

# “Teaching strategies in intermediate mathematics”

PAGTUDLO 4.0- 1<sup>st</sup> Edition

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Author

This journey book entitled  
"PAGTUDLO 4.0" since I started my  
teaching career  
is warmly and heartfully

Dedicated to

My

Wife April Rose and Son- Andres Rei.

And above all

To our Almighty God

-RMA

## R A T I O N A L E

Nevertheless, change upholds mystery only science and history determine the certainties of symmetry and pattern of derivatives of space and time in reference to change. The time travelled, denotes a lot of discoveries, a lot of successes and failures in the preservation and conservation of humanity, social scientist, science and mathematics philosophers, inculcated the pedagogical connectivity of different disciplines that cater the usefulness of human entity. The communal aspects of human being depend on his time travelled, in the 21st century and beyond (Future trends), connectivity between the human race and it's peripherals become lighter and fast as speed of light per se. The man's arena to fulfill his dreams from the beginning up to the end, depend on how he/she interacts, interpolated and intrude his nature's nature. The adaptation of change shown of what he/she wants to be. The Knowledge, skills, attitudes and values (KSAV) mold from early childhood up to adulthood, relative to what he/she acquired from his surroundings. Being a 21st century teacher and beyond (Future trends), your connectivity of change in this recent time is like uplink and downlink of laser rays of information, even the smallest particles of unlearn learners are hit the bull's eye of empty minds, attitudes and specially his multiple intelligence, according to garner's theory. For almost two and half decade in teaching, I realize how teaching profession become fulfilling to me, teaching three major disciplines: Mathematics, Science, Computer and education theories/learning in different level of learners (primary, secondary, tertiary and post graduate) and teaching –learning strategies varied in different situations and only for sure their(my learners) success is my success , their failures also my success(room for improvement). Learning learner's habitat is the most challenging in this 21st century and beyond (Future trends), a lot of concern and uncertainties, distracted their multiple intelligences that really needed in this machine's dependent society. The interdisciplinary knowledge, skills, attitude and values needed by a learner should also fill up by the teacher. Experiences are not enough to deal with this xyz generation of learners, in order to move forward, ahead of them (3 steps maybe) , a lot of new stuffs in teaching-learning pedagogy need to learn, and this is PAGTUDLO 4.0 a compilations of different teaching strategies in different major disciplines.

## ACKNOWLEDGEMENT

Pagtudlo 4.0 offers an excellent platform for experimenting with various teaching and learning approaches that may incorporate a new curriculum for the twenty-first century and beyond (Future Trends) for the average Filipino student catching up with the new evaluation tool that will ascertain the inventiveness and competitiveness for someone's nest of improvement.

The teacher's ability to use his classroom as a nesting place with four corners is determined by his room's progress. Reorganize, analyze, and reassess the learning gap considering the learner's position on the progression level. With nearly two decades of experience working in both private and public schools, the author is confident that the Pagtudlo 4.0 guidance is based on scholarly investigation and observations from the current real-world situation.

The writer expresses gratitude to all the various personalities, ranging from the administration to the students, at each institution they have served. I hope you enjoy perusing and reading my journey book, Pagtudlo 4.0, which includes all the teaching tactics employed by the author. This served as a point of reference for the paradox of future trends and thought processes, who knows, maybe you may get better at the best.

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# CHAPTER 1

## INFORMATION COMMUNICATION TECHNOLOGY (ICT) BASED EDUCATION

“Its impact on the education, the ICT based education got a positive response, particularly in Mathematics education before COVID 19 pandemic era”



Figure 1.0. Before the COVID 19 epidemic, a Grade 8 student at KNCHS was mostly taught High School Geometry using UBDGEOMESYS, a computer interactive system created by the author.

## PRE COVID 19 PANDEMIC ERA

### *UBDGEOMESYS (Understand by Design)-Geometry- System!*

The goal of the project was to create and evaluate an ICT-based educational program that would help students acquire mathematical concepts. It is a program written by researchers in the Microsoft Visual Basic programming language. Two groups of Koronadal National Comprehensive High School's (KNCHS) second-year special-class students were among the study's respondents. The test results from both before and after the lesson served as the data for the analysis. Activities related to validity and dependability were carried out to guarantee the tool's quality. The evaluation revealed that the content, technical value, and instructional usefulness of the ICT-based material were all of good quality. Additionally, analysis showed that students who used the instructional software achieved learning objectives somewhat higher than those who used the conventional method.



Figure 1.1. The Computer Laboratory of KNCHS, located at the center point of the school.

According to the author, who took a rigorous Visual Basic programming course, the integration of ICT (information and communication technology) into mathematics education is very technical, especially in high school geometry within the boundaries of the Basic Education Curriculum (BEC). Conversely, author achievements include the creation of educational software composed of Visual Basic codes that are computer programmed utilizing the object-based programming tool Visual Basic. Furthermore, this executable and runnable software is called UBDGEOMSYS, which is derived from the BEC basic approach of

UBD (understand by design), with geometry serving as the primary content and the system being embedded in a desktop computer.

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Figure 1.2. The 386x-Computers (40 pcs) that composed in KNCHS Computer Lab 1, installed the UBDGEOMSYS system to be used by the learners as a computer-aided instructions, labeled as experimental group.

The author, who has experience with computer programming, presents concepts that integrate program coding, innovative teaching strategies, the UBD format, and mathematics mastery. These innovative approaches represent new directions in teaching strategies, especially for high school geometry. The author has been teaching mathematics in grade 7 at Koronadal National Comprehensive High School (KNCHS) since 2009. She has been

teaching math in grade 7 for almost ten years. This experience gives the author insight into an innovative approach to teaching high school mathematics that uses personal computers as the primary peripherals for instructional materials. This method is known as an ICT-based teaching strategy. Owing to the lack of high-end computers at the time, Figure 1.2 illustrates how speed impacts the installation of UBDGEOMESYS in the 386x. Figure 1.3 shows how speed memories caused some headaches for the writer while creating the system. In contrast to the other private institution I worked for, such as the Notre Dame of Siena Schools of Marbel (NDSSM), where I taught information technology before becoming a math tutor at KNCHS, they used a state-of-the-art laboratory meant for graders studying ICT. To sum up, the ICT is very helpful at that moment and is a must for every learner's journey.

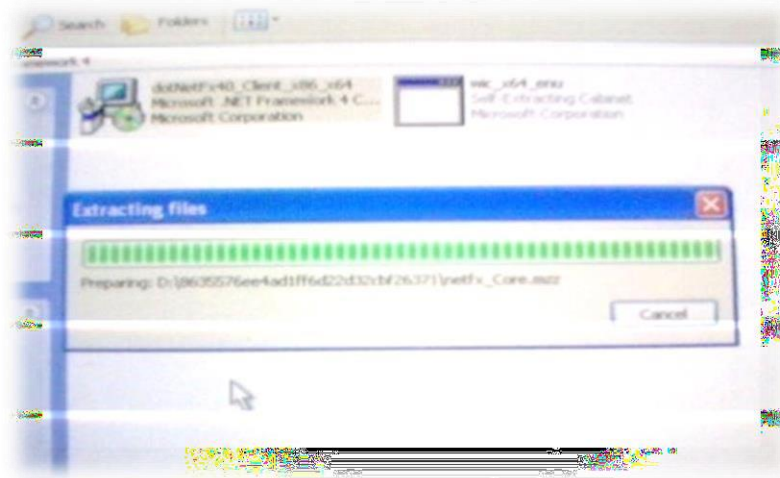


Figure 1.3. The installation of the UBDGEOMESYS in the Computer laboratory (44 pcs computers)

The author taught mathematics at the school (KNCHS) for nearly eight years. In those days, speaking with students was traditional, and even though ICT was widely used, students still used the chalk-and-board method, as seen in Figure 1.4, where the author did a good job of explaining the material. As a math high school mentor in the next years, I witnessed the transition of three basic education curricula: K12 Curriculum, Basic Education Curriculum (BEC), and Revised Basic Education Curriculum (RBEC). Within a ten-year period, these three-curriculum changed, which caused a rapid shift in the pedagogies and teaching tactics used by basic education teachers.



Figure 1.4. The controlled group, Grade 8 learners teach the subject-Geometry through chalk and board method.

Lesson plans are also subject to alter based on the methodology required by each curriculum element. For example, the author recently employed the Daily Lesson Log (DLL), which is essentially a semi-detailed lesson plan that summarizes each lesson once a week, employing the author's preferred teaching method, Understand by Design (UBD), which is used in K12 and BEC curricula and provides guidance on how to use computer-aided instruction as the primary teaching and learning approach.



Figure 1.5.a Physical Appearance of the Computer Lab with UBDGEOMESYS installed.

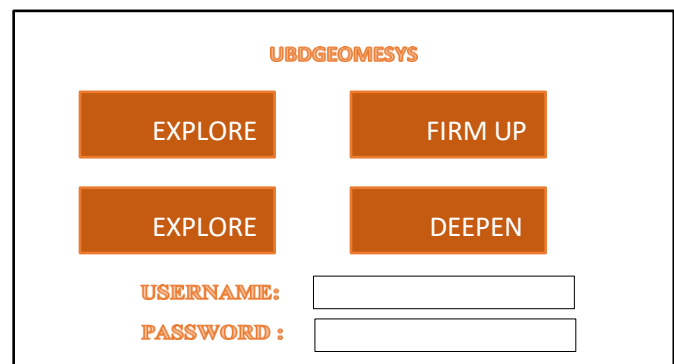


Figure 1.5.b The Window based appearance of the UBDGEOMESYS run in each computer.

Figure 1.4 depicts the computer-based UBD teaching techniques system that focuses on five Grade 8 geometry subtopics that are driven by K12 curriculum. The author's masterwork, UBDGEOMESYS, defined the concepts of computer-assisted instruction (CAI) or computer-aided learning (CAL) as lucrative teaching strategies during the Basic Education Curriculum (BEC), which constituted the Department of Education's (DepEd) primary curriculum from 2000 to 2013. This year, as the Philippines' basic education system shifts from the BEC curriculum to the K–12 curriculum, new curriculum formats are being implemented to address student deficiencies and balance the number of years of instruction. Only the Philippines maintains a ten-year basic education program; all other nations have adopted the K12 model. When it comes to lesson planning, the Understand by Design (UBD) approach is backwards since it gives the evaluation before going into detail about the lesson's core ideas. Being an expert in this type of instruction, the students can identify his areas of subject weakness with difficulty.



Figure 1.6. The experimental group, these Grade 8 heterogeneous learners explore the effectiveness of the UBDGEOMESYS, a computer aided instructions teaching topics in Geometry subject.

In terms of evaluation results, ICT-based teaching proved to be much more effective than the chalk-and-board method prior to the COVID-19 epidemic. Because of the limited use of the internet at the time, the UBDGEOMESYS system is not yet internet-ready to be compatible with smartphone apps. The UBDGEOMESYS's limitations were based on the actual expense of computer peripherals at the time. Even in this age of education 4.0, the ignored ICTs continue to remain on the lucrative side because the public education system cannot currently incur the highly expensive ICT peripherals.

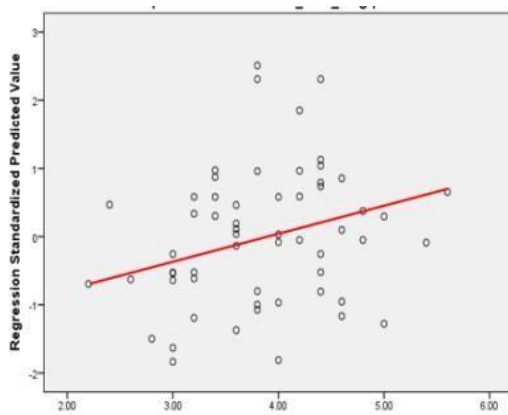


Figure 1.7.a non-ICT based ( $R^2 = 0.05$ , @0.05 Sig. value) (Arciosa,2022)

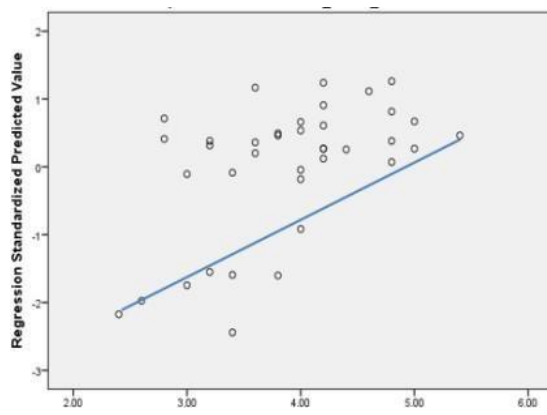


Figure 1.7.b ICT based ( $R^2 = 0.28$ , @0.05 Sig. value) (Arciosa,2022)

Examine how the ICT-based UBDGEOMESYS instructional software affected the learners' scores as produced by the SPSS computer program. The regression analysis yielded a high value of 0.28 in contrast to the traditional method (chalk and board), got 0.05 with a two decimal digits in difference.

Prior to the COVID-19 pandemic, ICT-based education was typically highly expensive due to the cost of the hardware, software, and most importantly, the peopleware. Computer-programming-trained teachers are extremely rare and require a significant financial investment for their training. This is only the author's creative notion to investigate the potential of creating teacher-made instructional software that can significantly influence the teaching and learning of basic geometry, which is essential for every Filipino learner from an early age.

## TASK 1.0- 8.0

OBJECTIVES: At the end of each task, the students should be able to

1. Thorough investigate of the three curricula namely: BEC, RBEC and K12 by
  - a. Learning competencies in basic education
  - b. Important features of each curriculum.
  - c. Lesson planning in each curriculum
2. Create an Understanding by Design (UBD) Lesson Plan
3. Develop a one-week DLL (Daily Lesson Log) with the assigned subject matter.
4. Perform a classroom teaching demonstration using the (a) UBD Lesson Plan; (b) DLL (Daily Lesson Log)
5. Record the teaching demonstration using a smartphone, then edit the result to become an edited video, afterward upload in your individual You Tube account
6. Make a narrative report of each teaching demonstration.
7. Demonstrate how the ICT implementation in the Philippine basic education, Higher Education and Technical Education
8. Make an AR (Action Research) about the thematic analysis/empirical analysis on the different research about the ICT in the Philippines education set up (from the beginning up to the present)

## **COVID 19 PANDEMIC ERA**

### **FLEXIBLE LEARNING**

To be exact on January 15, 2017, the writer level up his career into as transferred as a mentor in one of the State University in Region 12, that is Sultan Kudarat State University. Sultan Kudarat State University is a solo State University around the municipality of Sultan Kudarat, a province that is part of the Region 12. There are seven (7) campuses namely: (i) Access Campus, the administrative center of the said University with four colleges- College of Teacher Education (CTE), College of Criminology Justice (CCJ), College of Nursing, College of Agriculture within the perimeter of the said campus, soon the College of Medicine will add on the list. (ii) Tacurong Campus – the businesses courses offered in this campus. (iii) Isulan Campus- Computer Science, Engineering and other science and technology related courses are offered here. (iv) Bagumbayan campus- agri-businesses courses are offered here. (v) Lutayan Campus – Agriculture laboratory campus. (vi) Kalamansig campus and (vii) Palimbang campus. To be exact in the academic year 2020-2021, where the education sector is too much affect by this Covid 19 pandemic, where no face to face in between the teacher and learners in all levels from primary education up to the higher education. The Philippine Higher Education Institutions (HEIs) are adopting this trend of using online learning pursuant to the Commission on Higher Education (CHED,2020) CHED COVID-19 Advisory No. 6, the ECQ in Luzon, Philippines. The Commission granted considerable flexibility to HEIs as they were advised to deploy available flexible learning and other alternative forms of delivery instead of on-campus learning. Students who did not have internet access were given the option of meeting the class requirements after the ECQ was lifted. In the primary and secondary level, modular approach is being used at that time. According to the National Economic and Development Authority (NEDA), Gross Domestic Product (GDP) contraction in 2020 was affected due to slow productivity as the quarantines prevented the efficient use of available capital and labor. Much more in the education sector, where due to lost income of parents and inability of some students to engage in distance learning, enrollment decline by 1.1 million (or around 5 percent). Further in the NEDA report, only in the Philippines during school year 2020-2021 did not have face-to-face learning, compared to other country in East Asia for the entire year.

The Sultan Kudarat State University launched the Electronic Delivery Systems (Elead)

that can be used as official online platforms between the learners and their respective faculty in different campuses. In figure 1.8 below, where there is a promotional ceremony conducted by the ICT Department of SKSU during the academic year 2020-2021.



Figure 1.8. The launching of the SKSU Electronic Learning Delivery System (ELEADS) and its logo design way back 2nd semester,2020-2021 at SKSU Administration Hall, 3<sup>rd</sup> floor, SKSU ACCESS Campus, Bo.2 Tacurong City.

Academic year 2020-2021,2<sup>nd</sup> semester, where the writer started using the SKSU ELEADS, but this official online platform has a problem with the connection details, particularly the learners from rural areas, where the connection of internet is very slow.



Figure 1.9.a The SKSU ELEADS is available in the SKSU official website, where the learners can access using their official school account.

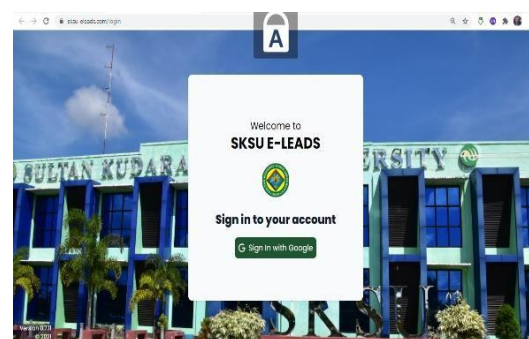


Figure 1.9.b The main menu of the SKSU ELEADS, where every learner has their personal online account

As online teacher of these learners, particularly the 2<sup>nd</sup> year students of Bachelor of Elementary Education (BEED) of who encountered online connections during the online class discussions and other considering things to be done. Shifting to other online platforms that are free to use, like the Facebook and Google meet are much more

accessible and easier to use among the learners, then the writer used these two online platforms. Three (3) online platforms are used by the writer in this mode of teaching and learning as the semester. Arciosa ,2022 -The most convenient and favorite online learning platform among the two hundred twenty (222) respondents is the FACEBOOK Group online platform, Google meet comes next and last in rank with the use of the SKSU Electronic Learning Delivery System (ELEADS). The effectiveness of the flexible learning is highly shown in the t-test results. It reveals that this flexible learning has an important value in terms of their academic learning competencies and still the respondents highly regard. The online face-to-face modality, which shows that gmeet has a great impact on effectiveness. Despite limited resources, like technical aspects as revealed in the qualities of flexible learning, online teaching modalities, the effectiveness of the learning delivered to every respondent without face-to -face instruction due to COVID 19, imparted knowledge on the subject matter.

The subject taken by the learners, during this academic year are Bachelor of Elementary Education (BEED), 2<sup>nd</sup> year students taking up a subject EDD Math 1 and Edd Math 2, with a subject descriptions 'Teaching strategies in Primary and Elementary mathematics' , where the writer used his self-made module to be found in the succeeding chapter- Competency based learning education.

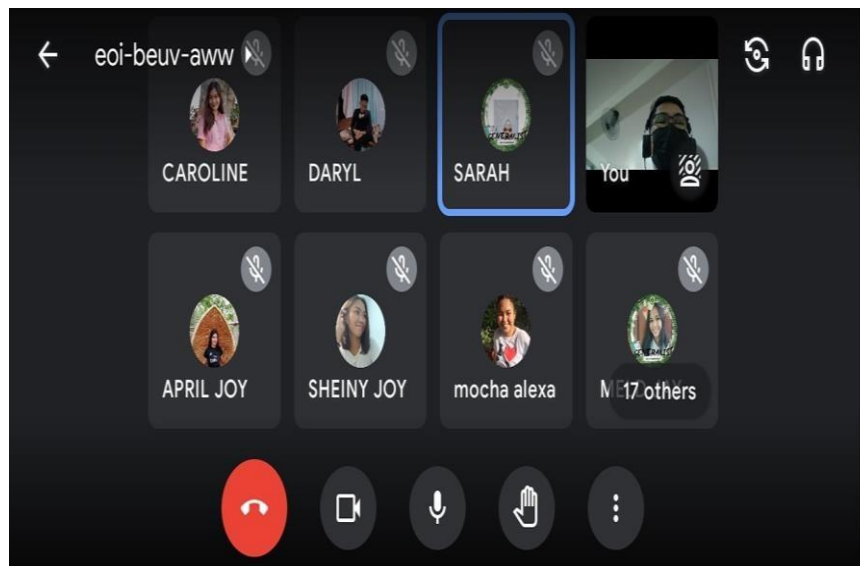


Figure 1.10. The Google meet online platform used by the experimental group- five (5) sections (A- E) of BEED 2 during AY 2020-2021 at CTE, Access Campus, SKSU.

The writer's competency self – module combines the concept of arts and mathematics in their every activity that is given to them, it will take time as they make for that activity, at the same time, they will adopt as soon they will become an elementary teacher in the future. The subject itself makes this class become interesting because it will develop their creativity and the same time interweave in the lesson particularly, one of the examples that the writer given as an activity is the poster making activity as shown in figure 1.11b. Using the Facebook online learning platform make the learners very comfortable and easy to access, even they have slow internet access connectivity, which preferred as the rank one (1), in terms of online platform used during the Covid 19 pandemic era as conducted by the writer as action research during this time.

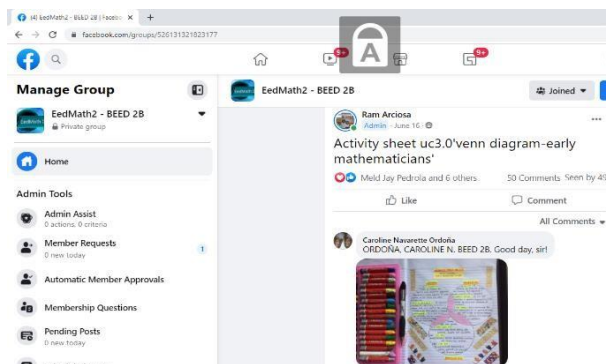


Figure 1.11.a The Facebook online platform, where the learners, group into their respective sections like (BEED 2A-BEED 2E)



Figure 1.11.b. One of the requirements of the respondent posted in the FB group. This is a poster making activity entitled "Geometry and measurements in the new millennium"

The finality of the said flexibility learning change in the concepts that there will be an actual face to face modality in learning in the minimal parts as called a hybrid learning, which slowly implemented as the time pass by. This vulnerability, unpredictability, complexity and ambiguity in this educational landscape phenomenon most particularly in the higher educational institution affect its economically mostly, but in the state colleges and universities it's just an opportunity to find these solutions to be used as guide and basis for the great implementations.

**TASK 9.0-13.0**

OBJECTIVES: At the end of each task, the students should be able to

9. What is your COVID 19 Pandemic experience in your studies. Create a documentary video presentation entitled “Ang kwentong Covid 19 sa aking pag-aaral”
10. What are other online learning platforms used by other HEIs (Higher Educational Institutions) during this COVID 19 pandemic era? Give at least five and tell something about this online learning platforms.
11. How VUCA (Vulnerability, Uncertainty, Complexity and Ambiguity) affect the future of Philippine education? (Reflection paper)
12. What are other teaching strategies used by the basic education during this COVID 19 pandemic era? (Narrative report)
13. Make an Action Research (Narrative quantitative /qualitative analysis) about the education during the COVID 19 pandemic era. References should not lesser than twenty authors (10 for Filipino authors and for 10 Foreign authors)

## POST COVID 19 PANDEMIC ERA

### ONLINE LEARNING /YOUTUBE LEARNING ERA

The post-COVID-19 era is striking like a monochromatic wave of hopefulness, and suddenly, the normalization in education is coming through the years where face-to-face transactions have been given a change of recovery, a change for getting new trends and solutions within the capacity of every individual. According to the author, one of the key components of the upcoming new curriculum will be future thinking approaches like interdisciplinary, multidisciplinary, and transdisciplinary courses like mastering the skills he had learned and research-ethnomathematics. Another will be the opportunity to master a new skill, like zipping a new trend, especially in the field of culture. This post on the COVID-19 pandemic highlights the popularity of vlogging as a teaching method, which the author personally experiences as he pursues a second post-master's certificate course. The teacher used Google Classroom and Google Meet as an online learning platform to discuss the writer's subject matter in his first online lesson, as seen in the image below.

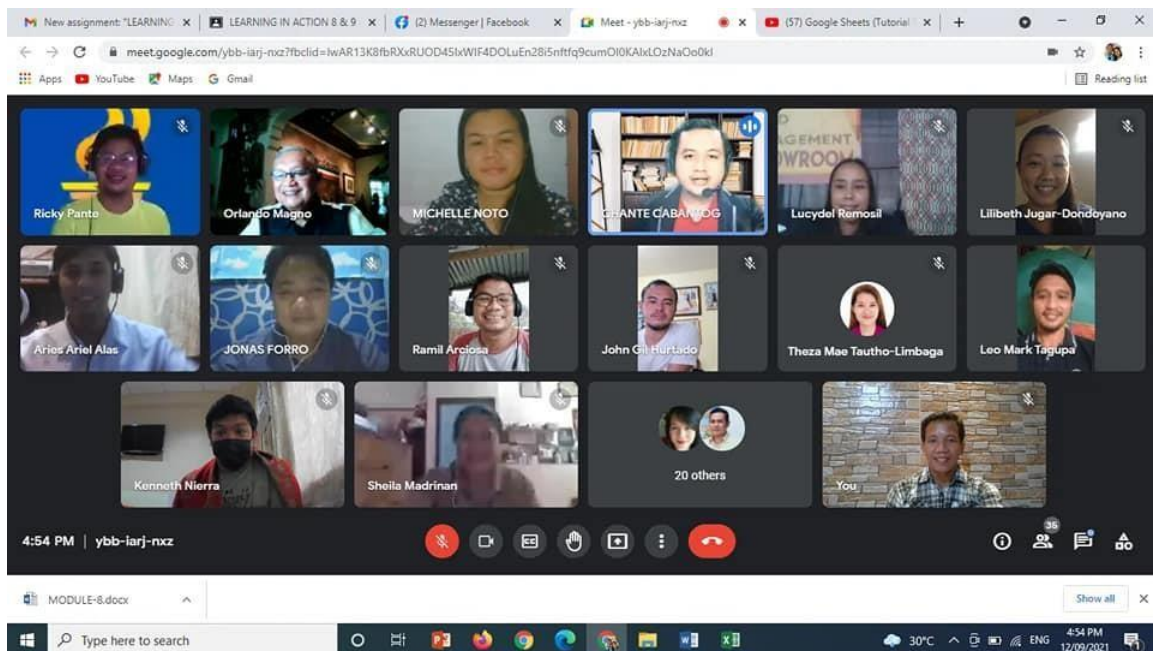


Figure 1.12. Google meet is one of the essential learning platforms used for conferences, post graduate studies or even in classes partner with the Google classroom are the two key elements as the ICTed (Information Communication and Technology for Education) arise in this era.

. In this case, the instructor, facilitator, or researcher creates their own account on YouTube to use the most practical method of disseminating material. The writer's most memorable online course, CUL ED 205: "Media-based cultural documentation," wherein videos are produced using the principles of localization, indigenization, and integration of the video content, was offered as part of the Graduate Diploma in Culture Education (GDCE). The author of this essay has considered how the video presentation can become realistic and, more importantly, how it can be incorporated into the courses that will be taught in basic education. We shall talk more about this culture-based approach in the upcoming chapter.



Figure 1.13.a. The writer's post master's diploma degree, as by product of the online learning during post Covid 19 pandemic era.



CUL ED 205 final requirement -Ang balay na Bayog from GDCE- NDMU

Figure 1.13.b. This is a project-based teaching strategy-video making using culture-based concept.

source :<https://youtu.be/7RMeNMEsI80>

The content of your lessons, the sounds you choose to use, and most importantly, the creative aspect of them should all be unique. The viewer's attractions are tallied, and occasionally the focus shifts to the social media trends on platforms where source links are accessible. Once the homemade movies are posted online, they won't be removed. In this crucial post-diploma course, the writer acquired new skills in video production, as seen in figure 1.13a. The writer's story board for the culture-based video "Balay na bayog" is displayed in Figure 1.13b. In this uncertain world, where the opportunity to prepare your future students for success is ideal, the ICTED phenomenon—where everything is evaluated by self-proclamation on social media platforms—is regarded as an educational platform as well. As a result, Philippine education is undeniably relevant in this new trend in the educational landscape.

## TASK 14.0 – 18.0

OBJECTIVES: At the end of each task, the students should be able to

14. How this Information Communication and Technology for Education (ICTED) evolved in education 4.0?
15. How this ICTED become valuable in your future teaching career?
16. Discuss briefly the history of computer.
17. Is computer programming (coding) can really help you to become a future teacher 4.0? How? Why?
18. How critical and creative thinking become a determinant of being an expert in ICT based education?
19. Give at least 20 local study about ICTED (Philippine setting)

## REFERENCES

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## APPENDICES-SAMPLE OUTPUT

## NARRATIVE REPORT

IN

EED MATH 211

**“META- ANALYSIS: ICT-BASED EDUCATION IN BRUNEI”**<https://youtu.be/JqqvEByWN8g?si=eFkhUGbRW2KUj1Et>

According to Besar (2006), ICT is indisputable in this digital age, information and communication technology, information, communication and technology (ICT), plays an instrumental role in the teaching and learning process all across the globe. ICT in education is increasingly emphasized in Brunei Darussalam as one of the strategies in becoming a knowledge-based economy. Recognizing that technology will become increasingly fundamental in shaping the composition of its future workforce, the Government of Brunei has invested heavily to incorporate ICT into national education. This program was created with an aim to justify the disparities that exist between conventional teaching methodological strategies, as well as between digitally informed practices and so on; incorporates with a level of elevation regarding education. Before diving into the creation of PowerPoint presentation about ICT-Based Education in Brunei Darussalam, we spent considerable time planning and gathering information. The initial step involved planning, searching, identifying and summarizing the topic and understanding the needs of our research. The group members were responsible dealing thorough research varied articles to ensure the comprehensive subject matter with the help of our leader Ms. Rosalie Esteban. The group created an outline that organized ideas logically, mapping out the key points and the functions of such tools in learning-teaching process. The group look into different articles such as ResearchGate, Academia, Google Scholar, Scribd, etc., in order to meet the needs of our task. Additionally, the group choose a theme and color scheme that would resonate to the SKSU color and making the content visually appealing. This planning stage is crucial as it set the foundation for a cohesive presentation and meta-analysis. As the group 5 began creating the PowerPoint and our meta-analysis paper, the focused was all about translating the outline into visual content. We incorporated appropriate tables, and bullet points to enhance the clarity and engagement of the message. Each slide and page was crafted with effort to maintain a balance between

text and visuals, ensuring audience would not be overwhelmed by excessive information.

## **INTRODUCTION (PRESENTATION AND OVERVIEW OF THE RESEARCH)**

When the clock strikes 10:30 a.m., our presentation officially takes off. Ms. Rosalie Esteban greets everyone first. "Good morning to all of you." I'm Rosalie G. Esteban, and I'm here with my fellow researchers (all members introduced themselves) to present our study, "Meta-analysis: ICT-Based Education in Brunei."

Following the introduction, Ms. Rosalie Esteban went over the study's abstract and the challenges Brunei's ICT-based education is facing. The introduction was then covered by Ms. Lyndel Kate Dadivas, who gave some background information on ICT education in Brunei. Ms. Evon Pearl Twalang then went on to provide the Statement of the Problem (SOP), outlining the difficulties Brunei is encountering in incorporating ICT into its educational system. Mr. Frankyl Paz presents the data analysis of our study; he goes into great detail about the statistical information we collected from the 15 articles we collected.

Ms. Rosalie Esteban concluded our presentation by outlining our study's findings and suggestions. She gave a presentation on our study's findings and suggestions for educators, learners, and future researchers on how to use ICT to enhance education in Brunei Darussalam. In addition, Mr. Frankyl Paz gave a quick overview of our sources and the 15 papers we collected in order to generate data.

At precisely 11:30, our lecture comes to a close. Without our professor, Mr. Ramil Arciosa, and the hard work of every individual in our group, this action research presentation would not have been feasible. Making this action research is a difficult procedure, but it gives us the strength to finish this report.

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## **REFLECTION AND SUMMARY OF THE STUDY/ACTION RESEARCH:**

The meta-analysis on ICT-based education in Brunei highlights the importance of integrating information and communication technology (ICT) into the educational landscape. This research is timely, considering the global emphasis on digital literacy and the need for students to be well-versed in technology-driven environments. Brunei, like many other nations, is focusing on ICT to enhance teaching and learning experiences, ensuring that education is in line with the demands of the 21st century. ICT tools, such as computers, tablets, and online platforms, have become important for enhancing teaching and learning in classrooms. The research shows that these tools help students engage better, improve digital literacy, and provide more flexible learning options. However, it also highlights challenges, such as the need for better infrastructure, teacher training, and equal access to technology across all schools.

In this meta-analysis, various studies were reviewed to understand the impact of ICT on education in Brunei. The findings suggest that ICT integration can improve student learning outcomes by making lessons more interactive and accessible. Teachers who use ICT in their classrooms reported positive experiences, though they emphasized the need for more professional development and technical support. The research suggests that while ICT has potential, there are still gaps to be addressed, such as ensuring all students have equal access to these tools and that schools have the right resources to fully benefit from ICT-based education.

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## CHAPTER 2

# CULTURE BASED EDUCATION



Figure 2.0.a. The writer on his culture-based research proposal-1 has been approved by the NCCA-CHED consortium projects, called SALIKHA 56, Academic year 2018-2019.



Figure 2.0.b. On August 2018, the Philippine Council for Industry, Energy and Emerging Technology Research Development (PCIEERD)-Department of Science and Technology (DOST) has initial interview with writer on his culture-based research proposal-2.

“ANG KULTURANG PILIPINO AY DAPAT MAY KABULUHAN SA  
EDUKASYON NOON, NGAYON at MAGPAKAYLANMAN  
(The culture of being a Filipino should have a true valued in the field of  
Filipino education, now, today and tomorrow)”

The writer had recently moved from Koronadal National Comprehensive High School (KNCHS) to Sultan Kudarat State University (SKSU), College of Teacher Education (CTE), on January 15, 2017, to be exact. This time, the author was a college teacher with a slightly daunting structure for what it takes to be a college teacher. The writer is more than competent of providing instructions, but this time there are three (3) tasks to do in the capacity of a college professor. A greater emphasis is placed on research and extension services in this regard. In this instance, the author submitted two (2) excellent study proposals based on culture to two (2) distinct agencies at the time. Unbeknownst to him now, the author already had some understanding regarding culture-based education. As seen, for instance, in figure 2.0, a, where the writer filed a culture-based research proposal called SALIKHA by the CHED-NCCA as a funding agency for this topic, his plans have really been authorized in the central offices.

The focus of this proposal for culture-based study is on the textile weaving practices of the Manobo and Teduray communities in Central Mindanao and Upi Maguindanao. The other is the innovative ikat weaving found in South Cotabato near Lake Sebu, as depicted in figure 2.0.b. In August 2018, this study proposal on culture was level one (1) and successfully defended at PCIEERD, DOST Taguig City, Metro Manila. It was only a month ago that the first culture-based research was approved by SALIKHA. Considering the DOST-PCIEERD proposal has chosen to be a sole member of SALIKHA and may have greater prestige and financing prospects, the author assigns it priority. In summary, funding agencies provided one million pesos (P 1 M) for the SALIKHA proposal. Based on the author's insightful ideas, it is assumed that Teduray and Manobo, which are located somewhere in these three (3) provinces—Sultan Kudarat, Cotabato Province, and Maguindanao—have a rich textile weaving tradition. This assumption was made on July 13, 2018, the day the funding organizations delivered the certificate of research grant to the university, SKSU.



Figure 2.1. Certificate of award from funding agencies (National Commission for Culture and Arts (NCCA) and Commission in Higher Education (CHED).

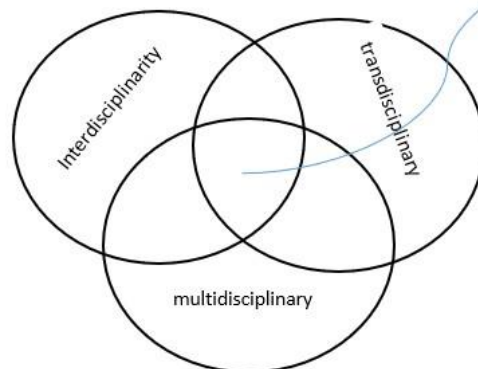
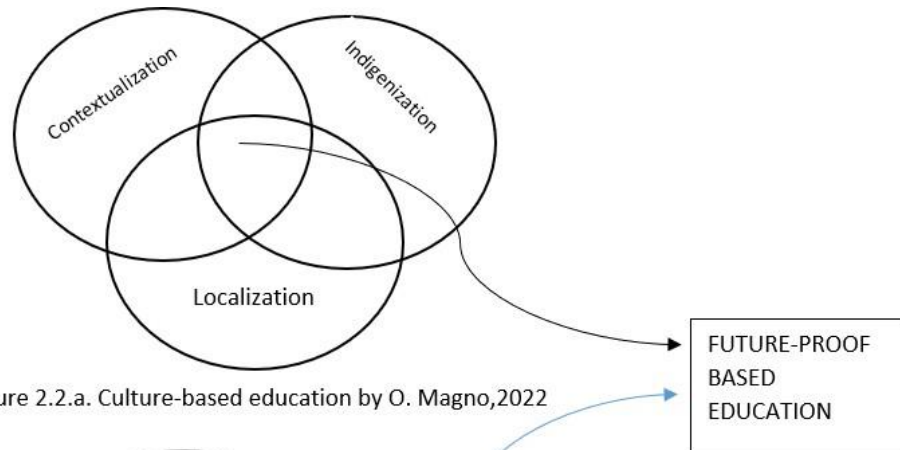
The information for the proposal, however, came from the writer's creative imagination; translating to culture-based study has been an essential component of being a competent educator someday, even though he has never visited those areas. The author's teaching background may not align with the culture-based study he has been conducting for nearly three years at Sultan Kudarat State University, raising an unanswered question. On the other hand, the creative aspect of the writer may become more prevalent in the future; this will be the focus of much more international research. The GDCE (Graduate in Diploma in Culture in Education) is a broad and extremely accurate degree, despite his lack of interest. Fortunately for the writer, he is fully committed to pursuing this next career milestone, which began with a big idea and will play a significant role in his classroom teaching strategies

### **Culture-Based Education: Core Competencies for future skills!**

The writer has understood from day one of this GDCE Level 1 course that it may not be related to his area of expertise, which is more science, math, and technology, but the writer believes this to be false. However, this can also push me to learn at a deeper level and become even more motivated to teach in a higher education system. More specifically, this may be one of the most important abilities that a classroom teacher today develops, and it may serve as a foundation for the skills that all instructors in the future will need to teach at all levels—primary, secondary, tertiary, and even graduate school. The writer discovers that all of his classmates work for the Department of Education (DepEd) and that he is the only student at the State University. This could indicate that he is lost in the dark or traveling in the wrong way. This is all part of the writer's short diary, or recollecting where it all began. However, the writer enjoyed and felt at ease working on the teamwork and camaraderie that they encountered from day one (1) until the last subject (Cul ED 209).

The writer learns a great deal from this training, a postgraduate study in culture education, and strengthens their instinct based on culture (the writer has written extensively about a researched indigenous craft). This postgraduate study fills in the gaps in the writer's previous work (working on the culture-based research). The writer's participation in the training validates the goals of culture-based learning. Culture-based education provides more teaching methodologies, native materials, and a

customized lesson plan that can be taught by an instructor similar to the author at the same time. The cornerstone of a culture-based education is comparable to the essential skills of the future in certain ways. The Venn diagrams below, Figure 2.2.a for culture-based education and Figure 2.2.b for future skills (Ulf-Daniel Ehlers, 2020), can be used to explain these two comparisons.



Since the beginning of the writer's teaching career, he always looking into the innovative side of teaching that the reason this *Pagtudlo 4.0*, a compilation of his different teaching strategies as journey in teaching work is getting good memorabilia in the field of published book. Another give an interest in the writer's creative perspective is all about T'nalak geometric patterns which took the writer's almost a decade of studying, which result into unique and new concepts which only satisfied his imagination and creative sides which link into the mathematics theories, practices and even interweave in the mainstream of education, which the writer's prefer most, called as "Filipino ethnomathematics" (Arciosa, R & Tuando, R, 2021). This is a result of a new aspect of writer's research skills. These skills upgraded into higher momentum when he joined a faculty of Sultan Kudarat State University – College of Teacher Education way back in 2017, where he spent almost seven (7) years in the

DepEd Secondary level. Now mastering this craft, in fact in May 2022, the annual convention of the Mathematic Society in the Philippines (MSP) sponsored mostly by the UP Diliman, La Salle University. The writer presented his unique study (See the attached video via Youtube, figure 2.3.b) and published his first book entitled “Ethno Physics: Elliptical T’nalak Analysis (ETA)” as shown in figure 2.3.a with different translated languages.

The writer has always been interested in the creative aspects of education, even from the start of his teaching profession. To obtain quality souvenirs in the realm of published books, he has compiled his various teaching tactics into Pagtudlo 4.0. This is part of his teaching journey. T’nalak geometric patterns are another topic that sparks interest in the writer's creative viewpoint. The writer studied these patterns for almost ten years, and the results were novel and unique concepts that only satiated his imagination and creative sides. These concepts link into mathematics theories, practices, and even interweave into the mainstream of education, which is what the writer preferred to call "Filipino ethnomathematics" (Arciosa, R., & Tuando, R., 2021). This is the outcome of a fresh facet of the author's research abilities. When he joined Sultan Kudarat State University's College of Teacher Education faculty in 2017, these abilities took off even more. He taught secondary education for nearly seven years there. Having mastered this art, UP Diliman and La Salle University primarily supported the Mathematic Society in the Philippines (MSP) annual meeting in May 2022. With several translated languages, the writer released his first book, "Ethno Physics: Elliptical T’nalak Analysis (ETA)" (see the linked movie on YouTube, figure 2.3.b), and presented his original research (see figure 2.3.a).

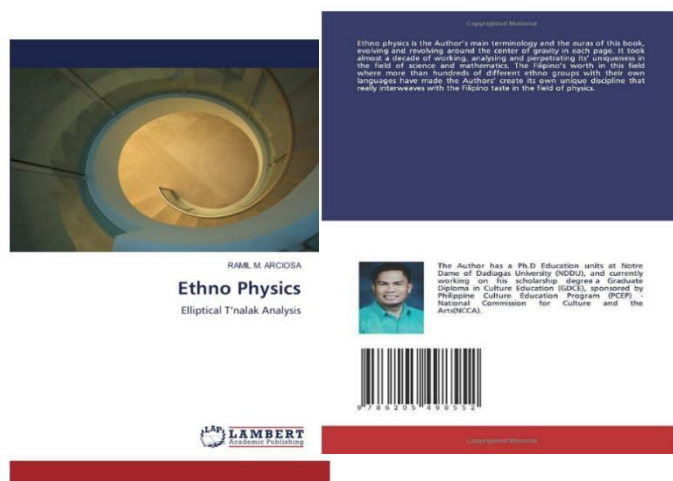


Figure 2.3.a. The writer's first book, published September 19, 2022 in the international book mainstream and available through amazon.com

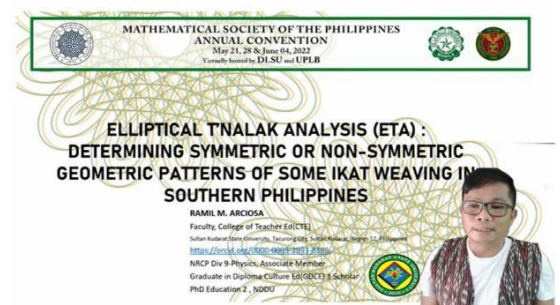


Figure 2.3.b The writer presented his study about T’nalak weaving design at MSP (Mathematical Society of the Philippines) 2022 Hybrid Annual Convention,

Source: <https://youtu.be/PvgpeytwzuM>

Culture-based education will play a significant role soon, according to the writer's cascade of thoughts, emotions, and abilities as a prospective teacher at all levels. In primary, secondary, and especially in teacher education colleges, where the writer teaches that future teachers are the melting pot of the near future learners, leaders, techno-crafts, engineers, economists, and scientists, education scholars are desperately needed to formulate a future-proof based education. In fact, having completed this post-diploma program, the author concluded that this is the crucial component lacking from becoming a culture-based educator, since the Filipino teacher's distinctive future teaching icon status is centered around and has developed inside the traditions and culture of the country!

## CULTURAL MAPPING 101

### TEXTILE WEAVING of TEDURAY at SULTAN KUDARAT - BRGY. SALUMPING, MUNICIPALITY OF ESPERANZA, SULTAN KUDARAT

As it is sometimes claimed that "one Piso coin, you are looking at the gateway of heaven," the most interesting element of the culture-based research is traversing between the hilly areas of Brgy. Salumping, Esperanza Sultan Kudarat, where the data gathering was place. This 1 hour and 34 minutes, as stated in the Google Map as shown in figure 2.4.a, is like a joke; it's just a roller coaster way of going in that direction with a motorcycle called "Habal Habal" as your mode of transportation, which goes to almost ninety degrees inclined mountains, very steep, where you feel nervous but you need to go there to gather your data, as they called cultural mapping. As a cultural researcher, you are entering their heritage corridor, much more on the well-known mountain they called Mariwar Peak, as depicted in figure 2.4.b.

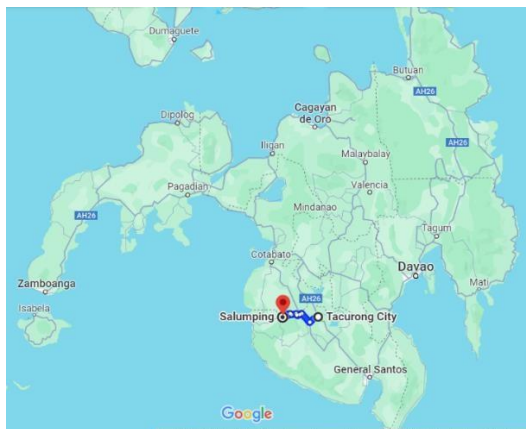


Figure 2.4.a The Teduray ICC (Indigenous Cultural Communities) with almost thousands of acres ancestral land domain and almost 9,000 population live at Brgy. Salumping, Municipality of Esperanza, Sultan Kudarat. This is located exactly at 2654 feet above sea level, which known with their tourist spot called Marawir Peak



Figure 2.4.b. The beautiful perfect cone in shape this Mariwar peak found in this Teduray ICCs at Brgy Salumping, Esperanza Sultan Kudarat. This is one of the tourist destinations in the said locality.

The Indigenous Cultural Communities (ICC) of Teduray Brgy. Salumping, Esperanza Sultan Kudarat, is home to over 9,000 people and has an abundance of both tangible and intangible cultural treasures. Since the beginning of this culture-based research in 2018, the author has personally experienced it. An assessment of the study team's goals for the Teduray ICC lands is displayed in figure 2.5.a below,

which was conducted while the team assembled the elders of the Teduray ICC along with representatives from the National Commission on Indigenous People (NCIP)—Sultan Kudarat conducted a pre-assembly.



Figure 2.5.a The Teduray ICCs elders (their highest governing body), SKSU SALIKHA 56 researchers and NCIP representative conducted pre-assembly as required by the NCIP, before given a MOA in both parties.



Figure 2.5.b. The MOA signing between the SKSU researcher team with Dr. Rolando Hechanova, former SKSUS president, NCIP legal team & Teduray ICCs elders. MOA signed is already done between the NCCA-CHED and SKSU.

Realizing and documenting the textile weaving of this Teduray ICC of Brgy is one of the goals of SALIKHA 56, which is named "Preservation and documentation of Teduray and Manobos textile weaving and its' mathematical implications." Esperanza, Salumping, and Sultan Kudarat. Figure 2.5.a illustrates what the SKSU research team discovered during the pre-assembly of the participants in this anthropological study: instead of textile weaving, that IP group specializes in bamboo crafts. Lastly, the two (2) main parties, the Teduray ICC (Indigenous Cultural Communities), chosen elders under the direction of NCIP Region 12, and the SKSU research team under the direction of the president, signed the Memorandum of Agreement (MOA), as seen in figure 2.5.b. Finally, as specified in the MOAs, the notice to begin conducting and gathering data is taken off. Cultural mapping will only focus on the tangible heritage, especially the handwoven items. As the researchers witness their palpable legacy, the eight (8) Teduray weavers create this distinctive product, as seen in figure 2.6 below. The author also created a little YouTube movie to demonstrate the actual application of this type of culture-based study.



Figure 2.6. The main subject of the research, their unique artisan with a meaningful design based on their customs and traditions. They created ten (10) geometric designs, as the writers called Teduray ethnomathematics.



**ETHNOMATH OF TEDURAY WEAVING TRADITIONS AT SULTAN KUDARAT**

Figure 2.7. The youtube video (short video) of one of the IP groups - Teduray ethnomathematics, as part of the SALIKHA 56 output.

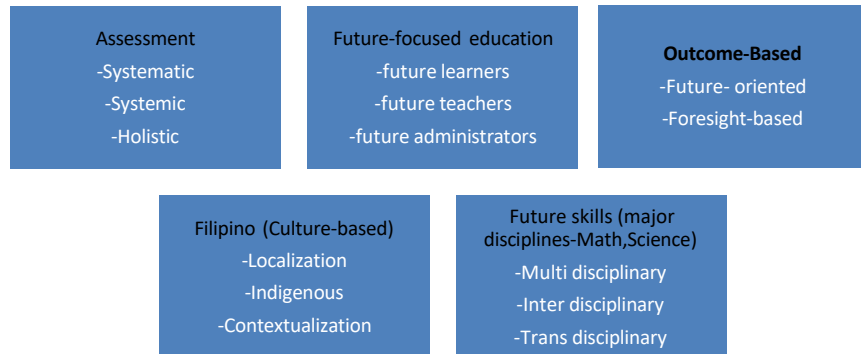
Source : [https://youtu.be/PaIqnsbR\\_rU?t=13](https://youtu.be/PaIqnsbR_rU?t=13)

## FEAUTURES OF CULTURE-BASED LESSON EXEMPLAR

This priceless SALIKHA 56 output is merely a piece of paper that is placed in an antique box or even in a culture book collection. Perhaps this is the reason the author, who received training in GDCE, developed and made this memorable to translate it into lessons that young Filipinos would teach; in addition to the ethnomathematics concepts, it contains a localization and indigenization of the main subject. The author creates an example of a culture-based lesson using the K–12 curriculum framework. Try to investigate this!

This is original Culture-based lesson exemplar!

This is an example of a culture-based lesson that could be a deliverable from the research on culture-based education. The author concludes by using figure 2.8 in his multi-strategies approach to dealing with culture- based education, which is bound to produce learners who are future- proof. This method is most likely outcome-based, meaning that the learner should be at the center of the learning process in terms of assessment. Combining fields, such as going from STEM to STEAM— where A stands for the arts—was widely adopted.



**TASK 2.1-2.10**

- 2.1 How do you assess the three (3) components of culture-based education like localization, indigenization and contextualization particularly in the present situation in the (a) basic education (b)SHS education (c) TESDA (d) Higher education. (Reaction paper at least five (5) pages up.
- 2.2 Is culture-based education can develop both critical thinking and creative thinking of your learner? How? Why? (current PISA ranking results)
- 2.3 Can future trends align with this culture-based approach? How? (MATATAG Curriculum)
- 2.4 Is MATATAG curriculum is a concrete example of culture-based approach and future ready for the young Filipinos? Why?
- 2.5 Is culture-based approach can decolonized (foreign lessons) in mathematics and science? How? If not, what will be the best strategies to interweave the local and foreign lessons
- 2.6 Select a particular topic in elementary mathematics/science/TLE and contextualize to become a culture-based approach. Make a story board out of it.
- 2.7 Make a culture-based video presentation, dramatization (radio, role playing) out of the lessons that you selected (This is group activity).
- 2.8 The culture-based video will be uploaded to youtube.
- 2.9 The finale will be a culture-based classroom demonstration together with the youtube video (refer 2.8) that will part of the lesson. Record this classroom demonstration afterwards download the edited video.
- 2.10 Make a narrative report out of the classroom demonstrations that all youtube links should be put in the reference in the last part of your narrative

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# CHAPTER 3

## COMPETENCY BASED EDUCATION

“When ARTS and MATH collides”



Figure 3.1. One of the outputs of Grade 7-Waling waling based on the Competency Based Module (CBM) made by the author

“Competency based education, gauge learners to be competent nor not competent. Learners’ knowledge is based on the practical use of the knowledge in their daily lives. The most important how education shape them like what they drawn using their crayons and wisdom”

The author enrolls in the National Competency in Computer Hardware Servicing (NC CHS II) program offered by the Technical Education Skills and Development Authority (TESDA) later in his time at Koronadal National Comprehensive High School to improve his skills. He then proceeds with Training Methodology (TM) 1 as illustrated in figures 3.2.a–b to become an NC CHS II assessor. This is the starting point of competency-based learning.



Figure 3.2.a The Author undergone a one (1) month (April 1- Mar Trainers' Methodology (TM) Level 1 at Surallah National Agricultural School (SUNAS) now a South Cotabato State College (SCSC).



Figure 3.2.b Together with other trainees from Department of Education in different high school in region twelve (12) in preparation of K12 programs. The Tech-Voc teachers should be trained in TM training

With the support of the TESDA Provincial Office, the author completed this Training Methodology (TM) and gained a competency-based education strategy that he could use to his teaching of mathematics in Grade 7 at KNCHS. In contrast to the spiral approach of K–12 curricula in Grade 7 Sanggumay, school year 2014–2015, the author created a module called CBLM Competency-Based Learning Material (CBLM) as a teaching aid for teaching mathematics in three (3) Grade 7 sections, namely: Grade 7 Tulip, Grade 7 Waling Waling, and Grade 7 Yellowbell. The competency-based methodology used by the Technical and Skills Development Authority (TESDA) in their different National Competency (NC) programs serves as the model for this module. The delivery of the performance lessons is less of the focus of the competency-based curriculum, which is focused on abilities and performances. As a result, the learner-centered, mathematical competency-focused CBLM developed by the researcher is grounded in the pedagogical philosophies of mathematics education. In this study, the first grading-number and number sense of the four (4) sections is used to evaluate and examine the accomplishment of 185

respondents in the given topic. The forty-nine (49) respondents in Section Grade 7-Sanggumay are the independent variable/control group, whereas the one hundred thirty-six (136) respondents under the three (3) sections—Grades 7-Tulip, Grades 7-Waling Waling, and Grades 7-Yellowbell—are the dependent variable/experimental group.



Figure 3.3.a The respondents using the CBLM Grade 7 math module



Figure 3.3.b one of the outputs of the CBLM Grade 7 math module

### **ACTION RESEARCH (AR) in COMPETENCY BASED MODULE!**

The primary goal of this action research (AR) was to assess the impact of Competency-Based Learning Material (CBLM), a teaching aid based on the Technical and Skills Development Authority (TESDA) and a modular approach to teaching mathematics in Grade 7. Specifically, set theory was the main topic of the first grading period of the Department of Education's (DepEd) Math K12 curriculum, which was implemented at Koronadal National Comprehensive High School (KNCHS), Koronadal City, South Cotabato. 49 seventh-grade students served as the dependent variable and 136 seventh-grade students served as the independent variable for the key participants. Furthermore, 49 students in Grade 7 employed the CBLM modular method, whereas 136 students used the Grade 7 math curriculum guide. The figure 3.3.a-b below are part of the dependent variables. A daily class attended by one hundred eighty-five (185) respondents was used to conduct the study over the course of three (3) weeks. Two (2) respondents taught Grade 7 mathematics. The findings of the pre- and post-tests were statistically analyzed using a simple mean and t-test. Following the completion of the Action Research (AR) study, the control group and experimental group showed

a statistically significant difference. The equivalent computed t-test for the pre-test and post-test is equal to 23.08 and 15.80, respectively, and is higher than the critical t value of 1.645 at the significance level of 0.05. The independent variable is the teaching strategies without CBLM modular approach while the dependent variable used CBLM module. As the retention of every subject particularly in mathematics is one of DepEd priority programs nowadays, the researcher found it practical to engage on it as to develop its own teaching material as to deliver the lesson and learned well by the respondents. Given the supportive and facilitating role of the school, the researcher done it with the vision and mission of helping the institution to create a teaching material particularly in Grade 7 mathematics. Considering that there was an apparent need to embark on learning enhancement among these Grade 7 learners, the teacher/researcher took the challenge in responding to the educational needs of these learners through creating teaching material that develop their critical thinking and the same time their creative ways.

## CHAPTER 4

### GAME-BASED LEARNING (GBL)

“Gamification Technique (GT) arouse the learning interest of the learners”



Figure 4.1 Before the COVID 19 epidemic, mechanical game-based learning (GBL) Instructional Material (IM) developed by former BEED 4<sup>th</sup> year students , academic year 2017

## PRE COVID 19 PANDEMIC ERA

### *Snake and Ladder GBL –A-like!*

Gamification Technique (GT) / Game-Based Learning (GBL) as teaching strategy is one of the author's interests in most particular in the field of mathematics, in fact one of the research proposals of the writer in the research division at SKSU VP RDE has been accepted and considered as one of the internal funded research projects during academic year 2017- 2018. This is one of the internal research projects that granted to conduct but failed to finish the said research. This research entitled Computerized Game Based Learning in teaching Basic Mathematical operation. This research needs a computer programmer to enable create the computer version of the said electronic version of the game-based learning(gbl). The sample mechanical game-based learning as shown in the figure 1.2 below came from the concept of the snake and ladder, which divided into four (4) levels namely addition level, subtraction level, multiplication level and division level. This level will be mastered through the series of games intended for the learners. The proto type model has been made by the education students in their math 6 subject with a title course 'teaching strategies in elementary math' which is the subject given to the author as his first-year teaching experience we back academic year 2017-2018 as shown in the figure 4.2.



Figure 4.2 The mechanical Snake-and-Ladder- A-like, A GBL (Game-Based Learning) proto type value in this GBL main object of the study.

In the absence of the actual face to face teaching as substituted by this proto type, developed by these group of students under the subject in Math 6, the subject taught by the author, as they feedback as good IMs in teaching basic arithmetic operation.



Figure 4.2 a. teaching basic math using GBL



Figure 4.2 b. Using tossing dice as a key element in the GBL teaching strategy



Figure 4.2 c. Evaluating the GBL-Snake-and-Ladder- a like as teaching strategy.

### ***BINGO LIKE GAME-BASED LEARNING!***

In the academic year 2018, its' a second year of the author in the Sultan Kudarat State University, particularly in the College of Teacher Education (CTE), and given a chance to teach in the Graduate School level. In this time, the author gives a major requirement to his graduate school student to conduct Action Research (AR) about Game-based Learning teaching strategies in their respective schools. In the unpublished study of Bema Friaes of Bambad National High School, academic year 2018, trying to differentiate its effectiveness, using BINGO cards as Game-based learning teaching strategy and traditional method in teaching Grade 9 mathematics

## DEVELOPING ELECTRONIC GAME-BASED LEARNING (e-GBL)!

The lacking of innovative materials and testing to be effective are some hindrances of creating and developing a GBL teaching strategy. The author tries to improve the imaginative and creative side of his learner/s in terms of developing a GBL teaching strategy as shown in the figures 4.2.(a-c), where the author gives his learners a change to explore the GBL teaching strategy. This kind will enhance more the student's interest, much particularly in the mathematics world, as shown in the figure, the pre-service teachers during academic year 2018, are enjoying much the mechanical aspect as well the new ways in teaching basic mathematics. The snake-and-ladder-a like Game-Based Learning (GBL) teaching strategy, has an impressive or 'very satisfactory – 4.16 mean value (figure 4.3)' feedbacks among the pre service teachers and graduate students during this academic year 2018, at CTE, SKSU. The progression of this internal funded research entitled "Computerized Game-Based Learning versus Mechanical Game-Based Learning in teaching basic operations in whole numbers" as a project leader trying to level up into electronic application that could run in any form of ICT gadgets like cellphone, tablets or PC. The author tries to put in the runnable program or executable program that is very easy to use by the end user. In this connection, the author hire a computer programmer which suitable in this features, in fact its' almost 40% of the coding has been interface in the proper platforms like in the android cellphone as shown in figures 4.3.(a-d) below.

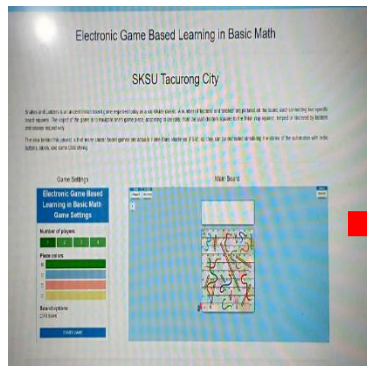


Figure 4.2.a. The main menu of the electronic-GBL, Arciosa,2021- GBL)



Figure 4.2.b. The Log-in menu, to record the gamer/learner as the game to start.

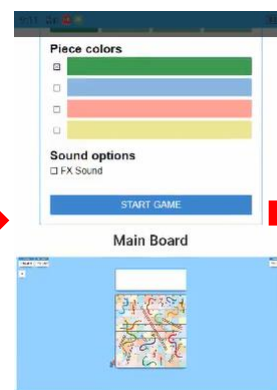


Figure 4.2.c. The gaming board, where the players learned the basic math as well as games happen.

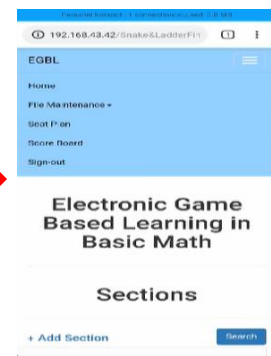


Figure 4.2.c. The administrator/Teacher main platform that maintain, monitor the whole the system.

The real score in this internal funded research by the Sultan Kudarat State University (SKSU), Vice President in Research Development and Extension (VP RDE) has not been in properly terminated and its coming in overdue as number reason, the author is not yet familiarizing and new to the SKSU system, particularly in the procurement process in the research. In the Sultan Kudarat State University, where four (4) fold functions should be practiced and need to render these jobs descriptions. Namely (1) Instructions; (2) Research; (3) Extension; and (4) Production. The author as a new entrant way back in the year 2018, which the highlights in the research and extension he had explore, there are three (3) projects have been approved that time, (i) one for the extension projects which the author become automatically a project leader, (ii) external funded research, called as SALIKHA grantee funded by the consortium between the CHED and NCCA., (iii) as a project leader with this game-based

research project. Multi-tasking, culture shock and never been in focus are some reasons why this game-based research project is failed in the process and the same time. The figure 4.3 below, the author presented the progress report of the game-based learning project during the 2019 SKSU in house peer review of research and extension research presentation.



Figure 4.3. The mechanical GBL versus electronic GBL in teaching whole numbers, presented SKSU in house research and extension paper presentation at VPRDE Center, SKSU.

The main objectives of this research project to develop a cellphone apps / computer application that is data driven, where the players / learners should learn simple arithmetic operation like addition, subtraction, multiplication and division. In the education 4.0, gamification / game-based learning is one essential learning platforms to be integrated in the teaching and learning process. As an educator for the future teacher in this college of teacher education, innovative ways in developing instructional materials are the most interesting part and it could be a frustrating also. Matching the mechanical component of a certain board game in any topic of mathematics are so hard to conceptualize, linking the parts into procedural components need a huge analysis. The author implied the current and future trends in the education, converting the mechanical gbl into electronic game-based which discussed in figure 4.3.

#### TIC TAC TOE GBL



Figure 4.4 This is a simple mechanical TIC-TAC-TOE, usually found in any Food stuff, which simply play for fun. US Patent number – 5,927,714 in July 27,1999.

The K to 12 curricula of the Philippine Mathematics Education acted to become a law as Republic Act 105333, which change and revised the teaching and learning processes of the learners on their own perspective and content-based pedagogy on the conceptual framework of the said Mathematics education under the said law. The main target of the teaching-learning process would be critical thinking and problem solving of every learner as he/she graduated in the K to 12 curriculum which could mostly availed in terms in-service and pre-service of mathematics teachers

through their baccalaureate degrees and experiences as mathematics teachers. The change of the landscape in mathematics education in this 21<sup>st</sup> century, create a new dimension in teaching strategies, learning absorptions and assessment validations in every teacher, particularly in mathematics education. As the researcher main objectives, as to develop a new instructional tool in teaching basic mathematics in this new trend of Philippine mathematics educations. The Game Based Learning (GBL) in the Philippine Education is seldom to see and rare to actualize its use in the basic education particular in Mathematics education. This program proposal will test its effectiveness of in relation to the presence of GBL as one major strategy in teaching TRIGONOMETRIC IDENTITIES, in response to its ICT (Information Communication Technology) streamline application in all aspects of students, the mechanical GBL will lead to computer-based instructions. In the near future where mathematics education will enter in the technology based much particularly in the computer application with data features. The author tried to incorporate the concept of 'Tic –TAC – TOE' board game into GBL in teaching trigonometric identities. The main objective of the study is to evaluate and test the effectiveness of the Game-based learning with the use of "TIC TAC TOE model", The game-based learning in Philippine Basic Education was rarely used as observed mostly in the field. In fact, teaching and learning process mostly used a traditional method in teaching mathematics. It adopted the integration of ICT (Information and Communication Technology) in advanced country, as the development of game-based learning, either its effective or not, is huge problem among the teachers involved particularly in mathematics, how much more the integrations of Information and Communication Technology (ICT). The concepts of Mathematics need a higher order thinking skills in order to transmit to the learner's mind wave, which wave goes into monochromatic output. According to Tokac (2015), on his math video games might have contributed to higher learning gains as compared to traditional instructional methods. The lack of access in the Information and Communication Technology (ICT) among public schools is the hindrance of public education looking into modernization. The capability of teachers in using game-based learning in the field of Mathematics, as one way of increasing learner's achievement is one major key in this research. The figure below

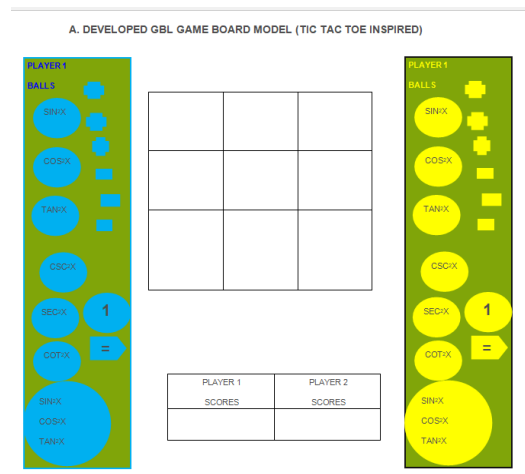


Figure 4.5 This is the author's TIC-TAC-TOE GBL-A-LIKE mechanical version. This will enhance the creative and critical thinking of the client(learner) probably.

### TASK 4.1.0- 4.6.0

OBJECTIVES: At the end of each task, the students should be able to

- 4.1 What is the philosophy of education that implied the GBL teaching strategy? (Give at least five (5) and tell how and why?)
- 4.2 Are GBL teaching strategy effective in the Philippine education? Give at least five (5) articles (Philippine setting) that tells its effectiveness.
- 4.3 What are the disadvantages and advantages in the GBL teaching strategies?
- 4.4 What are the trends and issues in using GBL teaching strategy?
- 4.5 Why electronic GBL is very expensive in the Philippine education?
- 4.6 Make a concept paper about the GBL either mechanical or electronic.

## COVID 19 PANDEMIC ERA

### EFFECTIVENESS of GBL at ELEMENTARY LEVEL

During the COVID 19 pandemic era, everything in school is shutting down, most particularly in the face-to-face classroom activities. In this time also, the author, try to assess his mechanical Game-Base Learning using the snake-and-ladder concept, through his undergraduate thesis advisees, which the main problem gaps to answer is its' effective in the basic mathematical operations like addition, subtraction, multiplication and division. This thesis writing spending almost two (2) years because the gathering of data falls in between the COVID 19 pandemic era, where restrictions in people going outside their houses are strictly implemented. In this case, the author's advisees divert their learning areas into two (2) safest places that could follow the restriction protocols in the barangay church and in the respondents houses only as shown in the figures 4.6(a-b) below.



Figure 4.6.a The author's thesis advisees control group held at Brgy. Catholic church due to COVID 19 pandemic restrictions.



Figure 4.6.b The author's thesis advisees experimental group held at one of the houses of the respondent.

Data gathering from the beginning up to the end as needed in the completion of the author's advisees are the hardest part in the total package of their final requirements before they will move to their final year as a BEED graduating students. Still, they were successful despite the COVID 19 pandemic restrictions which affected mostly by their respondents. (Arciosa, 2021) discuss to his study that the both control group (non-

GBL) and experimental group (GBL) understand the concept of addition and subtraction while in the multiplication and division has no improvement at all. The objectivity of this study to see the research result gap in between the experimental and control group as the GBL- snake-and-ladder-a-like is much more answer the difficulties in the basic arithmetic operations. The reality of this the mathematical knowledge and skills are trait in this teaching strategy. The basic foundation is very important, regardless what teaching methodology can be used. The clarity of the mechanics also one factor, is not a copy and paste the concept taken from a well-known game board such as snake and ladder but to scholarly study the transferring of the mathematical content from the game itself.

#### **TASK 4.7-4.9**

**OBJECTIVES:** At the end of each task, the students should be able to

- 4.7 List down at least five (5) games that will integrate the concept of mathematics aside from the games given by the author.
- 4.8 What are other teaching strategies used by the basic education during this COVID 19 pandemic era? (Narrative report)
- 4.9 Make an Action Research (Narrative quantitative /qualitative analysis) about the game-based learning strategies (online or non-online) during the COVID 19 pandemic era. References should not lesser than twenty authors (10 for Filipino authors and for 10 Foreign authors)

## POST COVID 19 PANDEMIC ERA

Everybody's back on normal, the realizations and post effect, affect the point of views, mechanics of every system that connect to the whole areas of habitat. The normal zone is to back to realm scenario, where memories and experiences of unexpected event gave every individual a positive or negative response, but the most important of all, still surviving at all cost. In the education sector, where the author is connected particularly at Sultan Kudarat State University, College of Teacher Education, continuing its main job is to teach the young Filipinos in this free tuition scheme where everybody's is given a chance to upskills in these coming years as they called future trends. This future trends in the education have been the roadmap of every organization after the Covid 19 pandemic, uncertain future trend shocks that counter attacked its weakest point. The main agendum of the author is to put in the digitization mode, his three (3) main mechanical GBL namely: (i) snake-and-ladder; (ii) Bingo and (iii) Tic tac-toe. In this future Pagtudlo 4.0 book where this digital approach is highly appreciated, but the main problem is the programming features, it's very hard programming skills to be done by the author in order to reach this goal.

The author has a subject of Math 131 and Math 132 intended for the BSED major in mathematics with the course description of thesis writing 1 and thesis writing 2 respectively, these subjects are given in first –second semester. After the thesis writing 2, the BSED mathematics third year students will be able to finish and put in hard bound the final thesis as shown in the figure 4.7.a. These subjects are given to the author after the comeback of the normal class, face to face classroom is very

evident after the COVID 19 pandemic. The author handling this with all knowledge that the giving of titles per group should be align to the recent situation in the Philippine education after the COVID 19 phenomena. The author wants that the research to be conducted by his students in Math 131 and Math 132 are the following; (1) Flexible learning/ hybrid learning; (2) Modular approach by the basic education; (3) Game-based learning; and (4) Culture-based learning. The excitement of the author handling these subjects rooted to his well-done output. Being a subject teacher, after the COVID 19 pandemic era, handling a group of third year students of Bachelor of Science in Secondary Education (BSED) major mathematics. In this part where the author, of course try to insert his one of his favorite teaching strategies, the game-based learning/ gamification technique there is one group accepted this challenge particularly in the TIC-TAC-TOE as shown in the figure 4.7.b. It's shown that the Game-based learning teaching strategy is one of the best teaching strategies to be used and its effectiveness are very showy and create a team working, communication gap. The attitude towards experiential situation in the teaching and learning process in between the teacher and the learners give a higher impact in the achievement of individual learner. In this recent year the author has given another chance to prove the effectiveness of the Game-based learning teaching strategy. The author's thesis advisees particularly in the elementary category where this 'TIC TAC- TOE'

**TASK 4.10 - 4.12**

OBJECTIVES: At the end of each task, the students should be able to

- 4.10 Is there any research that are related to localize Game-based Learning adopted by either in basic education or higher education? If yes, what are these articles all about?
- 4.11 Make a game-based learning as major teaching strategy in class demonstration per group. Make a narrative report and conduct simple action research.
- 4.12 Make action research out of the question number 4.11.

**REFERENCES**

1. Arciosa, R. M. (2021). Game-Based Learning (GBL) in Teaching Primary Mathematics. *Asian Journal of Education and Social Studies*, 25(3), 43-54.

# CHAPTER 5

## COMMUNITY- BASED LEARNING

“The best remedy in the midst of education crisis in the rural areas, particularly-community based learning teaching strategy”



Figure 5.1.a. The final briefing of MAT- math students during their community-based extension program at Prk.3 Brgy. Población, Tacurong City.



Figure 5.1.b. The execution of the program with the young learners in the community.

The community –based education, started during the author’s has an internal funded extension program, that open the opportunity to see the social impact of this kind of teaching strategies. The author realizes the importance of this kind of teaching strategies, where it should go in through the community. The pre-need assessment analysis data is coming from the Department of Education through their Alternative Learning System (ALS) program, which give the author to proceed in the conduct of the community extension. The author’s new to the system of being a faculty in the state university, where the extension has given a big slice of job’s prescribe as part and parcel of being a faculty in the higher education most particularly in the state university and colleges (SUCs). The new paradigm shift in the methodology also changes as research driven and one of the suggested by the author is to conduct an extension. Below is the terminal report of the author’s extension project that granted to work with in two (2) years span.

## **PRE COVID-PANDEMIC ERA-**

### **AUTHOR’S 1<sup>ST</sup> EXTENSION PROJECT (TERMINAL REPORT)**

#### *A. BASIC INFORMATION*

1. *Program Title; “LITERACY AND NUMERACY ENHANCEMENT PROGRAM FOR ALS LEARNERS IN ISLAMIC CENTER, POBLACION, TACURONG CITY*

a. *Project Title: LITERACY AND NUMERACY ENHANCEMENT PROGRAM FOR ALTERNATIVE LEARNING SYSTEM (ALS) AND OUT-OF-SCHOOL YOUTH (OSY) LEARNERS IN BRGY POBLACION AND BRGY NEW ISABELA, TACURONG CITY.*

b. *Study Title: COMMUNITY EXTENSION: NUMERACY AND LITERACY ENHANCMENT PROGRAM AND IT’S IMPACT IN SELECTED SITES IN TACURONG CITY, PHILIPPINES*

2. *Researcher(s): RAMIL ARCIOSA, ERNIE CERADO, JONALYN PERFECIO & EMY MORBO*

#### *3. Implementing Agency/Station*

a. *Lead Agency: SULTAN KUDARAT STATE UNIVERSITY*

b. *Cooperating Agency: BRGYS POBALCION- TACURONG CITY, BRGY. NEW ISABELA – TACURONG CITY, ALS DEPARTMENT DEP ED*

a. *Project Site(s); ISLAMIC CENTER & PUROK 11 - BRGY POBLACION TACURONG CITY & BRGY. NEW ISABELA, TACURONG CITY*

4. *Funding Agency(ies); SULTAN KUDARAT STATE UNIVERSITY -CTE – EXTENSION*

## FUND ALLOCATION.

### 5. Duration (Definite Dates)

- a. Date Started: July 1, 2017
- b. Date Ended: June 30, 2018

### 6. Financial reports

- a. Total Approved budget P 126,000.00
- b. Actual Released budget P 31,150 (MOOE) + 45,000.00 (PS)
- a. Actual Expenditure P 76,150.00

**TITLE: COMMUNITY EXTENSION PROGRAM (CEP): NUMERACY AND LITERACY ENHANCMENT PROGRAM AND IT'S IMPACT IN SELECTED SITES IN TACURONG CITY, PHILIPPINES**

### **ABSTRACT**

*AIM: Determine the impact of the community extension program in the community particularly in the direct stakeholders like in the SKSU CTE BEED Accreditation, Community leaders and seventeen (17) participants, seven (7) for Alternative Learning System for Islam group and non-Islam groups and ten (10) for Out – of- School – Youth (OSY);*

*METHODS: A quantitative and qualitative exploratory study design was used. Data collected from the descriptive surveys like AACUP Accreditation surveys, QCE extension survey and pre-test and post-test results for the participants. The semi – structured interview among the selected participants using purposive sampling for quantitative data are used for the social and economic impact. Quantitative data were analyzed using the Creswell (2013) analysis approach.*

*FINDINGS: The findings are;*

*CONCLUSION:*

### **I. Rationale**

*In Sultan Kudarat State University (SKSU), since program accreditation was advocated in 2007 the extension services of the College of Teacher Education (CTE) have been steadily active. True its mandate of providing progressive leadership in its areas of specialization, it desires to contribute to the community in facilitating the delivery of knowledge and skills mainly to the underserved communities. The Extension Services of the College of Teacher Education (CTE) of Sultan Kudarat State University had been very active. True to its mandate of providing progressive leadership in areas of extension, it desires to contribute to the community in facilitating the delivery of knowledge and skills to deprived clientele. With its pool of competent and service-oriented faculty, it is committed to serve off-campus according to the available expertise within and the assessed needs of the target beneficiaries. Usually, the capacity to provide formal instruction to learners particularly on basic education comes as the most convenient service the college can readily extend. As the alternative learning system (ALS) is one among DepEd priority programs, the CTE finds it practical to engage on it. Given the supportive and facilitating role of the department, the implementers thought of forging an agreement with the latter to exercise the institutional function of extension. While Barangay Población of the city hosts one of the poor communities known as Islamic Center wherein identified ALS learners reside, it was then considered very suitable for the deal. In addition, Barangay New Isabela was pegged to have plenty of out-of-school children based on school data. Since there was an apparent need to undertake instructional enhancement among ALS and out-of-school youth, the implementers took the challenge of responding to the instructional needs of these young learners. thus, the proposal to carry out a literacy and numeracy enhancement program. As the alternative learning system (ALS) is one of the Department of Education (DepEd) priority programs nowadays, the CTE extension workers found it practical to engagement to engage on it. Given the supportive and facilitating role of the university, the implementers thought of foregoing an agreement with the latter to exercise the institutional function of extension. While Barangay población particularly in Purok Islamic center and Purok 11 as shown in Figure 1.a-b of the deprived communities known as “Islamic Center” and ‘Purok 11’ where some ALS learners live, thus it was considered very appropriate for the activity to be carried out therein. Moreover, Barangay Isabela as shown in Figure 1.c was pegged to have many out-of-school (OSY) based on school data. Considering that there was apparent need to embark*

on learning enhancement among these ALS and OSY, the faculty implementers took the challenge in responding to the educational needs of these learners through a modest literacy and numeracy program. Equally, as research and extension activities are not disjoint, hence the study. Mojares, Compasivo & Panganiban (2020) discuss that the OSY Learners are elementary graduates with children in the elementary level, most of them also are farmers and vendors with no other income and no other skills. However, most of them also do not have idea of what skill to have and training to attend to improve their current situation. Further, the important issues emerged as basis for intervention in education for out of school youth (OSY) to finish high school or of technical vocational training to acquire competency needed by the industry and lastly the provision of livelihood trainings for female adults to start a business even at home. In that case, proponents are only for the starting up in the numeracy and literacy as to bridge the OSY participants in going to college or technical/vocational trainings.



Figure 1.a. The Islamic Center, Bo. Poblacion, Tacurong City    Figure 1.b Purok 11, Bo. Poblacion, Tacurong City    Figure 1.c. Bo. New Isabela, Tacurong

City

The Figures 1.a-c described the locale of the study where the ALS and OSY Learners or participants live.

Therefore the proponents are only concentrated on the literacy and enhancement program for the Muslim, Non-Muslim ALS Learners and OSY Learners. Medina(2019) reiterated that the community engagements of SUCs generally were its four plus one-function namely instruction, production, and internationalization but it was found out that the heart of community engagement is research and extension. Further, there were issues and challenges identified in conducting research and extension, relevant to the attainment of community engagement. Lastly, Medina (2019) point out that SUCs were socially and culturally-responsible in conducting its research and extension initiatives. That's the reason why the proponents as a faculty in the Sultan Kudarat State University, a premiere State Universities and Colleges (SUCs) in Region twelve(12) do the mandates in conducting research and extensions particularly the numeracy and literacy enhancement program.

## I. Review of Literature

Historically, the extension services in the country have been in practice since the Spanish era and it was recognized as a national system only in 1952 (Gonzales & Maghamil, 2009). It was also indicated that a community-based approach made its significant application relative to extension works in the 1970's. The community development work was facilitated by the Department of Local Government and Community Development (now DILG) which acted as the coordinating body. In the 1980s, non-government organizations (NGOs) started and participated as acceptable channels for direct assistance.

Extension services is a core function of the Philippine State Universities and Colleges as to deliver the unique services that SUC's only have like education specialist, engineers, agriculturist, accountants and technical specialist in all aspect of human needs that the societies imparting in a communities where the other services left behind. According to the study of Corpuz (2000), the respondent- beneficiaries believed that the extension services of Technological Institute of the Philippines (TIP)-Manila has four finding these are (i) majority of the respondents are 41-50 years of age most of them are women, more than one-half are married and self-employed all of them are earning below P15,000 pesos per month, most of them have one up to four family members and most of them have stayed for more than 41 years in the barangay; (ii) extension services contributed well in their social development; (iii) watching movies and decrease in crime rate are the economic and social effects of the extension services on the lifestyle of the beneficiaries; and (iv) extending financial assistance to small-scale business enterprises was the primary need of the respondents. The intervening factors of the extension services give a high regards or impact to the target communities, which vary on the pre-survey that every extension services that have been conducted prior to the beginning of the extension services, there are instances that in the form of services like non formal education as the extension's main purpose like the Southern Leyte State University. Arong and Arong (2014), stated on their study that extension services cover the community needs, development of sustainability and self-reliance, people's opportunity to become productive particularly the literacy for children and capability building for adults in Mahayahay, Sogod, Southern Leyte for the 300 respondents. In the other aspect of community extensions like the environment status quo of a certain place like the study of Lubos (2010) of Bukidnon State University, he told on the degradation of

the mountains is caused by human activities such as land clearing, slash and burn method for expanding crop plantation, urbanization, firewood consumption, over collection of moss plant materials of horticulture, landscaping and other commercial purposes. The increasing population of a certain community affects the socio-economic cycles that create depletion of natural resources; the human resources of a certain state university will be the rescuer for the sake of balancing the law of nature and human as one of the extension services that could be offered. Lubos and Japos (2010) cited that the University-based translational research is effective in greater utilization of research finding in increasing community awareness, enriching content of instruction, enhancing pedagogy of biodiversity education, generating local legislation on river conservation and promoting biodiversity research in higher education.

In 2016, the Commission on Higher Education issued CMO No. 52, s. 2016 to provide competition-driven grants or assistance for their competent faculty members who wants to engage in extension works. Considering that universities served as producers of knowledge or hubs of innovations, they are in the position to partner with the communities, industries or businesses in facilitating transfer of knowledge and technology to development areas particularly affecting communities. This mechanism prompted many extension activities or community engagements to be organized among Higher Education Institutions (HEIs) in the country. In the General Appropriations Act (GAA) is defined as an inherent function of institution of higher learning with the aim of initiating, catalyzing, and sustaining the development of various communities, using their experience and available resources. In his study, Medina (2018) pointed out that other higher education institutions today have encouraged a transformed style of relationship between the academe and the client community. Advocates would often refer to it as "engagement". However, not all academic institutions are swiftly able to develop these engagements with the public. Hence, an assessment of their competence to address the apparent weaknesses needs to be done to effectively leap into such endeavor in the future. Also some liberal private HEIs even have extension activities which they dubbed as "outreach" programs while others regarded it as corporate social responsibility (CSR). In his CSR study at a Catholic University, Ramel (2013) mentioned that academic programs should "empower individuals, liberate the mind from ignorance, cultivate social responsibility, inquiry and intellectual powers, engage students and foster civic engagement and social responsibility in integrative learning." Basically, the intent of CSR is the same as the extension services of SUCs which proceeded to community or stakeholders' transformation. The assessment of a certain community will give the extension research a great help in determining the intervening factors such as the Herman (2004) studies that the families encountered problems which were socio-economic in nature and that potable water sources, multi-purpose center, and other amenities were the basic facilities needed by the community, which the local officials particularly the Barangay officials should address. In their study given an emphasis on the collaboration of the results of the extension research on the direct people who will be the one to give an immediate address. In the business side where mostly of Filipinos also caught these as one of the major source of income, the handling of small scale business need a basic concepts of skills on managing small businesses. Meanwhile, Betonio (2014) reported that extension services could determine the entrepreneurial competencies of the SME operators. Accordingly, a high or moderate competencies in terms of time management skills, financial management skills, marketing management skills and technical skills, so the moderate one need extension program. The concerned people that can hold extension services should be impart in the educational processes of every individual, in order to enhance his capabilities in the extension services. Lao(2009) wrote that there is a high level of sense of community, involvement in extension program among the students of the concerned schools The Philippines is agricultural country where the main source of income of the main population goes on the tilling of vast idle land, planting and harvesting major crops that need in the human consumption of almost 100 million Filipinos all over country. Further, it is also the main concerned of major government agencies and also the non-government agencies, mostly of the agriculture scientist are in the academe particularly in the Higher Education Institutions, this is one way of extending their precious services. The increasing young population of the Philippines strikes the different angles particularly the different diversities of the Filipinos particularly in the education processes which the main agency that cater this basic education is the Department of Education. Due huge number of learners that attached to the diversified culture of the community their times that learning could be hampered due to some technicalities in the process of imparting the knowledge, skills and values of the 21<sup>st</sup> century education. In his study, Sencil (2009) told that ALS implementation in the Maguindanaon community found out that the community itself do not regularly participate in the program because of (i) strong religious influence of Islamic groups or other sectors to support only a purely culture-based program; (2) the DepEd's premature turnover of the program to the municipal local government units results to limited technical and financial assistance and; (3) the scarce human and financial resources of the District Department of Education leading to limited promotions, inadequate support for the conceptualization of the modules and insufficient trainings fort the community. Ollerenshaw, A. (2012) describe a community extension program can enhance and promote the awareness of literacy and numeracy in young children with the support of committed educational and community partners. Fikrat-Wevers, Steensel & Arends (2021) investigate effects of family literacy programs on the emergent literacy skills of children from low socioeconomic status families (0–6) and to establish which program, sample, study, and measurement characteristics moderate program effects that children benefit from targeted programs that focus on a limited set of activities and skills and that are

restricted to one (training) context. Hence the targeted communities are belong to the low level income, in fact the participants are mostly working in the public market which the place is located. Through enhancement program of SKSU the participants are willing to participate in the said community extension program. Conducting an early numeracy and literacy enhancement program to those OSY and ALS Learners who seldom to interact with the formal education can caused an illiterate and non-numerical through community extension program it can help the ALS and OSY Learners to cope up the basic knowledge. Korat, O., et.al. (2017) the efficacy of an early literacy programmed in enhancing immigrant children's phonological awareness (PA) and print knowledge, including transferring learning to numeracy that there was a greater improvement in the numeracy side. Further, this can a starting point for the readiness of ALS and OSY Learners to be ready in the school based set up. In Figure 1.b a picture of one of a authors, who introduce the concept of set theory as based on the teacher-made module to the two(2) non-Muslim ALS Learners establishing a phonological awareness (PA) to the said participants. The different set up of community extension programs varied in different location and participants which can enhance the academic and non-academic performances among the direct and indirect stakeholders. Amparado & Colonia(2020) conducted a extension services in partner communities addresses the fourth function of a university: community extension. Further, they explained that the essential for the university to provide opportunities of learning and assistance to residents in the community especially those who has no access to education or work opportunities. Mostly they reiterated that the lessons learned by students in the classroom and the knowledge and skills of teachers and non-teaching staff should cascade to partner communities. That's the reason, the Sultan Kudarat State University (SKSU) , College of Teacher Education (CTE) pursued and conducted this community extension program despite of limited project. Salazar (2020) of Camarines Sur Polytechnic College revealed that the level of program outputs of the community extension services in terms of skills training, health education, computer literacy, advocacy programs and livelihood programs were satisfactory. Moreover, the economic and social impacts of extension services were likewise rated as satisfactory. Hence the program outputs were also determined in relationship to its social and economic impact. Erno (2021) revealed that a community extension program (CEP) should enhanced and strengthened the potential, knowledge and marketing skills of the beneficiaries and there should be a monitoring and evaluation to be conducted to ensure the effectiveness of the CEP implemented. The researcher-implementers insured the CEPs success in both out-of-school youth (OSY) and Alternative Learning System (ALS) learners in some Barangays of Tacurong City. Mojares, Compasivo & Panganiban (2020) explained that through their CEP -there Community Based Monitor System (CBMS) they conducted successfully the education for out of school youth (OSY) to finish high school or of technical vocational training to acquire competency needed by the industry and the provision of livelihood trainings for female adults to start a business even at home. Morales, et...al (2021) emphasized that having a CEP in a crowded area like they have done, the Edukasyon sa Kalye (ESK) was launched and became the brainchild of the Punong Barangay to enhance the kid's motivation to study and learn. Further, they promoted informal learning systems, such as self-learning and independent study programs, especially those that address community needs. In this case also the researcher-implementers encountered a ALS Muslim learners which the direct beneficiaries located at Islamic Center one of the purok under the Barangay Poblacion. Aguanta & Intong (2015) conducted a CEP-Madrasah Sa Basak (MSB), a community-based and participatory educational campaign for rice production, is an extension program of Mindanao State University (MSU) and Philippine Rice Research Institute (PhilRice). Further, this study was conducted to evaluate the MSB particularly its effectiveness in terms of Meranao rice farmers' awareness, knowledge, adoption of MSB practices and productivity (AKAP) and identify the farmer-related and MSB-related factors that affect the effectiveness of the MSB program. As the effectiveness, the MSB program is effective when implementing strategies integrate the Islamic principles using group and flexible curriculum to Meranao rice farmers who have bigger farms and are provided with farm inputs. To date, extension service is one of the mandated functions of all public higher educational institutions (PHEIs) in the Philippines aside from instruction and research. Republic Act 7722, otherwise known as the Higher Education Act of 1994, mandates institutions of higher learning like state universities and colleges (SUCs) to respond to the call for societal transformation to serve the poorest of the poor, the less privileged, the deprived and the oppressed. In its own Charter, SKSU is directed to 'provide advanced instruction and professional training in science and technology, agriculture, fisheries, education and other relevant fields of study'. Likewise it is required to undertake research and extension services (Section 2, RA 9966).

Generally, results indicated that extent of impact ranged from moderate improvement in community knowledge, attitude, and lifestyle to improved long-term outcomes after the completion of any extension program. Constraint on best outcome is often due to the fact that faculty implementers are preoccupied with heavy academic loads while doing extension works. Typically, it ended up on piloting stage as no personnel would stay in the villages to sustain the efforts. According to Llenares & Deocarlis (2018) that the extension program of HEIs have varying delivery modes for example utilizing students to help local groups and other ways that involve faculty, staff program. They emphasized that to attend community development in the form of "educational cohorts, social service, public health, and livelihood and technical training, consultations and direct application of R& D output." Daquis et al. (2016) cited that most common examples of extension activities are those dealing with livelihood, health promotion, and computer literacy programs. Remarkably, community extension services are not simply limited to the needs of community

but to the vision and mission of the institution. It also extends to the opportunities to make education accessible to the poor and to pursue a socially relevant education addressed to the young, poor and the young at risk, and to promote the Filipino value of unity by ensuring justice and human dignity (Dilao, n.d.).

## **II. Objectives**

The objectives are subdivided into three (3) major part, where in part A contains the project objectives, part B are the direct accomplishment per major stakeholders and part C for the perceptions of the participants for the said study;

A. What are the percentage mean of the following ?

i. Develop teaching modules in numeracy and literacy enhancement program for ALS(Alternative Learning System) Learners and Out-of-School Youth (OSY) in selected sites of Tacurong City, Sultan Kudarat.;

ii. Undertake numeracy and literacy enhancement session among ALS and OSY Learners utilizing the developed modules;

iii. Translate the teaching modules into Maguindanaon(Mother Tongue Basic Language)

B. What is the impact of the said community extension project among;

i. Sultan Kudarat State University (SKSU) –College of Teacher Education(CTE) BEED Accreditation Survey by the AACUP;

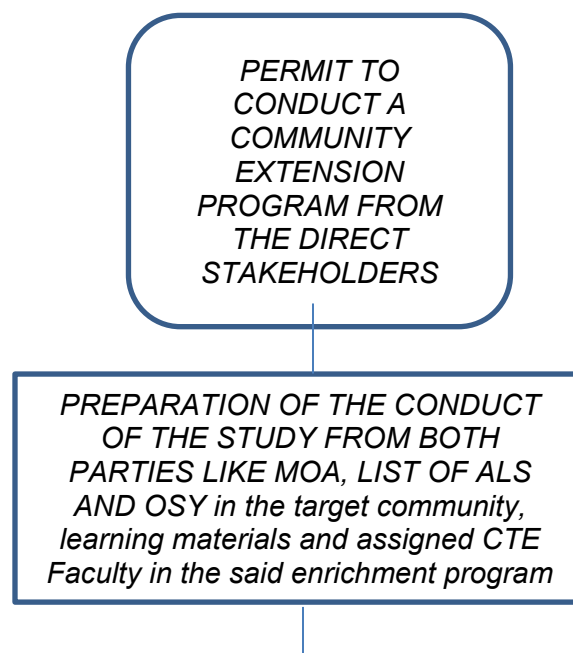
ii. Community Leaders and Co-partner agency (DEPED –ALS); and

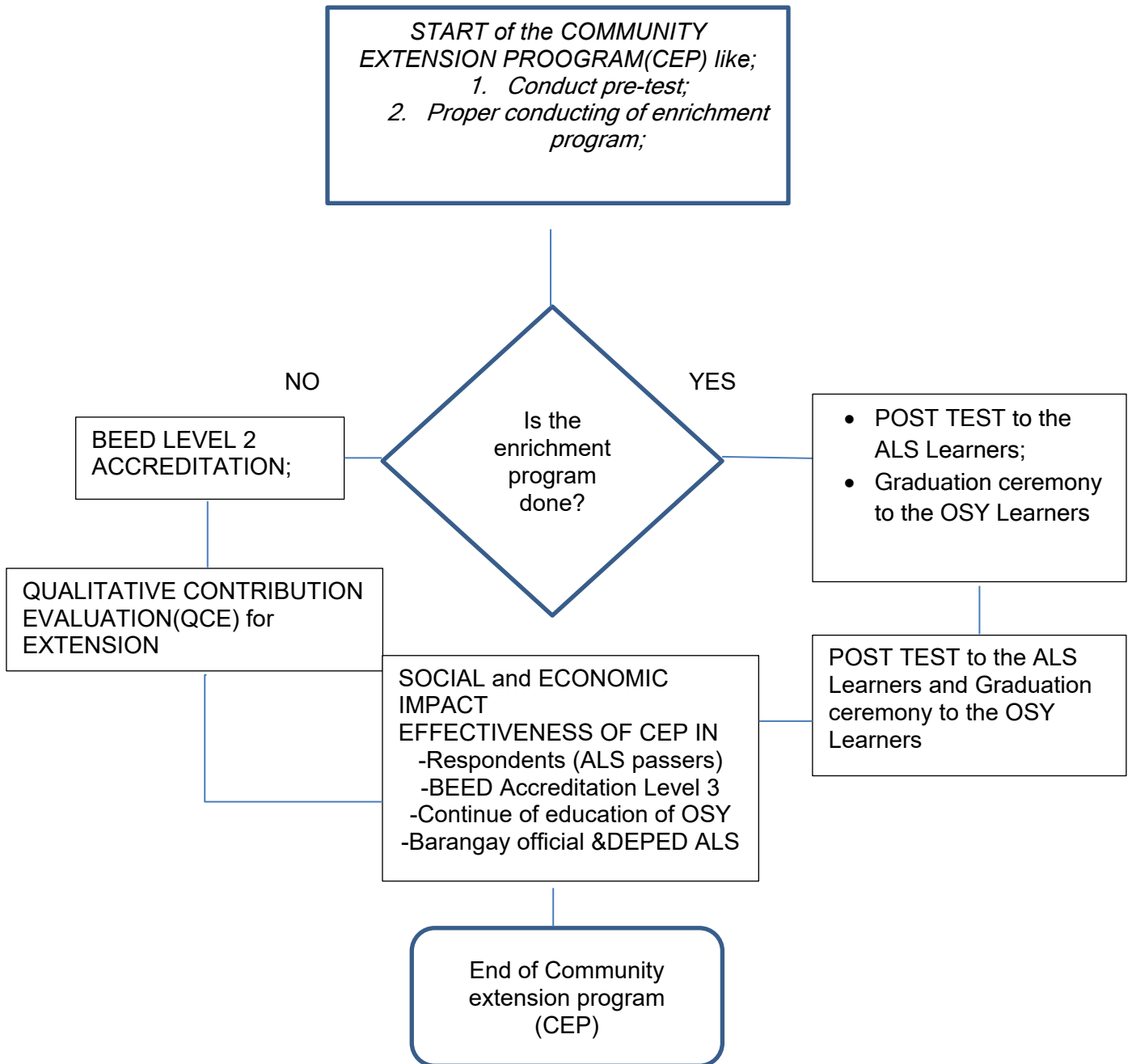
iii. Effectiveness of CEP –Numeracy and Literacy enhancement program in ALS and OSY Learners;

iv. It's impact on the economic and social impact of the OSY and ALS learners;

III. Procedure/Methodology;

The community extension study used the quantitative and qualitative methods, where the effectiveness of then said study purely used a descriptive method while the social and economic impacts used interview method. Below is the figure of the flowchart of the said study.





IV. Discussion of Results

*The CEPs Project objectives*

Table 5.1. Percentage output of the project objectives ( 100%)

a. Develop teaching modules in numeracy and literacy enhancement for ALS learners and 10 OSY in Islamic Center, Tacurong City	50%
b. Undertake numeracy and literacy enhancement session among ALS learners and OSY	100%

utilizing the developed modules	
c. Test the effectiveness of the teaching modules	100%
d. Translate the teaching modules into Tagalog, Ilongo, or Maguindanaon	0%
Weighted mean	62.50%

**The Community extension program (CEP) in LEVEL 3 phase 1 accreditation and Qualitative Contribution Evaluation (OCE) in Extension area perspectives**

**A. CEP Versus (Vs) ACCREDITATION RATING**

In the implementing the community extension program (CEP), the College of Teacher Education reaccredit the BEED program from Level 2 to Level 3 during the first quarter of academic year 2018 by the Accrediting Agency of Chartered Colleges and Universities of the Philippines (AACUP) where this community extension program (CEP) particularly this enhancement program is only CEP included in the assessment in the AACUP ACCREDITATION. The accreditors, stakeholders and the proponents, visited and assess the respondents of the study as shown in the Figure 5.1 and Figure 5.2.



**Figure 5.1.** AACUP ACCREDITATION ASSESSMENT RESULTS DURING 3<sup>rd</sup> survey visit- 1<sup>st</sup> phased of the BEED PROGRAM for LEVEL 3 on July 2018.



**Figure 5.2.** AACUP Accreditor inquired and interviewed the respondents

The community extension program (CEP) particularly the enrichment program of the proponents as major contributor during the AACUP accreditation for Level 3 in BEED category in area six (6) which is extension and community involvement.

**Table 5.2.** Rating mean scores before and after the CEP per area in AACUP technical review and board action results

AREA	Mea n	S D	Interpretation
I.VMGO	4.20	0 .81	Very Satisfactory
II.FACULTY	3.97	0 .20	Satisfactory
III.CURRICULU M_INSTR	4.14	0 .01	Very Satisfactory
IV.SUPPORT_S TUDENT	3.63	0 .83	Satisfactory
V.RESEARCH	3.57	0 .64	Satisfactory

<b>VI.EXTENSION</b>	<b>3.83</b>	<b>0</b>	<b>Satisfactory</b>
		<b>.35</b>	
VII. LIBRARY	3.39	0	Fair
		.01	
VIII. FACILITIES	3.36	0	Fair
		.81	
IX. LABORATORIES	3.86	0	Satisfactory
		.02	
X. ADMIN	4.12	0	Very
		.02	Satisfactory
<b>Mean</b>	<b>3.87</b>	<b>0</b>	<b>Satisfactory</b>
		<b>.37</b>	

Table 5.2 revealed the important contribution of the CEP in the accreditation of the AACUP accreditor in the BEED program of College of Teacher Education (CTE) ACCESS Campus, Sultan Kudarat State University, the increase in the Mean of area six(6) particularly the extension and community involvement as shown in the Standard Deviation (SD) equals 0.35 that there is a change from the previous rating of the accreditation signified that the conducted CEP is successfully and effective in the part of the SKSU accreditation in the BEED program of College of Teacher Education (CTE).

#### B. Community extension program (CEP) versus Qualitative Contribution Evaluation(QCE)

The main respondents of the QCE evaluation survey are the Barangay chairperson of the two(2) barangays of Tacurong City like Barangay captain Llavore and Casador of Brgy Poblacion and Brgy New Isabela as shown in Figure 5.3 and Figure 5.4 respectively. The main partner in this CEP is the DepED – ALS Division of Tacurong City as also shown in Figure 5.5.



**Figure 5.3.** The researcher with Brgy. Captain Llavore of Brgy. Poblacion, Tacurong City.



**Figure 5.4.** The researcher with Brgy. Captain Casador of Brgy. New Isabela, Tacurong City.



**Figure 5.5.** The Tacurong City DepED –ALS Division officials with the researcher.

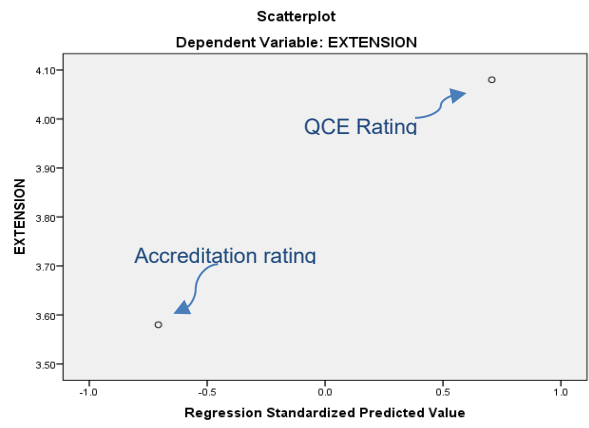
Table 5.3. Level of QCE (Qualitative Contributions Evaluation) scores in Extension area for the CEP implementers.

QCE's Key statements	Mean	SD	Interpretation
1.) Involve students, colleague's, parents in planning, implementing, monitoring and evaluating quality standards and plans;	4.40	0.55	Very Satisfactory
2.) Involves colleagues and students in the identification of partners for development activities in the community;	4.80	0.45	Outstanding
3.) Link the community to NGOs, GOs and line agencies;	4.60	0.55	Outstanding
4.) Develops community support system through the alliance for sustaining effective	4.60	0.55	Outstanding

learning and working environment;			
5.) Works with members of the faculty, staff and community to identify and implement effective extension processes.	4.60	0.55	Outstanding
Mean	4.60	0.53	Outstanding

*The Community Extension Program (CEP) ; Enhancement Program Vs. AACUP Rating & QCEs*

The rating value of the CEP affect the results of the AACUP rating and OCEs surveys which rated with the direct stakeholders of the said study . Using the SPSS where the authors used the regression analysis try to determine the dependency of the CEPs into two (2) independent variables ( Accreditation weighted mean , OCE Survey rating). Figure 5.6, revealed that there is a positive value < (+1) it means that the CEP is directly proportion to the QCE rating which is also demonstrate the researchers are always visit and follow up the CEPs in the aid barangays. The Accreditation rating is not directly proportion >(-1) in concerned with the CEPs, it's shown that the extension is part and parcel of the 10 key areas of the accreditation variables. The CEP is nothing to do with the results from the accreditation rating value but it has a big role in the accreditation process during the 1<sup>st</sup> visit on July 2018. The College of Teacher Education (CTE) of Sultan Kudarat State University (SKSU) is directly affects the dependent and the series of independent variables which need to address by the faculty as a researchers and mostly the dean, administrators and direct stakeholders.



**Figure 5.6.** The Regression Analysis plot of Extension versus {AACUP rating, QCE KS's)

*The Effectiveness of the Community Extension Program (CEP): Numeracy and Literacy enhancement program*



**Figure 5.7.** The ALS Learners in the Islamic center, brgy. Poblacion, Tacurong City in their numeracy program.



**Figure 5.8.** The ALS Learners in the Islamic center, brgy. Poblacion, Tacurong City in their literacy program



**Figure 5.9.** The Out of school youths (OSYs) in the Brgy. New Isabela during their literacy and numeracy enhancement program.

### A. On Learning Achievements

Table 5.4 shows the learning achievements of the ALS and OSY participants as shown in Figure 5. (7-9) in English and Mathematics lessons as result of literacy and numeracy enhancement program. Pretest, posttest, gain scores as well as differences area presented and analyzed through t-test. Mean Gain is defined as the average differences between the posttest and pretest scores. As indicated, the learning achievements in literacy of both groups relatively increase at certain level from pretest to posttest, that is, 13.83 to 17.67 and 13.00 to 21.10 for ALS and OSY, respectively. Closer analysis of these data, however, revealed that trend for each group is opposite as the high score during pretest tends to lower in the posttest, whereas the low in the pretest becomes higher in the posttest. Contrary, the pattern of scores in numeracy is different yet reliable because both achievements in the pretest of both groups consistently improve in the posttest. Generally, gains in scores are all positive across groups and programs indicative that changes in learning achievements possibly occur.

**Table 5.4 t-test Analysis on the Literacy and Numeracy Enhancement Results**

Group	N	Pretest Mean Scores	Posttest Mean Scores	Mean Gain	Df	t-stat	t-critical @ 0.05
<b>LITERACY</b>							
<b>ALS</b>	6	13.83	17.67	3.83	5	4.84*	2.57
<b>OSY</b>	10	13.00	21.10	8.10	9	5.71*	2.26
t-stat		0.33	1.59	2.19*			
<b>NUMERACY</b>							
<b>ALS</b>	6	11.67	15.50	3.83	5	3.66*	2.57
<b>OSY</b>	10	13.30	20.40	7.10	9	5.34*	2.26
t-critical @0.05		2.14	2.14	2.14	14		

Note: \*- Significant

### A. Differences of Learning Achievements in Literacy and Numeracy

Data on the same table indicates that the learners' literacy achievement in the pretest and posttest are significantly the same for both ALS and OSY groups ( $t = 0.33 < t_{tab[0.05,14]} = 2.14$ ;  $t = 1.59 < t_{tab[0.05,14]} = 2.14$ ). It can be inferred that both groups have observable increase in learning level after the enhancement program was conducted. This is evident as there is significant difference between the pretest and posttest results ( $t = 4.84 > t_{tab[0.05,5]} = 2.57$ ;  $t = 5.71 > t_{tab[0.05,9]} = 2.26$ ). The finding is implicit and difficult to dispute that no learning takes place. The difference between pretest and posttest scores that is statistically significant is enough proof to offer. Comparing the main gain scores of the two groups shows that OSY had significantly improved their score over the ALS learners ( $t = 2.19 > t_{tab[0.05,14]} = 2.14$ ). From these data, the researcher-implementers concluded that the enhancement activity helped the learners to improve their literacy level whether the participants are OSY or ALS. In other words, the Literacy Enhancement program under the Community Extension Program (CEP) is a positive intervention in assisting deprived learners in the community. Moreover, the learners' numeracy achievement level in the pretest are the same for both ALS and OSY groups ( $t = 0.58 < t_{tab[0.05,14]} = 2.14$ ). On the contrary, the OSY has relatively higher score than the ALS group in the posttest ( $t = 2.45 > t_{tab[0.05,14]} = 2.14$ ). It can be established further that both groups have evident learning after the numeracy enhancement program was introduced. It is indicated by a significant difference in the pretest and posttest results ( $t = 3.66 > t_{tab[0.05,5]} = 2.57$ ;  $t = 5.34 > t_{tab[0.05,9]} = 2.26$ ). However, the mean gain of the 2 groups shows that both groups of OSY and ALS have the same amount of learning ( $t = 1.71 < t_{tab[0.05,14]} = 2.14$ ). Generally, the data provides inference that the enhancement activity provided opportunity for the learners to improve their numeracy level whether the participant is an OSY or ALS. It suggests then that the Numeracy Enhancement Program under the Community Extension Program (CEP) of researcher-implementers is a valid mechanism that can help other beneficiaries of similar characteristics.

Moreover, the CEP of the researcher-implementers are very effective in terms of the learning achievement scores in both OSY and ALS learners in the community despite of limited time and location where the CEP conducted. Baladjay, et. . . , al (2020) recommended that there is a need of continuation of the program to fully equip the OSY (out-of-school) youth on their different endeavors as specified with

different objectives per extension program. Further, Ruiz et., al(2019) reiterated that with ALS learners facing various family and financial challenges, it becomes difficult for them to pursue their studies. However, the perception of the learners with the ALS Program is positive and they are eager to finish the program to support their families and achieve their dreams.

### The Social and Economic impact of the beneficiaries of the community extension program(CEP)



**Figure 5.10** The Islamic ALS learning center in their series of activities in the numeracy enhancement program using the Arts & Math Concepts



**Figure 5.11** The Community based education is very effective as to observe the real situation in the community in purok 11, brgy. Poblacion, Tacurong City



**Figure 5.12.** The Brgy. Chairman of Brgy New Isabela as he delivers the importance of education, even if they are OSY in the community.

On top of these indications, the researcher-implementers recognized that the experiences they have with the two (2) communities in the city are extensive and very valuable as shown in Figure 5.10-5.12. Observing the ALS learners and OSY's enthusiasm to learn despite the unfriendly environment motivates them to keep coming back in the communities every week. They felt fulfillment and pleasure in serving these unfortunate individuals who were deprived of opportunities available to typical students. What is more essential was the fact that the implementers learned to associate with the community leaders, the barangay officials and the beneficiaries themselves. As educators who are used to formal setting, they were able to appreciate the difficulties and realities of learning under the difficulties and realities of learning under adverse situation as well as life among underserved members of the society. The forgoing findings are indications that the community extension program(CEP) of SKSU-CTE is relevant and working. Despite its narrow scope, the initiative tends to show an affirmative outcome. As DepEd ALS program needs a design improvement and higher OSY participation according to World Bank experts (Tomacruz, 2018), the completed enhancement initiative is still laudable to some extent. After the community extension program (CEP) conducted in the two (2) Barangays of Tacurong City, of SKSU-CTE. The OSY and ALS learners, the direct beneficiaries of the CEP continue on their usual works like mostly of the OSY continue in their schooling. The two (2) ALS beneficiaries out of six(6) ALS learners of the community extension program (CEP) took Alternative Learning System's Accreditation and Equivalency (A & E) test. The two(2) ALS learners passed the A & E test with the rating value of 69.38 % for examinee no. 015598 and 73.60% for examinee no. 095799 as shown in Table 5.5. Further, in DepEd memorandum no. 76 series of 2018, stated that the change in passing score of the 2016 Accreditation and Equivalency (A&E) Test conducted in November 2017 from 75% to the generally accepted passing score of 60%. In this manner, the two(2) ALS learners, the direct beneficiaries of the CEP are eligible for entry to Junior High School. As of now, these two ALS learners are currently enrolled in Tacurong National High School.

**Table 5.5. Rating(%) results of A & E Test**

Learning strand	Percentage(%) correct response	
	Examinee # 095799	Examinee # 015598
<b>Communication skills (CS) –Literacy</b>	<b>68.00</b>	<b>75.00</b>
<b>Critical thinking and problem solving(CTPS)-Numeracy</b>	<b>68.00</b>	<b>65.00</b>
Sustainable use of resources and productivity (SURP)	76.00	77.50
Development of self and a sense of community (DSSC)	93.75	57.69
Expanding one's world vision(EWV)	77.78	64.29
Weighted mean> 60%	73.60	69.38%

Ruiz et., al(2019) emphasized on a continued partnership between the government and the academe and the learning environment of the learners should be improved. In the indications of Table 5.5 these ALS learners improve their literacy and numeracy level during the conduct of CEP of SKSU-CTE.

## V. Conclusion

From the preceding analysis and discussion of results, these essential conclusions are drawn:

1. The Community Extension Program(CEP) of College of Teacher Education (CTE) of Sultan Kudarat State University (SKSU) delivered a 62.5 % objectives, which the remaining percentage is intended for the translation of the develop numeracy module into a Mother Tongue Basic Language (MTBL) –Maguindanaon version. Further, the development of literacy module that is used during the CEP is not yet develop;
2. The most important impact of CEP in the accreditation of BEED program, one of the courses offered by the CTE, SKSU. The CEP is the only on-going extension program that is included during the BEED Level 3 accreditation by the AACUP and resulted a difference of '0.5' scores from the previous rating and interpreted as 'satisfactory' by the accreditors.
3. Same with the impact level of the CEP in the community level, together with the Barangay leaders and DepED- ALS representatives regarding the CEP conducted by the implementer-researchers of CTE, SKSU that the CEP rated as '4.60'- outstanding to the direct stakeholders.
4. Using the regression analysis, the CEP have a contributory factors in the accreditation and it can affect the standing results of the accreditation rating while in the community level it's has a positive impact in every detailed of the CEP.
5. The CEP, particularly the literacy and enhancement program was effective as there were evident changes in the learning achievements. Regardless of whatever the learner was ALS or OSY, it was well settled that the posttest mean scores were relatively higher than the pretest mean scores. ( $t = 3.66 > t_{tab[.05,5]} = 2.57$  ;  $t = 5.34 > t_{tab[.05]} = 2.26$ ). However, the learning achievements of ALS and OSY participants have opposite trend in literacy, while these were normal or consistent in numeracy.
6. Lastly, among the six(6) ALS learners as the participants in these CEP, two(2) of them passed the Alternative Learning System Accreditation and Equivalency (A & E test) with a weighted mean 73.60 % and 69.38 % respectively. The two (2) major learning strand of the A& E test focus on the numeracy and literacy level, which the CEP given to the A& E passers, before they taken the exam. Economic and Social aspect of the CEP participants are greatly change in this manner.
7. Indeed, the literacy and numeracy enhancement program promoted the professional and social growth of the implementers.

## VI. Recommendations

Recommendations are based on per conclusions;

1. The aspect of MTBL (Mother Tongue Basic Language (MTBL) translation particularly in the mathematics and English languages translated to the Maginduanon language should be in a separate project in dealing with this aspect need an linguistic experts to initiate and stand with this project. The utilized instructional materials like the modules and assessment tools may be improved so as to meet the needs of bigger and more diverse group.
2. More extension program should implement by the College which participated by the teachers, students or even the administrators for having an outstanding level in this category : extension and have a higher scores in accreditation level.
3. It is suggested that the activity be sustained utilizing a larger group of beneficiaries..
4. As suggested that more extensions should be taken so that it can have a positive results to become very satisfactory. Extensions is the product of the research, more extension means more research to be conducted by the HEIs. Further the CEP is very recommendable in the part of the community which is the direct beneficiaries of most extension program conducted by some HEIs.
5. It can also replicated in other underserved communities that are duly identified by the host community. More poor and under privilege communities should be cater with a CEP as their immediate needs to be taken.
6. More ALS learners should passed the A & E test and there should be a ALS version to those OSY that is affected by the K 12 curriculum. Mostly OSY participants of the CEP are High school drop outs in the said community.

## VII. Acknowledgement

The authors would like to recognized SKSU RD & E Division for granting funds so that the program and study would be fulfilled. Also our gratitude goes to the Office of the President that allowed the activity for implementation. We are likewise indebted to our partners, namely : DepEd ALS of Tacurong City Division and the Barangay Poblacion and Barangay New Isabela, Tacurong City, Sultan Kudarat, Philippines.

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*Note: Adapted from PCAARRD NAARRDS Form No. 2*

During these two (2) years in the making, this extension-based is much affect the author's point of reference, in terms of strategies in delivering a lesson for the ALS learners and must specially a learner in a special way to adopt changes in the learning and teaching processes

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Arciosa, R. M., Perfecio, J., & Cerado, E. C. (2022). *Community extension: Literacy and numeracy enhancement program for alternative learning system and out-of-school youth learners*. *ASEAN Journal for Science Education*, 1(2), 75-80.

## POST COVID 19 PANDEMIC ERA

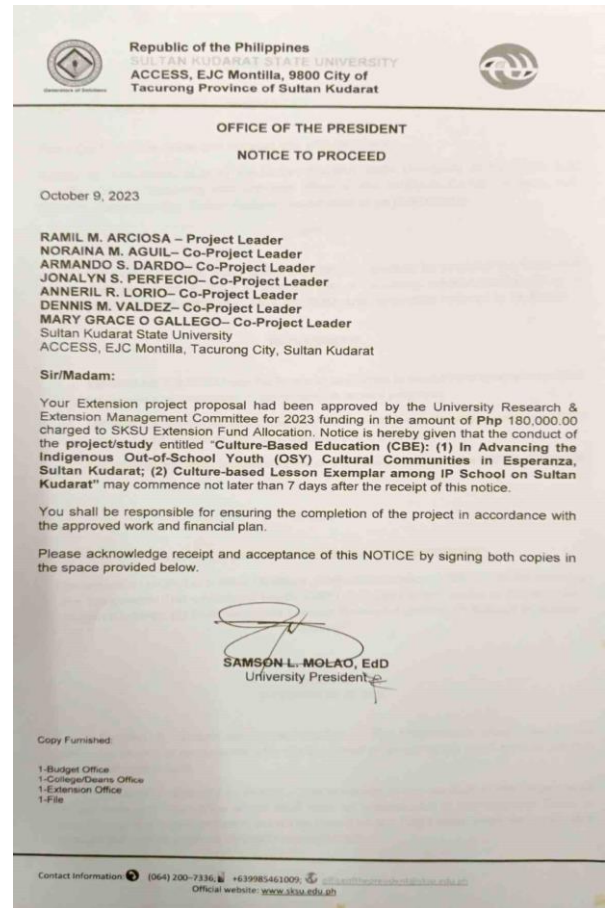
in this part, the author has given another change for conducting an extension project, but this time in the IPED schools which focuses on the culture-based lesson exemplar, not only in the mathematics side, but it covers the other major disciplines that anchored in the majoring offered by the College of Teacher education. Here are the sample document of the one(1) year extension project of the author.

1. Project Title: **DEVELOPMENT OF CULTURE-BASED INSTRUCTIONS (CBI) & EMPOWERING INDIGENOUS PEOPLE SCHOOL YOUTH (IPSY) AMONG IP SCHOOLS IN DEPED ESPERANZA, SULTAN KUDARAT DIVISION**
2. Researcher(s): **Ramil M. Arciosa et.al**  
 Project Leader: **Ramil M. Arciosa** –  
 Project Members: (1) **Norajisa M. Aguil**; (2) **Armando Dardo**; (3) **Jonalyn Perfecto**; (4) **Anandil R. Lorio**; (5) **Dennis M. Valdez**; (5) **Mary Grace O. Gallego**; (8) **Gracelyn Ataya**; (7) **Evora Dioneza**; (8) **Leizel Meriales**; (9) **April Lechonshito**; (10) **Jing Reyes**; (11) **Lovelyn Lenillo**; (12)
3. Implementing Agency/Station
  - a. Lead Agency: **Sultan Kudarat State University-College of Teacher Education(CTE), Access Campus**
  - b. Cooperating Agency: **Esperanza – Local Government Unit(LGU), Sultan Kudarat, Philippines**
  - c. Project Site(s): **Broy Uoigis & Broy Manirub Sultan Kudarat**
4. Funding Agency: **SKSU VPRE P 150,000.00**
5. Duration (Definite Dates)
  - a. Date Started : **February 2024**
  - b. Date Ended : **February 2025**
6. Financial Reports
  - a. Total Approved budget **-Php 150,000.00**

Item	2024-2025 (Actual in Php)	Transportation / Accommodations	Documentation	Others expenses	TOTAL
Personal Services (PS)					
Project Leader – 3,500/mo. x 12 months	P 42,000.00				P 72,000.00
Component Leaders – 2,500/mo. x 12	P 30,000.00				
Maintenance and Other Operating Expenses (MODE)		P 30.00	P 15.00	P 33,000.00	P 78,000.00
		0.00	0.00	Scope Publication & International Presentation Fees	
Equipment / Capital Outlay					
<b>TOTAL</b>	<b>P 54,000.00</b>	<b>P 30.00</b>	<b>P 15.00</b>	<b>P 51,000.00</b>	<b>P 150,000.00</b>

- b. Actual Released budget
- c. Actual Expenditure

### 7. BUDGETARY REQUIREMENT PROPOSAL FOR FOUR(4) QUARTERS/1 YEAR



**Figure 5.2.b.** A piece of copy that the proposal has been approved as internal funded research, cover in the period of December 2023 – December 2024.

**Figure 5.2.a** The researcher new extension project proposal that covers culture-based education pedagogies and coming from the SALIKHA research project.

For almost a year, the author's conducted a major accomplishment as prescribed in the major objectives as it has been proposed here are the executive summary of my extension project.

## EXECUTIVE SUMMARY

*The different backgrounds and experiences of teaching colleagues, administrators, and other interested parties in public and private higher education institutions around the Philippines have influenced the recent evolution of the situation in the higher education sector. When trade flourished between Mindanao Island and the Jolo's archipelago in prehistoric times, the American empire established the groundwork for our current educational system in the Philippines. All young Filipinos are the focus of this kind of public education since they will ultimately shape Philippine society. In relation to Mindanao, the author's career as a teacher started and ended there, even while graduate school. When he applied for SALIKHA (Saliksik ng Manlilikha) research funds from NCCA/CHED in 2018, he demonstrated his passion for culture-based research and extension since he thought it was the best fit for young Filipinos in this era of globalization and inclusive education. As Filipino instructors in higher education, we currently need to innovate with cultural sensitivity in order to prepare future educators for the next generation of Filipinos. We have succeeded in this completely new environment. A culture-based curriculum may be the solution to all of the problems associated with these efforts in higher education. Filipino students have a strong appreciation for our intangible cultural legacy, which needs to be turned into culture-based education. Let's start with the basic foundation of education- IPED education. One of the extensions that truly matters in this matter and works on the inclusivity of education is improving Indigenous Peoples' (IPs) education peripherals—culture-based lesson exemplars in five (5) major disciplines and general discipline—by enhancing the teaching and learning processes into multidisciplinary approaches as restricted by the MATATAG Curriculum. Culture-based lesson exemplars should be included in secondary school since they enhance CTE BSED key courses like English, Filipino, Mathematics, Science, Social Studies, and MAPEH. Since each student is the main audience at this level, the general subjects taught in elementary school should coexist peacefully with each learner's diversity and inclusion.*

*As an extension leader, managing nearly fifteen (15) CTE faculty members in this one-year extension research project, which is an internal extension funded by the SKSU VPRDE. It began with the creation of a culture-based lesson exemplar in the two IP schools at Esperanza Sultan Kudarat back in the second semester of the 2023–2024 academic year. Although the work is almost finished, the most significant aspect of this extension research is that the extensionists in this group are from the College of Teacher Education (CTE) and are experts in the most relevant and practical subjects. This group is looking at the situation from a suitable perspective because they are aware of the substantial research deficit. The National Commission on Indigenous People (NCIP) Region 12 has granted these two (2) IPED schools a certificate of precondition, and as the overall team leader, I am experiencing, monitoring, and maybe analyzing the situation there. These two (2) IPED schools are two of the fifty-eight (58) IPED schools in the province of Sultan Kudarat that have been approved and recognized as valid by the NCIP and DepED Sultan Kudarat namely : Ugis Elementary School and Manirub Integrated School.*

*However, the primary issue for these seven (7) non-IP teachers out of eight personnel in UGIS ES and twenty-one (21) out of twenty-five personnel in MANIRUB IS who are not IP members is the lack of contextualization in the teaching and learning processes between the subject matter and the cultural tangible and intangible heritage. This was brought up during the assessment and needs analysis with the following summary quote: "Teaching in an IPED school is very challenging; we learned some of their beliefs and traditions." Using stratified random sampling, we discovered that the non-verbal IQ of the IP students at these two (2) IP schools—Manirub Integrated School*

and Ugis Elementary School—was primarily "below average." The system itself is affected by this extension research, which calibrates its abilities within the extension members' personal mantra as they present the pedagogical and conceptual ideas of culture-based education as initially proposed by the extension leader. In fact, Dr. Magno, a specialist in this area, was invited during the project's first quarter. Forty (40) faculty members from Sultan Kudarat State University's various campuses were chosen to attend this seminar on culture-based education; fortunately, four (5) faculty members from South Cotabato State College were also there. The Philippine Cultural Education Program (PCEP) held a national symposium on culture-based education in the second quarter, which four (4) of the sixteen (16) extension members attended. During the SKSU VPRDE university-wide presentation, the seminar participants unexpectedly produced two (2) research proposals. This extension project's domain replicates its own research and extension ideas. Sultan Kudarat State University's (SKSU) College of Teacher Education (CTE) firmly ensured a culture-based, keen clientele, in accordance with his territorial point of reference and the most recent accreditation; extension should be in line with its course offerings. The main objective of this CTE extension program is to develop culturally-based lesson exemplars and diversified instructional materials (IMs). Although the conclusion is a positive step toward the expansion objectives, is IPED education truly for IP learners given the current state of affairs in the field? Is SKSU prepared to support a new arts and culture program, specifically in the College of Teacher Education?

#### MOVs attached

1. Progress Report - 1<sup>st</sup> Quarter; Attached Appendix A – Culture-based seminar-



**Figure 5.3.a** The opening program, together with the Extension Director, Dr. Siony Brunio.



**Figure 5.3.b** The resource speaker, Dr. Orlando Magno, the Father of Culture-based Education with the participants—selected faculty from other campuses and coming from the SCSC participants.



**Figure 5.3.c** One of the participants, a IP –Teduray Faculty coming from SKSU-Bagumbayan, shared his output in the said activity.

Video : <https://youtu.be/m63nrjwKXmU>

2. Narrative Report – 2<sup>nd</sup> Quarter – PCEP Seminar by 5 Extension Members : Appendix B ( summarize Narrative report of the participants)



**Figure 5.4.a** The “Pagsasanay sa Edukasyong Pangkultura” – Visayas Cluster, sponsored by the Phil. Culture Education Program (PCEP) seminar, where the SKSU- CTE participants, sponsored the said air fare and allowance



**Figure 5.4.b** The five (5) participants as member of the extension research participated in the said seminars.

3. Progress Report - 3<sup>rd</sup> Quarter – Kultudlong Ugis & Manirub (Chapter4)- Gathering Data, Survey Need Analysis ; Video : [https://youtu.be/xVR\\_Bcey5hw](https://youtu.be/xVR_Bcey5hw)



**Figure 5.5.a.** The CTE-Extension group composes of different expertise who are in-charge of the UGIS ES



**Figure 5.5.b.** The school located at the top of the mountain range nearby at Brgy. Marguez, Esperanza Sultan Kudarat



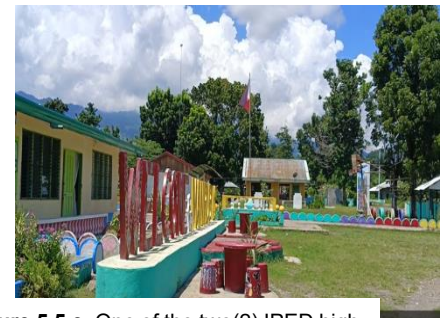
**Figure 5.5.c.** The UGIS ES personnel with a limited numbers of non-IP teachers except the OIC (Officer-in-charge) who is full blooded Teduray.



**Figure 5.5.d.** The Manirub group called "kultudlong Manirub", the second group/ members of extension project who's in-charge with the Manirub IS.



**Figure 5.5.d.** One of the deliverable output of the Extension project, developing a 'story book' as main Instructional Materials (IMs) in these two(2) IPED schools and resource materials in their Cultural Heritage Learning Center(CHLC) as required by the DepEd and IP community.



**Figure 5.5.e.** One of the two(2) IPED high schools, offers a JHS/SHS curriculum among fifteen(15) IPED schools with in the Teduray and Manobo Dulangan Indigenous Cultural Communities (ICCs) with in the parameters of UGIS and Mariwar Peak. This is a Manirub Integrated School (IS)

## TASK 5.1-5.2

**OBJECTIVES:** At the end of each task, the students should be able to

- 5.1 Make action research that applied the concept of community-based extension. Each group will choice a type of teaching strategies of the following: (i) ICT-based education; (ii) Competency-based education; (iii) game-based learning; (iv) culture-based education;
- 5.2 Based in question number 5.1, choice a community barangay probably a out-of-school learners to conduct this kind of action research

## APPENDIX A -STUDENT'S OUTPUT

**NARRATIVE REPORT IN FINAL DEMO TEACHING AS EXTENSION  
SERVICES OF 2<sup>ND</sup> YEAR BEED STUDENTS AY:****GROUP 5**

PREPARED BY:

**Dadivas, Lyndel Kate****Esteban, Rosalie****Paz, Frankyl****Sambaga, Guiraya****Samillano, Liezel****Serenio, Cherilyn****Talusan, Samantha****Twalang, Evon Pearl S.**

PREPARED TO:

**RAMIL ARCIOSA, GDCE, MAT**



Republic of the Philippines

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It was a tiring moment as we delved into the most anticipated segment of our final demo in Assessment Learning 1. The demo was pretty difficult as our Kambuniyan PaSKSULaban 2024 was approaching, and we needed to reschedule our meeting and papers. In such, Princess May Maylas, Frankyl Paz, Mark Louie Walok, Jever Fermo, Gaudemar Epine Terania, and Jasmine Daulo were assigned to draft a letter and visit the selected school—San Emmanuel Elementary School of Purok Liw-liwa, Barangay San Emmanuel, Tacurong City, Sultan Kudarat.

Afterwards, the class of BEED 2A had decided to choose participants for demo teaching, and these were Jiyah Baylon, Gaudemar Epine Terania, and Jasmine Daulo. These three demo teachers discuss the “Use of Numbers in Different Types of Fruits. In such, Jiyah Baylon started to introduce her name along with her two demo teachers, and she led the prayer “*Manalangin tayo. Salamat po, Puong Diyos na dakila sa iyong mga biyaya at mga pagpapala. Kami po ay ingatan sa lahat ng oras, kapatid ko at magulang at guro kong mahal. Amen.*” She also tailored motivational activities like a video presentation entitled “The Number Song” to catch pupils’ attention. The pupils were not familiar with the song as some of them are stuttered and stamped with each word, but they were actively participating as they followed each step.

Also, Gaudemar Epine Terania discusses numbers from 1 to 10, and then she navigates students through illustrated pictures of fruits and numbers to determine pupils’ prior knowledge about the topic. The last discussant was Jasmine Daulo, and her part was to assess pupils’ knowledge by providing comprehensive activities to evaluate their progress.

Moreover, demo teaching would not be possible without the creative and innovative minds of the following students: Frankyl Paz, Rosalie Esteban, Donnalyn Serue, Jessel Fabiana, Fhebe Ann Mojica, Lyndel Dadivas, Mark Louie Walok, Fritz Endaya, Clarence Aritalia, and Ian Juls Faderogao.



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Clarence Aritalia and Cherilyn Serenio were the photographers who captured the essence of demo teaching. With a creative eye, they expertly frame and light shots, showcasing pupils and teachers' interactions and classroom dynamics. Both have shown their talents, which was helpful for future educators to reflect on their teaching methods and pupils' participation. This task serves as documentation for action research and narrative reports.

During observations, Evon Pearl Twalang and Rosalie Esteban meticulously recorded instructional strategies, pupils' responses, and classroom environment to produce compelling action research and narrative reports on demo teaching.

Moreover, Revie Calimlim, one of the respected teachers of San Emmanuel Elementary School, gave her constructive criticism to the three demo teachers. These included their strategies and methods on how to make pupils aware of the lesson presented. The expertise and insightful feedback have been a guide to improving our strategies as future educators. Teacher Revie Calimlim's advice has been beneficial and valued.

### **Group Activities (30 minutes):**

### **Time Allocation:**

Discussion: 1 hour

Group Activities: 30 minutes

The allotted time for activity and proper discussion was one (1) hour to ensure every pupils have the opportunity to contribute, participate and learn. By means of meaningful discussion and activities they will determine each number.



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### **Reflection and Summary:**

This demo teaching has been beneficial to our personal progress as students. We've learned important skills like effective communication, dispute resolution, and leadership through teamwork. Our team promotes various perspectives, inventive problem solutions, and critical thinking. As a result, obstacles arise when coordinating timetables, managing different work styles, and dealing with unequal contributions, as the schedule of Kambuniyan PaSKSUlaban 2024 was same to our demo presentation.

Just as we were heading to San Emmanuel, there was unpredictable scenario, leaving us stranded and some of the members were anxious. More importantly, no matter what happened we stood and work as a team, because that's the core idea of having a collaborative effort. In spite of this setback, the benefits of this demonstration surpass the difficulties. We've made enduring connections, learnt to adjust to shifting circumstances, and grown in emotional intelligence. To optimize future group work, we intend to set clear objectives, encourage open communication, and promote inclusive decision-making procedures. Reflecting on these experiences gave us significant insights into good teamwork, which improved our capacity to collaborate and interact.




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<https://youtu.be/PgRhNA4TJOI?si=L3H8XBJYlvFrjDad>

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 Province of Sultan Kudarat  
**APPENDIX B**

December 1, 2024

**ANESA MANGINDRA, Ph.D**  
 Program Chairperson  
 College of Teacher Education  
 ACCESS Campus, EJC Montilla,  
 City of Tacurong, Sultan Kudarat


Ma'am:


We, the 2<sup>nd</sup> year students under, The Bachelor of Elementary Education students of the Sultan Kudarat State University are conducting our demonstration as part of our final requirements in ProfEd 006 and EED MATH 211.

In line with this, we are reaching out to request permission to conduct a brief educational demonstration at "San Emmanuel Elementary School " on 6th day of December, 2024.

This demonstration is designed to introduce young learners in a fun and engaging way. The session will be safe, interactive, and age-appropriate, aiming to reinforce positive values and curiosity in learning. Thank you for your kind support and God bless!


Respectfully yours,  
**BEED 2-A**

Noted by:  
  
**RAMIL ARCOJOSA, Ph.D**  
 Subject Teacher

Approved by:  
  
**ANESA MANGINDRA, Ph.D**  
 Program Head/Chairperson

*Approved and relaxing provided that the subject instructor will accompany the students*

VISION: A leading University in advancing tertiary innovation, multi-cultural convergence, and responsive public service in a borderless Region | MISSION: The University shall primarily provide advanced instruction and professional training in science and technology, agriculture, fisheries, education and other relevant fields of study. It shall also undertake research and extension services, and provide progressive leadership in its areas of specialization. (RAVISE) Governance of Institutions. | CORE VALUES: Patriotism, Respect, Integrity, Faith, Excellence in Public Service.


 Republic of the Philippines  
**SULTAN KUDARAT STATE UNIVERSITY**  
 EJC Montilla, City of Tacurong, 9800  
 Province of Sultan Kudarat

December 1, 2024

**WENDY LYNN G. CONEJAR, P-1**  
 School Principal  
 Purok Liw-liwa, San Emmanuel,  
 Tacurong City, Sultan Kudarat

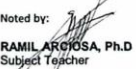
Dear Ma'am Conejar


We, the 2<sup>nd</sup> year students under the program of Bachelor of Elementary Education students of the Sultan Kudarat State University are respectfully requesting permission to conduct a demonstration at "San Emmanuel Elementary School" as part of our group's educational requirements. This December 6, 2024, aims to provide young learners with engaging and age-appropriate educational content.

We assure you that the demonstration will be conducted safely and professionally. We are happy to provide additional details or discuss this further if needed.

Thank you for considering our request.

Sincerely,  
**BEED 2-A**

Noted by:  
  
**RAMIL ARCOJOSA, Ph.D**  
 Subject Teacher

Approved by:  
  
**ANESA MANGINDRA, Ph.D**  
 Program Head/Chairperson

*Received: [Signature] 12/05/2024*

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## CHAPTER 6

# Project based Learning (PBL)



**Figure 6.1** The Practice Teaching activity of the author's pre-service teacher on their OJT (On the job Training) at SHS Laboratory High School, SKSU, teaches a physical science subject applying the PBL on his journey towards his practice teaching.

“Learn by doing and fun are the most arousing part in the assessment of learning”

In almost seven years spend by the author in the Sultan Kudarat State University, particularly in the College of Teacher Education (CTE), blended with the four focal functions such as; (1) Instructions; (2) Research; (3) Extension and (4) Professional growth as faculty, the possibility of using project-based learning (pbl) method in teaching and learning of his major clientele as to augment the time management. Managing this four (4) focal functions are not easy to handle, that's the reason why the author apply this major project based learning to his students , particularly. There are three (3) major project-based learning, where the students learn through their experience and actual doing the project that bounded by the course performance requirements and objectives. Namely (1) Thesis writing (2) classroom demonstration; (3) writing a book.

This project-based learning is based on the author's course requirements in the past seven (7) years, spent in the College of Teacher Education (CTE). It's based on the teaching and learning pedagogies, which applied in this education 4.0, working in the group/ individual project to be done not in a single day but in a successive day that need to clear the goal. Goal setting with additional skills in the communication and writing skills, doing in creative and critical thinking manners are the best features to combine. Let's shown the most catching project-based learning outputs, done by the group of students or individual. The author makes a Flow chart out of this very difficult project –based learning that sway in the norms.

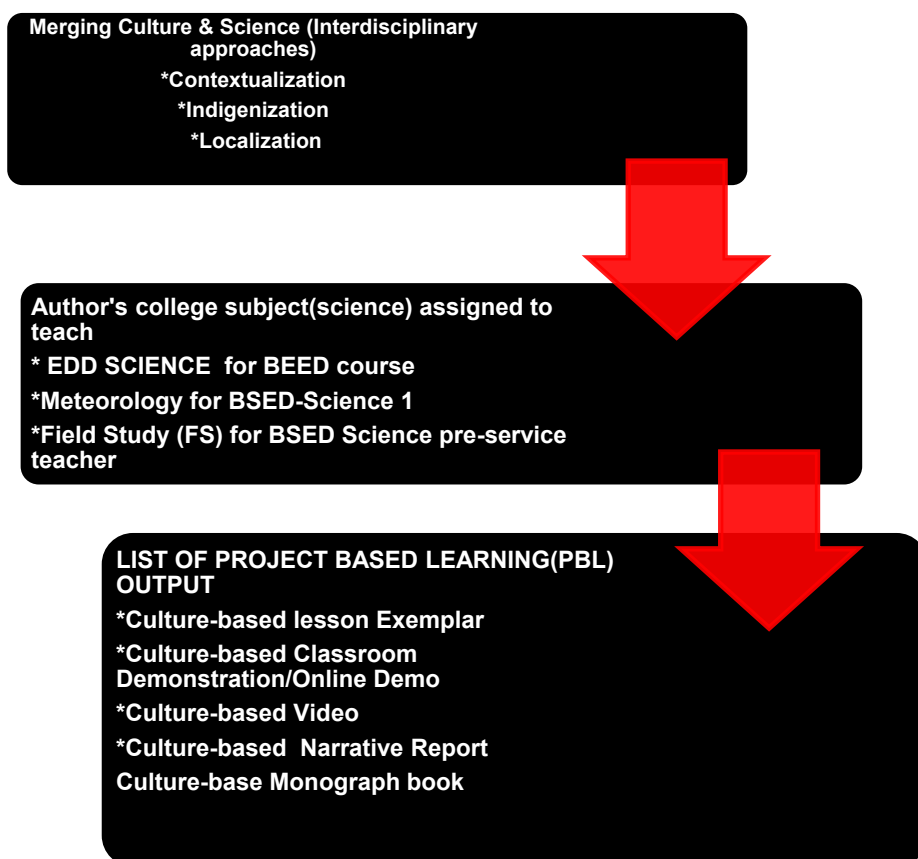


Figure 6.2. The Input-Process-Output of the PBL (Project Based Learning) of the author's perspective.

### **Project Base Learning (PBL) on MONOGRAPH!**

Lately, the author has a subject of meteorology in the BSED science academic year 2023-2024 as their science professor, the approach is different in a way that they will learn the lesson, in the Philippine setting way. The reason why that the approach as their major requirements as to write a book, their teaching and learning processes since the day one up to the last day of the meeting, is they will write their group experiences in the subject of meteorology. The reason why the author experimented this kind of teaching strategy a project-based learning approach. Try to look one of the outputs in this kind of project-based learning.

*Narrative Report: Unveiling Earth's Cultural Tapestry: Climate Change effect on Humanity*

Submitted to: Prof. Ramil Arciosa

Submitted by Group 1:

Albert C. Bernadez  
 Gille Marie G. Barrera  
 Joanna Rose Naig  
 Marjorey Kate A. Desales  
 Angelita Aguilar  
 Charlyn P. Quicoy  
 Monlove Faith L. Samson  
 Lovely Grace Bejle

**Table of Contents**

- Links
- Introduction
- Our First Errand and Hardship
- Reporting
- What we Feel
- Expectation and Reflection
- Making of Culture Based Video
- Our Journey
- Final Demonstration
- References



**Introduction**

Our Meteorology project began with an interesting task from Professor Ram. He told us to make a video blog, or vlog, about the changes in weather patterns around the world, the cutting down of trees in forests, and the important work done by Filipino scientists who study the weather. This report tells you everything we did, from the moment we got the assignment until we showed our final video to the class. It explains how we came up with ideas, got ready to make the vlog, and worked together as a team. Professor Ram came to our class feeling very excited and energetic. He started his lesson by explaining why the changes happening to the Earth's climate are so important and how they are affecting the whole planet. After that, he talked about the serious problems caused by cutting down trees in forests, especially in warm places like the Philippines. Finally, he told us about the great discoveries and inventions made by Filipino scientists who study the weather. When the class was over, Professor Ram gave us all the details of our project. He wanted us to make a video blog to teach people about the changes in weather patterns, the cutting down of trees in forests, and the important jobs done by Filipino scientists who study the weather. This assignment was meant to test how much we had learned and to help us get better at working together as a team and communicating our ideas clearly.

The first thing we had to do was think of ideas for our vlog. We sat together as a group and talked about what we wanted to include. We decided to focus on three main topics: changes in weather patterns, deforestation, and the work of Filipino weather scientists. For the weather patterns, we thought it would be interesting to show how the weather is getting warmer in some places and colder in others.



PREPARATION  
<https://www.youtube.com/watch?v=ejcQVKE-Xgg>



CULTURE BASED VIDEO  
<https://www.youtube.com/watch?v=5E6mNjvBA4E>

**Figure 6.3(a-d).** These 54 pages of monograph type of PBL, worked by a group of BSED-Science students in their subject -SCIE 122 with description of Meteorology as their final requirements, a series of compilation of small PBLs, create a huge greater valued of Project Based Learning output.

The approach of this PBL (Project -Based Learning) rooted on the concept of localization, indigenization and much more on the contextualization. The main problem in teaching this major subject: Meteorology are the Instructional Materials (IMs) that is localize based on the Philippine settings much more in the Mindanao geographical location where the Sultan Kudarat State University is located. That's the reason why the author wants that his students in this subject will be able to combine the local information into the science based approached.

In the making of PBL as one major teaching strategies with variant major disciplines like science and mathematics, the most important now a days, the learners are much excited of this kind of teaching strategies, because they can manage their time and space with in the time frame that are usually their main problems as to comply major school requirements. In the college set up which extra-curricular activities are hampering the classroom schedules that the usual teacher and learner activities are cancelled. This author really suggested this kind of teaching strategies as to make the requirements become visible and in innovative ways. As per experience by the author, in his major subject -meteorology with his BSED major science learners, where it's started with the culture-based demonstration where this subject meteorology will be decolonizing approach as to set up a 'localize examples' in the

**A SEMI-DETAILED LESSON PLAN IN SCIE 1- TEACHING IN THE FIELD OF SCIENCE**

School	SULTAN KUDARAT STATE UNIVERSITY- ACCESS CAMPUS	Year Level	1 <sup>st</sup> Year College
Teachers	JUNNEL C. EBORDA CHARLES BRENT E. MANLUPIG RUFFA MAE V. PACTAO BENEDICT M. RAFANAN JR. DARWIN A. SAN DANIELA L. SANCHEZ ALIJANA A. TAYLIAN	Learning Area	Understanding the Hydrogen, Nitrogen, and Phosphorus Cycle
Teaching Date	April 24, 2024	Quarter	3 <sup>rd</sup>
I. OBJECTIVES			
A. Content Standard	The learners demonstrate an understanding of: a. the three (3) different cycles including its; b. significance and roles in our planet Earth.		
B. Performance Standards	The learners shall be able to: a. identify the three (3) different cycles; b. develop a deeper understanding with its processes, and; c. describe these cycles and its processes		
C. Essential Learning Competency	Students will be able to develop and enhance a comprehensive and thorough understanding about the different chemical processes or cycles (hydrogen, nitrogen, and phosphorus).		
D. Objectives	At the end of the lesson, the learners will be able to: a. identify the different processes in a cycle; b. define various cycles and its processes, and; c. compare hydrogen, nitrogen, and phosphorus cycle		

**II. CONTENT**

A. Topic	METEOROLOGY THE THREE (3) DIFFERENT CYCLES
III. LEARNING RESOURCES	- Google Meet - Virtual Presentation - Laptop - Mobile Phone - Culture-based Video of Group 4
A. References	<p><a href="https://www.youtube.com/watch?v=3JAFDoGM7si=MjBGG3eyMRKnDaZ">https://www.youtube.com/watch?v=3JAFDoGM7si=MjBGG3eyMRKnDaZ</a></p> <p><a href="https://www.youtube.com/watch?v=3JAFDoGM7si=MjBGG3eyMRKnDaZ">https://www.youtube.com/watch?v=3JAFDoGM7si=MjBGG3eyMRKnDaZ</a></p> <p>EarthPen. (2020). WATER CYCLE   Biology Animation <a href="https://youtu.be/gG_3JAFDoGM7si=MjBGG3eyMRKnDaZ">https://youtu.be/gG_3JAFDoGM7si=MjBGG3eyMRKnDaZ</a></p> <p>7ActiveStudio. (2014). NITROGEN CYCLE <a href="https://youtu.be/lBqPekijyc7si=FQlwdw72ep-OTZur">https://youtu.be/lBqPekijyc7si=FQlwdw72ep-OTZur</a></p> <p>Jyoti, D. A. (2021). The Phosphorus Cycle. SCIENCE QUERY. <a href="https://sciencequery.com/phosphorus-cycle-definition-and-description/">https://sciencequery.com/phosphorus-cycle-definition-and-description/</a></p> <p>Biology_B. (2014). The Phosphorus Cycle. <a href="https://www.youtube.com/watch?v=cSKqwhX1dvk">https://www.youtube.com/watch?v=cSKqwhX1dvk</a></p> <p>Elsner, J. J., Bennett, E., &amp; Schampel, J. H. (2007). Phosphorus cycle: A broken biogeochemical cycle. "Nature", 450(7166), 322-322</p> <p>Schlesinger, W. H., &amp; Bernhardt, E. S. (2013). "Biogeochemistry: An analysis of global change". Academic Press</p>
B. Other Learning Resources	xBooks/Journals

**Figure 6.4(a-d).** (a) The class conducted a usual class demonstration by a group; (b) The class starts working with a culture-based video presentation that will be the main learning resource materials in a culture-based lesson exemplar, using a story board (c-d) The Culture-based lesson exemplar in teaching meteorology (Science 122)

In the figure 6.4 (a-d) shows the exact illustrative examples on how this PBL (Project Based Learning) strategy is very exciting in the part of the learners, the teacher is only facilitating the segmental PBL which they should arrived in the right directions. These Project Base Learning (PBL) flow which in every segment have a micro effect to the learner as going to the huge PBL, which equivalent for six months or one semester. These kind of PBL where the author, recognized the developing skills and talents for the future teacher to be. The teaching strategies in the near future, or so-called lifelong learning, developed a innovative skills that transcend into higher order thinking skills which also give a hint to the future teacher in their respective field. This kind of a teaching strategy is a must!

## **PRE-SERVICE TEACHING DEMO!**

In the college of teacher education where this PBL (Project Based Learning) is very evident is the pre-service teaching activities to be done by a graduating student where the pre-service teaching will hold an actual teaching demonstration for almost six months in different high school laboratories, especially in the Department of Education (DepEd) schools. Of course, there will be a MOA (Memorandum of Agreement) in between the College of Teacher Education, Sultan Kudarat State University in the nearby DepEd schools like in the Sultan Kudarat, Tacurong City or even in the South Cotabato school's division. As Field Study (FS) supervisor, particularly in the Physics subject which is also the author specialization. The pre-service teacher assigned to the author is a BSED major science pre-service teacher, assigned in the SKSU Laboratory High School, who is going to teach in the HUMMS Grade 12 students in the subject of physical science. Introducing the culture-based education in his teaching strategies as one key element make the FS pre-service teacher, a glimpse of acceptance even though that this concept of culture-based education is very new to the said FS pre-service teacher. Same with the author as he has been undergone a two (2) years online schooling in the Graduate in Diploma in Culture Education (GDCE) under the Philippine Culture Education Program (PCEP) under the umbrella of National Commission in Culture and Arts (NCCA) there is a resistance in terms of interconnectivity between science and culture, no problems with the mathematics, which the authored known to his ethno- math researches. The FS pre-service teacher also used the 7Es in his lesson planning these 7Es are: (1) Elicit; (2) Engage; (3) Explore; (4) Explain; (5) Elaborate; (6) Evaluate; and (7) Extend, which is very detailed and comprehensive in the sense that the teacher used this kind of lesson planning with 7 Es are meticulous enough in the details for his delivering of the lessons. The author gives a major six (6) chapter to the FS pre-service teacher, these are (i) Newton's law of motion;

(ii) Fluid mechanics (Fluids, density and pressure) ; (iii) thermodynamics ; (iv) waves/acoustics ; (v) electromagnetisms ; (vi) optics , enough to covers the basic foundation of physical science concepts in the non- majoring science in SHS program. In this regard the author really amazes with the results both on papers and on actual teaching demonstration, which the movements of the teaching and learning processes of the SHS-HUMMS learners really impacted the intertwining approach in between the 7Es and culture-based education. Try to look one of the narrative reports of the FS pre service teacher as shown below in figure 6.5(a-b)



SULTAN KUDARAT STATE UNIVERSITY  
LABORATORY HIGH SCHOOL  
ACCESS, EJC Montilla, Tacurong City



#### NARRATIVE REPORT

A day in a life with the concept of thermodynamics!

A fascinating reality to realize just how much this branch of science influences our everyday experiences, often without us even noticing. Thermodynamics deals with the transfer of heat and energy, and its principles are at work in countless aspects of our daily routines, from the moment we wake up to the time we go to sleep.

As much as the weather is concerned, it is too warm. Just like the minds of young social scientists from the SKSU – Laboratory High School, specifically the Grade – 12 HUMSS students. They were very keen to learn the wonders of thermodynamics through the first activity of ELICIT called "Pictograph review," this was the best avenue to stimulate the prior knowledge of the students by identifying the given picture with the use of the word pool. The activity was supported by the ENGAGE part of the lesson, wherein the students were tasked to differentiate the concept of temperature and heat with the use of the Venn diagram and by answering epic word battles.

Thereafter, the most exciting part of the lesson was the experimentation (EXPLORE) wherein the teacher presented a short video clip for them to demonstrate scientifically. Each group was divided into the three principles of heat transfer mechanism (conduction, convection, and radiation). Each group made an excellent output and they presented in the class with an excellent observation and understanding of the concept. They were amazed by the concept of thermodynamics with the simple experiments they did in the three phases of matter.

EXPLAIN. Temperature scale is one of the important ideas in understanding the lesson and this involves its conversion. Students are tasked to complete the table that was presented on the TV screen by converting three of the temperature scales which are Celsius, Fahrenheit, and Kelvin, respectively and accurately. The teacher facilitated the computation of the students for positive reinforcement and checking in the EVALUATE part.

Ultimately, the teacher in practice has his way of integrating the concepts into real-life applications wherein he presented the "Sir Jun Show" on the ELABORATE part. He wanted to incorporate **culture-based education** into his lesson by providing local examples on a day-to-day basis for the student's great appreciation of the topic. On the part of EXTEND, the students must showcase a presentation that highlights their positive outlook or response to the growing problem of the globe which is global warming. This was the best avenue to raise awareness of the simple causes of it and ways to prevent a micro-to-macro effect of its devastation. The "**Talent Mo Show Mo – Culture-based learning**" task was graded through a rubric with three judges, appreciation of the efforts, and video presentations were made available online.

#### Documentation



(a)

(b)

**Figure 6.4(a-b).** (a) The true learning works really, as shown in the narrative report of FS pre-service teacher where how he blended the 7Es teaching strategy with the concept of Culture-based education (b) This group of HUMMS-SHS students applied really the concept of Arts into science concept like in the 'thermodynamics'.

In the context of narrative analysis, where how the author conceptualizes the concepts of Project-Based Learning (PBL) are all based on his experiences, which based on the latest styles in teaching and learning in between the teacher and learners in this new trend of education pedagogies. The crafting of this different styles of PBL by segment have impacted the most affected clientele that's the student's satisfaction. The core of it, its so called the culture-based education, which the author realize the importance of this kind of teaching and learning pedagogies which based on the localize configuration. The trends and challenges of education either in the basic or higher, the importance of the conceptualization that challenge the real scenario of the Philippine settings have different goals and objectives, but true to all are the benefits of the learnings as they go along this kind of future trends ahead.

### **TASK 6.1 -6.5**

**OBJECTIVES:** At the end of each task, the students should be able to

- 6.1. Make a lesson exemplar using the 7Es and culture-based learning with your selected topics in the basic education.
- 6.2. Do the actual online or face to face classroom demonstration using the Lesson exemplar made (number 15)
- 6.3. Conduct a pre-posttest statistical analysis in your classroom demonstration.
- 6.4. Create a simple Action Research using the concepts of 7Es and Culture-based learning.
- 6.5. Make a short video from the preparation of making lesson exemplar up to the conduct of Action Research. Do it individually.