development. Data were gathered through online questionnaires and focus group discussion (via Google Meet). The findings of this study revealed that though there was a very high utilization of online platform, teachers still found difficulty in delivering lectures or conducting classes online, much so when it comes to giving feedback or follow-up instruction. The study also confirms that the age and teaching experience of teachers are integral (strongly linked) to the employment of teaching strategies. This paper moves forward the field of knowledge through a professional development plan for teachers using different online platforms.

Keywords: *teaching, online platforms, 4th industrial evolution, new normal, faculty development plan*

INTRODUCTION

Despite these trying times brought about by the spread of the coronavirus disease 2019 (COVID-19), the Department of Education (DepEd) continues to find ways to

help ensure that "education will continue". Department of Education launched online platforms to support distance learning (March 2020). According to Secretary Leonor Briones, Education must continue even in times of crisis, whether it may be a

calamity, disaster, emergency, quarantine, or even war.

As mandated by the Department of Education, Division of Lipa abide and immediately follows the order of the DepEd Secretary to continue the delivery of basic education to our children. Undersecretary Alain del Pascua, noted the use of DepEd Commons and Edmodo, together with other online educational delivery platforms is highly encouraged especially in situations where face-to-face instruction is impossible.

Prior to the implementation of various learning modalities. Teachers used to have different ways and means for their professional development. The most common of them all was the face to face or residential mode of acquisition of learning whether through participating to seminars, conferences, trainings or by attending graduate classes.

The onslaught of the COVID 19 pandemic drastically changed the educational landscape including the supposedly progressive professional (education) development of teachers.

The researchers are taken by idea that teachers must not stop learning; that education must continue; that quality must not suffer; and that professional development must not be impeded.

With the pressing needs of the time, and to be relevant to the current system of learning, teachers should be able to fit themselves into an environment which is practically influenced and governed by technology. Online platforms are what most schools, teachers and students turn to for continuance of their education. It is

believed that when teachers are properly oriented and educated with and through online platforms, there would be significantly interesting impact on the teaching – learning results and professional development. Thus, this study makes itself highly valuable and useful, not only to give credence to the professional development of teachers but also to elevate proficiency and competence in education and technology as a whole.

The researchers conducted this study to determine and assess online platforms as portal to teachers' professional development. Selected teachers from the Division of Lipa used by the researchers as respondents in this study.

OBJECTIVES OF THE STUDY

The primary purpose of this study was to propose faculty development plan that will improve professional development of teachers. Specific aims included the following: (1) describe the profile of the respondents (2) determine the extent teachers utilize online platforms for their professional development. (3) assess the extent of online platforms and its effect on the professional development (4) determine the relationship among

4.1 profile of the respondent and online platforms utilized by teachers

4.2 profile of the respondents and their professional development

4.3 online platforms utilized by teachers and their professional development

(5) design a faculty development plan that will improve professional development of teachers.

METHODOLOGY

This research made use of the descriptive method to determine and assess the use of Online Platforms and its effect to Teachers' Professional Development in the New Normal. Researcher-made questionnaire and focus group discussion were used as data gathering tools for this study. The respondents of this study were 122 selected teachers from the Schools Division of Lipa City. The researchers used random sampling to arrive at the sample size where the obtained sample sizes were made equivalent to the population size using the Slovin's Formula. The statistical tools used to analyze the data are weighted mean, percentage, and correlation coefficient.

RESULTS AND DISCUSSION

1. Profile of the Respondents

This part describes the profile of the respondents.

1.1 Profile of the respondents in terms of age.

Table 1 presents the profile of the respondents. Five (5) items were used by the researchers in characterizing this category. These were 21-30, 31-40, 41-50, 51-60, and 61 years old and above.

Table 1
Profile of the Respondents in terms of Age

Category	F	%	RANK
21 – 30	22	18.03	3
31 – 40	57	46.72	1
41 – 50	28	22.95	2
51 -60	15	12.30	4
61 and above	0	0	5
Total	122	100	

The data revealed that most of the respondents in Schools Division of Lipa City are in age range of 31-40 with frequency count of 57 or 47.72%. This was followed by age range of 41-50 with frequency count of 28 or 22.95 percent.

In contrast, none of the respondents belong to age range of 61 and above, which got the lowest rank. This was followed by respondents at age range of 51- 60 years with frequency count of 15 or 12.3 percent at rank 4.

A key factor in readiness for computer use and integration in teaching is teacher age. The level of self-efficacy is not equally distributed across ages. In their study Wambiri & Ndani, (2016) Gill and Dalgarno's (2008) stressed on influences of pre-service teacher preparedness to use ICT in the classroom found younger respondents to have higher confidence in their ability to teach using computers than older respondents.

On the other hand, Tucker (2017) stated that the availability of technology and the many advances in that field are changing the ways in which information and knowledge can be delivered to students. While research results that teacher's age plays a significant role in technology implementation in the classroom are mixed, the preponderance of evidence suggested it is not a factor in technology integration.

1.2 Length of Service.

Table 1.2 presents the data on the length of service of the respondents. Five (5) items were used by the researchers in characterizing this category. These were less than 3 years, 3-6 years, 7-10 years, 11-14 years, and 15 years and above.

Table 2
Profile of the Respondents in terms of
Length of Service

Category	F	%	RANK
Less than 3 years	8	6.56	5
3 - 6	27	22.13	2
7 - 10	25	20.49	3
11 - 14	22	18.03	4
15 years and above	40	32.79	1
Total	122	100	

Data revealed that most of the respondents have length of service of 15 years and above with frequency count of 40 or 32.79 percent. This was followed by 3 – 6 years with frequency count of 27 or 22.13 percent at rank 2.

In contrast, respondents with less than 3 years got the lowest rank with frequency count of 8 or 6.56 percent. This was followed by 11-14 years at rank 4 with frequency count of 22 or 18.03 percent.

Research on the role experience plays in effective teaching and technology integration has produced mixed results. (Tucker 2017 and Tsai 2015) concluded the experienced teacher displayed an optimistic attitude regarding utilizing technology but focused mainly on pedagogy and curriculum content during implementation.

Howard and Gigliotti (2016) found a positive and significant correlation between a teacher’s experience with risk-taking and successful technology implementation in the classroom. Teachers in the study gained experience with specific coping strategies that supported the integration of technology in the classroom.

1.3 Highest Educational Attainment

Table 3 presents the data on the highest educational attainment of the respondents. Five (5) items were used by the researchers in characterizing this category. These were 4 years teaching course, with MA units, with master’s degree, with doctoral Units and Doctoral Degree.

Table 3
Profile of the Respondents in terms of
Highest Educational Attainment

Category	F	%	RANK
Doctoral Degree Holder	2	1.64	5
With Doctoral Units	9	7.38	4
Master’s Degree Holder	27	22.13	2
With Master’s Degree Units	61	50.00	1
Bachelor Degree Holder	23	18.85	3
Total	122	100	

The data revealed that 61 or 50.00% of the respondents in the Schools Division of Lipa City have units in Master’s which obtained rank 1. It was followed with 27 teacher-respondent or 22.13% having Master’s Degree at rank 2.

In contrast, only 2 or 1.64 of the respondents obtained highest educational attainment of Doctoral Degree Holder that marks at the lowest rank. It was followed with school respondents with Doctoral Units which obtained 9 or 7.38 percent at rank 4.

As cited by Ladd and Sorensen (2015) finds that teachers who obtain master’s

degrees are more likely to transfer to higher quality schools with better working conditions. Moreover, our descriptive finding that school administration is the single most popular choice of advanced degree indicates that for many teachers, pursuing a master's degree may constitute preparation for future administration positions, such as an assistant principal or department head rather than as a means of improving their teaching skills.

In the findings in the study by Roberto & Madrigal (2019) further showed no significant difference in both the teaching standards competence and performance when the teachers were grouped according to sex, educational attainment, marital status, and status of employment.

2. Teachers utilize online platforms for their professional development.

Table 4
Assessment of the Respondents on the Utilization of Online Platforms for their Professional Development

Indicator The teacher...	WM	VI	R
1. utilizes online platforms in attending webinar related to their tasks as teacher.	4.38	VGE	3
2. uses online platforms in attending faculty meeting to update themselves with DepEd issues and concerns.	4.43	VGE	2
3. utilizes online platforms to give follow-up lesson with his/her students.	4.00	GE	5
4. utilizes online platform in	4.01	GE	4

conducting meeting/orientation with parents to improve their partnership.
 5. utilizes online platforms in submitting reports/documents need by the school.

Composite Mean	4.26	VGE
<i>Legend: Range</i>		<i>Verbal Interpretation</i>
4.20 – 5.00		Very Great Extent
3.40 – 4.19		Great Extent
2.60 – 3.39		Normal Extent
1.80 – 2.59		Limit Extent
1.00 – 1.79		Not at All

Data shows the assessment of the respondents on the utilization of online platforms for their professional development. Results revealed that utilization of online platforms in submitting reports/documents need by the school obtained the highest weighted mean of 4.47 and verbal interpretation of very great extent. It was followed by using online platforms in attending faculty meeting to update themselves with DepEd issues and concerns with weighted mean of 4.43 at rank 2

On the other hand, the respondents assessed indicator 3 “The teacher utilizes online platforms to give follow-up lesson with his/her students” to be great extent with weighted mean of 4.00 at rank 5. This was followed by indicator 4 “The teacher utilizes online platform in conducting meeting/orientation with parents to improve their partnership” with weighted mean of 4.01 at rank 4.

To sum it up, the respondents assessed the utilization of platform for their professional development to a very great extent with composite mean of 4.26.

As cited by Anh (2017) Popular LMS systems currently provide essential tools that

allow interactive activities in the course, such as forums, message, online forms of assignments, exercises in wiki format, virtual classroom, etc. These tools also assist teachers in tracking and monitoring the student learning process, such as status submitted assignments reports in school, the frequency of access statistics, activity logs on the system.

3. Extent of online platforms and its effect on the professional development of teachers.

To determine the extent on the respondents' assessment on the effects of online platforms in their professional development, three (3) items were used by the researchers as basis of assessment. These were in terms of teaching strategies, assessing learners, and dealing with diverse learners.

3.1 Teaching Strategies

Table 3.1 presents the data on the assessment of the respondents on the effect of online platforms in their professional development in terms of the teaching strategies they use. Five (5) items were used by the researchers in characterizing this category.

Table 5
Assessment of the Respondents on the Effect of the Online Platforms in their Professional Development in terms of Teaching Strategies

Indicator The teacher...	WM	VI	R
1. discusses her lesson via google meet/ fb room/ video calls and phone calls.	3.78	GE	4

2. can give questions to be answered by the learners using the chat box to ensure learners' understanding of the lesson.	3.85	GE	3
3. delivers a lecture via google meet/ fb rooms/ video chat and phone calls that targets the misconceptions or gaps in knowledge acquire during module accomplishment.	3.64	GE	5
4. develop confidence among pupils to express their own ideas openly during presentation of output.	3.90	GE	2
5. can reach-out all his/her learners to give follow – up lessons using different online platforms.	3.96	GE	1
Composite Mean	3.83	GE	

Legend: Range	Verbal Interpretation
4.20 – 5.00	Very Great Extent
3.40 – 4.19	Great Extent
2.60 – 3.39	Normal Extent
1.80 – 2.59	Limit Extent
1.00 – 1.79	Not at All

As can be seen from the data, the assessment of the respondents on the effect of online platforms in their professional development. Results revealed that reaching-out all his/her learners to give follow – up lessons using different online platforms obtained the highest weighted mean of 3.93 and verbal interpretation of great extent. It was followed by developing confidence among pupils to express their own ideas

openly during presentation of output with weighted mean of 3.90 at rank 2.

On contrary, the respondents assessed indicator 3 “The teacher delivers a lecture via google meet/ fb rooms/ video chat and phone calls that targets the misconceptions or gaps in knowledge acquire during module accomplishment.” to be great extent with weighted mean of 3.64 at rank 5. This was followed by indicator 1 “The teacher discusses her lesson via google meet/ fb room/ video calls and phone calls” with weighted mean of 3.78 at rank 4.

The respondents assessed the effects of online platforms in their professional development in terms of teaching strategies at great extent with composite mean of 3.83.

In a study conducted by Mavroudi and Tsagari (2018) revealed that the participant teachers received very well a variety of formats and also, they indicated methods as well as types of tasks and activities they would find most favorable in an online training course. With this in consideration, there really shows that online platforms and teaching strategies are greatly correlated.

In addition to that, a survey was conducted for a study, Teachers’ Perceptions of Large-Scale Online Teaching as an Epidemic Prevention and Control Strategy in China, Yang (2020) revealed a lack of training in online teaching skills among primary and secondary school teachers prior to the outbreak of COVID-19. It appears that the full adoption of online teaching methods and comprehensive training in online teaching skills was only conducted in response to the control of this epidemic. The questionnaire examined teachers’ recent reception of online teaching training, finding

that 55.31% of the teachers received relevant training.

3.2 Assessing Learners

Table 6 presents the data on the assessment of the respondents on the effect of online platforms in their professional development in terms of assessing learners. Five (5) items were used by the researchers in characterizing this category.

Table 6
Assessment of the Respondents on the Effect of the Online Platforms in their Professional Development in terms of Assessing Learners

Indicator The teacher...	WM	VI	R
1. uses google forms in giving assessment among learners.	3.41	GE	5
2. uses integrative assessment which he/she learned on lac session conducted by the school.	3.83	GE	4
3. ensures that rubrics were provided before the performance tasks of the learners.	3.99	GE	2
4. rates the performances done by his/her learners based on the video sent to his/her email and messenger.	3.98	GE	3
5. developed written work assessment for his/her learners based on MELCs which are part of the webinar he/she attend in teaching - learning in the new normal.	4.23	VGE	1
Composite Mean	3.89	GE	

<i>Legend:</i>	<i>Range</i>	<i>Verbal Interpretation</i>
	4.20 – 5.00	Very Great Extent
	3.40 – 4.19	Great Extent
	2.60 – 3.39	Normal Extent
	1.80 – 2.59	Limit Extent
	1.00 – 1.79	Not at All

Data shows the assessment of the respondents on the effect of online platforms in their professional development in terms of assessing learners. Based on the result, developing written work assessment for his/her learners based on MELCs which are part of the webinar he/she attend in teaching-learning in the new normal obtained the highest weighted mean of 4.23 and verbal interpretation of very great extent. It was followed by ensuring that rubrics were provided before the performance tasks of the learners with weighted mean of 3.99 at rank 2.

On the other hand, the respondents assessed indicator 1 “The teacher uses google forms in giving assessment among learners.” to be great extent with weighted mean of 3.41 at rank 5. This was followed by indicator 2 “The teacher uses integrative assessment which he/she learned on lac session conducted by the school.” with weighted mean of 3.83 at rank 4.

To sum it up, the respondents assessed the effects of online platforms in their professional development in terms of assessing learners at great extent with composite mean of 3.89.

Furthermore, (Abuhassna, Megat, Yahaya, et. al. (2020) present study highlights the effects of online learning platforms on student’s satisfaction, in relation to their background and prior experiences towards online learning platforms to identify learners that are going to be satisfied toward online course.

3.3. Dealing with Diverse Learners

Table 3.3 presents the data on the assessment of the respondents on the effect of online platforms in their professional development in terms of dealing with diverse learners. Five (5) items were used by the researchers in characterizing this category.

Table 7
Assessment of the Respondents on the Effect of the Online Platforms in their Professional Development in terms of Dealing with Diverse Learners

Indicator The teacher...	WM	VI	R
1. gives follow - up lesson based on the capabilities of the learners such as through google meet, fb room, video calls or phone calls.	4.03	GE	3
2. prepared individual monitoring plan for learners who needs more attention.	4.22	VGE	1
3. provides intervention to individual learners based on their needs.	4.13	GE	2
4. provides differentiated activities among learners especially when giving follow-up lesson.	3.97	GE	5
5. uses age-appropriate and localized materials based on the needs of the learners.	4.00	GE	4
Composite Mean	4.07	GE	

<i>Legend:</i>	<i>Range</i>	<i>Verbal Interpretation</i>
	4.20 – 5.00	<i>Very Great Extent</i>
	3.40 – 4.19	<i>Great Extent</i>
	2.60 – 3.39	<i>Normal Extent</i>
	1.80 – 2.59	<i>Limit Extent</i>
	1.00 – 1.79	<i>Not at All</i>

As can be seen from the data, the assessment of the respondents on the effect of online platforms in their professional development in terms of dealing with diverse learners. Based on the result, preparing individual monitoring plan for learners who needs more attention obtained the highest weighted mean of 4.22 and verbal interpretation of very great extent. It was followed by providing intervention to individual learners based on their needs with weighted mean of 4.13 at rank 2.

On the other hand, the respondents assessed indicator 4 “The teacher provides differentiated activities among learners especially when giving follow-up lesson.” to be great extent with weighted mean of 3.97 at rank 5. This was followed by indicator 1 “The teacher uses age-appropriate and localized materials based on the needs of the learners.” with weighted mean of 4.00 at rank 4.

To sum it up, the respondents assessed the effects of online platforms in their professional development in terms of dealing with diverse learners at great extent with composite mean of 4.07.

FunNLearn (2017), noted that worksheets offer a unique learning avenue to kids that is already provided and given in the module. They are not only fun to do but even facilitate ease of learning and knowledge retention in the young minds. It offers enough challenge to the young minds and encourage them to use them more. That’s exactly the reason why teachers and even parents prefer worksheets for their kids’ education. The study conducted by Sun and Chen (2016)

stated that online instructors also identified the need to engage their students, which can be accomplished by utilizing emails and online discussion boards, responding promptly to discussion questions, encouraging students to share their backgrounds and work experiences, and conducting meaningful small group projects. To achieve these objectives, they suggested online instructors to be good organizers. In a well-organized course they described, students should be given all course materials at the beginning of the class, be provided with direct links to the necessary websites and resources, and be clearly informed about how to navigate the university website to successfully complete the course. In addition, they noted that being flexible was another crucial element for effective online teaching. Technology isn’t always perfect and reliable, and online instructors have to be prepared to cope with issues such as system delays, software updates, email glitches, etc. Good online instructors are those who possess the knowledge and skills on how to use and adapt updated technologies, who are available online at all times, who frequently check for emails and text messages, who promptly reply to questions and concerns, and who grade and return assignments with feedback on a timely manner.

4. Test of Significant Relationship

Table 8 presents the data on the profile of the respondents and utilization of online platforms.

Table 8
Test of Relationship of the Profile of the Respondents and the Utilization of Online Platforms

Compared Variables		r	p-Value	Interpretation
Age		0.174	0.056	Accept Ho
Length of Service	Utilization of Online Platforms	0.127	0.163	Accept Ho
Highest Educational Attainment		0.135	0.139	Accept Ho

Legend: $p > 0.05$ = Accept Hypothesis
 $p > 0.01$ = Reject Hypothesis

As can be seen on the table the assessment of the respondents on the relationship of their profile and the utilization of online platforms. Based on the result, all compared variables revealed that they do not have significant relationship with each other as it reflects on the f -values of 0.174, 0.127, and 0.135 on age vs utilization of online platforms, length of service vs utilization of online platforms, and highest educational attainment and utilization of online platforms respectively. It further revealed that the p -values of 0.056 for age vs utilization of online platforms, 0.163 for length of service vs utilization of online platforms, and 0.135 for the Highest educational attainment vs. utilization of online platforms are greater than the 0.05 level of significance, thus the null hypothesis for these items were accepted.

The research of Fine (2016) concludes that age of the teacher in the delivery dimension and faculty members who have been teaching for 16+ years may have preconceived perceptions about online delivery compared to those who are new to the profession or younger. Older teachers who have taught many years but did not grow up using technology and may not be adept at integrating it into their teaching world in the same way as younger teachers may have

negative perceptions about online delivery. Moreover, Fine also noted that, teachers' demographic characteristics in areas that included years of teaching and age negatively affected their computer proficiency. As age and years of experience increased computer proficiency decreased. Teachers' computer proficiency positively influenced their technology integration. It is also found that senior faculty and younger faculty members are equally involved in embracing online instruction even though the younger teachers have a better understanding and acceptance of technology. As cited by Horn and Jang (2017) among early childhood, primary, middle, and junior high school teachers, those with a master's degree do not have a larger effect on student reading achievement, relative to teachers with only a bachelor's degree. The effect on student math achievement is unclear. The effect of master's degree attainment on student reading and math achievement during high school remains unclear. One study suggests that master's degree attainment will only yield a positive effect on student achievement if the teacher majors in during the master's degree program. Regarding achievement, one study demonstrated that scores were higher among students whose teachers had a master's degree, relative to students whose teachers only had a bachelor's degree. Overall, past research depicts a complex, poorly understood relationship between teacher educational attainment and student outcomes that may vary by such factors as level of schooling, academic subject, and major-course congruence.

4.1 Profile of the respondents and effects of online platforms to their professional development.

Table 9 presents data on the profile and effects of online platforms to their professional development.

Table 9
Test of Relationship of the Profile of the Respondents and the Effects of Online Platforms to their Professional Development

Compared Variables		r	p-Value	Description
Age		0.248	0.006	Significant
Length of Service	Teaching Strategies	0.201	0.027	Significant
	Highest Educational Attainment	0.096	0.295	Not Significant
Age	Assessing Learners	0.082	0.372	Not Significant
	Length of Service	0.173	0.056	Not Significant
Highest Educational Attainment	Dealing with Diverse Learners	0.008	0.091	Not Significant
	Age	0.075	0.410	Not Significant
Length of Service	Dealing with Diverse Learners	0.111	0.223	Not Significant
	Highest Educational Attainment	0.032	0.727	Not Significant

Legend: $p > 0.05$ = Accept Hypothesis
 $p > 0.01$ = Reject Hypothesis

The data presents the assessment of the respondents on the relationship of their profile and the effects of online platforms to their professional development. Based on the result, two out of nine components were found to be significant. Specifically, age of the respondent's vs teaching strategies and length of service vs. teaching strategies with r – values of 0.248 and 0.201 respectively. It also revealed that the p -values for these components were 0.006 and 0.027

respectively which are less than the 0.05 level of significance, thus, null hypotheses for these components were rejected.

All other components were found not significant. For educational attainment vs teaching strategies, the t - value is 0.096 and the p -value is 0.295. Age vs assessing learners, length of service vs assessing learners, and educational attainment and assessing learners were also not significant with p -values of 0.372, 0.056, 0.091 which were greater than 0.05 level of significance.

Likewise, age vs. dealing with diverse learners, length of service vs. dealing with diverse learners, and educational attainment vs. dealing with diverse learners were also found not significant with their p - values of 0.410, 0.223, and 0.727 respectively. All p -values for these components were greater than 0.05 level of significance. Thus, the null hypotheses for these components were accepted.

Imlach, A R, et al (2017) shows that ageing—up to the eighth decade of life—is not an impediment, and that specific cognitive functions (episodic memory and language processing capacity), in combination with attributes associated with lifetime engagement in cognitively stimulating activities, contribute toward academic performance.

4.2 Utilization of Online Platforms and Professional Development of Teachers.

Table 10 presents data on the utilization of online platforms and professional development of teachers.

Table 10
Test of Relationship of the Utilization of Online Platforms and Professional Development of the Teachers

Compared Variables	r	P-value	Description
Teaching strategies	0.625	0.000	Highly Significant
Utilization of Online Platforms	0.621	0.000	Highly Significant
Dealing with Diverse Learners	0.611	0.000	Highly Significant

Legend: $p > 0.05$ = Accept Hypothesis
 $p > 0.01$ = Reject Hypothesis

As can be seen on the table the assessment of the respondents on the relationship of utilization of online platforms and its effects on their professional development. Based on the result, all components were found to be highly significant. Specifically, utilization of online platforms vs teaching strategies, assessing learners, and dealing with diverse learners with r – values of 0.625, 0.621, and 0.611 respectively. It also revealed that all their p – values are 0.000 which is less than the 0.01 level of significance, thus null hypotheses for these components were all rejected.

As cited by Donelan (2016), in this technological world that we live in, it is very important for teachers to be in step with new technologies and enhancing staff’s professional development and growth. This will allow them to better understand their students who are actively browsing the web. Tutors will be able to adapt their teaching methods to their learners’ needs and they will improve their own IT abilities. This article will reveal the benefits of e-learning for teachers. It will focus on how e-learning allows educators to improve and develop their teaching styles. The article will also emphasize how online platforms can

positively impact the professional self-development of teachers.

Professional development is necessary to fill in the gaps in the skill sets of new teachers, and to continue to develop the expertise of teachers (Evers et al., 2016).

Professional development should provide an important tactic for improving schools, increasing teacher quality, and improving student learning (Girvan et al., 2016; Opfer, Pedder, & Lavicza, 2011; Witte & Jansen, 2016)

Meaningful technology use in education continues to improve given an increase in access to available technologies and professional development. (Alexiou-Ray & Bentley, 2017)

5. Proposed Faculty Development Plan to Improve professional development of teachers.

Based on the findings and conclusions, the researchers proposed a faculty development plan to improve teachers’ professional development using online platforms. Developers and policy makers call for more rigorous evidence that describes how professional development design elements affect the likelihood of program success (Witte & Jansen, 2016). Based from the result of the study of Coswatte & Shelton (2017), planning new or improving existing faculty development programs that enhance teaching and learning in the online classroom is significant to professional development.

CONCLUSIONS

The result of the study based on the profile of the respondents indicates that most of the middle age got the highest percentage

because of their exposure to the utilization of online platforms. It is also found out that, experienced teachers had better knowledge in using online platforms in teaching rather than newly hired teachers. Furthermore, teachers who have master's degree are equipped in using online learning management system.

Teachers' utilization of online platforms for their professional development shows very great extent. More so, the extent of online platform when it come to its effect on teachers' professional development in terms of teaching strategies shows great extent. This means that there is still a room for improvement of teachers' capabilities in using different online platforms with regards to their teaching strategies. The finding denotes that teachers show great extent when it comes to the utilization of online platforms in assessing the learners. Despite the teachers' utilization of online platforms for their professional development, they still need to work on utilizing online platforms in assessing learners. Based on the elicited responses, teachers show great extent in the utilization of online platforms in dealing with diverse learners.

It is found out on this study that there is no significant relationship between the profile of the respondents and the utilization of online platform thus hypotheses must be accepted. Furthermore, the age and length of service of teachers are significant to the teaching strategies thus the null hypotheses for these components are rejected. On the other hand, highest educational attainment and teaching strategies are significant thus accepting the hypothesis. The profile of the respondents and assessing learners and the profile of the respondents and dealing with diverse learners are significant thus accepting the hypotheses.

On the other hand, there is a highly significant relationship between the utilization of online platforms by the teachers and the professional development they acquired thus rejecting the hypotheses. This implicates that online platforms have great effect on the teachers' professional development in the selected teachers in the School Division of Lipa City.

RECOMMENDATIONS

The following were recommended based on the conclusions drawn:

1. The school management should craft a faculty development plan to improve teachers' professional development.
2. In depth seminars and workshops that focuses on utilization of different online platforms in terms of teaching strategies, assessments, and dealing with diverse learners should be administered to the teachers.
3. Partnership among different internet providers, stakeholders, and the Department of Education in the provision of free internet access, technological tools and training to improve professional development among teachers.

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LOCAL COLLEGES AND UNIVERSITIES' PREPAREDNESS AND RESPONSE TO EDUCATIONAL PRIORITIES AMIDST COVID-19: AN INPUT TO A MODEL-BASED STRATEGIC DEVELOPMENT PLAN IN A NEW NORMAL

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Abstract

This endeavor is mainly focused on preparedness and responsiveness to educational priorities amidst Covid-19 through determining the profile, preparedness level, and responsive level of Local Colleges and Universities (LCUs) in Region IV CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon). Furthermore, the researcher analyzed the gathered data towards identifying predictors on the preparedness and responsiveness level of LCUs through Linear Modelling. Lastly, it also aimed to develop a model-based strategic development plan in a new normal.

The study revealed that the respondents' profiles do not singly affect the level of preparation in addressing education priorities amidst the COVID-19 pandemic; that the respondents' profiles except employment status do not singly affect the level of preparation in addressing education priorities amidst the COVID-19 pandemic; that the respondents' level of preparedness does singly affect the level of response in addressing education priorities amidst the COVID-19 pandemic. This study will move forward the body of knowledge by utilizing the very output of this academic endeavor which is the Model-Based Strategic Development Plan for LCUs in CALABARZON.

Keywords: *strategic development plan, educational priorities, preparedness, responsiveness, parents, linear models, LCUs*

INTRODUCTION

The COVID-19 pandemic has generated significant economic, social, and political problems throughout the world. It has resulted in both a health and an educational disaster. Lockdowns and quarantines impacted 87 percent of the world's student population, with 1.52 billion children missing school or other educational institutions (UNESCO Learning Portal, 2020). COVID-19's abruptness, ambiguity, and volatility forced the educational system to adapt quickly to the new learning environment.

As the COVID-19 epidemic spreads over the world, it is critical to meet the educational requirements of all stakeholders, particularly those who have a direct influence, such as students and educators. This educational requirement emphasizes the need for quick preparation and reaction in the classroom. However, if COVID-19 remains a public health priority, how will it be accomplished?

Indeed, the COVID-19 pandemic is largely a public health concern, and scientists and pharmaceutical firms' efforts to develop vaccines or other treatments to prevent or treat COVID-19 infections are key to

mitigating its impacts. Without effective medication intervention, mitigating the impacts of a pandemic would rely on public health government officials to prevent the spread of the illness via methods like social distancing. The coronavirus sickness (COVID-19), a communicable virus, is caused by a newly discovered coronavirus. The majority of COVID-19 virus-infected people will experience mild to moderate symptoms and

will recover without the need for treatment. People who are older and have underlying health issues including depression, diabetes, chronic lung illness, or cancer are more prone to have serious health problems. Most governments across the world have promptly shut down academic institutions to stem the spread of the COVID-19 virus. This nationwide shutdown will affect over 90% of the world's student population (UNESCO, n.d.).

This infection truly shocked the total world, and indeed the nations with the finest open well-being framework were too forced the lockdown handle due to the increment of COVID-19 cases.

A group of researchers at Harvard University have found that a certain type of exercise can help improve cognitive function. The Chan School of Public Health has warned that the United States might need to apply periodic social distancing measures starting in 2022. Dr. Yonatan Grad, a professor of medical specialty and infectious diseases at Harvard, joined WBUR's Morning Edition to debate the findings of a paper he has not yet published.

Social distancing refers to measures to reduce the amount and duration of contact and increase the physical distance between people to slow the spread of disease (Qualls et al., 2017). Aside from hand hygiene and

the use of personal protective equipment such as face masks, social distancing practices include measures creating additional distance between students in lecture halls and corridors, and canceling activities that bring students into close contact (e.g. gatherings, field trips) and others.

On campus to prepare for an outbreak of pandemic flu, it takes a multi-dimensional effort from a team of individuals with experience in the unique ways the university works and for your epidemiological plan to be effective, some of the disciplines that must be in place are theory and planning practice, committee organizations, community relations, learning organizations, change and development, optimization, risk assessment, human behavior, leadership, and emergency management (Pokrywka, 2016). The recent disasters at universities and colleges have shown how unprepared universities and colleges are for emergencies. The infrastructure has been severely damaged by fires, floods, and hurricanes.

Thus, the output of this study was to create a proposed model-based strategic development plan in a new normal through the analysis of the preparedness and response of LCUs in CALABARZON amidst the COVID-19 pandemic.

Framework of the Study

Kurt Lewin's Force Field Theory will serve as the foundation for the research. There are forces driving change (government intervention, societal values, technological changes, knowledge explosion, and administrative support) and forces restraining it (government intervention, societal values, technological changes, knowledge explosion, and administrative support) in Lewin's model (fear of the unknown, negative attitudes to change, traditional values, limited resources, and obsolete equipment). There will be no

change where the two sets of forces are in balance. According to Riley, the driving force must be greater than the restraining factor for change to occur (2016).

In the wake of the COVID-19 epidemic, Lewin's theory promoted the implementation of new normal programs, particularly in the educational sector, where traditional face-to-face instruction was supplanted with distance learning. It was a significant shift in the educational system, and as a result, education leaders and stakeholders may be required to limit or intensify their efforts to support government-sponsored initiatives aimed at combating or at least mitigating the COVID-19 virus. In this difficult time, stakeholders' assistance is critical, particularly in providing health and nutrition support for students, teachers, and the entire community. Direct assistance to teachers and parents will be provided as soon as possible, such as ensuring that the school's submission and retrieval of outputs for modular distance learning—printed or non-printed, and the like—are safe and guided by standard health protocols established by the Inter-Agency Task Force (IATF) for COVID-19. Furthermore, under RA 8525, the Adopt-a-School Program, and RA 11494, the Bayanihan to Heal as One Act of 2020, stakeholders' efforts to improve the learning environment, learning assistance, technological support, and training and development have been amplified throughout the country.

The study is also supported by the Complex Adaptive Blended Learning System (CABLES) framework. The learner is at the core of the paradigm, yet all of the elements interact. The system consists of six components, each with its sub-system. The student, the instructor, the technology, the material, the learning support, and the institution are the six (6) elements.

Each element not only has its nature and mechanism, but they also interact with one another. Relationships are dynamic and integrative, much as in any complex system. The linkages and effects of each element functioning with and on the other elements provide the basis for this adaptive blended learning system. This framework was created to help people grasp the dynamic and adaptable nature of blended learning more thoroughly and accurately.

Objectives of the Study

The main goal of this study was to create a proposed Model-Based Strategic Development Plan in Education Priorities by exploring the preparedness of the Local Colleges and Universities in CALABARZON and their response to the COVID-19 pandemic.

Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of:
 - 1.1. classification (administration, faculty, non-teaching staff, COVID-19 response team);
 - 1.2. age;
 - 1.3. sex;
 - 1.4. employment status?
2. What is the level of preparedness of LCUs in addressing education priorities amidst the COVID-19 pandemic?
3. What is the level of response of LCUs in addressing education priorities amidst the COVID-19 pandemic?
4. Do the respondents' profiles singly affect the level of preparation in addressing education priorities amidst the COVID-19 pandemic?
5. Do the respondents' profiles singly affect the responsive level of addressing education priorities amidst the COVID-19 pandemic?

6. Does the respondents' preparation level influence the level of responsiveness in addressing education priorities amidst the COVID-19 pandemic?

7. What strategic model-based development plan may be proposed based on the findings and implications derived from the study?

METHODS

Research Design

This study employed the descriptive-correlational type of research where the survey method determined the LCUs' preparedness and response to Covid-19. According to Adanza et al. (2009), descriptive-correlational research is used to obtain information regarding current circumstances, status, or trends, as well as to deal with what is now happening. According to Salmorin (2006), it is a design that aims to characterize the nature of the situation as it exists at the time of the research and to investigate the source of specific phenomena.

According to Castillo (2007), descriptive research entails more than just data collection and tabulation. It includes components of interpretation of the meaning and relevance of the information provided. Furthermore, descriptive research frequently combines measurements, classifications, and interpretations with comparison and contrast. As a result, a descriptive approach is used to describe certain phenomena. It's been described as "fact-finding" or "knowledge collection" with analytical interpretations by some researchers.

The descriptive technique encompasses more than simply data collection. From the standpoint of the study's aims and underlying assumptions, the

genuine meaning of the data obtained should be communicated. Although the facts gathered are an accurate statement of central tendency, deviation, or association, the report is not researched until the data is discussed to the point of competent interpretation. Ordered reasoning must be used to apply the facts to the thinking process (Sanchez, 1993).

Because of the necessity to determine the preparation and reaction to Covid-19 of Local Colleges and Universities in CALABARZON as input to a strategic development plan, the descriptive technique of research suited well into this study.

Another research approach employed in this study was predictive research, where a linear model for forecasting and prediction may be created, which is extremely useful in a condition of emergency and/or pandemic in a changing period.

Research Locale

Local Colleges and Universities in Region IV-A CALABARZON were the research localities, which comprised Local Colleges and Universities in the region's five provinces: Cavite, Laguna, Batangas, Rizal, and Quezon.

Respondents of the Study and Sampling Technique

Academic stakeholders were included in the formulation of a strategic plan, but only administrators, teachers, non-teaching staff, and the COVID response team were regarded as samples. As a result, it has restrictions for students, parents, practitioners, and communities. The key reason for selecting them was that they were directly and principally involved in a hasty preparation and implementation of how to respond to COVID-19 in terms of educational priorities

at CALABARZON's Local Colleges and Universities.

Based on CHED's list as of May 31, 2017, there are 74 public higher education institutions in the entire region. Sixty (60) are state universities, 4 are those local universities, and ten (10) are local colleges (CHED, 2017; Region IVA Colleges and Universities, 2021). Hence the total research locale was from all the fourteen (14) LCU's i.e., 4 from local universities namely (i) Pamantasan ng Cabuyao, (ii) Laguna University, (iii) Pamantasan ng Lungsod ng San Pablo and (iv) Pamantasan ng Montalban. Meanwhile, ten (10) local colleges in the region represented the provinces in CALABARZON. These were (i) Trece Martires City College, (ii) City College of Tagaytay, (iii) City College of Calamba, (iv) City College of Lucena, (v) Balian Community College, (vi) Colegio ng Lungsod ng Lipa, (vii) Tanauan City College, (viii) Colegio ng Lungsod ng Batangas, (ix) San Mateo Municipal College, and (x) Pambayang Kolehiyo ng Mauban.

According to Bosch (2018), depending on the expected and modified school settings, they use different instructional formats. However, there are some commonalities in the preparedness and response to educational priorities amidst the pandemic. This highlights the similar vision and mission of these colleges which made them common to be part of the Strategic Development Plan because they have the same vision of providing quality learning opportunities through relevant and affordable education. Also, they have similar clients which are usually the youth of the city and the province, and their source of the fund came from the local government unit.

Instrumentation

The study tool was a researcher-created survey questionnaire format concerning Reimers and Schleicher's (2020) framework for guiding an education response to the COVID-19 pandemic 2020. It was divided into four sections. Part I provided a general profile of the respondents, including age and sex, as well as the type of administrator, teacher, or COVID-19 Response team. Part II dealt with determining the crucial amount of how much they were exposed to educational priorities. Part III provided metrics for determining the amount of level of readiness concerning the experienced education priorities. The last segment assessed the degree to which each preparedness indicator offered in the preceding section elicited a response.

The researcher used a validation scoring sheet composed of the following criteria to conduct expert validation with three professionals in the fields of Administration and Supervision and/or Education: (1) clarity; (2) wordiness; (3) balance; (4) use of jargon; (5) appropriateness of responses; and (6) relationship to the research problem. Inter-Rater Reliability Coefficient will be used to examine the replies (IRR). Aside from the targeted IRR value of larger than 0.7, validation feedback inputs were also integrated into the research instrument version.

In addition, non-actual participants were tested with the instruments in either the same local or private institutions in the same category, and the findings were assessed using Cronbach's alpha reliability score of better than 0.7.

Data Gathering Procedure

For the gathering of data, the researcher first secured a letter of permission

from the presidents or heads of the LCUs to survey the involved respondents.

All of the offered statistical measures were produced by collecting data from respondents after obtaining the relevant permissions. The data was disseminated in two ways: the first was through a Google form and Google Meet orientation, and the second was through restricted face-to-face distribution following health procedures, as the region is still primarily in its Pandemic Alert Level 1 state. Both the Google form and the tally sheets yielded findings that were collated, examined, and interpreted.

The result of the survey was used as a basis for the preparation of the strategic development plan.

Data Analysis

The answers to the questions understudy were tabulated, organized, and analyzed using the Statistical Package for Social Science:

To determine the distribution of the profile, the frequency count and percent formula were used. Basic rank was used as well to highlight the most and least occurring profiles.

Since data came from the random probability sampling, several assumptions in the descriptive and inferences were satisfied including a test of normality through the Shapiro-Wilk Test. Second was the test of homogeneity via the Breush-pagan test. If assumptions were met, the parametric measures were used. Likewise, if assumptions were not met, non-parametric counterparts were used.

To interpret the generalized levels of preparedness and extent of response, the weighted mean was used. The 4-point Likert

scale mode of interpretation was the basis of the interpretation schemes. Linear regression formula was used to create a linear model of prediction based on current profiles in predicting the level of critical extent of preparedness and responsiveness on the educational priorities of the LCUs amidst the COVID-19 pandemic. Also, the same analysis was applied in the prediction of the responsive level regarding the preparedness level.

RESULTS AND DISCUSSION

The three-hundred and one (301) respondents of the study which was 12.38% of the total population in the LCUs in CALABARZON. The profiles are as follows: the majority of responses came from 68.1% (205) of the faculty function alone while the combined function with the COVID-19 response team was 13.6%. To emphasize that the samples were derived from the close proportions of every age range but mostly participated from 30-34 and 40-44 at an equal 19.3% while least participated by 65 years old and above at 1.7%. From the raw data, the age of 81 was the oldest practitioner-respondent in the field while 20 years old was the youngest employee. More than half of the respondents were female at 56.5% (170). More than half (54.5%) who participated in the assessment of the areas defined in the study were permanent regular employees while the least participation came from the 0.7% of the job orders.

The level of preparedness of LCUs in addressing education priorities amidst the COVID-19 pandemic showed moderate preparedness with a mean weight of 2.62.

The LCU responsiveness is at a moderate level to education priority during the COVID-19 pandemic, with a mean weight of 2.60.

The computed R-value of 0.135 was interpreted as a very low positive correlation. An r-squared of 1.8% of the differences in preparedness level can be explained by the profile variables at a constant value of 2.107. Moreover, with p-values of 0.549 for classification profile, 0.124 for age, 0.587 for sex, and 0.051 for employment status, these were the evidence that there is no best predictor in determining the preparedness level if the profile variables were involved.

The R-value of 0.154 was calculated and was interpreted as a very minimal positive correlation. The profile variables can explain 2.4 percent of the changes in the responsive level and the constant value is 2.020. Furthermore, with p-values of 0.085 for employee classification, 0.552 for age, 0.324 for sex, and 0.026 for employment status, these were pieces of evidence that there is only one predictor for determining the responsive level of profile variables were involved, i.e., the employee's employment status profile.

The R-value of 0.858 was calculated and was interpreted as a high positive correlation. The preparedness level can explain 73.5 percent of the changes in the responsive level with a constant value of 0.014. Furthermore, p-values of 0.000 as the best predictor for determining the responsive level if the preparedness level is concerned.

CONCLUSION

Overall, this study signals an encouraging conclusion: despite varying profiles, education professionals are sufficiently prepared to address the educational challenges posed by the COVID-19 pandemic. The results demonstrate that most profiles of the respondents did not singularly affect the level of preparation in addressing education priorities during the COVID-19 pandemic. The exception to this

was employment status, which did have an impact on the level of preparedness. On the other hand, the preparedness of the respondents did not have any influence on the level of response to the pandemic in addressing education priorities.

These findings suggest that education professionals are taking the necessary steps to ensure that the educational sector is adequately prepared to cope with the many challenges posed by the pandemic. As such, education stakeholders should continue to invest in the necessary resources to ensure that education professionals remain adequately resourced and prepared to respond to the pandemic.

RECOMMENDATIONS

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

1. A proportional number of participants according to profile may be reconsidered to give an equal distribution of analysis and assessment about the education priorities.
2. Strong indicators may be sustained for professional advancement and prioritization of the safety and security of the faculty to ensure learning continuity.
3. Incorporation of online mental health and medical services to increase its medical services and student support services, allowing for more constant monitoring and implementation of health practices both within and outside of the academy.
4. Furthermore, for a basic understanding of any pandemic or emerging medical concerns, HEIs may also formulate a management protocol and flowchart focused on on-campus medical services to serve as public health awareness measures.

5. The conclusion is that employment status significantly affects the responsiveness of the employees especially if they are permanent, hence, it is recommended that LCUs may increase permanent position items.

6. Since it is concluded that the preparedness level significantly influences the responsiveness of the employees, it is recommended that strengthening preparedness through a set of activities should be planned, implemented, and evaluated.

7. The LCUs may validate the proposed model-based strategic development plan in the specified eleven educational priorities for possible utilization.

8. future researchers may conduct similar studies to of creating models for predicting readiness and responsiveness not only in educational priorities amid a pandemic but also alike situation emergency scenarios.

9. future researchers may explore the other external factors to complete the 100% predictability of preparedness and responsive factor of the LCUs.

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CONVERGENT PARALLEL MIXED METHODS STUDY ON STUDENT RECORD MANAGEMENT SYSTEM IN HIGHER EDUCATION INSTITUTIONS IN CALAMBA CITY

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Abstract

The main objective of this convergent parallel study was to identify the efficiency of the student record management system in different Higher Education Institutions (HEIs) in Calamba City and propose a Registrars' Manual that can be used in day-to-day transactions with stakeholders. The convergent parallel design, a mixed-methods design, was used in this study to gain a thorough grasp of the problem. There were two elements to the research process: qualitative and quantitative. The study was conducted on selected HEIs in Calamba City having 140 student respondents and 9 registrar staff using a disproportionate stratified sampling method and equal allocation to identify the total student respondents per HEI and total enumeration for the registrar staff. Based on the quantitative data gathered, showed that the respondents believed that the current student records management system was fully implemented and that they were also fully satisfied with the level of implementation of the current records management system.

Furthermore, there is no significant difference between the assessment of registrar staff and students as regards the satisfaction level of implementation on the existing student records management system in all variables having a probability value greater than a .05 level of significance. Based on the qualitative data gathered, the researcher found out that respondents encountered various problems with records management, system accessibility, and digitization so they came up with alternative solutions to solve these various problems they encountered. It is concluded that despite the lack of a completely dedicated records management system, some HEIs in Calamba City prioritize record protection, check record duplication, and propose student records management guidelines.

Keywords: *Records Management System, Mixed Method Study, Higher Education Institutions*

INTRODUCTION

Student record management is considered one of the main foundations of any academic institution. All student's academic activities will rely heavily on all information contained within. The smooth running of an institution relies heavily on effective and efficient records management. Certain administrative decisions are

dependent on the accuracy and integrity of the information stored such as course offerings, faculty performance, and class schedules, among others. Without such, student evaluation, course loading, promotion, and graduation application are impossible (Bentil,2018).

Furthermore, according to ISO 15489-1-2016, also known as Information

and Documentation -Records Management – Part 1- Concepts and Principles, records serve as evidence of business activity as well as information assets. They are characterized by a variety of information assets their role as facts in business activities and their reliance on metadata. Metadata for records is used to indicate and preserve context, as well as to apply appropriate rules for record management. There is currently a lack of research on student records management. Despite earlier studies on the issues of keeping student records, there is a shortage of research focusing on the deployment of a centralized student records management system in the country. With the ongoing epidemic and the transition toward online learning, there is an urgent need to study the possibility of digital solutions in tackling both issues. Addressing this research gap is critical for improving educational quality and guaranteeing the correct recording and maintenance of academic records.

Records whether printed on paper or stored electronically must constantly be improved in terms of creation, retention, and retrieval to adapt to the amount of information stored and the demands of the stakeholders. According to accessrecordsmanagement.co.uk, educational institutions have very particular duties when it comes to maintaining information and records. They produce enormous volumes of data, not only about hundreds or even thousands of students, but also about staff, facilities, equipment, and institutional processes. Trying to keep a big volume of school records on-site might result in a lack of physical space and a general lack of efficient organization for some schools and educational institutions that still employ manual filing and management processes.

An accurate official record should serve as the foundation for human rights protection, poverty reduction, rule of law,

economic development democratization, and an accountability framework.

The researcher believed it is imperative, especially during this time of the pandemic that registrars and staff consider reviewing and updating some of the processes they currently practice to be on par not only within the City of Calamba but also on the international scene. Improvements in records management must be done to ensure that all stakeholder’s demands will be met with great efficiency and reliability. It is the legal and moral responsibility of every College/University Registrar to ensure that all records are secured, intact, and accessible to that authorized personnel as stated in the Manual of Operation for Private Higher Education. This is to avoid emerging record management problems such as data inaccuracy, unavailability of records, and migration to digitized record management. This is also important to make sure that both employees’ and students’ expectations are met in terms of services such as requesting records, updating information, and generation reports being provided by the office of the registrar of their respective institutions to ensure the satisfaction of the staff and the students.

Framework of the Study

Based on the above-mentioned theoretical framework, a research paradigm was abstracted.

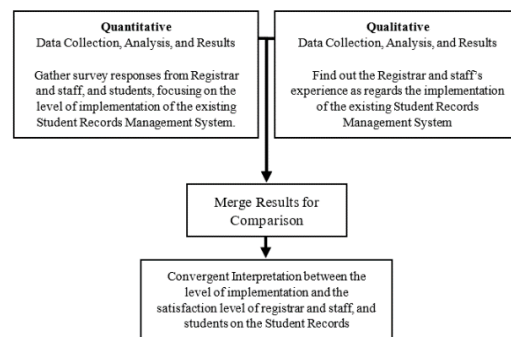


Figure 1 Research Paradigm

Figure 1 illustrates the research paradigm of the study. The study used the convergent parallel mixed method. The researcher used both qualitative and quantitative approaches to gather data. Both approaches were conducted simultaneously but independently from each other. Different HEIs' registrar and staff, and students were provided with a validated set of questionnaires to identify the level of implementation of the existing Student Records Management System. Concurrently, a set of open-ended questions were also provided through interviews to find out the level of satisfaction of both the registrar and staff and students with the implementation of the existing Student Records Management System. After gathering the data, all the results were merged and compared to create a convergent interpretation between the level of implementation and the satisfaction level of the registrar and staff, and students on the Student Records Management System.

Objectives of the Study

The main objective of this convergent parallel study was to identify the efficiency of the student record management system in different HEIs in Calamba City and to propose a Registrars' Manual that can be used in day-to-day transactions with stakeholders. To do so, the following objectives served as the basis for this research:(1) Determine the level of implementation of the current records management system in selected HEIs in Calamba City as assessed by the registrar and staff in terms of Records Creation, Retention Policy, Access, and Data Privacy ; (2) Determine the satisfaction level of registrar and staff, and students on the level of implementation of the current records management system of their respective HEI; (3) Determine the significant difference between the assessment on the level of satisfaction among the registrar and staff, and

students as regards to the level of implementation of the existing student records management system; (4) Describe the experience of the registrar and staff on the implementation of the current records management system in selected HEIs in Calamba City; and, (5) Propose a records management system that can be incorporated in the Registrar Manual.

METHODS

Research Design

A convergent parallel design the researcher to conduct the quantitative and qualitative portions of the research at the same time, to weigh the methods equally, to evaluate the two components independently, and to interpret the results cohesively. By directly comparing quantitative statistical data with qualitative findings, the researcher sought to triangulate the methodologies for corroboration and validity. During the study, two data sets were collected, reviewed separately, and compared. Demir, & Pismek(2017). Convergent Parallel Design was used to obtain different but complementary data on the effects of the level of implementation of the HEI's student records management system and the student's level of satisfaction with the services provided by their respective HEIs.

Research Locale

The study was conducted in four selected Higher Academic Institutions in the City of Calamba duly recognized by the Commission on Higher Education. All the selected HEIs are at least level 1 on a recognized accreditation body for private and local academic institutions such as but not limited to, the Association of Local Colleges and Universities Commission on Accreditation (ALCUA) and Philippine Association of Colleges and Universities

Commission on Accreditation (PACUCOA). These institutions were selected primarily due to their proximity, making access and data gathering easier for the researchers. Furthermore, these institutions have different levels of technology used in their regular processes.

Respondents of the Study and Sampling Technique

The study utilized respondents from four (4). Higher Educational Institutions in Calamba City from both public and private. The numbers of student and staff population also offer a diverse sample for the study and the potential generalizability of the findings. The researcher was able to determine the distribution of the number of respondents needed for the attainment of the objectives of the study. The table below shows the number of samples from two groups of respondents.

Table 1
Distribution of Respondents to HEI for the Survey

Distribution of Respondents according to HEI for the Survey

Higher Academic Institution	Total Registrar Staff	Percentage	Student Respondents	Percentage
HEI 1	4	100%	35	25%
HEI 2	1	100%	35	25%
HEI 3	2	100%	35	25%
HEI 4	2	100%	35	25%
Total	9	100%	140	100%

For the registrar personnel, total enumeration was utilized due to the small number of populations. HEI 1 has 4 registrar personnel respondents, HEI 2 has only 1, and HEI 3 and 4 have 2 respondents each.

Table 2
Distribution of Respondents according to HEI for the Interview

Distribution of Respondents according to HEI for the interview

Higher Academic Institution	Registrar Staff
HEI 1	4
HEI 2	1
HEI 3	2
HEI 4	2

Instrumentation

There were two research instruments utilized in this study to attain its objectives. For the qualitative part, the researcher prepared open-ended questions used during the interview among the registrars of the different HEIs in Calamba City. The interview questions were validated by the adviser and five - graduate school professors or any experts in the field of the system of the registrar's office. While for the quantitative part, a questionnaire created by the researcher was used to respond to the objectives of the study.

Research Ethics Protocol

Following the ethical guidelines outlined in the LCBA Research Manual was enforced since ethical issues were considered throughout the study. It was expected that both the registrar and their students would be engaged in the interview voluntarily. To obtain the consent of the respondents, the study's importance/significance and objectives were explained to them. The data and information gathered were kept private. In addition, the works of other authors' researchers were cited suitably. Lastly, this study passed the Research Ethics and Integrity Board Clearance last September 3, 2022.

Data Gathering Procedure

The researcher transcribed the responses of the participants. Interpretative phenomenological analysis (IPA) was employed to interpret and analyze the

participants' responses IPA was used to discover what a subjective experience means to the person via in-depth reflective inquiry. The hermeneutic roots of IPA allowed researchers to go beyond the surface-level presentation of data to give meaningful interpretive explanations of participants' actual experiences. Confidence or trustworthiness was crucial to credibility in qualitative research since the findings represent the experiences of participants regarding the phenomena being investigated. This was accomplished by active participation in the hermeneutic circle, which ensured that both the participants' experiences and the researchers' interpretations of their narratives were given considerable voice (Peat et al., 2018).

Data Analysis

Using the Statistical Package for Social Sciences (SPSS), the following statistical treatments were applied in the study: About the level of implementation, a three-point Likert scale was utilized. And to express the level of satisfaction, the mean, percentage, and a four-point Likert scale were utilized with the registrar's office's services. With the results of the two variables (satisfaction and implementation), a T-Test was implemented to test if there is a significant correlation between the mentioned variables.

RESULTS AND DISCUSSION

The following are the study's outcomes per the purpose statement, based on the data obtained and after diligent and extensive analysis:

Based on the quantitative data gathered it showed that the respondents believed that the current student records management system

was fully implemented having a composite mean of 3.60 in terms of records creation, 3.42 in terms of the records retention policy, 3.80 in terms of access, and 3.56 in terms of data privacy. The respondents were also fully satisfied with the level of implementation of the current records management system having a general assessment of 3.54 in terms of records creation, 3.52 in terms of the retention policy, 3.62 in terms of access, and 3.70 in terms of data privacy. Furthermore, there is no significant difference between the assessment of registrar staff and students as regards the satisfaction level on implementation of the existing student records management system in all variables having a probability value greater than a .05 level of significance.

Based on the qualitative data gathered, the researcher found out that respondents encountered various problems with records management, system accessibility, and digitization so they came up with alternative solutions to solve these various problems they encountered. The respondents also shared the students' complaints they received about inaccessibility, complicated process, and data deficiencies and their responses to these complaints such as proper communication, verification, and improved service. The respondents also expressed the necessity of technology relative to student records management systems for improvements in records management, services, efficiency, and accessibility.

CONCLUSION

The researcher concluded that first, despite the lack of a completely dedicated records management system, the selected HEIs prioritize record protection and implement the system to provide services to their students. Second, while there are specific services that need improvement, both

the registrar and the registrar personnel, as well as the students, are satisfied with the record management services. Third, although there are still encountered problems that need to be resolved, both the registrar and the registrar staff, as well as the students, are content with the implementation of the records management services. Fourth, the registrar and the registrar personnel face various challenges in implementing the student record management system, and they provide alternative solutions to resolve these challenges. Finally, the proposed student records management guidelines are essential supplementary material to address the problems and challenges encountered by the selected HEIs in Calamba City in providing effective and efficient services to the students.

RECOMMENDATIONS

After thorough assessment and consideration of the foregoing findings and conclusions of the study, the following recommendations are hereby presented: (1) The office of the registrar is encouraged to have a standardized file organization system focusing on file classification, proper labeling, and arrangement, an observed validation and evaluation of student information, an organized retention policy and records preserved in a safe and secure physical and digital environment to maintain and improve the records management; (2) To improve the satisfaction level of the registrar and staff, and students on the level of implementation of the current records management system, it is recommended to conduct additional proper records management; establish disaster recovery plan; create a centralized processing and releasing of student records; improve existing retrieval tool for locating and accessing student records; and, develop a method of monitoring and detecting security incidents; (3) HEIs need to adapt a fully

automated student records management system. Records management advancements may be seen in the easy creation of records, standardized workflow, acquired organization, security, and automation, and (4) HEIs are recommended to use the proposed guidelines for student records management systems in their registrar manual.

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SETTING BOUNDARIES: FLEXIBLE LEARNING MECHANISMS AND EDUCATIONAL PRODUCTIVITY AMONG LOCAL UNIVERSITIES AND COLLEGES IN LAGUNA

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Abstract

The main purpose of this study was to determine the level of implementation of flexible learning mechanisms in terms of synchronous mode (online), asynchronous mode (offline), and blended learning mode and the level of educational productivity in terms of student characteristics, instruction, and psychological environments in both quantitative and qualitative aspects. The explanatory-sequential mixed methods design was utilized in the study but only the qualitative part was shown in this paper. Local universities and colleges in the province of Laguna namely City College of Calamba (CCC), Pamantasan ng Cabuyao (PnC), Pamantasan ng Lungsod ng San Pablo (PLSP), and Laguna University (LC) were the locale of the study. The sampling methods used were stratified random sampling and purposive random sampling. G*Power was used to compute the sample size. A total of 81 academic heads and 614 students were the respondents of the study. The adapted and crafted instruments and interview questionnaire guide were used in data collection. Statistical tools used were frequency distribution, weighted mean, and Pearson-r correlation coefficient.

Findings revealed that flexible learning mechanisms were all fully implemented and educational productivity was at a highly productive level. It was also found that there was a significant difference in the perception of the respondents on synchronous mode, asynchronous mode, and instruction. A significant relationship was revealed between flexible learning implementation and educational productivity. As an output of the study, a guidance intervention program was proposed.

Keywords: *Flexible learning, Synchronous, Asynchronous, Blended Learning, Educational Productivity, Student Characteristics, Instruction, Psychological Environment*

INTRODUCTION

The COVID-19 pandemic irreversibly transformed the educational landscape making the school year 2020-2021 forever recognized as a challenging and unique year in the history of the Philippines' public and private education systems. Due to the present issues facing the education

industry, schools should examine new means of education delivery that better fulfill students' requirements.

The coronavirus pandemic has wreaked havoc on the world's educational system. Educational institutions in the Philippines are struggling to maintain normalcy amid of catastrophe. In

circumstances where traditional modalities of instruction are impractical, such as in times of national emergency, flexible learning allows for the continuance of inclusive and accessible education, according to the Commission on Higher Education (CHED). According to CHED Chairman Prospero de Vera III, institutions and colleges are allowed to choose the most effective form of instruction. Some will be wholly web-based, while others will be completely modular.

Flexible learning developed as a feasible alternative for online education in light of connectivity constraints. Flexible learning focuses on empowering students by allowing them to pick their speed, location, and form of education, which can result in a more successful pedagogical practice.

Students are a school's most precious asset. Academic accomplishment is intricately related to social and economic growth. Students' performance is crucial in creating the highest-quality graduates who will serve the country as outstanding leaders and manpower, ultimately responsible for the country's economic and social progress.

The purpose of this study is to provide supplemental data to school administrators and policymakers about flexible learning and its potential impact on educational productivity. This lays the groundwork for assessing and comprehending the possible benefits of flexible learning for educational production. Considering the challenges encountered by the faculty members and students in particular, a guidance intervention plan could help to lessen or address the emotional burdens and other struggles of the participants/respondents

Based on the different studies and literature, it can be concluded that the success of a school's flexible learning endeavor depended on how the academic heads provided appropriate activities and programs and how the different aspects of the process were practiced. These practices helped in improving the educational productivity level and achieving better outcomes for the students.

On the other hand, this present study on flexible learning and educational productivity was similar to the cited studies in a way that both studies focused on the flexible learning implementation and level of educational productivity.

They focused on identifying the relationship between these two constructs. In contrast, this present study aimed to assess the practices of accredited local universities and colleges instead of assessing the said scenario in general or the absence of any criterion. Another difference was the demographic profiles and significant experiences of the respondents used in all of the studies.

This study also differs from the previous studies because it focused on assessing flexible learning mechanisms and educational products to shed light on the present state of the LUCs as they embraced and thrived on the CHED's mandate. Lastly, unlike any other studies which utilized either purely quantitative or qualitative approaches, this study determined LUCs level of flexible learning mechanisms and educational productivity level in both quantitative and qualitative aspects.

Framework of the Study

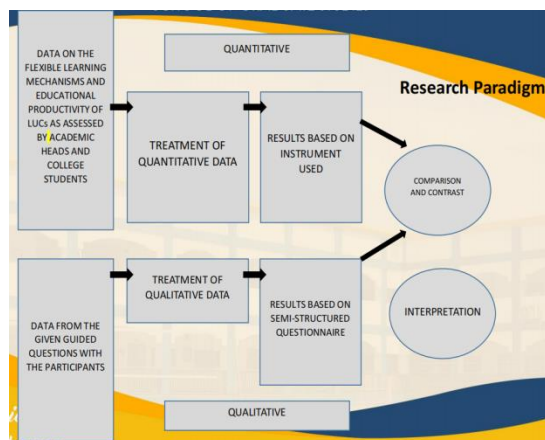


Figure 1. The Research Paradigm

This study used an explanatory sequential mixed-method research design. This started with quantitative data collection. After the data were gathered and analyzed, the results were compared and contrasted.

After the quantitative data gathering and analysis, the researcher proceeded with the guide questions to gather the feedback of the academic heads and college students regarding flexible learning mechanisms and educational productivity.

The results were further explained by comparing and contrasting the information and afterward interpretation through qualitative data analysis was conducted. The said results were utilized in the development of a guidance intervention program.

Objectives of the Study

The main objective of the study was to propose a guidance intervention program to further better the implementation of the flexible learning and educational productivity of LUCs. The following were the determined objectives of the study: (1) To determine the implementation level of flexible learning in Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads, and college students in terms of synchronous

mode (online), asynchronous mode (offline), and blended learning mode. (2) To identify if there is a significant difference between the assessments of academic heads and college students on the implementation level of flexible learning; (3) To determine the educational productivity level in LUCs as assessed by academic heads and college students in terms of student characteristics, instruction, and psychological environment; (4) To identify if there is a significant difference between the assessments of academic heads and college students on the educational productivity level in LUCs; (5) To identify if there is a significant relationship between the implementation level of flexible learning and educational productivity level in LUCs; (6) To describe the lived experience of the academic heads and college students on the implementation level of flexible learning and educational productivity level in LUCs; and, (7) To propose a guidance intervention program.

METHODS / PROCEDURES

Research Design

The study utilized the explanatory sequential mixed-methods research design. For Creswell and Creswell (2018), the explanatory sequential mixed methods were a mixed-methods design that appealed to people with a strong quantitative background or from sectors that were still learning about qualitative approaches. It consisted of a two-part data-collecting project where the researcher gathered quantitative data in the first phase, analyzes the findings, and then used the findings to organize (or build upon) the second, qualitative phase. The qualitative phase's carefully chosen participants and the questions that were posed to them were often guided by the quantitative findings. The general goal of this approach was to use the

qualitative data to further explain the initial quantitative findings; as a result, it was crucial to link or connect the quantitative results to the qualitative data collection. In this regard, the researcher deemed that this applied to the study on the flexible learning mechanisms and their relationship to the educational productivity of LUCs.

Instrumentation

The researcher used the adapted and crafted instruments to obtain relevant information for the study. To measure the level of flexible learning implementation, the 2020 CHED Memorandum Order No. 4 series, which includes the guidelines for implementing flexible learning was used. psychological environment. In gathering relevant information, the researcher utilized guide questions which were used for the feedback of the academic heads and college students.

Research Locale

The study was conducted in Local Universities and Colleges (LUCs) in Laguna. Schools particularly City College of Calamba, Pamantasan ng Cabuyao, Pamantasan ng Lungsod ng San Pablo, and Laguna University were the research locale of the study. This locale was considered given the employment of the researcher at a local college in Calamba City. It was beneficial to conduct a study on how LUCs accepted the challenge of delivering quality education under the new normal. The researcher purposefully chose the area of study so that the result of this study could be of great help to flexible learning implementation. To further better their implementation of flexible learning modalities and students` educational productivity

Research Ethics Protocol

Informed permission, respect for anonymity, confidentiality, and privacy, as well as other institutionally established ethical standards for research, were all observed during this study. The respondents/participants received a letter requesting their consent before being informed of the study's purpose and parameters. The collected data were handled with the utmost confidentiality.

Data Gathering

The researcher served the letter request personally to the school heads/administrators of the LUCs to obtain permission in conducting the study with the academic heads and college students of the

To measure the Educational Productivity aspect of the respondents, the researcher-made questionnaire was utilized. This consists of statements related to student characteristics, instruction, and university/college. Upon approval to conduct the study, the researcher started the data gathering. The researcher plotted the questionnaires of flexible learning and educational productivity into an online form questionnaire to limit physical contact with the respondents following the implemented social distancing due to the COVID-19 pandemic.

The researcher first conducted quantitative data collection. The researcher sent a request letter to the College President or Administrator of the four LUCs. Letters were sent through email and in person. After getting their permission, the researcher requested the total number of academic heads and students from the third-year and fourth-year levels. The sample size was calculated

using the information obtained. The researcher then communicated with the institution's designated personnel to help her spread the word about the study instruments. There were research tools in the Google Form version. The Google Form also contained a letter outlining the purpose and scope of the study as well as the consent letter. The researcher gathered and arranged the Google Sheet responses after reaching the desired number of respondents. Excel was used to organize the data and present each element separately. After that, the Statistician received the combined data for computation. Then the researcher collected qualitative data through an interview.

RESULTS AND DISCUSSION

Purpose Statement Number 1. Determine the implementation level of flexible learning in Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads, and college students in terms of synchronous mode (online), asynchronous mode (offline), and blended learning mode

Table 1
Implementation Level of Flexible Learning in Local Universities and Colleges (LUCs) in Laguna as assessed by Academic Heads and College Students in Flexible Learning.

Mode	Mean	VI
Online	3.64	FI
Offline	3.57	FI
Blended	3.58	FI

*3.25-4.0: Fully Implemented (FI) 1.75-2.49: Partially Implemented (PI)
2.5-3.24: Implemented (I) 1.0-1.74: Not Implemented (NI)*

Table 1 shows the implementation level of flexible learning in Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Synchronous Mode

(Online). It had a general assessment of 3.64 which was verbally interpreted as Fully Implemented. All indicators were all verbally interpreted as Fully Implemented. Furthermore, the indicator “Our LUC uses digital platforms or Learning Management System” had the highest computed mean of 3.78 while the indicator “Our LUC provides clear policies on intellectual property rights (IPR), online educational resources (OER), plagiarism, student attendance, and monitoring that are available in electronic copy.” had the lowest computed mean of 3.43.

The implementation level of flexible learning in Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Asynchronous Mode (Offline). It had a general assessment of 3.57 which was verbally interpreted as Fully Implemented. All indicators were all verbally interpreted as Fully Implemented. Furthermore, the indicator “Our LUC uses digital platforms or Learning Management System” had the highest computed mean of 3.68 while the indicator “Our LUC utilizes printed modules, audiotapes, videotapes, CDs, storage devices, and learning packets in teaching.” had the lowest computed mean of 3.44.

Also, the implementation level of flexible learning in Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Blended Learning. It had a general assessment of 3.58 which was verbally interpreted as Fully Implemented. All indicators were all verbally interpreted as Fully Implemented. Furthermore, the indicator “Our LUC uses digital platforms or Learning Management System” had the highest computed mean of 3.72 while the

indicator “Our LUC provides clear policies on intellectual property rights (IPR), online educational resources (OER), plagiarism, student attendance, and monitoring that are available in electronic copy.” had the lowest computed mean of 3.43.

Purpose Statement Number 2. Identify if there is a significant difference between the assessments of academic heads and college students on the implementation level of flexible learning.

Table 2
Test of Difference on Assessment of the Academic Heads and College Students on the Implementation Level of Flexible Learning.

Sub-variables		Sum of squares	df	Mean square	F Ratio	Sig.	Remarks	Decision
Synchronous Mode (Online)	Between Groups	.698	1	.698	4.403	.036	Significant	Reject H ₀
	Within Groups	109.877	693	.159				
	Total	110.575	694					
Asynchronous Mode (Offline)	Between Groups	1.924	1	1.924	8.716	.003	Significant	Reject H ₀
	Within Groups	152.988	693	.221				
	Total	154.912	694					
Blended Learning mode	Between Groups	.737	1	.737	3.492	.062	Not Significant	Accept H ₀
	Within Groups	146.161	693	.211				
	Total	146.898	694					

Level of significance 0.05

As shown in Table 2, the generated computed probability values of Synchronous Mode (Online) and Asynchronous Mode (Offline) were .036 and .003 respectively which were lesser than the level of significance of 0.05; thus, the null hypothesis is rejected. Therefore, there is a significant difference between the responses of the two groups of respondents on the above-mentioned variables.

This means that the academic heads and college students have different perceptions about the implementation level of flexible learning in terms of synchronous mode (Online) and asynchronous mode (Offline).

On contrary, the generated computed probability value in blended learning mode was .062 which was greater than the level of significance of 0.05; thus, the null hypothesis is accepted. There is no significant difference between the responses of the two groups of respondents on the above-mentioned variables. Therefore, academic heads and college students have the same perception about the implementation level of flexible learning in terms of blended learning mode.

Purpose Statement Number 3. Determine the educational productivity level in LUCs as assessed by academic heads and college students in terms of student characteristics, instruction, and psychological environment

Purpose Statement Number 3. Determine the educational productivity level in LUCs as assessed by academic heads and college students in terms of student characteristics, instruction, and psychological environment.

Table 3
Educational Productivity Level of LUCs as Assessed by the Academic Heads and College Students

Areas	Mean	VI
Students	3.34	HP
Characteristics		
Instruction	3.53	HP
Psychological environment	3.44	HP

3.25-4.0: Highly Productive (HP)) 1.75-2.49: Partially Productive (PP)
2.5-3.24: Productive (P) 1.0-1.74: Not Productive (PI)

Table 3 shows the educational productivity level of Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Student Characteristics. It had a general assessment of 3.31 which was verbally interpreted as Highly Productive. Most of the

indicators were verbally interpreted as Highly Productive except for two indicators assessed as Productive. Furthermore, the indicator “students think critically and analytically in evaluating a point of view, decision, or information source” had the highest computed mean of 3.45 while the indicator “students relax and socialize with friends even virtually or through online platforms” had the lowest computed mean of 3.13.

The instruments and instructional objectives employed in consistent and inconsistent contexts are distinct. Communication tools, response kinds, input techniques, collaboration methods, and targeted skills are five factors that can be utilized to distinguish between synchronized and compatible settings, according to Xie, Liu, Bhairma, and Shim (2018). Although students reported satisfaction with appropriate communication methods (such as online forums or email correspondences), they also showed gratitude for the chance to hear back from a particular teacher in the appropriate settings.

The educational productivity level of Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Instruction. It had a general assessment of 3.53 which was verbally interpreted as Highly Productive. All indicators were all verbally interpreted as Highly Productive. Furthermore, the indicator “teachers enable the students to demonstrate learning through quizzes, assignments, and other activities” had the highest computed mean of 3.63 while the indicator “teachers provide prompt and detailed feedback on tests or completed assignments.” had the lowest computed mean of 3.43.

Teachers are responsible for inventing novel ways that aid in the elimination of impediments to effective instruction. Teachers are collaborating at the local level to develop approaches for online instruction. Because instructors, parents, and students all have access to the same information, the unprecedented potential for cooperation, innovative solutions, and an openness to learning from others and experimenting with new tools exist as emphasized by Doucet et al. (2020). Numerous educational institutions make tools and solutions available for free to facilitate and encourage collaborative and inclusive teaching and learning. In comparison to teaching and learning in a typical classroom setting, online education has opened up new avenues for teaching and learning.

The educational productivity level of Local Universities and Colleges (LUCs) in Laguna as assessed by academic heads and college students in terms of Psychological Environment. It had a general assessment of 3.44 which was verbally interpreted as Highly Productive. All indicators were all verbally interpreted as Highly Productive. Furthermore, the indicator “provide support to help students succeed academically” had the highest computed mean of 3.64 while the indicator “provide conducive space/area to study and attend online classes at home.” and indicator “live with a peaceful community/neighbor that makes it possible to focus on online classes” had the lowest computed mean of 3.31.

Subedi, Nayaju, Shah, and Shah (2020) mentioned that during the epidemic, electronic information technologies enabled colleges and universities in informing students about university closures and skills shortages. It is vital to assess and support staff

recognition and student preparation when transitioning to new conditions. Concentrated newcomers find it difficult to adjust to changes, whereas boom-minded newcomers rapidly adapt to a new field of competence.

Purpose Statement Number 4. Identify if there is a significant difference between the assessments of academic heads and college students on the educational productivity level in LUCs

Table 4
Test of Difference on Assessment of the Academic Heads and College Students on the Productivity Level

Sub-variables		Sum of squares	df	Mean square	F Ratio	Sig.	Remarks	Decision
Student Characteristics	Between Groups	.322	1	.322	1.392	.238	Not Significant	Accept H ₀
	Within Groups	160.463	693	.232				
	Total	160.785	694					
Instruction	Between Groups	.951	1	.951	3.949	.047	Significant	Reject H ₀
	Within Groups	166.915	693	.241				
	Total	167.866	694					
Psychological Environment	Between Groups	.431	1	.431	1.668	.197	Not Significant	Accept H ₀
	Within Groups	178.987	693	.258				
	Total	179.418	694					

Level of significance 0.05

Table 4 shows the significant difference in the assessments of the academic heads and college students on the educational productivity in LUCs. In terms of Student Characteristics, the computed probability value of .238 was greater than the level of significance ($P < 0.05$); thus, the null hypothesis is accepted. The result shows that there is no significant difference in the assessment of the respondents. In terms of Instruction, the computed probability value of .047 was lower than the level of significance ($P < 0.05$); thus, the null hypothesis is rejected. The result shows that there is a significant difference in the assessment of the respondents. In terms of the Psychological Environment, the computed probability value of .197 was greater than the level of significance ($P < 0.05$); thus, the null

hypothesis is accepted. The result shows that there is no significant difference in the assessment of the respondents

Purpose Statement Number 5. Identify if there is a significant relationship between the implementation level of flexible learning and educational productivity level in LUCs

Table5
Test of Relationship between the Implementation Level of Flexible Learning and Educational Productivity in LUCs

Implementation Level of Flexible Learning	Educational Productivity Level	r value	P-value	Remarks	Decision
Synchronous Mode (Online)	Student Characteristics	.438**	.000	Significant	Reject H ₀
	Instruction	.515**	.000	Significant	Reject H ₀
	Psychological Environment	.409**	.000	Significant	Reject H ₀
Asynchronous Mode (Offline)	Student Characteristics	.453**	.000	Significant	Reject H ₀
	Instruction	.601**	.000	Significant	Reject H ₀
	Psychological Environment	.594**	.000	Significant	Reject H ₀
Blended Learning mode	Student Characteristics	.463**	.000	Significant	Reject H ₀
	Instruction	.622**	.000	Significant	Reject H ₀
	Psychological Environment	.566**	.000	Significant	Reject H ₀

**Correlational at the level 0.01

*Correlational at the level 0.05(Two-tailed)

Table 5 shows the significant relationship between the implementation level of flexible learning and educational productivity level in LUCs, the r values ranging from .409 to .622 were interpreted as low positive to moderate positive correlation to correlate flexible learning modality and educational productivity. The computed probability values of .000 were lesser than the level of significance ($P < 0.05$); thus, the null hypothesis is rejected. The result shows that there is a significant relationship between the dependent and independent variables.

As an output of this study, a guidance intervention program was crafted. This program will serve as a guide for the Local Universities and Colleges as they

continuously better their flexible learning implementation and level of educational productivity.

CONCLUSION

Based on the aforementioned findings of the study, the following conclusions are derived:

The HEIs truly embraced the need for online learning delivery considering the changes brought about by the pandemics in the education sector. The academic heads and college students have different perceptions about the implementation level of flexible learning of synchronous mode (Online) and asynchronous mode (Offline). The academic heads and college students have the same perception about the implementation level of flexible learning in terms of Blended Learning.

The COVID-19 pandemic had the greatest impact on the quality of the learning experience and students' mental health. Given today's uncertainties, it is vital to gain a nuanced understanding of students' online learning experience in times of the COVID-19 pandemic. Their limited mobility can be an avenue to sustain consistency and focus on their studies or could be detrimental to their mental health. But proper guidance and encouragement can do wonders in promoting balance in their academic and social well-being.

RECOMMENDATIONS

The following are the recommendations offered based on the summarized findings and conclusions drawn.

The LUCs may continuously improve the policies, guidelines, and practices in the implementation of flexible learning based on

the identified expectations and challenges encountered by the stakeholders. They may find ways or benchmark the practices of other educational institutions to address the cited shortcomings and limitations of the present mechanisms being utilized. They may also consider further enhancing the features of their existing LMS to make it more suited to the changing needs of their respective institutions.

They may opt to address the reflected difference in the perceptions of the academic heads and college students in the synchronous and asynchronous mode of learning to continuously facilitate teaching-learning with clear support from them. In addition, to provide clarity and proper guidance, the LUCs may utilize other means or mechanisms that will reinforce their understanding or acceptance of the cited modes of learning. Re-orientation, meetings, seminars, videos, flyers, and pamphlets are some tools that can be used in educating the stakeholders.

The LUCs may promote innovation and creativity in the teaching-learning delivery to encourage learners' participation and facilitate learning. The provision of prompt feedback, comments, and returning of students' work needs to be observed religiously. This is another way of compensating for their efforts and hard work as their source of motivation to continue despite the challenges encountered because of the present situation that we are in up to present.

LUCs may provide supplemental activities and information to enhance educational productivity in terms of instruction. Consider appropriate teaching tactics and media, and identify whether the

instruction should be instructor-centered or student-centered, or teacher-led and student-centered. Following the selection of a teaching strategy, it is necessary to determine which technology, media, and resources will best support the selected style of instruction.

The LUCs may revisit their present policies and practices to continuously improve their flexible learning mechanisms considering the crucial role in educational productivity. Clarity and suitability to the needs of the students and faculty members are prime factors in the design of instructional materials and the learning management system.

Since flexible learning mechanisms are important factors in education that could impact educational productivity, the academic performance of the students in particular, and prevent the onset of mental health problems as well as potentially lessening the severity of existing mental health problems, LUCs may encourage collaborative efforts among the members of the institution and other stakeholders to maximize their impact on student's educational productivity in particular and of the LUC in general.

They may also utilize the proposed guidance intervention plan or make it tailored- made to ensure that it fits well with the characteristics of the students they have. LUCs may also use the plan as the initial basis to start formulating policies and services to further improve flexible learning implementation and increased educational productivity. They may also consider the adaption of the identified best practices of other LUCs.

The Researchers may utilize other flexible learning mechanisms and

educational productivity frameworks or models to assess LUCs' flexible learning and educational productivity mechanism implementation. Also, they may use this study as a reference for future research about LUCs' flexible learning mechanisms and educational productivity. They may consider other areas not covered in this study.

ACKNOWLEDGEMENTS

The researcher would like to express her gratitude to those who played a pivotal role in completing this study. Their invaluable assistance, support, guidance, and prayers made this research reach this milestone.

Sincerest thanks to City College of Calamba, to her family, and other pertinent individuals that contributed to the completion of this humble piece of work, and may our Lord almighty bless you a thousand folds for your generosity and being a blessing to others.

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e-GURO LEARNING MANAGEMENT SYSTEM IN CITY COLLEGE OF CALAMBA AND ITS INTERNAL STAKEHOLDERS' QUALITY AND SATISFACTION LEVEL: BASIS FOR ENHANCEMENT PLAN

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Abstract

The City College of Calamba (CCC), one of the Philippines' recognized higher education institutions in the province of Laguna, shares the dilemma with all other academic institutions struggling to make ends meet as they strive to transition from face-to-face sessions to modular and blended learning during the pandemic. With this, e-GURO, a web-based LMS established for CCC in 2021, needs to be reviewed in terms of its quality and the users' satisfaction level to check if it meets the needs of the faculty and students. The researcher used Information System Success Model (ISSM) to measure the quality and satisfaction levels of the faculty and students using non-probability convenience sampling. The instrument was adopted from various studies and was disseminated using google forms.

The researcher concluded that the faculty and students of CCC are highly satisfied and in agreement with the quality of the current functions and features of e-GURO. It has been confirmed that both faculty and students find e-GURO to be of 'very high quality'; therefore, e-GURO's administrators must uphold the established standards. Similarly, the general assessment results concerning faculty and student satisfaction revealed that all current processes must be maintained and improved to achieve a higher level of satisfaction. With an overall score of 'highly satisfied,' these results indicate that respondents find e-GURO beneficial for their work or study. Lastly, the researcher proposed an enhancement plan for e-GURO that focuses on the functions and features that need to be enhanced to further improve the satisfaction level of its end-user.

Keywords: *Learning Management System, LMS, Online Learning, Online Distance Learning, CCC e-GURO, Information System Success Model, ISSM*

INTRODUCTION

For basic, vocational, and higher education institutions, the pursuit of innovative pedagogy has been a persistent priority. Technology integration in education has been viewed as a valuable resource for fulfilling the demands of a rapidly changing

learning environment and a varied student population. This was true until the global pandemic caused by the COVID-19 virus compelled the global adoption of self-paced, remote distance, and virtual learning. Aside from ranking last in reading comprehension out of 79 countries, the Philippines' school system is facing other obstacles amid this

crisis. This has thrown a wrench in the educational landscape in over 150 nations, altering how institutions at all levels communicate and deliver instructions to 1.6 billion pupils, regardless of whether or not they were financially, psychologically, or physically prepared (World Bank, 2021).

For this reason, the most immediate question is how to continue providing learning and instruction to pupils while the pandemic continues. According to the World Bank Group (2020), one of the main education financiers, distance learning has been highlighted and used during the ongoing worldwide school lockdown, when teaching is delivered remotely via digital platforms. Academic institutions developed emergency remote solutions using a variety of distribution systems including government platforms, SMS, social media, TV, radio, printed materials, and online platforms to keep learning going despite the lockdown (UNESCO, 2020). According to Tria (2020), the Philippines' education sector is one of the most distressing parts that has to be rebuilt through collaboration among the country's main players. Learning modules, online classes, radio and TV broadcasting, blended and flexible learning, and all other types of education continuity plans were used to creatively respond to the global health problem, similar to other Southeast Asian countries (Joaquin, 2020). Furthermore, the Commission on Higher Education (CHED) had provided greater flexibility to higher education institutions by providing essential training and pedagogical materials (Handog, 2020).

In the same way, CCC, one of the Philippines' recognized higher education institutions in the province of Laguna, shares the dilemma with all other academic institutions struggling to make ends meet as they strive to transition from face-to-face

sessions to modular and blended learning. The college began to shift to learning modules to encourage continuous education while weighing the pros and cons of adopting an information system. Unfortunate circumstances such as the lack of allowance for mobile load, shortage and unavailability of the device, poor internet signal, and a variety of other issues that were faced by the CCC students, were also mentioned by Child Hope (2020) in their conducted study. Despite such issues, there is little doubt that an LMS can enhance education by providing 24/7 access to course content and providing a learning environment for students (Fearley & Amora, 2020). With this, e-GURO, a web-based LMS established for CCC in 2021, needs to be reviewed in terms of its quality and the users' satisfaction level to check if it meets the needs of the faculty and students.

Framework of the Study

The conceptual framework shown below helped the researcher to determine the specific characteristics that would analyze the significant relationship between the quality level of the CCC e-GURO system and information design attributes and the satisfaction level of faculty and students as to the use of e-learning technologies.

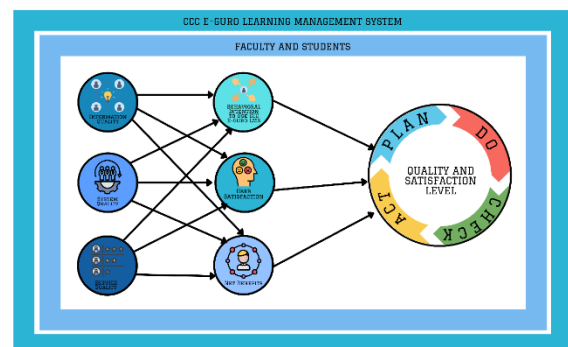


Figure 1. Research Paradigm

The framework consists of three circles in the first column, each of which represents an independent variable that

measures the quality level of information, system, and service. This way, the study can determine if there are functions and features of the LMS that need to be maintained, reviewed, or redesigned to ensure stakeholder satisfaction. The circles in the second column represent the dependent variables, which include behavioral intent to use, user satisfaction, and net benefits. This component of ISSM measures faculty and student satisfaction with the LMS.

Objectives of the Study

The main objective of the study was to propose an enhancement program for the existing e-GURO Learning Management System. The following were the determined objectives of the study: (1) To know the functions and features of the e-GURO Learning Management System; (2) To identify the quality level of the e-GURO as perceived by faculty and students in terms of System Quality; Information Quality; and Service Quality; (3) To identify the satisfaction level of faculty and students as to the use of e-GURO in terms of Behavioral Intention to use the LMS; User Satisfaction; and Net Benefits; (4) To identify any significant difference in the assessment of faculty and students with regards to the quality level of the e-GURO system and their satisfaction level; (5) To identify a significant relationship between the quality level and the perceived satisfaction level of faculty and students as to the use of e-GURO; and, (6) To develop and propose an enhancement plan for e-GURO.

METHODS

Research Design

To assess, measure, analyze, and find out the theories about people's attitudes and behavior based on a numerical form, the researcher used a quantitative research

design. This method helped the researcher understand what the end-users think about their existing learning management system. This is to find patterns and predictions and review the cause and effect of the end-users and the success levels of the implemented LMS. It also examined whether the system is moderated following the nature and background of the institution involved. To further understand the present situation at CCC with e-GURO, the researcher also used a descriptive approach. It is an approach examining the actual state through observation and figuring out the correlation between two or more variables or phenomena (QuestionPro, 2022).

Instrumentation

There were two research instruments utilized in this study to attain its objectives. For the qualitative part, the researcher prepared open-ended questions used during the interview among the registrars of the different HEIs in Calamba City. The interview questions were validated by the adviser and five - graduate school professors or any experts in the field of the system of the registrar's office. While for the quantitative part, a questionnaire created by the researcher was used to respond to the objectives of the study

Respondents of the Study

The respondents were the faculty and students of CCC presently employed and enrolled in the Second Semester of the Academic Year 2021-2022. The researcher used a non-probability sampling approach, specifically convenience sampling because it is a quick, simple, and cost-effective method for collecting data. In addition, it makes it more suitable as a sampling approach because the researcher has difficulties with the availability and time constraints in gathering the data.

Research Locale

The chosen locale for this study was the City College of Calamba; a non-partisan educational institution funded by the City Government of Calamba. The College promotes academic freedom and pursues academic excellence by continuously aligning its curricular offerings, acquiring and sustaining accreditation, establishing retention policies and maximum residency rules as well as enhancing its academic standards in the delivery of instruction, research and extension, and community service.

Research Ethics Protocol

This study is ruled by ethical considerations that are considered a major requirement in any research undertaking. Scientists and researchers must always adhere to the set of principles that protect the rights of research participants, to enhance the research validity and maintain scientific integrity regardless of the value that it will contribute to society. The researcher will ensure that the participants are knowledgeable about the study, its purpose, and the benefits it will bring through consent. In addition, all the participants were fully aware that they are not obligated to participate by all means and they are free to opt out of the study without any pressure, coercion, or negative repercussions. Personally identifiable data such as name and age were not collected. In compliance with Republic Act 10173-Data Privacy Act of 2012, the respondents' answers were treated as confidential and used only for academic purposes and only for the particular research. The physical, social, psychological and all other types of harm will be kept to an absolute minimum (Scribbr, 2021). To promote equality and distribution, the research

participants will come from the students and teachers presently enrolled and employed respectively, in CCC.

Data Gathering Procedure

The researcher initially sought permission from the President of CCC for approval to conduct the research. The researcher designed an instrument adopted from various studies which were validated by a pool of experts. The study used non-probability convenience sampling to gather the data online to address the constraint in time and availability of the faculty and student respondents. All of the 193 respondents employed and enrolled faculty and students were guaranteed their anonymity, and the name field was considered optional.

Data Analysis

The collection of data occurred between May and June of 2022. For research questions 1 and 2, the study employed a 4-point Likert scale, which was treated simply into two: Agree and Disagree to show the highest proportion per indicator. For research question 5, Pearson Product-Moment Correlation was used. The findings were compiled and examined, and they all served as inputs for the proposed enhancement program.

RESULTS AND DISCUSSION

The e-GURO LMS was a product of a huge change in the educational landscape brought about by COVID-19. It's seen as a solution and response to continue providing quality learning to students through the aid of connectivity, to attain their academic goals amid the pandemic. The e-GURO project started in the year 2021 intending to develop a custom-made web-based application via open-source programming language which

will require browser access and utilization. The main objective of the project is to develop a customized LMS based on the culture and needs of the stakeholders of the institution.

The e-GURO's functional requirements include the development of the registrar, instructor, and student module where each module represents the type of access for each type of user. The registrar access includes the ability to register students, manage the class list and schedules to the respective instructors and generate reports such as class lists, grade sheets, and summaries of computed grades. The instructor access includes the ability to upload course materials, create exams and quizzes, announcements and provide electronic resources such as PDFs and supplemental links. Student end-users can download the course materials, answer quizzes and examinations and check their academic performance. Lastly, an administrator page is in place for the monitoring and maintenance of the LMS (Scope of Works, 2021).

Table 1
Quality Levels of e-GURO as Perceived by Faculty (F) and Students (S) 2022

INDICATORS		AGREE %	DISAGREE %	HIGHEST PROPORTION
System	F	100.0	0.0	Agree
Quality	S	95.0	5.0	Agree
Information	F	100.0	0.0	Agree
Quality	S	96.0	4.0	Agree
Service	F	100.0	0.0	Agree
Quality	S	93.0	7.0	Agree

Based on the results shown in Table 1, a significant number of faculty (median=100%) and students (median=95%) agreed that the e-GURO system met the System Quality standards set forth by the indicators presented. It can be concluded that e-GURO has implemented rigorous system security and protection of information

through passwords that made the faculty and students feel secure against unauthorized access and data breaches. On the other hand, developers of e-GURO must find a way to minimize downtime and ensure reliability. This is aligned with the work of Yakubu and Dasuki (2018) and Fearnley and Amora (2020) who states that one of the reasons why students will most likely use the LMS is because of reliability and responsiveness. A high-performing quality system equates to being useful and easy to use.

Results from Table 1 also mean that the content and information that is being displayed in e-GURO is easily understood by the faculty and students, with a significant number of faculty (median=100%) and students (median=96%) agreeing that the e-GURO system met Information Quality standards set forth by the indicators presented. It means that it presents information about faculty and students such as class schedules, announcements, quizzes, assessments, and grade sheets. This result is supported by the study of Yakubu and Dasuki (2018) who mentioned that information must be accurate and easy to understand to increase user satisfaction and the intention of the students to continue using the LMS. In contrast, e-GURO must ensure the timeliness and organization of the content and information being displayed. According to Al-Hunaiyyan et al. (2020), the complexity and organization of the LMS interface can impede the LMS's integration into pedagogical delivery. This necessitates the need for MISD to investigate ways to improve the organization of e-GURO's electronic files and the appropriateness of content and information posted or uploaded to the system.

Lastly, through the manuals, video tutorials, announcements, and infographics that are being uploaded into the system, it is implied that e-GURO has been providing

faculty and students with the necessary instructions and guidance. Table I shows that a significant number of faculty (median=100%) and students (median=93%) agreed that the e-GURO system met the Service Quality standards set forth by the indicators presented. Maintaining service quality is possible if the college establishes a help desk and provides online guides and explanations for the LMS (Seta et al., 2018). The provision of training, support, monitoring, peer mentoring, and continuous feedback to faculty members will increase motivation and may contribute to the achievement of the LMS's intended purpose (Fabito et al., 2020). On the other hand, e-GURO must focus on its accessibility and usability, as server downtimes, system issues, and maintenance were identified as areas for improvement. If the computer, online technology, and environmental issues associated with LMS usage are resolved, the quality of their outputs will increase (Cinco, 2019).

Table 2
Satisfaction Levels of e-GURO as Perceived by Faculty and Students, 2022

INDICATORS		AGREE %	DISAGREE %	HIGHEST PROPORTION
User	F	97.0	3.0	Agree
Satisfaction	S	95.0	5.0	Agree
Behavioral	F	98.5	1.5	Agree
Intention to use the LMS	S	97.5	2.5	Agree
Net Benefits	F	97.0	3.0	Agree
	S	93.0	7.0	Agree

Table 2 shows that a significant number of faculty (median=97%) and students (median=95%) agreed that the e-GURO system met User Satisfaction standards set forth by the indicators presented. It can be concluded that the implementation of e-GURO has helped both the faculty and students streamline their respective teaching and learning tasks however it still needs to improve the current

function and features to make it more effective. This supports the results mentioned in the study of Garcia (2017) that establishing an LMS would mean a game-changing decision for colleges and universities as they take their first step in embracing digital solutions. In the same way, they must take action against the convergence of the pedagogical challenges, such as participation. However, the respondents find that the functions and features of LMS can still be improved to fully support their studies and work. It was mentioned in the study of Annamalai et al. (2021) that LMS should include learning tools such as plagiarism and referencing tools aside from the common contents and features that will allow students to communicate in real time. The study of Aldiab (2019) also suggests features that can assist both the faculty and students in performing laboratory experiments. LMS must use main trends such as cross-platform support, asynchronous activities, improved gamification and real-time communication among users, and the use of cloud technology (Kraleva, et al, 2019).

Results from Table 2 also mean that the respondents were highly satisfied with using e-GURO highlighting that its implementation was a good idea. A significant number of faculty (median=98.5%) and students (median=97.5%) agreed that the e-GURO system met Behavioral Intention to use the LMS standards set forth by the indicators presented. This supports the finding of Aldiab et. Al. (2019) that the implementation of LMS has changed from an assistant tool to becoming a main tool in delivering instructions. The respondents find that e-GURO's intelligence can still be improved as it garnered the lowest computed mean. This supports the findings of the study by Abazi-Bexheti (2018) which states that LMS must include features across areas of teaching,

learning, creation, and management to make it more effective.

Lastly, table 2 shows that a significant number of faculty (median=97%) and students (median=93%) agreed that the e-GURO system met the Net Benefits standards set forth by the indicators presented. It can be concluded that in an overall assessment of the e-GURO performance and capabilities, the respondents were highly satisfied. The ability of LMS to provide relevant information essential to academic pursuits boosted the user's happiness (Fabito, et al., 2020). However, the respondents find that the functions and features of LMS can still be improved to further increase their productivity in study or work. The study of Abazi-Bexheti (2018) states that LMS must include features across areas of teaching, learning, creation, and management to make it more effective. Learning tools such as plagiarism and referencing tools aside from the common contents and features will allow students to communicate in real time. (Annamalai, et al. 2021) In addition, features that can assist both the faculty and students in performing laboratory experiments. (Aldiab, 2019)

Table 3
The Test of Difference on the Assessment of Faculty and Students with regards Quality Level of the e-GURO, 2022

QUALITY SUB-LEVELS	RESPONSE	FACULTY	STUDENTS	DIFFERENCE
System	Agree	100.0	95.0	5
Quality	Disagree	0.0	5.0	-5
Information	Agree	100.0	96.0	4
Quality	Disagree	0.0	4.0	-4
Service	Agree	100	93.0	7
Quality	Disagree	0.0	7.0	-7

As shown in Table 3 the faculty members and students have relatively the same agreement assessments with a difference ranging from 4-7 responses. Therefore, there is no difference between

the responses of the two groups of respondents on the above-mentioned variables. This means that the faculty and students have the same perception concerning the quality level of the e-GURO system and information design attributes particularly the system quality, information quality, and service quality.

Table 4
The Test of Difference on the Assessment of Faculty and Students with regards Quality Level of the e-GURO, 2022

SATISFACTION SUB-LEVELS	RESPONSE	FACULTY	STUDENTS	DIFFERENCE
User	Agree	97.0	95.0	2
Satisfaction	Disagree	3.0	5.0	-2
Behavioral	Agree	97.0	93.0	4
Intention to use the LMS	Disagree	3.0	7.0	-4
Net Benefits	Agree	98.5	97.5	-1
	Disagree	1.5	2.5	-1

As shown in Table 4, the faculty members and students have relatively the same agreement assessments with a difference ranging from 1-4 responses. Therefore, there is no difference between the responses of the two groups of respondents on the above-mentioned variables. This means that the faculty and students have the same perception concerning the satisfaction level with the use of e-GURO, particularly regarding user satisfaction, behavioral intention to use, and net benefits.

Table 5 shows the significant relationship between the quality level of the CCC e-GURO system and information design attributes and the satisfaction level of faculty and students as to the use of e-learning technologies. The r values ranging from .638 to .796 were interpreted as low positive to moderate positive correlation. The computed probability values of .000

were lesser than the level of significance ($P < 0.05$); thus, the null hypothesis is rejected. The result shows that there is a significant relationship between the dependent and independent variables. It can be concluded that the quality level of the e-GURO has a

Table 5
The Test of Significant Relationship
between the Quality Level and
Perceived Satisfaction Level of Faculty
and Students as to the Use of e-GURO,
2022

QUALITY LEVEL OF E-GURO	SATISFACTION LEVEL	CORRELATION COEFFICIENT
System Quality	User Satisfaction Behavioral	.796**
	Intention to use the LMS	.701**
	Net Benefits	.704**
Information Quality	User Satisfaction Behavioral	.771**
	Intention to use the LMS	.748**
	Net Benefits	.755**
Service Quality	User Satisfaction Behavioral	.720**
	Intention to use the LMS	.638**
	Net Benefits	.692**

Relationship with the satisfaction level of faculty and students. The user's perception of the e-learning system's satisfaction indicates that the system supports the user's field of study, facilitates more effective and efficient learning, and results in an overall satisfied user. When users of an e-learning system are more satisfied, the system will be utilized more frequently (Seta et al, 2018).

CONCLUSION

The study concluded that the faculty and students of CCC are highly satisfied and in agreement with the quality of the current

functions and features of e-GURO. It has been confirmed that both faculty and students find e-GURO to be of 'very high quality'; therefore, e-GURO's administrators must uphold the established standards. Similarly, the general assessment results concerning faculty and student satisfaction with the use of e-learning technologies revealed that all current processes must be maintained and improved to achieve a higher level of satisfaction. The higher the quality level of e-GURO, the higher the satisfaction level of the CCC's faculty and students in using it. With an overall score of 'highly satisfied,' these results indicate that respondents find e-GURO beneficial for their work or study.

RECOMMENDATION

After thorough assessment and consideration of the foregoing findings and conclusions of the study, the following recommendations are hereby presented: (1) Future studies must adopt a research instrument in different virtual learning platforms that are specifically based on the LMS being utilized. (2) As a suggestion for future similar studies, factors such as the environment and the student and faculty's motivation during study and work can also be considered. (3) The researcher also suggests using qualitative research to come up with themes to support the quantitative results of their future studies.

ACKNOWLEDGEMENTS

The author would like to give the sincerest thanks to the City College of Calamba and specifically the Office of the Vice-President for Research and Innovation for the unwavering support of this research endeavor through the

Graduate Research Assistance and Subsidy Program (GRASP).

Investigation of Factors Affecting Filipino College Students' Acceptance of Learning Management Systems.

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DEVELOPMENT AND VALIDATION OF MATHEMATICS INSTRUCTIONAL MATERIAL ON TRIGONOMETRIC FUNCTIONS IN SOLVING TRIANGLES USING GEOGEBRA SOFTWARE

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Abstract

Instructional material is a type of educational tool that aids to support the teaching process and allows students to master a particular course topic. In this mixed-methods research, instructional material on Trigonometric Functions in solving triangles using GeoGebra software was developed and validated for innovative Mathematics instruction. The findings of the study revealed that instructional material was developed through the generated themes in document analysis and interview responses. The themes that emerged in document analysis are Deductive and Inquiry-Based for the teaching approaches; Software-Based as the focus of the instructional material; and Analytical, Synthesis, and Non-mathematically rich tasks for mathematical tasks. Interview responses highlight the themes of the Effectivity of the instructional material in promoting proficiency and convenience; SMART, Well-presented, Legible, Visible, Teaching and learning support for the five features of the material; Usefulness in verifying solutions and Limitations on internet access and unavailability of gadgets; and Integration of GeoGebra software which needs exploration and inclusion. For the acceptability level, students highly accepted and the experts accepted the instructional material's quality in terms of Objectives; Content; Format; Graphics; and Usefulness. In conclusion, the respondents' validation shows that the initially developed Mathematics instructional material can be released for implementation and evaluation purposes which may be useful by the teachers handling Trigonometry integrated GeoGebra software as a supplement in teaching.

Keywords: *Instructional Material, Trigonometric Functions, Triangles, GeoGebra Software, Development, Validation*

INTRODUCTION

Mathematics is a relevant subject with vital significance as it helps in coping with the demands of life. Unfortunately, in general, despite all the highly recognized importance of the subject, it can still be observed that several students have a lack of interest and find difficulty in learning Mathematics subject up to the point of

disliking it and it remains an issue of concern in schools, colleges, and universities. Yeh, Cheng, Chen, Liao, and Chan (2019) stated that Mathematics students of the 21st century enter Mathematics classrooms with a serious lack of fluency and reliability in numerical and algebraic manipulation and simplification, problem-solving, and a negative attitude. About Trigonometry, Aminudin, M., et al., (2019) stated that the

common mistakes made by students in answering trigonometric questions that were considered difficult for them include the use of improper equations, sequences of operations, and misuse of sines and cosines, misinterpretations of languages, illogical inferences, distorted definitions, and technical error calculations.

Aligned with instructional material development validation, Capuno, R. et al, 2019 stated that teachers can connect classroom instructional materials with useful and developmentally appropriate tasks in which students can participate by using resources like computers, calculators, and other technology in addition to concrete materials. For example, learning mathematics with technology encourages students to engage in more active mathematical practices like experimenting, analyzing, reasoning, and problem-solving.

Technology integration in Mathematics, such as in Trigonometry is one tactic to aid the learning gap in this area. According to the studies of Murphy, D. (2016) & Kissane, B. & Kemp, M. (2010), incorporating technology into the classroom offers several opportunities such as increasing student engagement in learning trigonometric principles, improving teacher-student interaction, ensuring the accuracy of computations, and enabling a deeper understanding of the trigonometrical concepts than they could with just paper and pencil.

Many studies have explored the development and validation of instructional materials and proved their significance in Mathematics teaching and learning process. However, there is no existing study that integrates GeoGebra software on

developing instructional material specifically about trigonometric functions in solving triangles. The research wants to bridge the knowledge gap since the desired research findings do not exist. The researchers conducted the study to develop a technology-based Mathematics instructional material that covers the topic of Trigonometric Functions in Solving Triangles for Grade 9 students. This material is integrated with GeoGebra, a software that serves as a powerful platform for the discovery of several concepts in Mathematics. Moreover, the material was validated by the teachers and students for the researchers to know if it provides appropriate content together with the integration of GeoGebra to the lesson of Grade 9 Mathematics.

The Framework of the Study

Input-Process-Output (IPO) design was used for the representation of the flow of the study. The input contains the Analysis-Design-Development (ADD) model where (1) the analysis phase comprises the related documents that were reviewed and evaluated, (2) the design and planning phase was where experts' interviews were administered and instructional material's development was planned, and (3) development and validation include the development of the instructional material and its validation upon the student-respondents and expert respondents acceptance level of the material. In the Process, document analysis, thematic coding, and descriptive analysis. were conducted to gather the data necessary to support the study. Lastly, the output contains the developed Mathematics instructional material.

From the theoretical perspective, the study was aligned with E-Learning Theory, proposed in 2015 by Richard E. Mayer, Roxana Moreno, and John Sweller. E-learning theory stresses the cognitive science principles of effective multimedia learning with the use of electronic educational technology. It is part of the grand theory of Connectivism as it focuses on how technologies can be integrated or adapted to offer new learning opportunities and promote knowledge construction. According to the empirically established principles of the theory, technology-assisted learning promotes efficiency. One specific principle of e-learning theory is multimedia learning, which claims that two formats—audio, visual, and text—rather than one or three—can increase deeper learning. Hence, people learn more effectively from words and images than from just words. It is supported by the empirically derived theory that contends that perception and learning are active, beneficial processes and that words and images trigger various conceptual processes. Additionally, the information to be acquired, the performance measures, and individual differences in spatial ability, prior knowledge, and general learning capacity all affect how well imagery and text are combined.

Objectives of the Study

The main objectives of the study are: (1) to develop Mathematics instructional material on trigonometric functions in solving triangles using GeoGebra software in the analysis and design phase; (2) to identify the emerging themes from the information of the analyzed documents and impressions of the expert-respondents on the material; (3) to

validate the instructional material using the acceptability level of student-respondents and expert-respondents with respect to Objectives, Content, Format, Graphics, and Usefulness; and (4) to determine the Mathematics instructional material that may be initially proposed.

METHODS/PROCEDURES

Research Design

The researchers used a mixed method of both the qualitative and quantitative design for this study and specifically used the exploratory sequential design. This approach is more appropriate in this study since the themes generated in the document analysis and interviews were used as the basis for the instructional material development, which is then validated by the experts using the 5-Point Likert Checklist to identify the acceptability level of the material. The development and validation of the instructional material followed the ADDIE Model (Analysis, Design, Development, Implementation, and Evaluation). In this study, only the first three phases (Analysis, Design, and Development) of the model were considered by the researchers, whereas the remaining two phases (Implementation, and Evaluation) were excluded.

Research Locale/Research Site

The researchers chose to conduct the study in the Palo Alto Integrated School (PAIS) due to its commitment to the DepEd vision of "competencies and values enable them to realize their full potential" which denotes that this school emphasized the importance of competency. Now to realize this vision, according to Hernandez, D.,

et.al, 2013, PAIS ranked 1 in the Mid-Year Achievement Test in Mathematics among the 22 public national high schools in Calamba Laguna for the academic year 2012-2013. Additionally, Llarena, R., et.al, 2015, cited that they ranked 9 on the National Achievement Test (NAT) in Mathematics, S.Y. 2014-2015. However, the school became silent after those years up until the present year, encouraging the researchers to help the institution to bring back what they had started through innovative instructional material.

Respondents of the Study and Sampling Technique/Participants of the Study

Under the document analysis, five textbooks were considered as the Elementary Geometry for College Students (Alexander, D. & Koerberlein G., 2020), Core Concepts in Mathematics: GEOMETRY (Parveen, F. et al., 2019), Core Concepts in Mathematics: TRIGONOMETRY (Parveen, F. et al., 2019), Practical Math 9 (Albay, E. & Oli, M. 2018) and Trigonometry-Fourth Edition (Moyer, R. & Ayers, F. 2009) which are related to the topic of the research. Researchers also considered the Grade 9 Lesson Exemplars coverage of the 4th Quarter and the DepEd curriculum guide for Grade 9 (MELCS).

The participants of the study were experts and students. Four expert respondents were chosen, 75% female and 25% male, with purposive sampling (typical sampling) used as the sampling technique. On the other hand, Simple Random Sampling Technique was used to get a sampling population of 11 (44%) students from Hyacinth and 14 (56%) from Carnation were randomly chosen from the

entire population of 45 and 47 students, respectively.

Instrumentation

The researchers used Document Analysis, Experts Interviews, and Students' and Experts' Likert Checklists as instruments in the data collection. Document analysis involves a comprehensive review of written materials with similar content which can be utilized to generate themes and to identify whether any features would make the material more significant to educators and learners, as well as to improve the teaching and learning process. Meanwhile, an experts' interview is a structured discourse where the researchers ask experts about their perceptions and recommendations on the initially developed instructional material. Lastly, the students' and experts' Likert checklist includes the five features (Objectives, Content, Format, Graphics, and Usefulness) which is made up of a series of self-made structured statements with bases on the Likert instrument used in the study of Torre Franca, E., 2017 and utilized for determining the acceptability level of the developed instructional material.

Research Ethics Protocol

Informed consent is a critical part of research ethics that has been recognized by a range of fields. The researchers must specify which data have to be collected and how it should be used in advance. The gathered information and data were kept private. The researchers made sure that the school was aware of every activity done by the researchers. Also, the researchers seek guidance from the school administrators to sign the letters before doing anything. This

was made feasible by sending letters to the school administration to ensure that all actions were approved by them.

Data Gathering Procedure

Analysis-Design-Development is the included phase that is adapted from the ADDIE model. For the Analysis phase, the researchers examined other existing related documents which are aligned with the topics of Trigonometric Functions in solving triangles. Meanwhile, the Design and Planning phase comprised (1) the perceptions and recommendations of the respondents upon the Mathematics instructional material were analyzed thematically to emphasize the emerging themes which are vital information to proceed in the next phase; and (2) planning of the included lessons, objectives, activities, and the visualization of how GeoGebra software can be an important aspect of the instructional material. Lastly, the Development phase contains (1) the development of the Mathematics instructional material based on the emerging themes from the information from the analyzed documents and impressions of the expert respondents; and (2) the results of the gathered data from the student respondents and expert-respondents were needed to accompany the validation of the overall quality of the instructional material.

Data Analysis

The following data treatments were used to accomplish the main objective of this study and to interpret the data: (1) Thematic Coding to determine the themes that emerged. (2) Highest and Lowest frequency count to determine the percentage of the highest and lowest

frequencies of the gathered responses, and Median to determine the acceptability level of the proposed study.

RESULTS AND DISCUSSION

The Mathematics instructional material on Trigonometric Functions in solving triangles using GeoGebra software was developed by the researchers through analyzing and examining other existing documents that are aligned on the topic being discussed, such as the Mathematics textbooks, Grade 9 Lesson Exemplars on the Fourth Quarter, and the DepEd Curriculum Guide which served as the reference for the generation of themes. Moreover, for the design and planning phase, four outlined procedures were adapted to achieve the purpose of the study which are the Design and Layout of the Instructional Material, Identifying and Specifying Objectives of the Instructional Material, Determining the Task that will be incorporated in the Instructional Material, and Preparing the Tests of the Instructional Material. These are the procedures on how the material was developed for the Grade 9 level to be utilized in their teaching and learning process.

There were generated themes that emerged in the analyzed documents and were used to develop the material such as the usage of an inquiry-based approach centralizing the students in the learning, focusing on Software-based material, and choosing relevant mathematical tasks. However, based on the responses of the experts in the interview that must be taken into consideration in developing the material, the material should promote proficiency and it should be convenient for both the students and instructors to use. For

the five features of the instructional material, the generated themes were: the objectives must be SMART, contents must be well-presented, the format must be legible, graphics must be visible, and usefulness must support the teaching and learning process. Another theme derived regarding the materials for supporting the teaching process includes the usefulness of the material for the teachers especially in verifying the solutions and considering the limitations since the chosen software is only accessible to those who have internet and available gadgets. The last theme that emerged in the further recommendations for improvement was the integration of the GeoGebra on all aspects of the material including the activities, lessons, and assessments.

As for the alignment of the study to E-learning theory, the researchers used acceptability level to determine if the GeoGebra software is accepted in the developed instructional material whereas it can open new opportunities and promote knowledge construction for an effective teaching and learning environment. The result on the validation of the student-respondents towards the acceptance of the format and graphics of the instructional material was highly acceptable with a composite median of 5.

FEATURES	MEDIAN	VERBAL INTERPRETATION
Format	5	Highly Acceptable
Graphics	5	Highly Acceptable
Composite Median	5	Highly Acceptable

Furthermore, the validation of the expert-respondents towards the acceptance of the five features showed that they accepted all features with a composite median of 4.

The results of the validation of both respondents possessed positive results which means that the instructional material met the standard quality of an instructional and educational resource.

FEATURES	MEDIAN	VERBAL INTERPRETATION
Objectives	4	Acceptable
Content	4	Acceptable
Format	4	Acceptable
Graphics	4.5	Highly Acceptable
Usefulness	4.5	Highly Acceptable
Composite Median	4	Acceptable

With the results from the three phases, the instructional material is developed by the researchers with the title “Trigonometric Functions in Solving Triangles (Using GeoGebra Software)” which is a technology-based material that explores GeoGebra software and contains 3 lessons about Grade 9 Trigonometry.

CONCLUSION

The results of the study imply that the importance of analysis and perceptions of others impacts how well the instructional material fulfills the needs of learners. Additionally, respondents provide highly acceptable validation on the development of the material, indicating that quantitative results establish interrelation with qualitative results as the themes generated from document analysis and interview responses were accepted in the validation. Moreover, since the study about the development and validation of Mathematics instructional material on trigonometric functions in solving triangles using GeoGebra software provides positive results, therefore, it is concluded that the Mathematics instructional material is qualified to be an instructional and

educational resource that can support teaching and learning on trigonometric functions in solving triangles.

RECOMMENDATIONS

The researchers would like to propose the following suggestions based on the findings and results drawn:

1. Educational institutions may use the developed instructional material for testing purposes and continuation of the Implementation and Evaluation phases.
2. Though the Mathematics instructional material was highly accepted, it is recommended for future studies to create a modified version of the material that addresses the weaknesses of the developed material, especially on its sighted limitation of internet accessibility and unavailability of gadgets; and
3. Future studies may generate much-improved Mathematics instructional material through
 - a. Inclusion of advanced content about trigonometric functions in solving triangles;
 - b. Exploration and utilization of different topics in Mathematics education in which GeoGebra Software can be used; and
 - c. Widening of the study's scope by having more participants and respondents for a broader analysis of related documents and extensive perspective of other people on Mathematics instructional material in solving triangles.

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A LESSON STUDY ON THE ENGLISH TEACHER'S MANNER OF ELICITING LITERARY COMPETENCE AMONG JUNIOR HIGH SCHOOL STUDENTS IN S.Y 2021-2022

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Abstract

Teachers encounter an immense variety in literary competence among students in their secondary school classrooms. Yet, little is known about how students perceive and deal with this variety. Thus, this study aims to describe the English teacher's manner of eliciting literary competence among Junior High School students. A lesson study was used as the research methodology, together with a priori interviews and observations. The methodology consisted of three stages: planning, observation, and reflection. In the planning stage, the subject teacher designed a lesson plan on how to achieve the learning goals. Through this, the teacher initially consulted with the evaluators and researchers. Researchers served as the third eye of the team, facilitating the members, and observing the teaching session and the post-conference. In the observation stage, the subject teacher taught the lesson while the evaluators were observing, collecting information, and noting details about the manner of the teacher in eliciting literary competence. Lastly, in the reflection stage, evaluators tackled and described the subject teacher's elicitation. Based on the results of the study, eight themes have emerged, namely: Differentiated Strategies, Curriculum guide as Basis for Idea Exemplar, Integration of technology, Utilization of Information-based Approach, Behavioral Engagement, Lack of Personal-based approach, Absence of Higher Order Thinking skills, and Difficulty of the Activities done by the Subject Teacher. The aforementioned themes became the indicators and descriptors of the manner of the subject teacher in teaching and eliciting literary competence.

Keywords: *Literary competence, Lesson study, Planning, Observing, Reflecting, Subject teacher*

INTRODUCTION

Although formal instruction comes after completing a teacher education program, new teachers still gain a lot of experience working in classrooms from their pre-service training. The methods used by pre-service teachers to carry out this particular practice are divided into three groups: (a) approaches that need to be

unlearned; (b) skills that can be built upon; and (c) skills that need to be learned (Meghan Shaughnessy 2017).

The normal school undertook the responsibility of spreading the new teaching method through training teachers and also editing and publishing instruction manuals and textbooks. In the process, the criticism lesson was introduced as a teacher training method. Thus, Japanese lesson study has

been a popular professional development approach in recent years (Stigler & Hiebert, 1999). In this method, teachers collaborate to study teaching contents and instructions by observing lessons and discussing with teachers.

Since the improved K-12 curriculum in the Philippines was implemented, literary works like prose, poetry, and theater have been included in English lessons. Literature has been a resource in the English as a Second Language (ESL) setting "for offering a realistic experience of the target language, as per Almonte (2015).

Due to the growing focus on learner-centered college English teaching and learning, there have been a lot of discussions lately on learners' emotional literacy. The researchers thus concentrated on how the development of literary competence enhances learners' emotional literacy.

Literature is significant because it helps students develop their reading, listening, viewing, vocabulary, writing composition, spoken language fluency, and grammar skills. The best interpretation, according to Rodger (1983), is the one with the greatest number of subjective responses that are also correlated with the greatest number of verifiable textual data, without the interference of irrelevant details, the omission of significant proof, or the loss of interpretative consistency that aims to explain the work's unity.

With this, the researchers wanted to describe the English teacher's manner of eliciting literary competence among students. The researchers see this as vital as it adequately prepares the teachers to positively add value to their students' performance,

school effectiveness and efficiency, and the entire educational system in the Philippines.

Framework of the Study

This lesson study includes three processes – planning, observing, and reflecting. The first cycle of the lesson study is to form a team and plan a lesson together (Santayasa, 2009) whereas the LS team was composed of three evaluators, a subject teacher, and researchers (third eye). In the planning stage, ST crafts IDEA Exemplar in which the subject matter is about The Elements of the Story of Ramayana. The Master Teacher of the English Department evaluates the IDEA Exemplar using DEPED COT. Since the researchers were the third eye of the study, ST answers a priori questions about Lesson Planning. In the observation stage, the subject teacher teaches the lesson while evaluators observe and collect evidence (Cerbin & Kopp 2006). ST elicits literary competence among students by teaching literary pieces while evaluators observe and describe the manner using their theoretical lenses. In the reflection stage, the LS team conducts a post-observation conference in which it tackles Questions and Answers with the ST and the Comments or Recommendations review of the evaluators.

Objectives of the Study

By studying the elicitation of teachers' literary competence among junior high school students, the researchers up with these objectives: (1) Determine the preparatory procedure of the subject teacher in lesson planning. (2) Describe how the teacher was able to elicit the literacy competence of the Junior High school Students. (3) Describe how the students interact with the strategy of the teacher in

eliciting a response from them during their literature class. (4) Ascertain the themes that emerged based on the analysis of the qualitative data gathered from the lesson study conducted. (5) Determine the implications that may be derived.

METHODS/PROCEDURES

Research Design

This study was carried out by the researchers using qualitative research. It is particularly suitable for addressing the reasons behind something being noticed or not, evaluating intricate multi-component interventions, and concentrating on the development of treatments. The researchers used a lesson study as a method to determine, describe, assess, and ascertain the English teacher's manner of eliciting literary competence among junior high school students.

Research Site

The researchers' study centers were at the Makiling Integrated School, the institution where the selected respondent worked or served as a teacher at the time of the study. This institution is suited to this study as it has the subject and participants needed and is appropriate to the study and the conducted lesson study.

Respondents of the Study and Sampling Technique

The researchers' strategy for carrying out this study was purposive sampling which offers comprehensive and in-depth information about the subject under study to identify the respondent needed. The respondents must meet the following criteria to be qualified for the lesson study. The subject teacher must be a Junior High School

English teacher, two evaluators from the research site whose area of specialization is English/Literature, and one evaluator from City College of Calamba whose area of specialization is also English/Literature. For the subject teacher, the role involves giving direct instruction and eliciting literary competence among the students. For the head evaluator, the role involves checking the lesson plan or Idea exemplar of the subject/model teacher using COT-RPMS 2021-2022, observing and describing how the subject teacher elicits literary competence among the students using theoretical orientation/lenses with emphasis on literary competence. For the two evaluators, the roles are similar to the head evaluator except for the evaluation of the lesson plan using COT-RPMS 2021-2022 since the head evaluator is the Master Teacher in English.

Instrumentation

The researchers used self-made interview questions where the design of questions will depend on whether the researcher wishes to collect exploratory information (i.e. qualitative purposes of better understanding or the generation of hypotheses on a subject). Additionally, the research questions were addressed and the necessary data was acquired using observation and interview. There are different validators of this lesson study since the researchers were not yet deemed experts and were only considered as the third eye of the lesson study. Two internal validators validated the "A Priori Questions for the Subject Teacher about Lesson Planning" and one external validator also validated the a priori questions for the subject teacher.

Research Ethics Protocol

The data gathered from the respondents will not be in use to offend the respondents nor used for self-gain. The researchers assured the term and questions that is asked are not disrespectful or offensive to the participants that responded to the research study conducted. During the observation process, studies based on observation in natural settings must respect the privacy and psychological well-being of the individuals studied. Unless those observed give their consent to being observed, observational research is only acceptable in public situations where those observed would expect to be observed by strangers. Additionally, particular accounts should be taken of local cultural values and of the possibility of intruding upon the privacy of individuals who, even while in a normal public space, may believe they are unobserved.

Data Gathering Procedure

To conduct a lesson study using observation and interview during the current situation or alert level in Laguna province, an invitation letter was addressed to the respondents informing them that they have been selected to be observed and to be interviewed. The nature of the research, the specific topic to be tackled, and their privacy and participation extent were all included. The school and the subject teacher were also given a letter of consent for the researchers' participation and observation during the online class. Afterward, the researchers went to the school of the subject teacher for lesson planning to be observed. It usually takes a week for a subject teacher to complete a lesson plan as there are many processes in including and aligning the objective of the

topic. Then, it will be checked by the head/master teachers and the principal of the said school before conducting a demo teaching.

After the participant agreed to take part, the researchers ensured that the exact time of each online class for observation, and the researcher's scheduled appointment for focus group discussion via Google Meet were set according to the respondents' availability. Due to the IATF health protocol and for the safety of the community, the researchers decided to utilize online video conferencing via Google Meet, the same application used during the teacher's actual online classes.

Data Analysis

The researchers used thematic analysis to come up with patterns and themes from the data gathered in the lesson study. The data gathered were read and reviewed by the researchers, followed by data transcription. Basic observation of the patterns that arose was also done. The given research objectives will be a pattern for how the lesson study went. In addition, if visible and broad ideas and concepts were made known to the researchers, they had labels or codes that would help them to structure and interpret the data.

RESULTS AND DISCUSSION

This includes the results and discussions on the Lesson Planning, Observation, and Reflection stages. This research has been conducted using a qualitative design and Lesson Study as methodology.

Planning Stage

A. On DepEd's Curriculum Guide as Basis for IDEA Exemplar

Emerging responses of the subject teacher from three different a priori questions include preparation for lesson planning, alignment of the instructional materials and lesson plan to the intended topic, and the effectiveness of the assessment rubric in extracting ideal responses from students. The emerging responses have revealed the relevance of DepEd's Curriculum Guide as Basis for the subject teacher's IDEA Exemplar.

ST during Lesson Planning: "So as per my preparation I'll be referring to the curriculum guide and the Most Essential Learning Competencies being given by the Department of Education and also as I am crafting my lesson plan, I'll be making use of the self-learning module given by the DepEd..."

ST on Question and answer with evaluators: "Yes, because as I have said earlier, I'll be guided by the curriculum guide or the MELC being given by the Department of Education."

ST during Lesson Planning: "... there is the curriculum guide specifically the performance standard wherein, there are the skills needed to be assessed from the students to have you referring to the... what is being written in the curriculum guide and that I'll be making use of it as a guide in crafting my rubrics."

According to what Tomlinson said in response to the subject teacher's a priori response, since the Curriculum Guide or

MELC serves as the DepED instructors' major source of inspiration when creating a lesson plan or IDEA example, assessments and instructional materials are compelled to address the questions raised by the Curriculum Guide. These were the key points why the subject teacher consistently mentioned that the Curriculum Guide of DepEd is the main source/standard of IDEA Exemplar as this was mandated by DepEd. Focusing on the IDEA Exemplar and the a priori answers of the subject teacher about the preparatory procedure of the subject teacher in Lesson Planning, the syllabus to be implemented during the discussion part has the aim to develop in students the ability to read the Story of Ramayana, understand the story by analyzing through Elements of the Story, and respond to literary activities through differentiated activities and performance tasks.

B. On Differentiated Strategies

The subject teacher's responses focused on differentiated strategies towards the class in eliciting literary competence in which it touched on three aspects of differentiation such as content, process, and product.

ST during the Lesson Planning: "Okay so I'll be making use of different strategies most especially differentiated strategies that will...that will fit or that will address the needs of the students especially that in our curriculum we are required to meet the discussion or teaching process more of a student-centered teaching so I'll be considering the needs of the students as I go along in my preparation."

ST during the Lesson Planning: “I’m planning to do... interactive and differentiated activity to help them appreciate the lesson.”

ST during the Lesson Planning: “I’ll be making use of different online platforms and applications.”

For the content, it was set by the subject teacher through a game called “The Last Man Standing” in which the activity according to the subject teacher “will address the needs of the students” meaning, the subject teacher aimed to cater to all the learning styles of the students is planned to be employed through an interactive activity. This was also defined by Tomlinson (1999; 2010) as the presentation of that content can be varied, and teachers might choose to present content in a variety of forms including modeling the content, rehearsal, choral chanting, movement associated with the content, educational games, or student-developed projects associated with the content.

The process can be seen in the IDEA exemplar where there are a lot of differentiated activities to be employed; first, to review the past lesson, the class will play an activity entitled “The Last Man Standing”. Second, instead of directly asking the processing questions about The Story of Ramayana, the teacher used graphic organizers to present all the questions. This will make the processing of questions pleasing, appealing, and organized while analyzing the story. Third, the subject teacher used Google Jamboard for the students to plot the literary text using a plot diagram. This kind of integration of technology is considered a differentiated activity.

The learning should be observed and evaluated (product) about the differentiated strategy. Here, the subject teacher mentioned that ST will make the student present or answer in a manner they will be able to share what the expected competencies are being asked by the learning objectives. Simply, if the subject teacher is more of a discussion type of teaching, evaluators or observers will see a defining feature of discussion during the observation process in which students have considerable agency in the construction of knowledge, understanding, or interpretation. In other words, they have considerable “interpretive authority” for evaluating the plausibility or validity of participants’ responses.

C. On Integration of Technology,

The subject teacher consistently mentioned the implementation of differentiated activities through the integration of technology. If in face-to-face classes’ modality, ICT or the integration of technology may remain optional, but the case here is that the IDEA exemplar is meant to be taught in an online mode of learning in which technology is the only gateway for the subject teacher to deliver and to elicit literary competence to her class. It was the point of the subject teacher that virtual set-up is already an integration of technology in eliciting literary competence: “So, the virtual class setup itself is a technology.”

Observation Stage

D. On Difficulty of the Activities

The theme that emerged from the English teacher’s manner of eliciting literary competence among Junior High School

students is the difficulty of the activities by the subject teacher. Evaluator 01 observed that the Subject Teacher is facing difficulty in expanding the learner's capability to think and explore the activity wherein the subject Teacher did not go deep to let the students think and explore more. Evaluator 2 emphasized a lack of engagement in students in learning results in a failure assessment, especially in eliciting students' comprehension in understanding the story and the topic. Researchers 01, 02, and 03 observed the engagement activity that the Subject Teacher does not execute in the discussion. Researchers said The Engagement Activity shown on the IDEA Lesson Plan entitled 2-3-1 Challenge was missed by the subject teacher. Therefore, the researcher believes if the teacher did not follow the performance and standard assessment of the lesson plan and missed one activity; it can affect the overall performance of the subject teacher. Researchers 01, 02, and 03 said, "The Assimilation Activity shown on the IDEA Lesson Plan was not delivered due to time constraints."

E. On Behavioral Engagement

For the behavioral engagement of the students, Researchers 01, 02, and 03 observed and agreed on the student's participation and said, "The class participates actively on the motivation." Therefore, classroom participation is a feature of many course designs. It can result in insightful comments and interesting connections being made by students and can foster a high level of energy and enthusiasm in the classroom learning environment. However, poorly managed participation can also lead to instructor frustration and student confusion. To encourage a conversation where

connections are made, students must see their participation as an addition to a shared experience. By inviting students to respond to one another's comments, a discussion can be established. Encouragement of such efforts further enhances the concept of collectivism.

Reflection Stage

F. Utilization of Information-Based Approach

Based on Carter, R., "Teachers' Approaches in the Teaching of Literature in Schools" There are six methods used in the teaching of literature, according to Long (1991). These are the Language-Based Approach (method 1), Paraphrastic Approach (method 2), Information-Based Approach (method 3), Personal Response (method 4), Moral-Philosophical (method 5), and Stylistic Approach (method 6) approaches.

E 01: "...so there are a lot of approaches in eliciting literary competence and I have observed the approach that you utilize was an information-based approach in which you use the literary text as a springboard in teaching the elements of the story so technically [nasa] cognitive level [siya]..."

However, based on the evaluators the subject teacher did not embody all of the possible approaches in eliciting literary competence instead the subject teacher limited her teaching strategy to one approach only as E 01 observed that only the concept of information-based was utilized approach by the subject teacher during the lesson study among the other approaches which could be also effective in eliciting literary competence.

Evaluators observed that the subject teacher acted as the initiator and foundation

of the knowledge in different processes or ways wherein another factor of the information-based approach is to touch the cognitive level of students and based on the evaluators 01 and 02 it achieved by the subject teacher they emphasized the process of identifying elements that fostered by the subject teacher towards the students as an effective strategy in touching the cognitive level.

G. Lack of Personal-Based Approach

The personal-based approach is one of the approaches that can be used by the subject teacher to elicit literary competence towards the students at an effective level as it ensures and fosters the application of what the students learned. This approach can also engage the subject teacher and students to dig deeper into the context of the literary text being discussed in the lesson study by allowing and encouraging the learners to share their insights and ideas about themes and details that can be extracted from the story.

E 01: "...one of the objectives of your lesson plan or the most essential competency would have to be to analyze literature or share the heritage of people from diverse backgrounds... [nakapaginclud sa tayo ng] personal response where students would have to relate ramayana's narrative, lessons or themes into their personal lives.

E 03: "As a teacher of literature, it is better if she could encourage her students to apply what they learned from any literary piece in real-life."

Generally, based on the comments and recommendations of the evaluators the emerging theme about the lack of a personal-based approach occurred as the subject

teacher did not apply the personal-based approach and fully attained the affective domain/level of teaching and learning process.

H. Absence of Higher-Order Thinking Skills

The concept of Higher-order thinking skills not only enhances the student's ability to analyze literature and achieve activities instead it also helps students to enrich their understanding of more complex contexts and lessons.

E 01: "...[medyo hinanap ko din po dun sa ating] page-eliciting literary competence just a little bit of background about Ramayana...[may nabanggit ata tayo sa] lesson na dharma [parang ganun na yung] values ng Indians ay [iba dun sa Filipinos no], it must adapt enhance or enrich [yung ating]discussion with just a background of the Indian values...."

E 02: "Same observation with Evaluator 1, you need to focus on the higher order thinking skills. Siguro we need to consider this in the preparation of the lesson plan."

However, based on the evaluators this concept was not achieved by the subject teacher which for E 01 and E 02 is essential and supposedly applied to more effectively draw out the literary competence towards the students with the appropriate level of difficulty.

CONCLUSION

Based on the findings and discussion of this study, the following essences were formulated.

The researchers found out the procedures upon checking and making the subject teacher's lesson plan using an a priori analysis done by the researchers. As well as

the Teaching-Learning Goals with Emphasis on Literary Competence, gather evidence of student learning where one team member teaches the lesson (Subject Teacher) while others observe (evaluators); researchers, collect evidence of student learning. Under the reflecting process, it was done by the Post-Observation Conference with a question-and-answer portion with the Evaluators and Subject Teacher. Also, there are comments/suggestions from the evaluators about the manner of the subject teacher in eliciting literary competence.

RECOMMENDATIONS

On basis of the summary of findings and conclusions of this study, the following recommendations are hereby presented:

The researchers recommend Carter, R, and Long (1991), *Teacher's Approaches in the Teaching of Literature in Schools* which recommends six approaches to the teaching of literature. They are the (1) Language-Based Approach, (2) Paraphrastic Approach, (3) Information-Based Approach, (4) Personal-Response Approach, (5) Moral-Philosophical Approach, and (6) Stylistic Approach. Each of these approaches is related to the teaching of the CCL Program in classroom instruction.

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A CASE STUDY ON THE GRADE 12 STEM STUDENTS' EXPERIENCES IN LEARNING CHEMISTRY WITH LABORATORY-BASED ACTIVITIES IN THE NEW NORMAL

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Abstract

Transitioning to the new normal education is an unfamiliar experience for students and teachers due to the COVID-19 pandemic. Chemistry is a big part of Science Education wherein it is taught to all levels of students through laboratories. One of the concerns that the students and teachers are facing now is about subjects that require laboratory-based activities which usually perform in the laboratory itself. Therefore, the researchers contemplated strand that requires laboratory-based activities, which is Science, Technology, Engineering, and Mathematics. This study aims to identify, determine, describe, and analyze the experiences of Grade 12 STEM students in learning Chemistry with laboratory-based activities in the new normal. This study utilized the Case Study methodology to establish an in-depth, diverse understanding of a complex phenomenon in its real-world context.

This case study includes four processes: (1) identifying the phenomenon, (2) formulating a theoretical framework, (3) collecting the data in which data was gathered by conducting interviews with open-ended questions. Lastly, (4) describing and analyzing the data wherein utilized thematic analysis to acquire patterns from the participants' responses.

Three themes emerged namely: teacher's pedagogy in the new normal, student's blended learning challenges, and lastly, preferences in learning Chemistry. The researchers concluded that the participants' experiences have important things in common and that face-to-face learning had a huge impact on their learning acquisition in laboratory-based activities on Chemistry.

Keywords: *Chemistry, New Normal, Laboratory-based activities, Case study, Thematic analysis, STEM*

INTRODUCTION

Billions of people were affected by the COVID-19 pandemic in which the entire world changed rapidly and drastically just within a few months of the outbreak. COVID-19 has no boundaries. People worldwide have no choice but to follow precautions due to the COVID-19 pandemic

such as staying at home, practicing social distancing, wearing facemasks and face shields, and following quarantine protocols. The spread of COVID-19 has sent global shockwaves, resulting in the closure of schools and other educational institutions. Therefore, it resulted in exceeding 1.2 billion learners globally (UNESCO, 2020).

Today, the system of education leads to more fundamental change. Other studies have revealed that the Covid-19 crisis has created additional significant difficulties for the education sector in ASEAN countries, including issues with teacher retention, particularly retention of ex-pat teachers; issues with planning, implementation, and assessment; and difficulties with the lack of a quiet study area at home and access to computers, software, other electronic devices, and the Internet (Heng, 2021).

Transitioning to the new normal education is an unfamiliar experience for the students and teachers since more than a year has passed since the first lockdown was announced in the country due to the COVID-19 pandemic and the closure of schools affected over 28 million learners in our local country, the Philippines (UNESCO, 2020). As per DepEd, the COVID-19 pandemic caused a significant impact on education and forced educators to evaluate their readiness for online instruction. Some of the changes, particularly for science teachers, include the removal of laboratory activities, field trips, and other off-campus activities (such as tours), as well as the shift to online lesson delivery. Challenges that come with these adjustments include the need to redefine lessons and assessments, restrictions on technological resources, and the results of other aspects like a decrease in social interactions between students and teachers.

One of the concerns that the students and teachers are facing now is about the courses that have subjects that require laboratory-based activities which usually perform in the laboratory itself. Therefore, the researchers contemplated one of the

strands in Senior High School that has a subject that requires laboratory-based activities, which is Science, Technology, Engineering, and Mathematics (STEM). This strand needs to take Chemistry subject because it is one of the specialized subjects under the STEM strand. Chemistry is a practical subject that the availability of a laboratory is necessary (Reid, Shah, 2007). In Science education, the role of the laboratory is vital for science educators. They proposed that laboratory-based activities have rich advantages in achieving the learning goals in Science subjects and this is especially true for Chemistry subjects (Hofstein, Lunetta, 2003). However, learning Chemistry with laboratory-based activities is also now different due to the COVID-19 pandemic which results in being taught virtually or with other learning modalities. This study aims to; identify the experiences of the participants in learning Chemistry with laboratory-based activities in the new normal; and determine how the participants perceive their teacher's strategy in the teaching laboratory; and their performance in Chemistry. Through this study, issues and concerns will be addressed by being able to identify the abovementioned purpose of this study.

Framework of the Study

This case study includes four processes –identifying the phenomenon, formulating a theoretical framework, collecting data, and lastly, describing and analyzing the data. The first process is to identify the phenomenon or the case. This study focused on the experiences of the Grade 12 STEM students in learning Chemistry with laboratory-based activities in the new normal which is the phenomenon that will be described throughout the process. The second process is formulating a

theoretical framework. This case study employed three major theories— Kolb's Experiential Learning Theory, Constructivist Theory, and Walberg's Theory of Educational Productivity. The third process of this case study is collecting the data. This study gathered data by conducting interviews with open-ended questions to elicit and obtain an in-depth response from the participants concerning the said phenomenon (Griffie, 2005). And the last process is describing and analyzing the data. This study utilized thematic analysis to acquire patterns from the participants' responses which are collected from the interviews.

Objectives of the Study

The general objective of this study is to identify the experiences of Grade 12 STEM students' experiences in learning Chemistry with laboratory-based activities. Specifically, it aims to: (1) explain how the Grade 12 STEM students of Calamba City Science Integrated School describe their experiences in learning Chemistry with laboratory-based activities in the new normal. (2) determine how the Grade 12 STEM students of Calamba City Science Integrated School perceive their teacher's strategy in the teaching laboratory. (3) Find out the academic performance of the students. (4) Identify the themes that emerged based on the analysis of the qualitative data gathered from the case study conducted. Lastly, (5) develop implications based on the synthesized findings and reflections of the researchers.

METHODS/PROCEDURES

Research Design

The Case Study method was used to investigate the experiences of the Grade 12 STEM students of Calamba City Science

Integrated School in learning Chemistry with laboratory-based activities in the new normal. This method is employed when there is a need to obtain an in-depth appreciation of an issue, event, or phenomenon of interest, in its natural real-life context. This study aims to provide insights into when to consider employing this approach and an overview of key methodological considerations about the design, planning, analysis, interpretation, and reporting of case studies.

Research Locale/Research Site

The study was conducted in Calamba City Science Integrated School located at Chipeco Ave, Calamba, 4027 Laguna. The school was already giving quality Science education for 12 years. According to Calamba City Science Integrated School's history, they have proved their best through awards and recognitions received from various academic and non-academic competitions at, division, regional, national, and also international levels. Their quality teaching and learning are ensured through their highly commendable and competent faculty and administrative staff.

Respondents of the Study and Sampling Technique/Participants of the Study

The researchers used purposive sampling, where the respondents were selected purposively for the interview. The researchers will choose fifteen (15) Grade 12 STEM students from Calamba City Science Integrated School who are experiencing laboratory-based activities in the New Normal. as a participant in this study by conducting purposive sampling. Purposive sampling is a technique that qualitative researchers use to recruit participants who can provide in-depth and detailed information. It is highly subjective and

determined by the qualitative researcher generating the qualifying criteria each participant must meet to be considered for the research study. The needed participants may be excluded or rescheduled, if any of the following criteria are present: health problems, internet difficulty, hectic schedules of all the participants, and differing time availability.

Instrumentation

Since the researchers used a case study methodology, an online interview was utilized in the study to collect data. The researchers used self-made interview questions which are anchored to the researchers' objectives of the study. The interview questions were validated by two experts in the field of the study who checked the interview questions and made some suggestions, recommendations, and revisions before conducting the interview. Before conducting data gathering, the researchers ensured that the interview questions have been validated, revised, and improved.

Research Ethics Protocol

The researchers adequately informed the participants about the research, comprehend the information, and gave them the power of freedom of choice whether to voluntarily participate or decline. The anonymity and confidentiality of the participants were preserved by not revealing their names and identity in the data collection, analysis, and reporting of the study findings. Privacy and confidentiality of the interview environment were managed carefully during online communication, interview session, data analysis, and dissemination of the findings. Other than this, serving other purposes is an infraction of the Data Privacy Act of 2012. The researchers

secured transparency and honesty which are the most important facets when conducting an online interview. The researchers disclosed that the interview was recorded, but also assured that the recording was only being used by the researchers as a reminder of their conversation and not be shared with anyone else. The researchers helped the participants to feel comfortable speaking whatever comes to their mind. And they had been mindful of how the participants felt throughout the interview. Moreover, for the participants who expressed discomfort or are unwilling to answer a question during their interview, the researchers did not push for an answer, as this goes against protecting the participants' well-being.

Data Gathering Procedure

Guidelines and supervision were given to the researchers by their research facilitator and research adviser. Letters were also prepared and noted by the Vice President for Research and Innovation as they go and collected data from the locale. The researchers supported their data to be presented to the research locale first. They had to visit Calamba City Science Integrated School to ask for permission to conduct a study inside their vicinity. As the school administrator officially allowed the researchers to collect and conduct their study by providing a series of letters that gave them clarity on the research objectives. The researchers sent the consent from the School Administrator which is sent to the participants' adviser. Their respective advisers were the one who lets the students receive the message that they were being chosen to be a part of the study. The researchers completed the participants' and parents' consent forms. The researchers communicated with them intending to

schedule themselves concerning their free time, by filling out the schedule using Google Docs that the researchers had provided. The participants willingly filled up their schedules for the interview. Concerning the health protocols and guidelines of the Inter-Agency Task Force (IATF), the interview was made possible with the use of online platforms most particularly Zoom and Google Meet. The researchers tackled the preliminaries of the interview before they dive into the interview properly.

Data Analysis

The researchers utilized the thematic analysis that was used to come up with patterns and themes from the data or experiences that were gathered from the participants. Thematic analysis is an appropriate method of analysis for seeking to understand experiences, thoughts, or behaviors across a data set. The most widely accepted framework for conducting thematic analysis involves a six-step process: familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining, and naming themes, and producing the report (Kiger & Varpio, 2020). The gathered data was read and reviewed by the researchers, followed by transcribing the data. The basic observation regarding the pattern that arose was noted as well. The given research objectives are used as a pattern in which the study goes to make sure it is aligned based on the analyzed data.

RESULTS AND DISCUSSION

This includes the results and discussions of this case study where various themes emerged based on the experiences of the Grade 12 STEM students in learning Chemistry with laboratory-based activities in

the new normal, as well as the results of the researchers' objectives.

Theme 1. Teacher's Pedagogy in the New Normal

The first theme that emerged was the teacher's pedagogy in the new normal about the participants' experiences in learning Chemistry with laboratory-based activities in the new normal. Based on the Constructivist Theory (1964), Piaget's ideas about teaching and learning summarize the seven pedagogical goals of constructivist learning environments, and one of those is to provide experience and appreciation for multiple perspectives wherein it evaluates alternative solutions. Participants' responses showed their teachers' teaching pedagogy with regards to teaching Chemistry with laboratory-based activities in the new normal and how the participants perceived it. About the Constructivist Theory, the alternative solutions that the teachers of the participants utilized were the integration of ICT tools and home-based laboratory activities. These teaching pedagogies were used for the students to learn Chemistry despite the pandemic. However, participants experienced various factors in their teachers' integration of that teaching pedagogy.

Theme 2. Student's Blended Learning Challenges

The second theme is the students' blended learning challenges which emerged based on the participants' responses. The participants utilized a blended learning modality in which they experienced online and limited face-to-face learning modality in learning Chemistry. Their teachers' pedagogy was different when their classes were online and when limited to face-to-face classes. Participants encountered challenges in their

blended learning such as time constraints, lack of resources, uncomfortable learning environment, and poor knowledge retention. Based on the Constructivist Theory, the teachers are creating an environment in which the students can actively participate in the learning process and stated that 'it takes time to learn: learning is not instantaneous. This implies that learning takes time, and it should be a continuous process. Additionally, Constructivist Theory stated that learners learn best when engaged in learning experiences rather than passively retrieving information which implies how hands-on learning is necessary for the students to be motivated in learning. Furthermore, Walberg's Theory of Educational Productivity discussed how academic performance can be affected by various factors and the learning environment of those factors. However, due to the new normal, time constraint, lack of resources, an uncomfortable learning environment, and poor knowledge retention are the factors affecting the learning of the participants because of the protocols that need to be followed based on their emerging responses.

Theme 3. Preferences in Learning Chemistry

The last theme was preferences in learning Chemistry which emerged based on the participant's responses on how they effectively learn Chemistry with laboratory-based activities in the new normal. As stated in Kolb's Experiential Theory, learning takes place through experience. He also stated the cycle of four stages for the students to achieve an effective learning process: 1) having concrete experience, 2) observation and reflection, 3) analysis and conclusions 4) testing hypothesis for the occurrence of the new experiences. This cycle can be used as a

learning style for students and as a basis for teachers when teaching a lesson. About the participants' emerging responses, they prefer to learn Chemistry through collaborative and face-to-face learning, this implies how experience can teach them and can motivate them to learn.

The Academic Performance of the Students

Table 1. Grade distribution in Chemistry

Participant	Academic Performance
A	Chemistry 1: 95 Chemistry 2: 99
B	Chemistry 1: 95 Chemistry 2: 99
C	Chemistry 1: 96 Chemistry 2: 99
D	Chemistry 1: 98 Chemistry 2: 99
E	Chemistry 1: 98 Chemistry 2: 99

Table 1 represents the academic grade of the participants in their Chemistry 1 and 2 courses. All of them had received a grade of 90% and above, which the researchers interpreted to mean that all of them were excelling academically. The participants noted that these grades had encountered two different sets of learning modalities. They have the full modular in Chemistry 1 and they are in an online class with limited face-to-face in Chemistry 2. Based on the researcher's findings the participants excelled more in their Chemistry 2 in which they had experience face-to-face laboratory-based learning.

Based on Walberg's Theory, various factors influence the academic performance of the students like students' psychological characteristics and their psychological environment. The abovementioned grades of

the participants showed how they cope with learning Chemistry with laboratory-based activities in their blended learning modality even though the pandemic brought numerous factors that affect their learning.

CONCLUSION

Based on the findings and discussion of this study, the following essences were formulated.

The researchers found out the experiences of the participants have significant things in common and that face-to-face learning had a huge impact on their learning acquisition in laboratory-based activities on Chemistry. Even though they had encountered two types of learning modalities, still, face-to-face learning modality is best suited to their learning style based on their responses. Therefore, the emerging responses of the participants showed how they prefer face-to-face learning modality and how they are struggling with the changes in the teaching and learning process due to the pandemic. This study also gives essence to new normal education, specifically, how learning Chemistry with laboratory-based activities in the new normal was being affected by the availability of laboratory materials and resources, time, learning environment, and the contributing factors brought about by the pandemic. Overall, internal, and external factors that can affect their learning may come endlessly but still, the students have successfully handled and finished their Senior High School with outstanding academic performance in Chemistry subject, most particularly in Chemistry 1 and 2. Their experiences in performing laboratory activities, whether it is home-based or limited face-to-face, have

made them resilient to earn knowledge even if there is a presence of challenges.

RECOMMENDATIONS

On basis of the summary of findings and conclusions of this study, the following recommendations are hereby presented:

The researchers recommend that the teachers should conduct a diagnostic test for the students for them to know the unclear lessons in which the students were being left behind. The subject most especially science-related subjects should be prioritized in implementing face-to-face hands-on learning. Note that this should be still done under the guidance of the health protocols that are given under the education and health sectors of the government. The teachers should conduct scheduled consultation hours for the students who experience unclear instructions that cause them to have difficulty in doing their home-based assessments and application. The teacher should provide prepared laboratory learning materials for those lessons that are complicated for the students to do inside their homes like videos about experiments. As a way of recognizing the difficulties of providing laboratory equipment and apparatus to conduct a home-based laboratory, the school can provide an online application that students can utilize in doing simulations. The researchers recommend that for the assessment to be considered a home-based task, it should be deeply considered to be able to be done by the students at home, if not the necessary adjustments should be made.

ACKNOWLEDGMENTS

This study would like to acknowledge the COVID-19 Guidelines of the United Nations Educational, Scientific, and Cultural

Organization (UNESCO), given that they are recognized by the Department of Education (DepEd), and the data from them is highly used and cited appropriately in this study.

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DEVELOPMENT OF MATHEMATICS INSTRUCTIONAL VIDEO IN TRIGONOMETRY

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Abstract

This study aimed to develop a Mathematics Instructional Video to determine the level of Acceptability between the teachers and students on the developed mathematics instructional videos, specifically in Trigonometry. It includes the topic namely: Six Trigonometric Ratios, Angle of Elevation and Depression, and Solving Problems involving Oblique Triangles. It is to support learners in studying Mathematics as well as for the teachers in teaching this course. It aids them as it serves as a supplementary material especially in various learning modalities that the education has. This study used a Mixed Method which involves gathering and analyzing both Quantitative and Qualitative Data. Furthermore, the Analysis, Design and Development Phase (ADD) of ADDIE model was utilized in the study. The ADD model used in analyzing the documents needed, designing an instructional video according to the perspective of an expert in the teaching field. Also, developing the instructional video according to the result of the survey questionnaire. The result of the study in the students' level of acceptability acquired 4.63 in the median value as Highly Acceptable. Whereas, for the teachers, it is Highly Acceptable with 4.50 as a median value. The perspective between the teachers and the students are Highly Acceptable which concluded that they positively perceived the mathematics instructional video that they watched. Thus, it means that the Development of the Mathematics Instructional Video in Trigonometry are ready to undergo in the implementation for testing on the schools, so that the evaluation phase for testing its effectiveness of learning competencies of the students in the mathematics as they were aid by the instructional video as supplementary material in current modalities.

Keywords: *Mathematics, Development, Instructional Video, ADDIE Model, Philippines*

INTRODUCTION

Since many students were technologically savvy, teachers were expected to incorporate various technological tools when creating lesson plans. Millennials make up 92 percent of the digital video viewing audience, and thanks to the accessibility of educational video platforms worldwide, a variety of topics are now

understood and accessible, as stated in the article "Why Videos are Important in Education" on nextthoughtstudious.com. As a result, this generation has begun using instructional videos that benefit all students, especially when learning. Incorporating supplemental media like instructional video content into the curriculum helps students learn the material more thoroughly and improves all teachers' delivery methods

(Ljubojevic, Vaskovic, Stankovic, Vaskovic, 2014).

According to the National Report of the Philippines: PISA 2018, the Philippines placed second-to-last among participating countries in the most recent International Student Assessment (PISA) in 2018. According to the data, despite only receiving 353 out of a possible 489 points on the OECD scale for mathematics literacy, one in five Filipino students, or roughly 19.7%, achieved at least the minimum proficiency level in mathematics literacy. Given the circumstances, the Philippine educational system has become more challenging for teachers and students, adding to the challenge of teaching and learning mathematics. While everyone is still adjusting to the changes, one challenge is figuring out how to create practical learning resources so that high-quality education can be delivered. Utilizing educational resources like supplementary films also facilitates learning. Students watch educational videos that assist them in learning new mathematics concepts and skills, so even though some of the questions are difficult to answer, they are still confident enough to handle the tasks in the modules. The student may have a thorough understanding of the mathematical concepts if the teacher thoroughly explains the video's material with adequate examples and a clear, modulated voice (Insorio & Macandog, 2022).

The respondents in the study by Dewanti and Sujarwo (2021) who are also students, teachers, and experts, refer to the content on YouTube and Instagram. The level of acceptability on the content aspect, context-setting, technical quality, and pedagogical quality are the main considerations in the question formulation. Sujorwa's study, however, focuses on its effectiveness as well as its consistency, relevance, and utility. Unlike Sujorwa's study, which covers both grade levels and a wider

range of mathematics topics, this study is solely concerned with trigonometry, one of those fields of mathematics. The research conducted by Viera et al. (2014) is qualitative. The advantages of videos in higher education are more heavily emphasized, with a focus on motivation for video creation and improvement. The study by Viera et al. (2014) was a voice-over presentation used in a recorded video lecture on the subject. To create educational video content, this study used animation and a lecturer.

Framework of the Study

Conceptual Framework

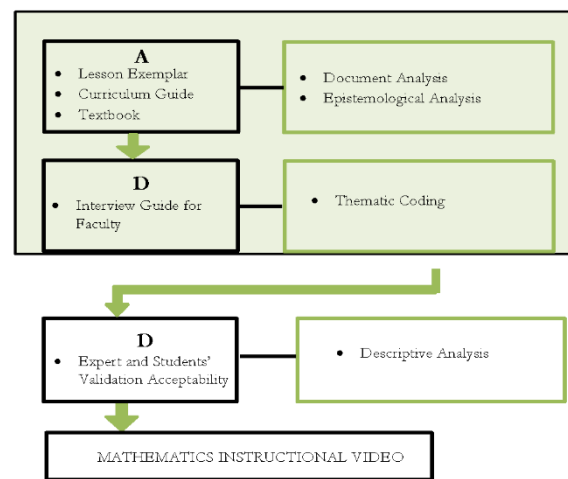


Figure 1-1. ADD Model Framework

The study's use of the continuous flow of the ADD Model is depicted in Figure 1-1, ADD Model Framework. The researchers started with the analysis phase, gathering the textbook, curriculum guide, and lesson exemplar needed to analyze the documents. As a result, the study's documents assisted the researchers in developing a strong epistemological guide question that is appropriate for getting a coherent idea from the population they chose.

Second, during the Design Phase, the researchers spoke with the faculty of the Grade 9 Mathematics Department, taking

into account the viewpoint of their Head Teacher. Each inquiry related to Thematic coding was used in the analysis of the transcribed data to show the researcher's understanding of the literature presented in the study. According to research by Mendoza, Caranto, and David (2015), Woottipong (2014), and Teng (2015), using instructional video content improves the effectiveness of the learning process and raises students' perception levels regarding learning mathematics. The first interview guide question was developed as a result of the findings that using instructional video content helps the learner have a positive outlook on learning mathematics and increases self-efficacy. The study by Wukowitsch and Hayden (2019) served as the basis for the second interview guide question, which focuses on how to create standards for instructional videos. In contrast, the videos ought to contain actual events that can help students apply their learning. These studies demonstrate that teachers are not utilizing innovative teaching strategies and media in online education. The third interview guide question was influenced by the notion that a teacher must increase their technology literacy to provide effective online learning (Khoiroh, 2017; Kohnke, 2021). As a result, the interviewee's responses were processed by transcription, with the first step being to highlight any pertinent information that would aid the researcher in gaining the required insight. Thematic coding was used by the researchers to categorize and arrange the themes that were consistent with the study's presented literature after they had transcribed the responses of the chosen population.

Finally, during the development phase, the researchers surveyed to determine the acceptability of the trigonometry

video. The following were the indicators listed on the survey questionnaire:

Aspects of the content, the creation of context, technological excellence, and pedagogical excellence. Each indicator enables professionals and students to understand the factors that should be taken into account when validating an instructional video. The survey questionnaire was completed using a link to a google form, into which the training videos had been added. Verbal interpretation was used to interpret the information gathered from the survey questionnaire. With this, the researchers will be able to determine how well-suited the trigonometry instructional video is to support the rapid changes in our modality.

Objectives of the Study

This study aims to develop a Mathematics Instructional Video in Trigonometry. (1) To determine the perspective of teachers in designing and developing the instructional video through the Analysis Phase and Design Phase. (2) To find out the level of acceptability in the Content- Aspect, Establishing Content, Technical Quality, and Pedagogical Quality of the Developed Instructional Video in Trigonometry between the teachers and the students. (3) To use the developed Mathematics instructional video as supplementary material in studying Mathematics.

METHODS/PROCEDURES

Research Design

The development of the instructional materials was done using a mixed-method research design. For the same study, mixed methods entail collecting and analyzing both quantitative and qualitative data.

Additionally, the design phase interview guide question and the epistemological analysis of the analysis phase both used qualitative data. The quantitative data was then applied to the Development Phase's Level of Acceptability between Teachers and Students. The study specifically used Sequential Exploratory Design under Mixed Method. Sequential Exploratory, as used in the study by Creswell (2013), entails the collection and analysis of qualitative data upfront, followed by the gathering and analysis of quantitative data. The design aims to investigate a phenomenon and is helpful in the creation and assessment of new instruments. For mixed methods research, deliberate method mixing is also required for data collection, analysis, and interpretation (Shorten & Smith, 2017). Three cases—Analysis, Design, and Develop Phase—were used by the researchers.

In the analysis phase, the researchers compile all the information necessary to create an instructional trigonometry video that focuses on the following subjects: Six Trigonometric Ratios, Angle of Elevation and Depression, and finally, Solving Oblique Triangle Problems. The curriculum guide, the Most Essential Learning Competencies (MELCS), and the student's textbooks or other learning materials are among these documents. Thematic Coding was used by the researchers to organize the responses of the selected population during the Design Phase. Each theme is related to the responses from the conducted interviews that were coded into categories. Thematic coding, also known as thematic analysis, is a technique for analyzing qualitative data. It is typically used with a collection of texts, like an interview transcript or other transcripts, and it carefully examines the data to find common themes—topics, ideas, and patterns of meaning that

recur—in the data (Caulfield, 2019). The acceptability level of the instructional video is also emphasized during the development phase. Descriptive analysis was used to comprehend the collected data to determine the acceptability of the expert and student validation. A method for assessing quantitative data called descriptive analysis helps to accurately describe, present, or summarize data points so that patterns can emerge that fully meet the needs of the data (Rawat, 2021). The design is appropriate for the current study because it allows the responses of the targeted population to be organized according to the documents being used and the teachers' level of expertise in creating the instructional video. The other design of the current study is to describe the degree of acceptability between the viewpoints of the students and teachers. This made it easier for the instructors and students to decide whether the instructional video is appropriate to use as a support for the evolving modality and to understand what factors should be taken into account when creating it.

Research Locale/ Research Site

The study was carried out at the Palo Alto Integrated School, where online and modular learning styles are common. The students lack the necessary resources to study their mathematics modules. Since the school is adjusting to the changes in the curriculum, the researchers decided to conduct their study in Palo Alto. Additionally, it was ranked third (3rd) for best ICT practices in Calamba City's division in 2019. Since they already have the background to practice using technologies, this can be beneficial for the teachers and the school as a whole. Barangay Palo Alto, Calamba City, Laguna, 4027 is the address of Palo-Alto Integrated School. The school was

founded in 1967 as Palo Alto National High School and received Integrated School accreditation in 2016. The mission and vision of Palo Alto were in line with what the City of Calamba Department of Education had in mind for its students.

Respondents of the Study and Sampling Technique/Participants of the Study

Epistemological analysis guide questions and interview guide questions were used in the study to gather information on the target population. Participants in the Epistemological Guide Questions were treated as the lesson example, the curriculum guide, and the teacher's textbook. Thus, four grade 9 mathematics teachers responded to the interview guide questions. Accordingly, the researchers employed Snowball Sampling in conjunction with Purposive Sampling. According to studies by Palinkas et al. (2016), the most common sampling method used in qualitative research for locating and choosing the necessary data related to the phenomenon of interest is purposeful sampling. There are numerous purposeful sampling techniques, but according to the criterion, purposeful sampling is the one that is most frequently used when conducting research. In the quantitative section, 50 respondents from the Palo Alto Integrated School's mathematics department head, math-9 teachers, and grade-9 students made up the study's sample. Students were the only respondents allowed because they were willing to take part in the study, according to the researchers. The researchers made use of quota sampling. It is a form of non-probability sampling in which the researchers select participants to serve a sample who are representative of a larger population (Simkus, 2022). Before collecting data for the study, the researchers used this technique to select

the respondents from the population and sample sizes. The sample size was set at least 37 respondents given the 566 population of grade 9 students. The method used to establish the required minimum sample size was based on Cochran's Formula. Additionally, the formula was proposed by Calmorin and Calmorin in 2007 by calculating the sampling size at a 1% level of probability and 99% reliability. However, the researcher used a sample size with a 95% reliability rate and a 5% level of probability.

Table 1-1. Profile of the respondents according to their Classification

Components	Head Teacher	Teacher	Students
Frequency	1	3	46%
Percentage	2%	6%	92%
N= 50			

The profile of the respondents is displayed in the table based on how they were categorized. In terms of the distribution of respondents, 1% or 2% of them were classified as head teachers. Additionally, 3 respondents, or 6% of the total, are teachers. In addition, 46 respondents, or 92%, are grade 9 students.

Instrumentation

The researchers used the following instruments in the data collection: Document Analysis, Experts Interview, and Students' and Experts' Level of Acceptability.

Analysis of Documents Related to the Instructional Material. Document analysis involves a comprehensive review of written materials such as textbooks, MELCs/ Most Essential Learning Competencies, and lesson exemplar in gathering the data needed that is helpful in the study. It is the instrument for Analysis Phase.

a. Experts Interview. It is a set of questions asked to the teachers to know their perspective about the instructional video in mathematics. The interview questions were created from the readings of the related literature by the researchers. It is the instrument utilized for the Design Phase.

b. Students and Experts' level of Acceptability Likert Checklist. It is a survey questionnaire determining the student's and teachers' perspectives about the developed mathematics instructional video by checking the acceptability level. It includes the Content-Aspect, Establishing Context, Technical Quality, and Quality. It is the instrument used for the Development Phase.

Research Ethics Protocol

Informed consent and clearance from the Ethics Review committee.

Data Gathering Procedure

The design and development of Mathematics Instructional Video in Trigonometry-9 were guided by the ADDIE Model but only the Analysis, Design, and Development Phases were used.

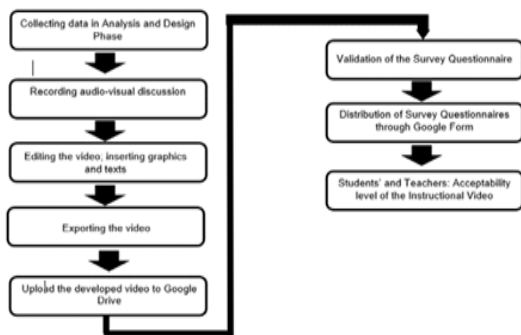
Analysis Phase. At this point, the researchers went to the principal of their preferred location and presented the letter for data collection, requesting his or her signature as authorization to look for and collect the documents from the mathematics department. The researchers analyzed the documents that were gathered. They examined the ninth-grade students' math textbooks to determine which lessons were present and needed to be studied.

Design Phase. The concept is created at this stage with consideration for the requirements and issues that must be solved.

Based on the study's review literature, the researchers used an interview guide question. The study's chosen participant was a grade-9 mathematics teacher, along with the head of the mathematics department. They responded to a series of questions that allowed them to express their opinions on the instructional video as a teaching tool. Their responses were captured using audio recordings. The researcher examined the information gathered during the interviews.

Development Phase. At this point, a methodical process was followed to create the instructional video, which included recording, editing, exporting, and transferring the videos to Google Drive. Software like Canva, CapCut, and PowerDirector was used to edit the video. After creating the videos for a few lessons geared toward grade 9 students, a trigonometry instructional video acceptability test was conducted. The mathematics instructor, the principal, and the Grade 9- students evaluated it. A survey questionnaire was the tool used. The mathematics department head oversaw its administration. By sending the head teacher a link to a Google drive that contained a Google form and an instructional video, the researchers sent a question. The three math teachers in grade 9 received the Google Drive link and Google Form from the head teacher, who then forwarded them to the grade 9 students. The aforementioned respondents had to view the math tutorial videos using the link provided in the GForm, which led to the videos. They then respond to the questionnaires with a Likert scale. The chosen respondents were able to gauge the acceptability level of the content of the mathematics instructional video after gathering the data. After gathering the data,

the researchers sort it and statistically analyze it to determine and discuss the results.



Data Analysis

Data Analysis for Qualitative Part in the Analysis and Design Phase

The documents required, such as the lesson exemplar, curriculum guide, and the learning material being used, provided the answers for the Analysis Phase and Design Phase of the designed and developed instructional video. Additionally, the presentation of the gathered information includes the interview guide questions posed by the mathematics department head and grade 9 head teacher. Data analysis for this study used qualitative research methods. Thematic Coding was used to present the answers to the interview guide questions and the epistemological guide questions. The interviews' audio recordings were converted into text by the researchers. Following that, they coded the data, looked for patterns among them, and began to develop themes. The coded data is examined to classify the themes. Then, it underwent a thorough review to be finished. The interviewee's organized responses to the following questions in developing and designing the Trigonometry-9 Instructional Video also served as the basis for the themes.

Data Analysis for Quantitative Part in Development Phase

By responding to the questions from the perspectives of the grade-9 students, mathematics grade-9 teachers, and the head teacher of the mathematics department, the Acceptability level in the Development Phase of the designed and developed instructional video was validated. To analyze the data gathered for this study, quantitative research techniques were employed. Descriptive statistics were also employed to verify and describe the data. Microsoft Excel was used to present the survey results, and SPSS software was used to conduct statistical analyses of the quantitative data. The researchers used a Median to analyze the data on the level of acceptance of the content aspect, establishing context, technical quality, and pedagogical quality of the Developed Instructional Video in Trigonometry by the head teacher, teachers, and students.

RESULTS AND DISCUSSION

Qualitative: Analysis Phase

Collaborative learning and constructivism must be used when designing and creating an instructional video. Based on the MELCS, or the Most Essential Learning Competencies of the Teachers, constructivism was used as a learning strategy because it allowed students to use their prior knowledge and engage in active learning by applying what they learned to the activities the documents included. Additionally, there are activities like solving a riddle, categorizing triangles, and assessing knowledge of right triangles included in the documents. To measure triangles using six trigonometric ratios, solve oblique triangles, and discuss them with the class while also

identifying the figures that represent the angle of elevation and depression, teachers grouped the students for collaborative learning. The instructional video is also effective because of collaborative learning because it gives the students different perspectives on the subject. In the study conducted by Halili et al. (2014), it was also mentioned that the use of flipped classrooms involves collaborative learning, where students can build their knowledge through group interaction and with some limited guidance from teachers. The advantages of watching instructional videos, according to the students, include better comprehension of the lesson's material, its enlargement, and even its increased interest (Wong, 2020). Furthermore, the motivational task that each lesson acquired was used to gauge prior knowledge of the subject matter. In the study by Wukowitsch & Hayden (2019), it was determined that having prior knowledge makes video content effective and efficient, especially when using it in a real-life scenario.

The Department of Education's learning materials starts with the lessons where they introduce the lesson topics and the formulas required to solve problems involving oblique triangles, identify the six trigonometric ratios, and determine the angle of elevation and depression. Following the knowledge of the general information, the documents present specific examples that can support the learner's knowledge, which results in the student's application. The process of recognizing, analyzing, and applying the topic aids students in developing their mathematical abilities. According to a study (Kinnari-Korpela, 2015), some disciplines, particularly those involving mathematics, are challenging to understand; as a result, students benefited from having a step-by-step explanation of the solutions. Additionally, the findings of Miner and Stefaniak's (2018) study on the effectiveness of specific video instructional delivery with the four video categories of lecture replacement, lecture enhancement, supplemental information, and problem-solving show that both teachers and students think that using videos to supplement lectures is a good use of time. Their academic performance is enhanced because they find the lesson to be more engaging and because it encourages being ready to learn the material. The learning competencies and instructional materials that focused on how the lessons and techniques were presented and demonstrated in the papers were the most significant in the study. The exercise will first concentrate on mathematical abstraction before incorporating a real-life issue because the texts follow the Content-Based Principle, where MELCs and textbooks continuously refer to the topic's content. Therefore, the content-based concepts focused on how

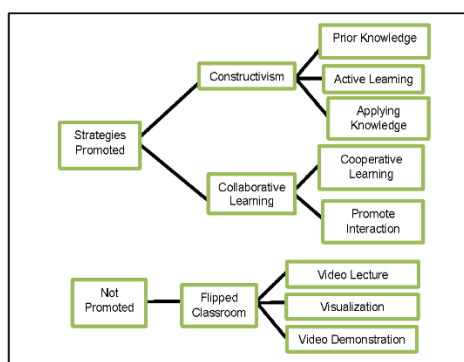


Figure 3-3. Thematic Chart Analysis Phase 1: Constructivism and Collaborative

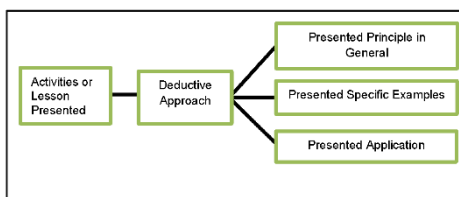


Figure 3-4. Thematic Chart Analysis Phase 2: Deductive Approach

students were acquiring knowledge and information.

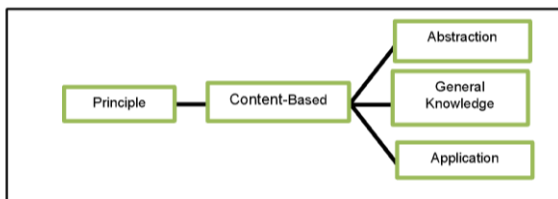


Figure 3-5. Thematic Chart Analysis Phase 3: Content-Based

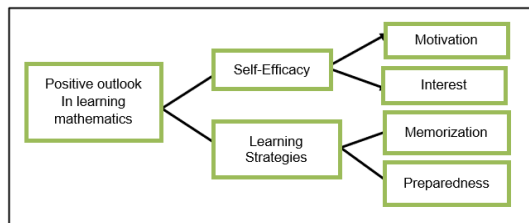


Figure 3-6. Thematic Chart Design Phase 1: Self-Efficacy and Learning Strategies

Qualitative Research: Design Phase

The positive outlook of the students in learning mathematics was having self-efficacy, which should lead the students to be motivated and interested in the subject, according to the research team's guide questions, which were derived from the researcher's readings. Additionally, the teachers said, "kapag ang bata, maganda yung tingin sa math or sa other subject nagkakainteres sila, hindi sila tatamarin at mas matututo sila so mas maganda talaga na ang bata ay may positive outlook sa math." It was also mentioned by the teachers that the researchers interviewed that the students' learning strategies had a positive outlook on mathematics. The teachers responded that students who watch instructional videos are better prepared to learn the material because they are more open to engaging with knowledge, welcoming new experiences, and recognizing a variety of learning opportunities. Additionally, the students were able to develop their preparation for learning the material and to memorize key mathematical ideas. The studies by Mendoza

et al. (2015), Woottipong (2014), and Teng (2015) showed that using instructional video content makes the learning process more effective, where the students increased their level of perception in terms of learning mathematics. As the researchers gathered information about the questions, it was reviewed in the source. Additionally, it was discovered that using instructional video content gives students a positive outlook on learning mathematics and boosts their sense of self-efficacy.

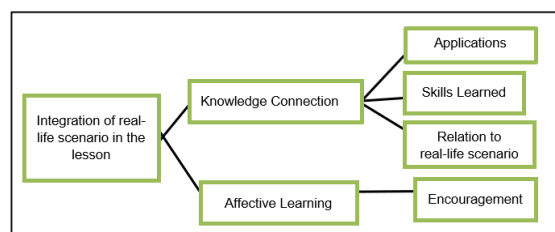


Figure 3-7. Thematic Chart Design Phase 2: Knowledge Connection and

Affective Learning

Derived from the researchers' second inquiry, which was also based on their readings. When the researchers spoke with the teacher, they learned that including real-life examples in the lesson helped students understand a crucial mathematical concept. The teachers also stated that "real life situation or scenario helps students to easily understand the lesson when using a real-life example in our instructional video the students tend to relate themselves in what they are learning". Additionally, the application of the knowledge derived from the subject matter would be able to establish the skills that the students learned and would have a connection to a situation in real life. "Real-life examples provide a complete application to knowledge and skills learned in the classroom as they relate the student to society and it also encourages the student to be aware of the choices they make and how to fit in the greater societal context," the

teacher said. In order to analyze the given problem, the students would also develop affective values, particularly encouragement in relating mathematics to the scenario. It was noted in the study by Wukowitsch and Hayden (2019), which focuses on how to design criteria for instructional videos, as the researchers gathered information. In contrast, the videos ought to contain actual events that can help students apply their learning. Additionally, it was mentioned in the study of (Detiana et al., 2020) that students can learn how to solve problems requiring mathematical communication skills by watching instructional videos. The study concludes that instructional videos can be a different or creative way for students to learn in order to enhance their mathematical communication abilities.

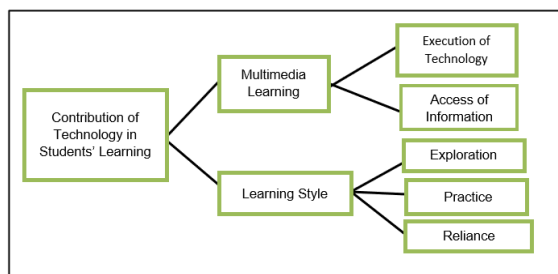


Figure 3-8. Thematic Chart Design Phase 3: Multimedia Learning and Learning Style

According to the teachers' responses to the third guide question, which was also based on the researchers' readings, technology plays a significant role in students' learning when it comes to the multimodal learning principle. Due to the students' access to information via technology, the teachers were able to use it in the discussion of the subject matter. It offers quick access to information, accelerated learning, and enjoyable opportunities for students to put what they have learned into practice, according to the teacher. It was also mentioned that the student's learning styles had allowed them to practice using the

worksheet pdf download while also exploring the idea of mathematics using technology. The teacher also responded allowed them technology so kapag ganun we teachers should be technology literate kasi how can we help our student to become technology literate if we teacher are not literate". To deliver effective online learning, a teacher must increase their technological literacy (Khoiroh, 2017; Kohnke, 2021). The students were so dependent on technology that they used it as a source of information. As the researchers collected the teachers' responses, it was noted in the study by Miner and Stefaniak (2018) that perceptions of the efficacy of specific video instructional delivery with the four video categories—lecture replacement, lecture enhancement, supplemental information, and problem-solving—indicate that both teachers and students think videos that supplement lectures are a good way to use the medium. Nevertheless, given the increasing dominance of technology in our lives, instructional video content is very important in the twenty-first century.

The teachers' supplemental materials were based on the fourth question, which was also derived from the researchers' readings and the data gathered in the classrooms. modules and instructional videos for teaching students and transferring knowledge. The instructional video, according to the teachers, improved the organization and delivery of their mathematics lectures. The teachers also stated that "mas maganda sya kasi pwedeng balikan ng bata yung mga hindi naintindihan". In addition to using instructional videos in the classroom, the teacher also employs modules, which only serve to organize and reference the lesson's content. The instructor also asked "if the video clips may improve lecture organization

and presentation to achieve effective teaching and learning" in another comment. The study by Umardiyah and Fitriyah (2021) stated that the emphasis is on creating learning media in the form of mathematics instructional videos. In the current Covid-19 pandemic era, teaching and learning tasks are challenging for both students and teachers. The requirement that students study at home will have an impact on them because they will no longer have their teacher's guidance in their subject matter. Additionally, Rasiman et al. (2020) noted that they used the development model to carry out their research, with the creation of videos serving as one of the data collection methods.

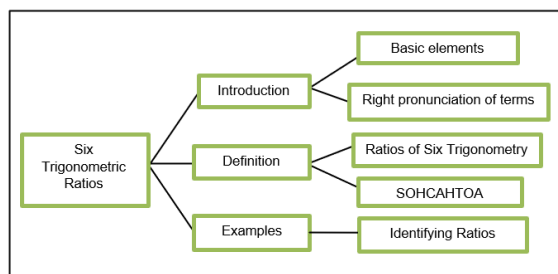


Figure 3-10. Thematic Chart Design Phase 5: Structure of Six Trigonometric Ratios developed Instructional Video

The Sine, Cosine, Tangent, and Theta were the basic elements of the lesson that the researchers began with when creating an actual instructional video for Six Trigonometric Ratios. In addition, we included in the video the proper pronunciation of the terms since some students still have difficulty pronouncing the terms. After that, the instructional video displayed definitions of its terms, which the students could use to understand the differences between those trigonometric identities. The instructional video's design incorporates the mnemonic names for the six trigonometric identities since there were six identities for the trigonometric ratios. The purpose is for the students to remember it

quickly and understand when to use that identity. Additionally, the examples from the video assist students in recognizing the reciprocals of trigonometric ratios. Additionally, by using the examples provided, students can understand how Sine, Cosine, and Tangent are used. Consequently, in the study of Drushlyak & Semenikhina & Proshkin & Sapozhnykov (2021), it is found that the level of development of mnemonic processes that ensure the memorization, preservation, and reproduction of information in the brain depends on the success of training, in particular, mathematics. Mnemonics are thought of as a way of perceiving new information due to the formation of associative connections using particular methods and techniques. This is done to introduce effective ways to memorize a variety of mathematical information.

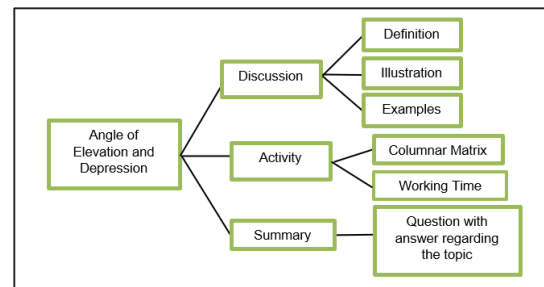


Figure 3-11. Thematic Chart Design Phase 6: Structure of Angle of Elevation and Depression developed Instructional Video

In the discussion, the video illustrated the angle of elevation and the angle of depression with the use of a man who is standing to look at the object from the ground. Additionally, it provided definitions for key terms like a line of sight, angle of elevation, and angle depression that were illustrated on each slide and were used in the lesson. It provides examples that have revealed how the three terms being defined are represented, with each answer being supported by a corresponding figure. Following the discussion, there is an activity

in the video that you have a certain amount of time to complete. According to Ou et al. (2019) study, four teaching methods—learning by doing, learning by example, adaptive feedback, and learning through reflection—were used to support students' understanding of the educational videos and help them meet their learning goals. By filling out the columnar matrix, participants in the activity are supposed to identify the lesson's figure. Finally, there is the summary, which includes quizzes on the lesson and gives each question's response along with a brief explanation of the issue. According to the study by Nonthamand (2020), the instructors should design an instruction model that integrates each of the following elements: learning strategy, communication, group process, idea-sharing activities, interaction, communication, and instructor preparation in the video conference instruction model.

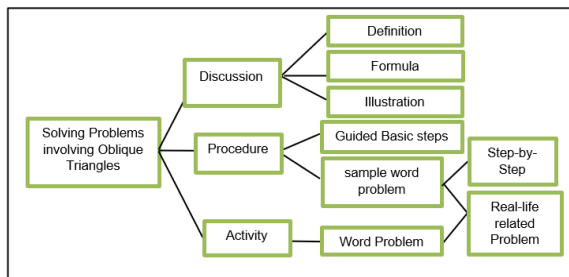


Figure 3-12. Thematic Chart Design Phase 7: Structure of Solving Problems Involving Oblique Triangles developed Instructional Video

The classification of an oblique triangle was brought up for discussion. Additionally, it provided an illustration and definition for each triangle using figures. It also provided the triangles' formula, which would be applied to the example problem. To assist the student in moving on to the given, the procedure, which includes the fundamental steps in solving the problem, was demonstrated. According to Kinnari-Korpela (2015), students would benefit from

a step-by-step breakdown of the solutions in the video. The sample problem, which represents the solution to the given problem, was discussed along with the procedure. The second sample problem, which was provided as an activity, was then presented for the viewer to respond to. The word problem that was given had a practical application. The videos should include real-life scenarios that can help students connect knowledge to practice, according to Wukowitsch and Hayden's study (2019). According to Anwar et al. (2020), video content engages viewers, piques their interest, and makes it easier for students to learn a subject.

Development Phase: Students' Perspective

Table 3-15. The students' level of Acceptability in Developed Instructional Videos in Trigonometry

INDICATORS	MEDIAN	VERBAL INTERPRETATION
Content- Aspect	5	Highly Acceptable
Establishing Context	5	Highly Acceptable
Technical Quality	4	Acceptable
Pedagogical Quality	4.25	Highly Acceptable
Total Value	4.63	Highly Acceptable

The student's level of acceptability in the developed instructional trigonometry videos are displayed in table 3.15. It is related to the study by Brame (2016), which claims that a successful educational video incorporates the rules and regulations for maximizing student learning from video content to determine the value of teachers' approaches to using video as a teaching tool. The content aspect received a median score of 5.00 from the students, as can be seen in the table. It is significant because of the way the topic is illustrated. Additionally, the students watched the lesson's content from the instructional video. The Establishing

Context, which includes the Relevance, Significance, Depth, Clarity, and Logicity of the videos, is also Highly Acceptable, scoring a median of 5.00. It focuses on the development of the video's flow and how the information was delivered. Student's finality, which has a median score of 4.00 and includes the video length, recording format, background, setting, subject lighting, and subject frame composition, is acceptable. It concentrates on the instructional video's technical aspects. Additionally, the student's Pedagogical Quality score, which includes the audio levels, discussion, pronunciation, diction, performance, and intonation of the teacher, is Highly Acceptable, with a median of 4.25. It has to do with how the subject is taught. With a median score of 4.63, the student's level of acceptability in developed instructional trigonometry videos, including the Six Trigonometric Ratios, Angle of Elevation and Depression, and Solving Problems involving the Oblique Triangle, is highly acceptable. To maximize students' learning of mathematics, learning videos must be created, according to Padmawati and Agustika's study (2020). Additionally, it aids in fostering students' readiness and learning (Moradi et al., 2018).

Table 3-28. The teachers' level of acceptability in development instructional video in Trigonometry

INDICATORS	MEDIAN	VERBAL INTERPRETATION
Content- Aspect	5	Highly Acceptable
Establishing Context	4.5	Highly Acceptable
Technical Quality	4.5	Highly Acceptable
Pedagogical Quality	4.5	Highly Acceptable
Total value	4.5	Highly Acceptable

The teachers' level of acceptability for the development instructional video in trigonometry is displayed in the table. The study by Beheshti et al. (2018), which

discusses the benefits, drawbacks, and design suggestions of instructional videos, may be responsible for the outcome. The content by spect received a median score of 5.00 from teachers, as shown in the table, and is rated as Highly Acceptable. Additionally, with a median score of 4.5, they were also Highly Acceptable for establishing context, which included the videos' relevance, significance, depth, clarity, and logic. While the teachers find the technical quality, which includes the subject lighting, subject frame composition, background and setting, video length, and recording format, to be highly acceptable, it has a median score of 4.50. Additionally, with a median score of 4.50, the student's level of acceptability in Pedagogical Quality, which includes the audio levels, discussion, pronunciation, diction, performance, and intonation of the teacher, is Highly Acceptable. The Six Trigonometric Ratios, Angle of Elevation and Depression, and Solving Problems involving Oblique Triangle are among the developed instructional videos in trigonometry that teachers find to be highly acceptable, with a median score of 4.50. The outcome of the tables examined in Rasiman et al. (2020) earlier study, in which the development model was also applied to the study's conduct and the creation of videos was one of the methods of data collection.

CONCLUSIONS

The findings demonstrated the necessity of conducting an epistemological analysis and developing study themes in order to design and produce an instructional video that willing to adjust to curriculum changes. Teachers use the instructional video as a supplement to other materials and as a tool to help their student's learning modalities. Additionally, based on how well each

indicator was presented in the provided video, teachers and students evaluate the instructional video. According to the teachers' and students' perspectives, which are rated as Highly Acceptable, they had a positive impression of the math lesson they watched. As a result, it means that the trigonometry-specific mathematics instructional video has been developed and is ready to be tested in classrooms. This will allow for an evaluation of the video's efficacy in assisting students in their learning of mathematics as a supplement to other learning modalities. Since the goal of the study is to create a mathematics instructional video, it can support the relationship between teachers and students by guiding them to develop a motivation that encourages engagement and active learning on the part of the students.

RECOMMENDATIONS

In light of the results and conclusions of the study, the researchers recommended the following;

The findings of this research study may help the teachers to sustain their strengths and improve their weaknesses in developing instructional videos. It was highly recommended to cover five or more lessons in developing videos in mathematics.

The findings of the research study may also help the school itself to encourage mathematics teachers in integrating instructional videos into the discussion.

The findings of this research study may help the students to design and develop videos in considering the content aspect. It may also help them in developing their own supplementary videos in mathematics.

In this study, it is recommended to improve the indicators of establishing context such as relevance, significance, clarity, logicity, and depth. Also, the indicators of technical quality such as subject lighting, subject frame composition, recording format, and background and settings. And lastly, the indicators in pedagogical quality such as performance, intonation, diction, pronunciation, and audio levels.

Future researchers were highly recommended to accomplish the implementation and evaluation phase of the ADDIE model in order to test the effectiveness of mathematics instructional videos. It was also recommended to use plenty of time in collecting the data of the respondents which will be used in developing the video as well as to have at least 50% of respondents for better results of the study.

It is highly recommended that future researchers complete the five phases of the ADDIE Model which includes Analysis, Design, Development, Implementation, and Evaluation to have a better result for the study.

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MATHEMATICS IMPLEMENTATION STRATEGIES FOR MODULAR LEARNING: INTEGRATION OF REALISTIC MATHEMATICS EDUCATION ON GRADE 7 STUDENTS IN BUNGGO HIGH SCHOOL

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Abstract

The purpose of the study is to implement the mathematics strategy of integrating Realistic Mathematics Education (RME) into modular learning of Grade 7 students. For achieving research objectives, the pedagogical experiment was conducted in the form of RME-based modules for fifteen 7th-grade students at Bunggo National High School, Brgy. Bunggo Calamba Laguna, Philippines. Accordingly, data on the pre-test and post-test were collected and analyzed quantitatively. The results were assessed based on the interpretation table for students' performance levels in the Department of Education. The Shapiro-Wilks Normality Test was used to determine whether the data had a normal distribution. After the test of normality, Levene's test was used to verify whether those variances are equal for all the data groups. The Independent t-test and Paired t-test were used to test whether there is a significant difference between the independent group and mean scores in the pre-test of the experimental and control groups and post-test of both groups and t-test whether there is a significant difference between the mean scores in the pre-test and post-test of the paired groups, control and experimental. Thereby, the experimental results showed that integrating RME into modular learning positively impacted the performance level of the students. The RME-based mode will serve as a tutelage on the difficulties and challenges experienced by the students in modular learning. The final output of this research is to improve RME-based modules for its possible implementation of DepEd and find it relevant for future use.

Keywords: *Realistic mathematics education. Modular learning. Modules. performance level. Mathematics.*

INTRODUCTION

Over several past decades, "Realistic Mathematics Education" (RME) has become one of the major themes in Mathematics Education (ME). The initial concepts for RME emerged in the Netherlands during the "Math War" as a fresh method of mathematics instruction in response to the "New Math" movement that spread across

Europe in the 1960s (Wittmann, 2020). At that time, as stated in Tien-Trung et al (2020) research, the contents of Mathematics Education programs and material were largely disconnected from reality since math education in the Netherlands was governed by mechanical teaching methods and content that was derived from the organization of mathematics as a science. As a result, the students lacked learning motivation and

could not comprehend the significance of learning mathematics in real-world situations.

Department of Education signed a memorandum about the implementation of Realistic Mathematics Education (RME) as stated in Regional Advisory No. 051, S. 2017 a curriculum based on RME uses real context as both a route into mathematics and also a means of developing students' understanding. This method encourages students to recreate mathematics for themselves and to gradually apply more complex techniques over time.

In RME, the connection between math and real-world situations not only appears after the learning process but also serves as a resource for both teaching and learning (Do et al., 2021). The education sector offers Self Learning Modules (SLMs) with alternative learning delivery modalities to be supplied for diverse sorts of learners around the Philippines as the Covid-19 Pandemic strikes (DepEd, 2010)

Upon examining the modules, the researchers noticed that there was the integration of real-life situations and examples in each lesson but it needed enhancement. The researchers believed that the solution to this problem is the implementation strategy in modular learning where RME is integrated and improved. This study aimed to show how the Realistic Mathematics Education (RME) approach addressed the challenges mentioned above by conducting quasi-experimental research for at least two weeks.

Framework of the Study

The Department of Education (DepEd) has a module provided for teaching

Mathematics subjects using the fact modular modality. It is, however, an attempt to introduce a kind of module with Realistic Mathematics Education (RME) to further enhance and promote authentic learning and assessment.

Pre-assessment was given to the students using DepEd Self Learning Module (SLM) and RME-based modules to check on the student's cognitive level before giving the module. This is to ensure homogeneity of the knowledge levels of the students who were grouped as control (DepEd SLM) and experimental (RME-based modules). The said modules were distributed for independent learning and eventually the post-assessment.

To support and substantiate the results of the assessment, the mathematics teachers/coordinator at Bunggo National Highschool were surveyed. The final output of this research is to improve RME-based modules for its possible implementation of DepEd and find it relevant for future use.

Objectives of the Study

The study aimed to implement an RME-based module in the Grade-7 Mathematics of Bunggo National High School during the school year 2021-2022. Specifically, the study sought to answer (1) the performance of the grade 7 students in both the control and experimental group in Bunggo National High School during their pre-tests (2) the performance of the grade 7 students in both the control and experimental group in Bunggo National High School during their post-tests (3) the significant difference between the mean level of performance two groups in their pre-tests and post-tests (4) the significant difference between the mean level of performance in the

pre-test and post-test of the two groups (5) the perception of Grade 7 students and Mathematics teachers about the use of the RME-based modules (6) the necessary improvements that should be made to the RME module (7) and to provide the proposed RME-based module.

METHODS/PROCEDURES

Research Design

Since "resembling" is the definition of the prefix quasi-, a quasi-experimental design resembles experimental research but is not actual experimental research. According to Sabarwal (2014), it chooses a control group that is as comparable as feasible to the experimental group in terms of standardized features while the actual experiment, where all variables are thoroughly controlled, is still being conducted.

Since the participants in this study were already divided into groups (experimental & control), it was determined that the quasi-experimental design was the most suitable.

Research Locale/Research Site

The researchers conducted this study at Bunggo National High School during the school year 2021-2022. The research site is located at Bunggo Calamba, Laguna. This school was chosen by the researchers because of its low proficiency level in Mathematics for the school year 2021-2022. Among all the subjects, Mathematics got the lowest percentage of learners who reached 80% and above which is 79.65%.

Respondents of the Study and Sampling Technique/Participants of the Study

The Grade 7 of Bunggo National High School has a total of 83 students in the Diligent (41) and Obedient (42) sections. The goal of the researchers was to get thirty students using the systematic sampling probability scheme. According to Manz (2017), a sampling procedure

called systematic sampling probability outlines the method for choosing each sample. To have the required sample size, the entire population was put into a list and a systematic sampling would take place. Manz (2017) added that it is always a good idea to randomize the starting point of the sample in the list to avoid unintentional bias in sorting or selection. In line with that, the researchers used the Number Picker Wheel, which is an online application used to spin a wheel to choose a random number.

The researchers listed down all the names of the Grade 7 students with a corresponding number which is encoded into the number picker wheel. The first 15 students randomly selected formed the control group and the remaining 15 students were in the experimental group.

Instrumentation

To measure the implementation of RME, the researchers conducted a multiple-choice type of assessment. The assessment made by the researchers consisted of 10 items classified as remembering, understanding, analyzing, applying, and creating in Bloom's taxonomy of learning. The topic for assessment is the Measurement of Variability of Ungrouped and Grouped Data and Analyzing, Interpreting, and Drawing Conclusions from Graphics and Tabular Presentations.

This assessment was used as the pre-test. According to the table of specifications made, in line with the lesson plan of the cooperating teacher throughout the experimentation, the researchers prepared two questions for each area mentioned above. The same sets of questions were used for the post-test. Another instrument used by the researchers was a Likert scale questionnaire consisting of 10 questions about the students from the experimental group and teachers' perceptions of the utilization of RME in the modular learning used during the study.

This set of perception questions is administered after the implementation of the RME on the modules. The sets of questions and

the module for implementation were validated by the Mathematics head and a Mathematics teacher at Bunggo National High School, and a Mathematics professor from the City College of Calamba to ensure the correctness, clarity, and alignment of the questions according to the lesson plans of the cooperating teacher and the K-12 curriculum guide.

The proposed module was developed by the researchers with the help of the cooperating teacher. The teacher knew the content of each lesson to be included in the RME-based module which had the same content as the materials used in the conventional module given by the DepEd. Furthermore, the content from the lesson plans was validated by the school Mathematics head and the principal.

Research Ethics Protocol

The ethical issues throughout the conducted study were done successfully by the researchers. Every action related to the study was known by the school. The given letters were addressed to the school management to make sure that every process had their permission.

The researchers made sure that the school management and Mathematics Department signed these letters before taking any action. The researchers, in addition, stated that the scores were kept confidential and used solely for the study. All randomly selected students from the sample group were given pre-tests and post-tests. The control group was given the conventional module while the experimental group was given the RME-based module. Everyone was allowed to have their understanding of the lesson tested.

Data Gathering Procedure

The researchers created an RME-based module, perception questionnaires, and pre-test and post-test. After the instruments were validated, the pre-test was then given to the sample group. After the pre-test was collected, this was followed by the implementation of the teaching strategy. The researchers and cooperating teacher distributed the RME-based

module to the experimental group. The students could study the module with real-life situation examples and answer the activities.

The implementation took place once the researchers disseminate the pre-test together with the week seven modules. For at least two weeks, the control group was given the conventional module by the teacher while the experimental group was given the RME-based module.

After the implementation, the researchers with the help of the cooperating teacher distributed the post-test to the respondents. The perception questionnaire was answered by the cooperating teacher, Grade 7 adviser, one mathematics teacher, and Grade 7 students (Experimental Group) at Bunggo National High School. The result of these sets of questions carefully underwent analysis through appropriate statistical treatment.

Data Analysis

This study used Arithmetic Mean to determine the performance of the samples gathered from the pre-test and post-test of the sample group. The Shapiro-Wilks test for normality is designed to detect any deviation from normality. Paired t-test to test whether there is a significant difference between the mean scores in the pre-test and post-test of the paired groups, control and experimental. Independent t-test to test whether there is a significant difference between the independent groups of mean scores in the pre-test of the experimental and control groups and post-test of both groups. After the test of normality, Levene's test was used to verify whether the variances are equal for all the data groups. This test is a test for homogeneity of variance, and a requirement whenever the independent groups are tested for equality. Likert Scale to measure the attitudes of the respondents directly. It is a four-point scale that is used to let the respondents express their feelings about a certain statement- whether they agree or not. And the Median to get the total proportion of the perception of grade 7 students and teachers about the use of RME-based modules.

RESULTS AND DISCUSSION

This study stated that both the control and experimental groups after being subjected to a pre-test got a mean score of 4.07 and 5.53 respectively, hence described verbally as did not meet expectations for their Mathematics performance. There is only a 1.46 difference between their mean scores.

While being subjected to a post-test got a mean score of 7.40 and 12.87 respectively, therefore the result of the control group was described verbally as did not meet expectations while the result of the experimental group result was verbally described as satisfactory for their Mathematics performance.

In line with that, after the experimental group has been exposed to learning modules with the integration of Realistic Mathematics Education, the researchers found that there is a 5.47 difference between the mean scores of the control and experimental group. It is clear evidence that the RME-based module is satisfactorily practical.

When the results of the pre-tests of the control and experimental groups were analytically compared, it generated a computed t-value of -1.158 wherein the absolute value of computed t is less than the critical t-value of 0.128252. The researchers decided to fail to reject the null hypothesis. This means that there was no significant difference between the pre-test results of the groups of participants.

On the other hand, when the researchers computed and compared the posttest results of the control and experimental groups, it generated a computed t-value of 0.000 which is greater than the critical t-value of 17.5. This means the researchers needed to reject the null hypothesis. They concluded that there was a significant difference between the post-test results of the two groups of participants.

It is clearly shown that the students gave a positive response to the use of learning modules

with the integration of realistic mathematics education since students that are exposed to the use of realistic mathematics education have a Strongly Agree and Agree on perception in the utilization of learning modules since the overall mean is 99.2 %.

It was evident that the teachers strongly agreed with the use of RME-based modules in the teaching of Mathematics within modular learning since ALL of them strongly agreed which means they all agreed to adopt the said RME-based module. Teachers are supposed to have a positive perception of the use of learning modules with the integration of realistic mathematics education.

In the end, by examining and comparing the test results before and after the integration of RME-based modules, the researchers find that module needs further improvement.

CONCLUSION

Based on the research findings analyzing the change in student performance through their test scores reveals that students have progressed step by step in some of Bloom's Taxonomy learning objectives. This study found that students struggle with some difficult items, especially those classified as applying and creating.

Wherein the RME-based module helped and guided the students in understanding the fundamentals of the lesson to the most complicated concepts and facilitated the submission of complete answers as it is provided with enough resources for it to be answered.

The use of the RME-based modules worked satisfactorily for the experimental group since it helped improve the students' mathematical performance. It is clearly shown that the scores of students improved and passed. The post-test given to both groups revealed a significant difference in favor of the experimental group, demonstrating the efficacy of RME as a teaching strategy.

The students in the experimental group and the teachers showed positive perceptions of the use of learning modules with the integration of realistic mathematics education. It is apparent in the perception of the students and teachers that they are willing to adapt to the use of RME-based modules

To promote the useful application of RME, the module can be digitized and converted into workbooks with the inclusion of the topic. The learning content of the module and the teaching methods/strategy can also be improved. The lessons and questions about applying and creating must be underscored. This will be done by adding some contextualized examples and information for further understanding of students.

RECOMMENDATIONS

Write recommendations only for national, regional, and global significance and application. This study suggests that the integration of Realistic Mathematics Education must be widely adopted throughout the nation to understand each lesson using real-life scenarios. They can use this study as a foundation to determine whether the RME-based module will be successful in teaching the other branches of mathematics.

For the Department of Education, with the current development happening, the output can be proposed as workbooks for the students. This will serve as supplementary learning materials that will help the teaching and learning experience.

The study can be used as a starting point for teachers to be more adaptable when developing learning modules. This will help them improve the performance of the students. The product RME-based module can be utilized to aid them to provide new and better strategies.

Lastly, the researchers propose integrating the RME into modular learning produced in this study since it can enhance student performance and create an environment

more receptive to learning new and improved teaching techniques.

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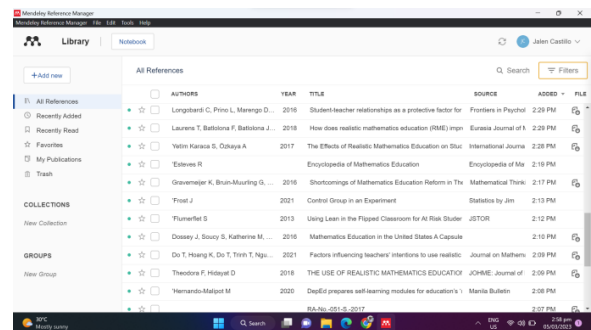
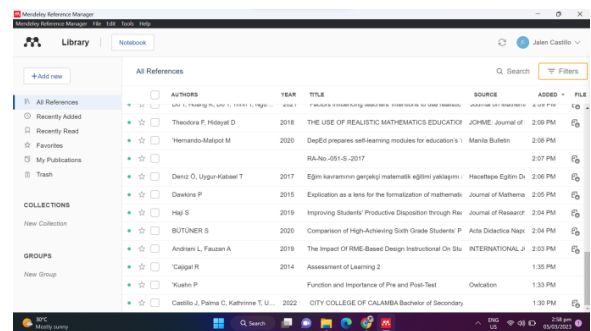
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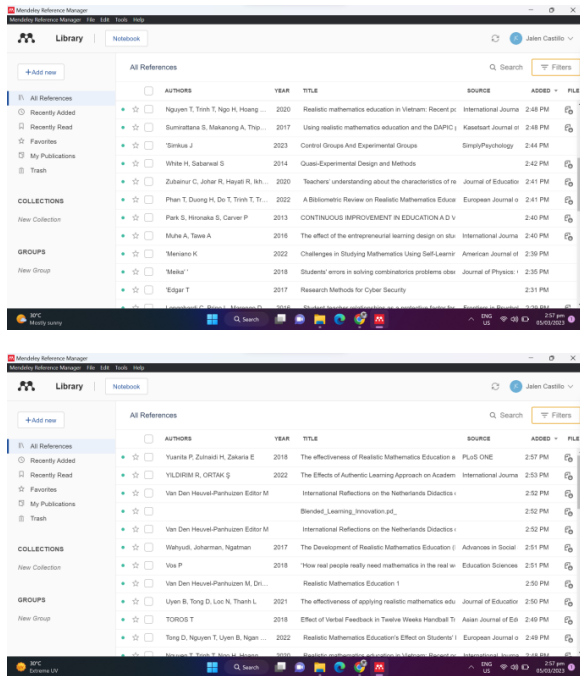
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MATHEMATICS IMPLEMENTATION STRATEGIES FOR MODULAR LEARNING: INTEGRATION OF REALISTIC MATHEMATICS EDUCATION ON GRADE 7 STUDENTS IN BUNGGO HIGH SCHOOL





LIFE OF A WORKING PRE-SERVICE TEACHER: A PHENOMENOLOGICAL STUDY

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Abstract

When academically qualified people do not have financial resources to support their studies, and the needs to help their family has arisen, the call for a student to work will be necessary. This has caused many students, especially at higher levels, to seek job opportunities while studying. The researchers wanted to know the lived experiences, challenges, and opportunities gained by working students to look for projects that could aid their needs in studying while working. This study uses a qualitative, phenomenological research approach wherein the respondents of the study were selected fourth-year BEd students from City College of Calamba. Data gathering was done through a focus-grouped discussion via an online interview. Five main themes emerged from the study based on the answers of the respondents such as time management, tasks management, challenges experiences, opportunities gained, and after-graduation plans. It shows the reasons why pre-service teachers continue to work while doing many tasks and responsibilities. It shows three reasons why students work while studying: work experience, adulthood, and financial support. Students' reasons show that pre-service teachers continue to work while studying due to personal needs that support themselves and their families. The researchers concluded that even if the working pre-service teachers were ahead of others through their work experience while studying, it does not prepare them to have a fixed plan for their career and long-term plans and actions for their future. The researchers proposed an action plan that could help the institutions, teachers, and working students through seminars, symposiums, and workshops that would help each other especially the working students to continue studying despite the need of working.

Keywords: *Pre-service Teachers, working students, Bachelor of Elementary Education, Lived Experiences*

INTRODUCTION

Statistics have shown that there is an increase in the percentage of the number of working students around the world. Even before the epidemic happened, approximately 70 percent of all full-time college students worked, taking time away from their studies and social lives (White, 2021). According to the Georgetown

University Center on Education and the Workforce, the majority of college students who are employed put in 15 to 35 hours per week. 15 percent of community college students who began their studies in the autumn of 2019 while working held two jobs to make ends meet, he added. From Organisation for Economic Co-operation and Development (OECD) Survey of Adult Skills

Programme for the (International Assessment of Adult Competencies (PIAAC), stated that the incidence of work and study varies by level and field of education. In most nations, young people who are pursuing university education are more likely to be employed than young people who are still in high school, except those where apprenticeships form a significant part of upper secondary education.

In the Philippine context, there is about eight (8) percent of working students out of all the college students in the country (ABS-CBN News, 2010 as cited in Abenoja R., Accion N., Aguilar J., Alcasid M., Amoguis A., Buraquit D., Mama A., Pacete J., Pame J., 2019). To outline the employment choices for Filipino working students, the website *The Working Student* (2016), enlisted online jobs, paid corporate internships, fast-food crew, and school positions. Students who work while studying have a hard time pursuing both of their responsibilities since they need to sacrifice a lot of things including their time, energy, and leisure activities.

According to Commission on Higher Education (CHED), 2010 (as cited by Abenoja et.al, 2019), only half of the employed students complete college, as many struggle to focus, others are ill, and others give up due to financial difficulties. However, there are still a lot of universities and colleges which proved that some of the graduates were working students and that they can provide for themselves and family amidst the responsibility of fulfilling their internship courses. This includes some working pre-service teachers around the world, including in the Philippines even during the pandemic period. According to the Natural Center for Educational Statistics (2022), in 2020, Part-

time students (74%) had a higher employment rate than full-time students (60%) for undergraduate students (40%). Being employed allows them to pay for their school expenses and other living expenses.

The study about working students is mostly conducted in different universities to help their students in terms of what they can aid with their needs, especially now amid COVID-19. Different universities and colleges have an equal number of students who works while studying regardless of their year level. The number of students who failed to finish their course due to work stress and the need to prioritize work over studying has also increased.

Therefore, the researchers pondered on this matter to help the working pre-service teachers understand their situation and learn about their experiences of working while doing their teaching internship. The researchers conducted a study entitled “Life of a Working Pre-Service Teacher: A Phenomenological Study”. They seemed to know how the students were able to manage their time and tasks, as well as the opportunities and challenges that they faced as a working student. Also, as the pandemic had happened, there were changes in teaching internships from face-to-face to blended learning. This also, is what the researchers aim to know as additional knowledge and study for working pre-service teachers in the pandemic period.

Framework of the Study

The theoretical framework of the underlying theories that served as the foundation in the research entitled “Life of a Working Pre-Service Teacher: A Phenomenological Study”. The experiences of the working pre-service teachers served as

a rim that entirely covers the set of theories used in this research. The experiences and the factors affecting those experiences can identified and supported better by having a strong foundation with the six (6) theories including (1) Moral Responsibility Theory by P.F Strawson, (2) Human Capital Theory by Gary Becker, (3) Pareto's Principle: The 80/20 Rule by Vilfredo Pareto, (4) Pickle Jar Theory of Jeremy Wright, (5) Online Collaborative Learning (OCL) by Linda Harasim. Bates, and (6) Monitoring and Blunting Theory by Miller S.M.

Objectives of the Study

The overall objective of this study is to know the lived experiences of Fourth year Bachelor of Elementary Education Pre-service teachers. The central question is to know the essence of their lived experiences as working pre-service teachers. There are three (3) Corollary Questions are included, one (1) is how the BEEd working pre-service teachers describe their experience, second (2) is the themes that emerged based on the responses, and third (3) is the proposed plan.

METHODS/PROCEDURES

Research Design

The method of research used in the study is phenomenology which is a Qualitative Research Method. According to Pritha Bhandari (2020), to better comprehend ideas, opinions, or experiences, qualitative research entails gathering and evaluating non-numerical data (such as text, video, or audio). It can be utilized to uncover intricate details about a situation or to spark fresh study concepts. The data that was collected comprises the respondent's points of view and thoughts to learn how other individuals perceive the investigated topic. To validate

the research hypotheses and make a statistical analysis, the qualitative method would be the best to use. The researchers used Qualitative research to understand what are the students' experiences in working while doing their teaching internship.

Research Locale/Research Site

The researchers conducted their study at City College of Calamba and located at Old Municipal Site, Burgos St, Brgy. VII, Poblacion, Calamba City, Laguna, Philippines. In gathering data, the researchers did not visit the school physically to conduct the study because of the threat made by Covid-19. They, therefore, seek the benefit of employing technology as a means of remaining in contact with working Bachelor of Elementary Education pre-service teachers. In addition, the researchers chose the said school because it was one of the institutions which have Bachelor of Elementary Education students who worked during their teaching internship, and the problems in terms of working while studying are prominent in the place.

Respondents of the Study and Sampling Technique/Participants of the Study

In conducting the qualitative research, the researchers used purposive sampling. For the identification and selection of information-rich examples relating to the phenomenon of interest, purposive sampling is commonly utilized in qualitative research (Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. 2013). Also, the sampling method will be useful for the study since the researchers needed selected people who are related to the study. According to Lee et al. (2014), this technique also known as judgmental sampling that is based on the criteria of the

respondents. Hence, this study looked for ten to fifteen 4th year Bachelor of Elementary Education students who are working while studying at City College of Calamba. It will not cover the other experiences of pre-service teachers of other department in City College of Calamba. Students who stop working during their pre-service teaching internship will also not be covered in this study. Other working students in different year levels will be excluded as well.

Instrumentation

The method of research used in the study is phenomenology which is a Qualitative Research Method. According to Pritha Bhandari (2020), to better comprehend ideas, opinions, or experiences, qualitative research entails gathering and evaluating non-numerical data (such as text, video, or audio). It can be utilized to uncover intricate details about a situation or to spark fresh study concepts. Quantitative research, which involves gathering and analyzing numerical data for statistical analysis, is the antithesis of qualitative research. The humanities and social sciences frequently employ qualitative research in fields like anthropology, sociology, education, health sciences, history, etc. The data that was collected comprises the respondent's points of view and thoughts to learn how other individuals perceive the investigated topic. To validate the research hypotheses and make a statistical analysis, the qualitative method would be the best to use. The researchers used Qualitative research to understand what are the students' experiences in working while doing their teaching internship.

Research Ethics Protocol

Before administering the questionnaire, the researchers explained the

research environment to the interview subjects, gave an overview of the study's goals, and stresses the value of cooperation and truthful responses. Through the social networking site, respondents were given a consent letter and requested to volunteer for the study while being aware of their right to decline. They were also told that the confidentiality of their information would be upheld. Additionally, the respondents were given enough time by the researchers to respond to their interview questions.

Data Gathering Procedure

The researchers started collecting data in July 2022. Initially, the researchers have thirteen (13) participants in the study who were all working Bachelor of Elementary Education working students. The researchers collected their names and added them to a group chat through the messenger app. The researchers provided an overview of the study, a consent letter that informs the respondents about the purpose of the study, sample interview questions, and a timetable which could help them choose what's the best time or day for them to be interviewed.

To achieve smooth data gathering collection on "Life of a Working Bachelor of Elementary Education Pre-Service Teacher: A Phenomenological Study", the researchers first sought permission from the CCC course director, and CCC guidance counselor before conducting the data gathering.

After the approval, the researchers conducted the online Interview via Focus Group Discussion (FGD) through an interview with the respondents. Deeper interviews were used for the research's objectives. In-depth interviews are eaten and semi-structured to elicit respondents' thoughts, feelings, and opinions about a

particular area of research. In terms of data collection instruments, a semi-structured questionnaire was employed during the research's execution as a guide for other department interviews. To direct the interview toward the achievement of the research objectives, several specific questions were prepared.

However, in the final setup for the interlevelson on July 17, 2022, the participants of thirteen (13) fall to ten (10) working pre-service teachers only due to the reason that the other participants have stopped working as they start their teaching internship. Nevertheless, the ten working pre-service teachers still provided valuable data. After the transcription of the respondent's answers, the researchers returned the transcription to the respondents to validate and consult whether the information they provided was correct and true.

RESULTS AND DISCUSSION

Working pre-service teachers are aware and understand that working while studying is not easy and that they have to embrace the challenges and opportunities that they encounter both in work and study to finish their studies. Furthermore, the working pre-service teachers infer that they spend their time depending on their schedules and they have already adjusted and balanced their schedules as an employee and at the same time as pre-service teachers to fulfill their responsibilities in school and the workplace.

In addition, due to their hectic schedule, both in work and studying, they use their rest day in getting enough sleep or accomplishing their pending tasks. Also, by making a to-do list, the respondents were able to do their assigned activities and tasks given by their cooperating teachers and professors.

For instance, the respondents see that the pressure of deadlines helps them to work on their pending tasks and activities and comply on time. As the respondents described the changes in their daily life routine from full-time students to working students, it appears that their work serves as an eye-opener to the reality of life that they are carrying great responsibilities in school, work, and home. They limit and maximize their time properly to balance their personal life and work.

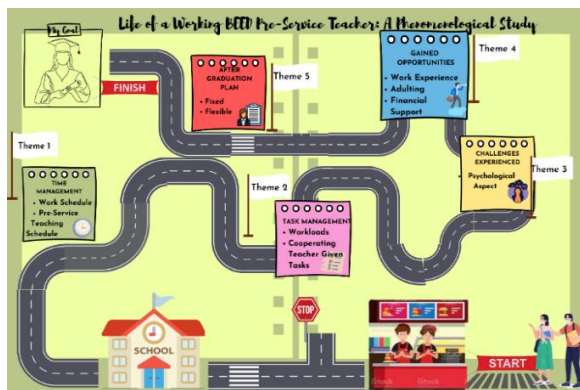
Moreover, there were many experiences that the respondents gained opportunities from working including socializing and communicating with other people, experience, and developing good skills that they could use in their life endeavors. It helped them to know themselves better and become mature individuals in handling all their finances, time, energy, and responsibilities.

Likewise, their work turns out to be their motivation because they can help themselves and their family, financially. Meanwhile, as the respondents gained opportunities, they were affiliated with challenges they encountered in both work and studying. The majority of the respondents agreed that they felt most challenged by their psychological aspects like stress, anxiety, and exhaustion from work and school responsibilities. Additionally, support from family and friends of the respondents helps them to cope with the challenges they encountered. Using that, they felt that they were not alone in their battles and that they had their family and friends back.

Correspondingly, the respondents have different plans after they graduate. Some of them have already applied for a job

and are waiting to start anytime soon while most of them are not ready and have no plans yet but received offers. The respondents' responses about their plans after graduation are between decided and undecided.

Furthermore, from the collected data from the study, the themes that emerged were composed of five main themes with their corresponding sub-themes namely (1) Time Management (Work Schedule and Pre-Service Teaching Schedule), (2) Task Management (Workloads and Cooperating Teacher Given Tasks), (3) Challenges Experienced (Psychological Aspect), (4) Gained Opportunities (Work Experiences, Adulting, and Financial Support) and (5) After Graduation Plan (Fixed and Flexible).



The given themes were all related to the lived experiences of Bachelor of Elementary Education working pre-service teachers as they both pursue studying and working. The researchers came up with the first theme, the respondents' responses generally talked about how they manage their time because there were complications between their work and pre-service teaching schedule. Also, it has relation to the second theme which was about how they handle their given tasks by their professors and cooperating teachers. As respondents stated that they came up with a to-do list to organize and finish their tasks. Furthermore, the third

theme talks about the challenges experienced by working pre-service teachers. As they all unified that because of mishandling their time and their tasks, they struggled in juggling their work and study which causes them stress and anxiety. Moreover, the fourth theme was about their gained opportunities in work while studying. Work respondents believed that working at the same time as studying was more of a help to gain opportunities whether the experience was good or bad. In addition, the last theme talks about what their plan after their graduation came up to be fixed and flexible. Some of the respondents said that they were unsure if they were ready to work as full-fledged teachers after they graduate or seek what they want in life. As the result of the study concluded that proper time management can help working students juggle their studies, as well as their work, and helps them to gain opportunities and experience challenges to develop their well-being, even if they finished their studies there were things in life that did not go as planned.

Based on the collected data for this study, the researchers present an action plan that covers the five major problems that working pre-service teachers during their teacher internship: including (1) proper time management, (2) segregation of tasks and activities, (3) beating the deadlines and completion of task without pressure and stress, (4) stepping to many (explaining and dissection of financial inspection, work financial inspection up-skilling), and (5) career planning. The given five major problems were aligned with the objectives of the action plan.

With encouraging working pre-designers to properly manage their time during their working and teaching internship

schedules, the researchers conferred five strategies that can be conducted either online or in traditional ways. It includes having a seminar or workshop where students will be introduced to different time management tools which they could use at work and school (Clock-in), having a seminar or workshop where students will be introduced to different introduce dement tools where they can input all their tasks and track it any time (Track your Task), having a recession or retreat to talk about retreats, distress from work, and renew their emotional and mental state (Rest Day), having a recession or retreat to talk about stepping into the reality of adulthood (A Step to Reality) and having seminars and workshop to talk about their plans after they graduate (Career Path),

On the next challenge or objective, pre-service teachers can manage their time even if they have work and need to support their family needs and themselves in studying, there is a strategy for that. It's the Clock-in where working pre-service teachers will be taught about the importance and proper way of time and energy spending. This is a seminar or workshop where students will be introduced to different time management tools which they could use at work and school.

In terms of working pre-service teachers express their freedom to choose what kind of career they wanted shortly. We have presented a strategy for the action of a plan which is the Career Path where they can talk about their plans, and have an idea in choose have a job after they grow they will be more certain about their plans after they graduate. This seminar will encourage them to find careers that are related to CareerSource and also this will inform and educate them on what they will expect and do

as they were hired. This seminar also makes the students will be more enthusiastic and encouraged them to find their careers.

CONCLUSION

On the summary of the findings the following conclusions were derived: First, the respondents have already adjusted and balanced their schedules as pre-service teachers and, at the same time, working students. There is an advantage for those whose work schedule is flexible, but for those whose work is full-time or fixed, they need to adjust to accomplish both of their responsibilities. Second, the different tasks cooperating teachers gave the respondents, but then they willingly and eagerly receive them since they served there for training and preparation for being an elementary teacher in the future. Third, some requirements need to be compiled in the teaching internship, including the e-portfolio, action research, and journals after the final demonstration. The cooperating teachers have a big impact on the respondents by collaborating on the pre-service teachers' journey. Fourth, the deadline will serve as a reminder and motivation for the respondents to work on the tasks given through pressure to work on school-related activities and the cooperating teachers' tasks. Fifth, the respondents, as pre-service teachers and, at the same time, working students, have no room to rest. Instead, they used their free time to comply with pending activities to lessen stressors and for self-fulfillment. Next is that the situation ranges from being full-time to working students who shoulder a big responsibility that causes them to have no choice. But if they are given a chance, they will spend their time according to their personal needs and self-satisfaction. Then, the opportunities gained by the respondents are experience, skills, character development,

and financial literacy as an individual to support themselves and their families. They treasure that experience to motivate themselves and persevere to achieve their goals in life. Next, the respondents faced many challenges in life as they walked through their journey as pre-service teachers and, at the same time, working students. They take all the challenges as a great opportunity to become a better and stronger version of themselves. Second to last is the different types of support from parents, friends, employers, loved ones, and cooperating teachers, whether it be moral, financial, or acts of service, which have an impact on the respondents. This is because they help them cope with and overcome the challenges they face on their journey. And lastly, some respondents have no plans and are undecided after they graduate, even though they receive offers. Others may stick to their plans and continue their careers as elementary teachers.

RECOMMENDATIONS

After a thorough analysis of data, the following recommendations are hereby made: For working pre-service teachers, they should consider using different tools that could help them manage their time and grow while doing their school and work tasks. They should know also their limitations in accepting loads and time so they could manage both easily.

For working pre-service teachers, they should consider having time for themselves and rest to aid to their challenges and learn to reward themselves. In regards to their school activities, they should be more open and talk to their professors so they could be more understood and their situation will be considered. Also, they should ask for help

from others so they could manage their time and tasks properly.

For the administrators, they should have a seminar, workshops, retreat, or recreational activities to fully understand the students and their situation, as well as to help them with their career and after-graduation plans.

Future researchers could use this study to improve the researcher's findings and improve the proposed plan presented.

The administrators, teachers, and working pre-service teachers should utilize the presented action plan in this study.

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PhilStar Global May 4, 2020 that SBD program involved three teaching modes: 'seamless mode' – local governments can help deliver physical learning materials to students, particularly those who do not have access to the internet or any digital device; 'blended' learning is a combination of online and traditional place-based classroom methods; and 'digital mode' – entails the transformation of digital media, such as videos into electronic books and other electronic learning materials.

