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Interdisciplinary Contextualized Supplementary Learning (IConSuL) material in grade 7 mathematics

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Abstract

This descriptive-developmental study aimed to develop Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in Grade 7 Mathematics. This study used both quantitative and qualitative methods in data analysis. The quantitative data were gathered from the evaluation tools of the 10 jurors from Tabaco City Division, Legazpi City Division and Albay Division, acceptability survey of 20 teachers from Tabaco National High School and San Antonio National High School and 30 students enrolled in Tabaco National High School with different learning modalities. The research instruments used were evaluation sheet, acceptability survey-questionnaire, and student journal. The major findings of the study showed that the developed five (5) Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material passed the criteria under Content Quality, Instructional Quality, Technical Quality and Interdisciplinary Contextualization. Majority of the teachers and students find the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material for Grade 7 Mathematics as highly acceptable. The five (5) Interdisciplinary Contextualized Supplementary Learning Material of Grade 7 Mathematics provides interdisciplinary contextualization that can be useful in attaining independent learning among students. Moreover, it can be used by teachers and students in public and private school which is beneficial and appropriate to the ability and level of the students. In view of the findings and conclusions, it is recommended that teachers may develop more Interdisciplinary Contextualized Supplementary Learning Material that are suited for the intended users—mathematics teachers, other non-mathematics teachers and students to create integrative assessment in the different learning areas.

Keywords: mathematics, Philippines, interdisciplinary, assessment

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Interdisciplinary Contextualized Supplementary Learning (IConSuL) material in grade 7 mathematics

1. Introduction

The World Health Organization declared the pandemic brought by COVID-19 infection last year; and it has now become a major public health challenge worldwide. The infection control and physical distancing measures are crucial to prevent the virus from further spreading and to help control the pandemic situation. The compulsory physical distancing policy has been implemented in many countries, including the Philippines, resulting in nationwide school and university closures. In accordance with this policy, educational institutions are compelled to make appropriate and timely modifications to continue to deliver education and sustain student academic progress. Since face-to-face learning engagement of students and teachers within the school has been suspended due to the pandemic, this has paved the way to the implementation of different learning deliveries as an urgent response to ensure continuity of education. The teaching and learning activities were immediately shifted to different learning modalities to meet the learners' needs, and one of these is the distance learning (DL) modality. This modality has three types, namely, Modular DL (MDL), Online DL (ODL), and TV/Radio-Based Instruction.

Among these different modality types of DL, most of the students prefer the modular approach. It is widely used because of its capacity to offer flexibility, choice, access, and mobility. Based on DepEd's National Learner Enrolment and Survey Forms (LESFs) data, 8.8 million out of the 22.2 million enrollees (39.6% of total respondents) preferred modular distance learning for this present school year. Meanwhile, 3.9 million enrollees (17.6%) preferred partial to blended learning (which uses a combination of different modalities), 3.8 million (17.1%) preferred online learning, and 1.4 million and 900,000 enrollees preferred TV-based and radio-based learning, respectively (Manlangit et al., 2020).

One of the most significant challenges in learning is for individuals to take responsibility for their own learning. When learners take responsibility for their own learning, they attribute meaning to the process of learning, leading to effective learning (Nzesei, 2015). Teachers need to understand the process of individual learning. In the learning process, individuals are interacting with the environment, i.e., uniquely processing the information and requiring a unique environment for learning. Thus, addressing the challenge in facilitating learning conditions while organizing such interactions should be taken into consideration to help individuals to optimize their learning (Sighn, 2017). Effective learning takes place when there is flexibility and creativity along the strategies employed in the teaching-learning process. One of which is the use of instructional materials. The importance of instructional materials in the development of learners' intellectual abilities and attainment of teaching/learning objectives cannot be over-emphasized. The students taught with instructional materials have excellent achievement scores compared with those taught without any material (Olayinka, 2016). This was supported by Aina (2013) who stated that instructional materials are very important because what students hear can easily be forgotten but what they see cannot be easily forgotten and last longer in their memory. Moreover, improvisation of instructional materials for teaching mathematics is the ability of the mathematics instructors and pupils to produce appropriate, adequate and relevant material resources. There are prerequisite skills that mathematics teachers need for the improvisation of instructional materials. (George & Amadi, 2016).

With our situation right now, it is vital to embrace and adapt to the new normal and to the changes that are happening around us. Students' Mathematics learning should not be compromised; thus, it must be more engaging and relatable to society even if there is limited interaction between students and teachers. Self-learning material should be realistic and integrative so that students can understand and relate to what is happening around them. Since many students find Mathematics a difficult subject, it is important to show them the value of learning it, by enlightening them on the connections that mathematics has with other disciplines and its real-world applications. Interdisciplinary and contextualization is a method of teaching that can give students insight into how mathematics

is useful in a variety of different fields. In addition to engaging students with relevant curriculum, leading students to discover the connections between mathematics and other subjects are helpful in showing students why learning mathematics is valuable.

Since high school students are in heterogeneous groups, some learners understand the language of Mathematics purely, while others still need supplementary resources to learn it. Because of the formula and rules involved in a mathematics lesson, students tend to develop negative attitudes and concern towards the subject (Altintas & Ilgün, 2017). According to Dangle and Sumaoang (2020), today's learners are struggling to their modules because some of its contents are not individualized to various types of students. Chin (2020) supported Dangle and Sumaoang claims and she added that one of the disadvantages of modular distance learning is the self-learning modules' reliability. As she argued, module being the pivotal instrument in this new norm, its' content should meet the standard learning capacity of various types of students – given that these instructional materials will be assessed by students mostly on their own. This is the reason why, there is a need for supplementary learning materials aligned with DepEd's most essential learning competencies to make the modules more individualized and applicable to the learners.

To better understand the different types of learners, teachers may use interdisciplinary contextualized self-learning materials to make the teaching-learning process realistic and meaningful. Since the instructional material is integrative and has connections with real-world situations, students can basically relate and apply the learning within themselves. This self-learning material can benefit all kinds of learners because it will serve as enrichment for the fast learners and aid those who struggle purely in understanding mathematics. In teaching Mathematics, it is important to use instructional materials to make teaching and learning more effective. Through supplementary learning materials, the teaching and learning processes become more evident, logically realistic, and practical. Availability, adequacy, and relevance of supplementary materials in the classrooms can improve students' knowledge and skills, increase their interests, make the subject matter more realistic, explicating complex concepts, make the learners learn the concepts through experience, and facilitate retention of what is learned (Okobia, 2011 as cited in Dhakal, 2017; Awolaju, 2016; Borigas, 2018).

Research says that the mind logically seeks meaning in context by probing for connections that seem useful and relevant. Learning, as decorated by numerous studies, only transpires when learners process knowledge or new information through their own frames of reference, specifically their own terms of reaction, memory, and experience (K to 12 Toolkit, 2012). Experts in the field of education postulated that interdisciplinary connections promote students' accomplishment, making learning easier, more realistic, and more useful (Shell et al., 2010; Karsten & O'Connor, 2002). Teaching and learning process emphasizes incorporating contextualized situations, connecting concepts/skills within and across learning areas such as Math and Science as it dramatically improves learners' involvement and performance, leading to meaningful learning (Chernus & Fowler, 2010). When students learn close and relevant things to their daily living, their interests are engrossed and maintained (Goode, 2000; Simpson & Nist, 2002).

Moving into the 21st century, the needs of the modern society are much different from the previous century due to the shift in skills demand of new industries and technological changes which eventually turn the economy integral and competitive. Society needs a man of the 21st century who can live and thrive in a new economy; can keep abreast with the social and intellectual changes; can cope with the demands of the changing times; can apply math knowledge in solving real-life problems; and can connect the subject to various disciplines to grasp a more authentic understanding of a subject matter under study that will lead to mastery learning.

In Education, several effective strategies and new program of Education are taken into consideration to make mathematics easier to understand. Due to the importance of mathematics education across the nation, the Philippines is upgrading the Filipino learners to global competitiveness by holistically developing them through the implementation of the Philippine educational system, the implementation of k to 12 curriculum. This reformation is mandated by Republic Act 10533 known as the "Enhanced Basic Education Act of 2013". One of

the features of the k to 12 is the use of spiral progression approach to ensure mastery of knowledge and skills after each level.

The implementing rules and regulation also states that "the curriculum shall be contextualized and global and shall be flexible enough to enable and allow schools to be localized, indigenous and enhance the same based on their respective educational context" and "the curriculum shall ensure integrated and seamless learning wherein subjects are taught from the simplest to complex in spiral progression wherein subjects are connected and integrated through grade levels" (Official Gazette, 2019).

This study acknowledged the role of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in Mathematics education. Integers and Rational Numbers are considered topics in Mathematics that is least mastered based on the report given by the Mathematics teachers. It is included in almost all topics in Mathematics. However, among the skills, solving fractions and integers are the least mastered topics or competencies of grade seven (7) students according to the report done for three consecutive years starting from 2016 (Educational Management Information System of Tabaco National High School, 2018). With a greater aim to improve students' learning experiences in Mathematics and to make supplementary materials that could be beneficial not only during this time of pandemic but for a long period of time as it will serve as learners' guide, reviewer, remediation, reinforcement and their own learning materials, the researcher, being a Mathematics teacher, is motivated to develop Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material focusing on students' least mastered competency in Mathematics.

2. Methodology

Research Method - This study is a descriptive developmental research which utilized quantitative and qualitative research design. Gillaco (2014), discussed that descriptive method seeks the real facts in relation to a current situation. Furthermore, this method works primarily on the description, comparison, analysis and interpretation of data that exists. Furthermore, descriptive developmental method is the systematic study of putting into design, developing and careful evaluation of instructional programs, processes and products that must meet the standard or criteria Davis, (2019). This study focused on the development and validation of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Materials. The quantitative data was gathered from the jurors, teachers and students' evaluation tools on the instruments to be used for this study. The qualitative analysis was from the data of the survey accomplished by both jurors and students; semi-structured interview answers from the teacher and the student journal.

To make sure that the research instruments, level of acceptability survey, and student's journal to be used in this study were reliable and valid, it was evaluated and validated by 10 jurors from the different divisions in Bicol Region which includes Tabaco, Legazpi and Albay who are at least (5) years in the field of teaching and master's degree holders or those with 18 units and above. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was assessed by the 10 (ten) jurors using the evaluation sheets based on the set criteria.

Sources of Data - The primary source of data for this study was drawn from the results of experts' validation and the result of acceptability level of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material from teachers and students. The developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was anchored from the K-12 Most Essential Learning Competencies (MELCs) for Grade Seven (7) Mathematics. Using the evaluation instrument from the Department of Education the Learning Resources and Management Development System evaluation instrument for print resources, the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was evaluated by ten (10) jurors coming from the different divisions in Bicol Region which includes Tabaco, Legazpi and Albay. The Mathematics teachers were in the field of teaching for at least (5) years. They are doctoral degree holders, and masters' degree holders, with complete academic requirements and with 18 units and above in master's degree. On the other hand, the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was evaluated using the level

of acceptability survey by twenty (20) Mathematics teachers from Tabaco National High School and San Antonio National High School and 30 randomly selected students enrolled in Tabaco National High School under different modalities. Since there were nine (9) Mathematics teachers in San Antonio National High School and four (4) of the teachers met the qualification needed for the acceptability survey, they were included in the study. These 20 Mathematics teachers include the Department Head, Master Teachers, Head Teacher and other teachers who were in the field of teaching for at least (5) years. The 30 Grade seven (7) students were randomly selected to determine the acceptability level of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. At the same time, they were given students' journal to identify their personal perception towards using the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in learning.

Respondents - The main respondents were the 10 jurors, 20 teachers and 30 students. The validators were composed of 10 jurors from the different division within Bicol Region of the Department of Education. These validators were in the field of teaching for at least five (5) years and they were doctor of philosophy holders, masters' degree holders, with complete academic requirements and with 18 units and above in master's degree. The validators were carefully selected as they were the major contributors in validating the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material to its intended users, the learners and the teachers. The twenty (20) Mathematics teachers from Tabaco National High School and San Antonio National High School was randomly selected for the level of acceptability survey which include Department Head, Master Teachers, Head Teachers and other teachers who were at least (5) years in the service. The 30 grade seven (7) students enrolled in Tabaco National High School was randomly selected under the different learning modalities- printed, digital and online.

Instruments - The following instruments were utilized in this study: (1) the evaluation tools for the validators, the (2) level of acceptability survey for the teachers and students and (3) students' journal for the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Evaluation tool for the IConSuL Materials. This tool was adopted from Department of Education Learning Resources Management and Development System evaluation instrument for print resources; this detailed validators' or experts' evaluation on the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The evaluation tool validated Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material to along with its: (a) content quality; (b) instructional quality; and (c) technical quality (d) interdisciplinary contextualization. This evaluation sheet was evaluated using the Likert Scale with the following measures: (4) Very Satisfactory, (3) Satisfactory, (2) Poor, and (1) Not Satisfactory. The results from this instrument served as a basis for determining the validity of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Level of Acceptability Survey for Teachers and Students. This was gathered to determine the level of acceptance of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material based on the assessment of the teachers and students. The level of acceptance survey of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was treated separately. These were evaluated using the Likert Scale with the following category: (5) Strongly Agree, (4) Agree, (3) Moderately Agree, (2) Disagree, and (1) Strongly Disagree. This survey was adopted and modified from the instrument used by Cheng et. al. (2016) in their study. The degree of agreement was translated into its corresponding level of acceptance using a pre-determined interval.

Students' Journal. These provided insights on students' perception towards the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. By asking students some open-ended questions, they were given the chance to express their thought and experiences on the activities they performed using the material. This strategy has been proven effective in eliciting the inner thoughts of the respondents.

Data Gathering Procedure - The study were divided into four (4) phases, namely: (1) preparatory phase in conducting the research study; (2) development phase of the Interdisciplinary Contextualized Supplementary

Learning (IConSuL) Material; (3) validation phase using the survey questionnaire and modification of the Developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and (4) evaluation phase using the acceptability survey and data analysis of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Stage 1: The Preparatory Phase in Conducting the Research Study. In this phase, the necessary documents (i.e. letters of communications, instruments to be used, etc.) were prepared prior to the main conduct of this study. A simple survey was administered and distributed around the community to determine the available resources that can be used to develop the instructional materials.

Stage 2: The Development Phase of the IConSuL Material. After the permission for the conduct of the study, came the development of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was aligned to the Most Essential Learning Competencies (MELCs) of the Department of Education for Grade 7 Mathematics in the topic area of Integers and Rational Numbers. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was composed of the following parts: (a) objectives; (b) preliminary activities; (c) discussion; (d) practice exercises; (e) assessment; and (f) enrichment.

Stage 3: The Validation Phase Using the Survey Questionnaire and Modification of the Developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. After the development of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, it was validated by 10 jurors coming from Tabaco, Legazpi and Albay Division. Modifications and improvement of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material based on the evaluators' comments and suggestions were also included in this stage.

Stage 4: The Evaluation Phase using the Acceptability Survey and Data Analysis of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. In this stage, the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was re-validated by the same jurors. The final refinements or modifications made on Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was based on the comments, suggestions, and recommendations of the validators. These were validated again by 10 jurors and was revised as suggested. After the revision, the 20 teachers from Tabaco National High School and San Antonio National High School and the selected 30 students were asked to accomplish the level of acceptability survey to determine the acceptability of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The journal writing guide to the students was also distributed which was answered to support the level of acceptability survey. Also, the necessary statistical tools and methods to determine and interpret this study's results was utilized.

Statistical Treatment of Data - The data collected in this study was analyzed and interpreted using the following statistical tools: *Weighted Mean.* This was used in the study to determine the expected outcome where each outcome has a different probability of occurring from the evaluators on the evaluation sheets. *Frequency.* This was used in the study to identify the total number of responses of the teachers and students in the acceptability survey. *Mode.* This was used in the study to identify the responses of the teachers and students that occurs most frequently in the acceptability survey. *Percentage.* This was used in the study to specify the percentage of observations that exist for each indicator in the survey of acceptability.

3. Results and Discussion

Five (5) Interdisciplinary Contextualized Supplementary Learning Material were developed in this study to address the identified learning competencies from Grade 7 most essential learning competencies. The developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material have the following parts: (a) objectives; (b) preliminary activity; (c) discussion; (d) practice exercises; (e) assessment; and (f) enrichment. The Interdisciplinary Contextualized Supplementary Learning Material developed were evaluated by 10 identified

experts. The developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was evaluated using the Evaluation Rating Sheet for Print Materials prescribed by the Learning Resource Management and Development System (LRMDS) Assessment and Evaluation under Department of Education. This has three factors: A. Content Quality, B. Instructional Quality, and C. Technical Quality. The researcher also makes use of an additional factor: D. Interdisciplinary Contextualization. For Factor A, B and C, it has 8 indicators, while there is 5 for Factor D. For Factor A, B and C, a juror must set a total score of at least 24 points out of a maximum 32 points to pass the criterion. For Factor D a juror must score at least 15 points out of the maximum 20 points to pass. It should be noted that any material which fails at least one of the four (4) factors shall not be recommended for possible use in the public schools. In addition, errors observed by the experts such as conceptual errors, grammatical errors, typographical errors, computational errors, etc. were ensured to be fixed and cleared before implementation.

A. Content Quality. In this study, content quality was assessed using the indicators from the Learning Resources Management and Development System for non-print materials. Under this factor are the eight (8) indicators which evaluate the consistency of the material to the most essential learning competency, relevance to real-life, promotion of positive values, appropriateness of language, organization, accuracy and out datedness of the content. Table 2a presents the assessment of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Table 2a

Content Quality Evaluation Results

Title of the IConSuL Material	Content Quality	
	Mean Total Score	Interpretation
Perform Fundamental Operations on Integers	31.10	Passed
Illustrate the Different Properties of Operations on the Set of Integers	31.10	Passed
Express Rational Numbers from Fraction Form to Decimal Form and Vice Versa	31.40	Passed
Perform Operations on Rational Numbers	31.00	Passed
Represent Real-Life Situations and Solve Problems Involving Rational Numbers	31.80	Passed

The data shown in table 2a presented all the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, total mean score, and the corresponding descriptions. The table showed that all the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material passed the evaluation under content quality. This is clearly supported by the evaluation of the jurors who rated all the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material ranging from three (3) as satisfactory to four (4) as very satisfactory. This is a delicate part of the intervention since its consistency to the learning objectives, set by the Department of Education for Grade 7 Mathematics, must be met. This is the reason why the researcher followed the competencies set and time allowance in making the Interdisciplinary Contextualized Supplementary Learning Material. Hence, based from the evaluation of the jurors, it showed that all of the Interdisciplinary Contextualized Supplementary Learning Material developed were consistent with topics found in DepEd Most Essential Learning Competencies of Grade seven (7) as the jurors rated all of them “very satisfactory”.

The concepts and activities given in the Interdisciplinary Contextualized Supplementary Learning Material were accurate. Contents were up-to-date since they were based from the learning guide of Grade 7 Curriculum. The problems were based from the learning materials of Grade 7. Aside from that, some problems were taken from trusted sources in the internet and published books. Moreover, word problems as application of concepts were familiar to the students’ common background as it used contextualization on the concepts and integration of other subjects were utilized to make the activities more interesting. They were properly selected and constructed so that students can relate to them. Represent Real-Life Situations and Solve Problems Involving Rational Numbers” got the highest mean total score of 31.80 out of the maximum 32 points under content quality. This was supported by one juror who emphasized “The enrichment activity part was the most creatively done for me. It was a different

flavor to give such a kind of exercises for the learners".

B. Instructional Quality. Instructional quality was also measured using the indicators from the Learning Resources Management and Development System for non-print materials. This will ensure the appropriateness of the material, objectives and its feasibility for use. Table 2b presents the assessment of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The total mean scores and its corresponding interpretations are likewise presented.

Table 2b

Instructional Quality Evaluation Results

Title of the IConSuL Material	Instructional Quality	
	Mean Total Score	Interpretation
Perform Fundamental Operations on Integers	31.10	Passed
Illustrate the Different Properties of Operations on the Set of Integers	30.30	Passed
Express Rational Numbers from Fraction Form to Decimal Form and Vice Versa	31.30	Passed
Perform Operations on Rational Numbers	30.80	Passed
Represent Real-Life Situations and Solve Problems Involving Rational Numbers	31.20	Passed

The data on the table showed that all the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material passed the evaluation on the instructional quality. This means that the purpose of the material was well-defined. One juror even stated verbally that there is no problem with the learning objectives and purpose of the material are clearly stated and measurable. Moreover, the tasks are properly laid out and explained to the students as shown on the image on the next page. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material with the topic Expressing "Rational Numbers from Fraction Form to Decimal Form and Vice Versa" got the highest mean total score of 31.30 out of the maximum 32 points under instructional quality. This was commended by one of the jurors who stated "I particularly commend the assessment activities. The activities are enjoyable, stimulating, challenging, and engaging."

c. Technical Quality. Technical quality was evaluated using the indicators from the Learning Resources Management and Development System for non-print materials. Under this factor are the 8 indicators which evaluate the illustrations, vocabulary and screen displays (text). Table 4 presents the assessment of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Table 2c

Technical quality evaluation results

Title of the IConSuL Material	Technical Quality	
	Mean Total Score	Interpretation
Perform Fundamental Operations on Integers	30.90	Passed
Illustrate the Different Properties of Operations on the Set of Integers	30.20	Passed
Express Rational Numbers from Fraction Form to Decimal Form and Vice Versa	30.50	Passed
Perform Operations on Rational Numbers	30.30	Passed
Represent Real-Life Situations and Solve Problems Involving Rational Numbers	30.40	Passed

This table shows that all Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material passed the indicators for Technical Quality of non-print materials under the Learning Resources Management and Development System (LRMDS). The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material with the topic "Perform Fundamental Operations on Integers" got the highest mean total score of 30.90 out of the maximum 32 points under technical quality. This indicates that the text used in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material were synchronized together with the visuals, the

vocabulary level and the presentation and organization of ideas are logical and smooth. Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is free from major typographical errors and appropriate for instructional purposes which made the students to easily understand the concepts. A juror supported that "The visuals used are good examples of letting the students imagine what something looks like especially nowadays where limited movements took place." The grammar is simple and understandable which can add up to strengthen the comprehension of the learners".

D. Interdisciplinary Contextualization. Interdisciplinary Contextualization in the material was validated using the indicators made by the researcher itself. Aside from the ten jurors who validated the instruments used in this research study, the indicators along contextualization were checked and validated by one (1) Teacher III and two (2) master teachers teaching at Tabaco National High School. Under this factor are the 5 indicators which evaluate the integration of different subjects or disciplines to Mathematics, learn new ways of transmitting information and connecting with others, recognize variety of perspectives and form of exploration that promotes engagement and learning. This factor also emphasized the relationship of things to daily life, background knowledge using some of cultural element and the application of metacognitive awareness in everyday living. Table 2d presents the assessment of the Interdisciplinary Contextualized Supplementary Learning Material.

Table 2d

Interdisciplinary contextualization evaluation results

Title of the IConSuL Material	Contextualization	
	Mean Total Score	Interpretation
Perform Fundamental Operations on Integers	19.80	Passed
Illustrate the Different Properties of Operations on the Set of Integers	20.00	Passed
Expressing Rational Numbers from Fraction Form to Decimal Form and Vice Versa	19.80	Passed
Perform Operations on Rational Numbers	20.00	Passed
Represent Real-Life Situations and Solve Problems Involving Rational Numbers	20.00	Passed

This table shows that all Interdisciplinary Contextualized Supplementary Learning Material passed the indicators for interdisciplinary contextualization. This indicates that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material relate things to daily life and consists of interdisciplinary contextualized activities relevant to concepts of Mathematics and other learning areas. This indicates that the Interdisciplinary Contextualized Supplementary Learning Material effectively achieve its goal on the integration of other discipline in learning Mathematics using the local environment, culture and resources.

Some activities in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material includes travelling around Tabaco City and Bicol Region, cooking local foods like laing, cassava cake, latik, *mascasotes* and other local products found in Tabaco City, sharing and caring during this pandemic through community pantry, helping and training oneself in a business venture for future success, exercising and doing workouts to maintain healthy lifestyle, saving money for future needs, getting ready for a job interview and other real life activities which is beneficial to the students and motivate students learning. Moreover, the material helps students reflect on their learning to bridge ideas from a familiar concrete context so they can recognize their own personal relationship to these concepts. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is also link across different subjects or disciplines to enhance learning which bridge the gap between mathematics and other subject areas. It is evident in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material that the subjects Science, English, Filipino, Edukasyon sa Pagpapakatao (ESP), Technology and Livelihood Education (T.L.E), Music Arts P.E.and Health (MAPEH), Araling Panlipunan were integrated in the tasks which let the students explore, participate and learn from the different tasks provided. One of the jurors stated that "Integration of other subjects to Mathematics brings together diverse knowledge which will enable students to develop a meaningful understanding of new concepts and existing knowledge.

The activities given in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Materials are more likely community based so that students will be more interested in the subjects and concepts being taught, and they will be more inspired to learn because a particular thing really exists. The topic is connected to concepts, issues, and contexts that are more familiar, understandable, accessible, or personally relevant to them. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material with the topic "Illustrate the Different Properties of Operations on the Set of Integers", "Perform Operations on Rational Numbers" and "Represent Real-Life Situations and Solve Problems Involving Rational Numbers" got the highest mean total score of 20 out of the maximum 20 points under contextualization All the jurors commended on how contextualization and interdisciplinary were incorporated in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

One of the jurors stated that "The real life situations are of great deal in engaging student's attention". Another juror stated that "The IConSuL Material is stimulating and appealing to the target learners. The activities are interdisciplinary and logically sequenced. Thus, it is likely to enhance students' understanding of performing operations on integers especially it is one of the least mastered skills of most learners. Integrating localized situations in practice exercises are like feeding two birds with one stone since students learn Math and at the same time their awareness of our country." Another juror stated that "Integrating localized situations/problems in Practice Exercise is like hitting two birds with one stone since students learn Math and at the same time their awareness of our country."

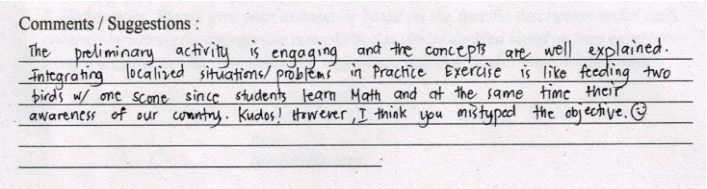
Comments / Suggestions :
The preliminary activity is engaging and the concepts are well explained. Integrating localized situations/problems in Practice Exercise is like feeding two birds w/ one scone since students learn Math and at the same time their awareness of our country. Kudos! However, I think you mistyped the objective. ☺

Plate 15: Juror's appreciation of the developed IConSuL Material

Another juror verbally stated that "The tasks are engaging which allow students to learn and experience reality and apply these learnings to the real world. In that way, they will be able to feel that they are learning not only the Mathematics concept but the application of these concepts to the real world." The material helps learners activate their own background knowledge through the use of some cultural element to make the learning more meaningful. Interdisciplinary Contextualized Supplementary Learning (IConSuL) Materials also gives emphasis on knowing one's culture. Bicolano's culture and values are evident in the activities which help individual strengthen one's identity and appreciate cultural elements. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Materials also give importance to the local sports, clothing, delicacies, festivals, social beliefs and values of Bicolanos. Incorporating cultural elements on the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is very important because it influences an individual's life in a variety of ways including values, views, desires and purpose. In addition, belonging to a culture provides people with a sense of identity, purpose and belongingness. Also, the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Materials develops the content knowledge of students and procedural knowledge, such as the metacognitive awareness of when and how to apply what has been learned.

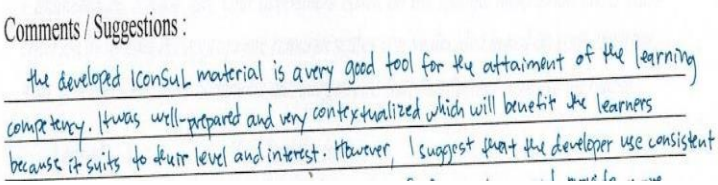
Comments / Suggestions :
the developed IConSuL material is a very good tool for the attainment of the learning competency. It was well-prepared and very contextualized which will benefit the learners because it suits to their level and interest. However, I suggest that the developer use consistent

Plate 16: Juror's appreciation of the developed IConSuL Material

Since the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material consists of varied real-life activities, it allows individual to develop competency and apply what they have learned in real life.

Students are given time to reflect upon the task demand and independently select and employ the appropriate learning strategy in solving math problems. Moreover, students are given the ability to apply their learnings in real life.

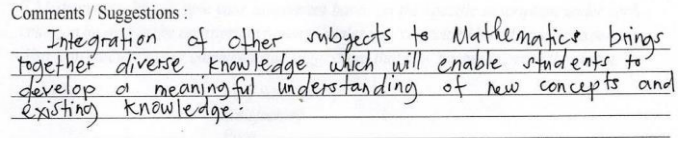

Plate 17: Juror's appreciation of the developed IConSuL Material

Students were allowed to explore old and new ideas in developing more compelling learning. One example of integration in the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is the application of English proverbs to mathematics problem that provides good values which students should put into practice. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is also flexible to other subjects like Araling Panlipunan because it can be seen in the other tasks how the map of Asia can be useful in teaching decimal and fraction. Aside from the integration, the material promotes the development and application of what has been taught and learned in a variety of perspectives. A juror stated that "The application of the lesson in the diverse areas is very engaging." It gives students examples of how Math can be effectively used. Surely it will help them appreciate the usefulness of Math in our lives. Also, it allows students to appreciate flexibility of Mathematics towards other learning areas. It is shown that the practical application of Mathematics lies everywhere. Mathematics helps us understand the world and provides an effective way of building mental discipline. Math encourages logical reasoning, critical thinking, creative thinking, abstract or spatial thinking, problem-solving ability, and even effective communication skills.

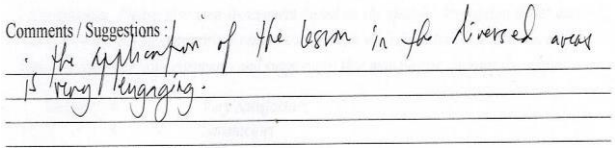

Plate 18: Juror's appreciation of the developed IConSuL Material

The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material has a lot of problems which are relevant to the activities in the real world. One example of the activity that can be learn and apply is the simple help offered by an ABM student to a relative by keeping an eye on the store during free time and helping that relative in buying items intended for the store. In this simple activity, students can apply their skills in Mathematics and at the same time learn new skills in running a small store.

One of the verbal statements given by one of the jurors stated that "The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material can bring out the best in an individual. Learning different things in one material is a big help for students to develop their sense of receptiveness." Moreover, the material has interdisciplinary activities which helps learners better develop their communication skills and learn new ways of transmitting information and connecting with others who may be different from them. Since not all students has the same pacing when it comes to solving and appreciating Mathematics, the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is one solution to this problem. If a student is good in English, he/she can use more the reading skills to understand clearly the problems being asked. If a student is good in Science, then he can solve problems well on those tasks with relation to Science.

It manifests that Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material allows more flexibility in moving up the knowledge and spreading that knowledge in different areas, which are connected to one another. In addition, the possibility of sharing their expertise and learning new things from others is activated bringing out connections from one person to another. This allows good communication which is an essential part of mathematics and mathematics education. It is a way of sharing ideas and clarifying understanding. Through communication, ideas become objects of reflection, refinement, discussion and change.

In general, jurors who evaluated Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material have expressed their judgement on the use of Interdisciplinary Contextualized Supplementary Learning Material. This shows that the Interdisciplinary Contextualized Supplementary Learning Material is an instructional material that is helpful to students in discovering new information relevant to their needs. It allows students to explore, experience and extract information in a diverse way of learning. Through interdisciplinary contextualization in the different learning areas in Mathematics with the presence of the local environment, culture and resources, it connects mathematics to real life problem which is attributed to the contributing failing and bad performance of students and it has the ability of transferring what the students have learned to the new situation and perceived situation in their entirety (Rakes et.al, 2010, Antofina, 2016, Anderson, et.al.2010). With this, students are equipped with cognitive and practical experiences which will lead them to become a productive 21st century learners.

3.1 Acceptability of the Developed Interdisciplinary Contextualized Supplementary Learning Material

The teacher and students' level of acceptance for the use of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was measured using a survey adapted and revised from the instrument used by Cheng et. al. (2016) in their study. The degree of agreement is translated into its corresponding level of acceptance using a pre-determined interval. The acceptability survey was modified by the researcher to suit with the present study. To gather data, the researcher made use of a Likert-scale with 5 scales. The modified acceptability survey has five criteria namely: Perceived Usefulness, Perceived Ease of Use, and Attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and Behavioral Intention to Use Interdisciplinary Contextualized Supplementary Learning Material. Majority of the teachers and students rated the acceptability survey for the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material as "highly acceptable".

Teacher. As summarized, using the frequency table to determine the most frequent responses of the twenty (20) respondents towards the acceptability level of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, majority of the respondents rated the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching integers and rational numbers as "highly acceptable". Table 3a shows the frequency table from the teachers' view of perceived usefulness, perceived ease of use, attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and behavioral intention to use the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Table 3a.

Frequency for IConSuL Material in Grade 7 Mathematics for Teachers

Indicators	Categories				
	SA (5)	A (4)	MA (3)	D (2)	SD (1)
Perceived Usefulness					
1. The use of IConSuL Material in learning will help the teacher to teach more effectively and efficiently.	19	1	0	0	0
2. The use of IConSuL Material will enable the teacher to make activities more interesting and realistic with variety of perspectives.	20	0	0	0	0
3. The use of IConSuL Material may improve the performance of a teacher.	19	1	0	0	0
4. I find the IConSuL Material useful to teaching especially its relevance to real-life situations.	20	0	0	0	0
Perceived Ease of Use					
1. Learning, discovering and exploring the IConSuL Material is easy for both students and the teacher.	17	3	0	0	0
2. Using the IConSuL Material for teaching-learning process, it is easy for the students and teacher to appreciate Mathematics as part of everyday living.	19	1	0	0	0
3. IConSuL Material is easy to understand because of the language used and relatable to the environment.	18	2	0	0	0
4. I find using IConSuL Material for teaching easy to use and friendly	19	1	0	0	0

material.

Attitude Towards IConSuL Material					
1. Using the material for both face to face and distance learning is helpful to teaching.	18	2	0	0	0
2. Being able to use IConSuL Material for teaching and learning stimulates both the students and the teacher more towards the subject and other disciplines.	17	3	0	0	0
3. It is interesting to use the IConSuL Material in learning because it caters connection to other disciplines and it is relevant to everyday living.	20	0	0	0	0
4. IConSuL Material increases cultural appreciation and self- confidence.	18	2	0	0	0
Behavioral Intention to Use IConSuL Material					
1. I intend to use IConSuL Material in teaching during its intended use.	17	3	0	0	0
2. I intend to use IConSuL Material to craft some interesting activities with its unique features in teaching as often as possible.	15	5	0	0	0
3. I will use the IConSuL Material to create other supplementary material which will make the learning more enjoyable and fun.	18	2	0	0	0
4. I will use IConSuL Material in teaching the subject in the future.	19	1	0	0	0

Perceived Usefulness. As seen in the table and graph, under the first indicator for perceived usefulness, nineteen (19) teachers out of twenty (20) respondents or 95% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) teacher out of twenty (20) respondents or 5% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the first indicator under perceived usefulness was five (5) which means that the teachers considered the use of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching Grade 7 mathematics useful to teachers to effectively and efficiently teach using interdisciplinary contextualization.

All of the twenty (20) respondents or 100% of the respondents rated the second indicator under perceived usefulness as “highly acceptable”. Majority of the responses for the second indicator under perceived usefulness was five (5) which means that the teachers agreed that the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material will enable the teacher to make activities more interesting and realistic with variety of perspectives. Majority of the teachers rated the third indicator under perceived usefulness as “highly acceptable”. Nineteen (19) teachers out of twenty (20) respondents or 95% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) teacher out of twenty (20) respondents or 5% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the third indicator under perceived usefulness was five (5) which means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material may improve the performance of a teacher especially crafting relevant instructional materials that will suit the needs of the students. Moreover, this will allow the teachers to maximize their creativity towards making real-life practice exercises which will engage the learners in the learning process.

For the fourth indicator under the perceived usefulness, all the twenty (20) respondents or 100% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the fourth indicator under perceived usefulness was five (5) which means that teachers agreed that the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is useful to teaching especially its relevance to real-life situations. At this present time where we all want to achieve the skills of a 21st century learners, this material will surely let the students think critically through problem solving, become technologically engage and achieve lifelong learning.

Perceived Ease of Use. It can be seen in the table and graph that seventeen (17) teachers out of twenty (20) respondents or 85% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) teachers out of twenty (20) respondents or 15% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material under the first indicator of perceived ease of use. The mode for the first indicator under perceived ease of use was five (5) which means that they considered the use of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in

teaching Grade 7 mathematics useful in learning, discovering and exploring the concept with Interdisciplinary contextualization.

Majority of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material under the second indicator of perceived ease of use. Nineteen (19) teachers out of twenty (20) respondents or 95% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) teacher out of twenty (20) respondents or 5% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the second indicator under perceived ease of use was five (5) which means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) will help the teacher boost students' appreciation towards Mathematics as part of everyday living.

For the third indicator under perceived ease of use, eighteen (18) teachers out of twenty (20) respondents or 90% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) teachers out of twenty (20) respondents or 20% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the third indicator under perceived ease of use was five (5) which means that teachers considered Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching Grade 7 mathematics easy to understand because of the language used in the activities and the familiarity of students towards their environment, culture and resources.

For the fourth indicator under perceived ease of use, majority of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Nineteen (19) teachers out of twenty (20) respondents or 95% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) teacher out of twenty (20) respondents or 5% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the fourth indicator under perceived ease of use was five (5) which means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) is easy to use, accessible and student friendly.

3.2 Attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL)

Material. Majority of the teachers' responses under attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was highly acceptable. Eighteen (18) teachers out of twenty (20) respondents or 90% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) teachers out of twenty (20) respondents or 20% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the first indicator under attitude towards use interdisciplinary contextualized supplementary learning (IConSuL) material was five (5) which means that they considered Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching Grade 7 mathematics helpful for both face to face and distance learning.

For the second indicator under attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, seventeen (17) teachers out of twenty (20) respondents or 85% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) teachers out of twenty (20) respondents or 15% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the second indicator under attitude towards use interdisciplinary contextualized supplementary learning (IConSuL) material was five (5) which means that the respondents agreed that the use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material for teaching and learning stimulates both the students and the teacher more towards the subject and other disciplines.

All of the twenty (20) respondents or 100% of the respondents rated the third indicator under attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material as "highly acceptable". The mode for the third indicator under attitude towards use interdisciplinary contextualized supplementary learning

(IConSuL) material was five (5) which means that teachers agreed that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is interesting to use in learning because it caters connection to other disciplines and it is relevant to everyday living.

For the fourth indicator under attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, eighteen (18) teachers out of twenty (20) respondents or 90% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) teachers out of twenty (20) respondents or 20% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the fourth indicator under attitude towards use interdisciplinary contextualized supplementary learning (IConSuL) material was five (5) which means that they considered Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching Grade 7 mathematics helpful in increasing cultural appreciation and self- confidence.

Behavioral Intention to Use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. As shown in the table and the graph, seventeen (17) teachers out of twenty (20) respondents or 85% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) teachers out of twenty (20) respondents or 15% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the first indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was five (5) which means that majority agreed to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material during its intended use.

For the second indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL), fifteen (15) teachers out of twenty (20) respondents or 75% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and five (5) teachers out of twenty (20) respondents or 25% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the second indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was five (5) which means that they are willing to craft some interesting activities using the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material with its unique features in teaching as often as possible. This will make students equipped with cognitive and practical knowledge that brings together diverse knowledge leading them to become a productive learner.

Majority of the responses under the third indicator of behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was highly accepted. Eighteen (18) teachers out of twenty (20) respondents or 90% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) teachers out of twenty (20) respondents or 20% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the third indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was five (5) which means that teachers will use the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material to create other supplementary material which will allow students to have ownership and control of their learning which will make the learning more enjoyable and fun.

For the fourth indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, nineteen (19) teachers out of twenty (20) respondents or 95% of the responses highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) teacher out of twenty (20) respondents or 5% of the responses accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the fourth indicator under behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was five (5) which means that the teachers are willing to use this instructional material for future references. This means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material can address the greater aim of

teachers for enhancing quality learning, shaping the behavior of the learner in the desired direction, identifying their strength and enabling them to live harmoniously in the environment where they can apply their learning in the real context.

Students. As summarized, using the mode to determine the most frequent responses of the thirty (30) respondents towards the acceptability level of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, majority of the respondents rated the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in teaching integers and rational numbers as "highly acceptable". Table 3b shows the frequency table from the students' view on the use the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Table 3b

Frequency for IConSuL Material in Grade 7 Mathematics for Students

Indicators	Categories				
Perceived Usefulness	SA (5)	A (4)	MA (3)	D (2)	SD (1)
1. The use of IConSuL Material in learning helps me learn more effectively.	29	1	0	0	0
2. The use of IConSuL Material enables me to complete my task more quickly.	29	1	0	0	0
3. The use of IConSuL Material improves my subject performance.	27	3	0	0	0
4. I find the IConSuL Material useful to my learning.	28	2	0	0	0
Perceived Ease of Use					
1. Learning, discovering and answering the IConSuL Material is easy for me.	25	4	1	0	0
2. Using the IConSuL Material for teaching-learning process, it is easy for me to appreciate Mathematics as part of everyday living.	23	7	0	0	0
3. I find the IConSuL Material easy to understand and I can relate well to the environment.	25	5	0	0	0
4. I find using IConSuL Material for learning easy to use.	27	3	0	0	0
Attitude Towards IConSuL Material					
1. Using the apps for both face to face and distance learning is helpful for my learning.	29	1	0	0	0
2. Being able to use IConSuL Material for learning stimulates my interest in the subject.	24	5	1	0	0
3. I enjoy using the IConSuL Material for my own learning.	28	2	0	0	0
4. I appreciate more our culture and confident to share with others what I have learned.	26	4	0	0	0
Behavioral Intention to Use IConSuL Material					
1. I intend to use IConSuL Material for learning if the topic is about rational numbers.	27	3	0	0	0
2. I intend to use IConSuL Material for learning when the needs arise.	27	2	1	0	0
3. I will use IConSuL Material for learning in future.	25	5	0	0	0
4. I will use IConSuL Material to explore and discover more of the culture and real-life experiences.	26	4	0	0	0

Perceived Usefulness. As shown in the table and the graph, most of the students highly accepted the first indicator under perceived usefulness. Twenty-Nine (29) students out of thirty (30) respondents or 96.6$\overline{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) student out of thirty (30) respondents or 3. 3$\overline{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the first indicator under perceived usefulness was five (5) which means that the students find Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material of Material in learning useful in learning more effectively.

For the second indicator under perceived usefulness is five (5), majority of the students with 29 students out of 30 respondents or 96.6$\overline{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) students out of thirty (30) respondents or 3. 3$\overline{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the

second indicator under perceived usefulness was five (5) which means that the students enables to complete the task more quickly using the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material of Material in learning useful in learning more effectively.

For the third indicator under perceived usefulness, twenty-seven (27) students out of thirty (30) respondents or 90 % of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) students out of 30 respondents or 10% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the third indicator under perceived usefulness was five (5) which means which means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material can be useful in improving student's performance in Mathematics.

Mostly, students' responses under the fourth indicator of perceived usefulness was highly acceptable. Twenty-Eight (28) students out of thirty (30) respondents or 93.$\overline{3}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) students out of thirty (30) respondents or 6.6$\overline{6}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses for the fourth indicator was five (5) which means that the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is useful on students' learning about integers and rational numbers.

*Perceived Ease of Use***.** Majority of the responses under the first indicator of perceived ease of use is highly accepted. Twenty Five (25) students out of thirty (30) respondents or 83.$\overline{3}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, four (4) students out of thirty (30) respondents or 13. $\overline{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) and one (1) student out of thirty (30) respondents or 3. $\overline{3}$% of the respondents is neutral on the perceived ease of use of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses under the first indicator was five (5) which means that most of the students find the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material easy for them in learning, discovering and performing the activities with interdisciplinary contextualization.

For the second indicator under perceived ease of use, 23 students out of 30 respondents or 76.6$\overline{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and seven (7) students out of thirty (30) respondents or 23. $\overline{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses under the second indicator was five (5) which means that using the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material for teaching-learning process is easy for them to appreciate Mathematics as part of their everyday living.

Majority of the students for the third indicator under perceived ease of use with twenty-five (25) students out of thirty (30) respondents or 83.$\overline{3}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and five (5) students out of thirty (30) respondents or 16. $\overline{7}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The mode for the third indicator under perceived ease of use was five (5) which means that the students find the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material easy to understand and they can relate well to the environment.

Most responses for the fourth indicator under perceived ease of use was highly accepted. Twenty-Seven (27) students out of thirty (30) respondents or 90 % of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) students out of thirty (30) respondents or 10% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the responses under the fourth indicator was five (5) which means that the students find the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material easy to use in the learning process.

Attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Majority of the respondents for the first indicator under attitude towards interdisciplinary contextualized supplementary learning (IConSuL) material was highly acceptable. Twenty-Nine (29) students out of thirty (30) respondents or 96.6$\bar{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and one (1) student out of thirty (30) respondents or 3. 3$\bar{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL). This means that most of the students find the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material useful in the learning process both in face to face and distance learning.

For the second indicator under attitude towards interdisciplinary contextualized supplementary learning (iconsul) material, twenty four (24) students out of thirty (30) respondents or 80 % of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, five (5) students out of thirty (30) respondents or 16. 6$\bar{6}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) and one (1) student out of thirty (30) respondents or 3. 3$\bar{3}$% of the respondents is neutral on the percieved ease of use of the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. This means that most responses was five (5) which means that most of the students stimulates their interest on Mathematics using the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material.

Most responses of students for the third indicator under attitude towards interdisciplinary contextualized supplementary learning (IConSuL) material was highly acceptable. Twenty-eight students out of 30 respondents or 93.3$\bar{3}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and two (2) students out of 30 respondents or 6. 6$\bar{6}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL). This means that students enjoyed the use of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in their own learning.

It was seen in the responses of the students that most students highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material under the fourth indicator on attitude towards Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Twenty-six students out of 30 respondents or 86.6$\bar{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and four (4) students out of 30 respondents or 6. 6$\bar{6}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL). This means that students appreciate more their culture and has confidence to share with others what they have learned.

3.3 Behavioral Intention to Use Interdisciplinary Contextualized Supplementary Learning

(IConSuL) Material. As shown in the graph, majority of the students highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material under the first indicator on behavioral intention to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. Twenty-Seven (27) students out of thirty (30) respondents or 90 % of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and three (3) students out of thirty (30) respondents or 10% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) This means that most of the students intend to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in learning if the topic is about rational numbers.

For the second indicator under behavioral intention to use interdisciplinary contextualized supplementary learning (IConSuL) material, 27 students out 30 respondents or 90 % of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material, two (2) students out of 30 respondents or 6. 6$\bar{6}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) and one (1) student out of 30 respondents or 3. 3$\bar{3}$% of the respondents expressed neutral acceptability on the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL). This means that most of the students intend to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in

learning when the needs arise especially if the topic focused on integers and rational numbers.

Most responses for the third indicator under behavioral intention to use interdisciplinary contextualized supplementary learning (IConSuL) material was highly accepted. Twenty-five students out of 30 respondents or 83. $\overline{3}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and five (5) students out of 30 respondents or 16. Six ($\overline{6}$%) percent of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL). This means that students intend to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in the future especially if there is a need to recall the basic knowledge in Mathematics.

For the fourth indicator under behavioral intention to use interdisciplinary contextualized supplementary learning (IConSuL), 26 students out of 30 respondents or 86. $\overline{6}$% of the respondents highly accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material and four (4) students out of 30 respondents or 13. $\overline{3}$% of the respondents accepted the Interdisciplinary Contextualized Supplementary Learning (IConSuL). Thismeans that most of the students intend to use Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material to explore and discover more of the culture and real-life experiences.

As perceived by the students, the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material was highly acceptable and useful in learning integers and rational numbers. Based from their learning journals, one of the students revealed that they learned to solve problems in rational numbers using the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. The students also appreciated the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material because they can relate well to the activities because it is realistic. Some of the activities are based on the local culture and real life events which allows them to reflect on their own experiences. They were fascinated by the use of contextualization especially that they can't travel at this moment because of the pandemic. They were allowed to explore the Bicol region using the printed material. They also learned how to become physically and mentally healthy because they were given some information on how to cook healthy and readily available ingredients and how to maintain a physically fit body by performing various activities. These are some of the content of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material which allow students to engage themselves in learning knowledge and apply that knowledge in real life. Moreover, it can be seen in the students' journal that they find the material interesting especially that they can relate to the activities and they enjoy the connection of Mathematics to other learning areas.

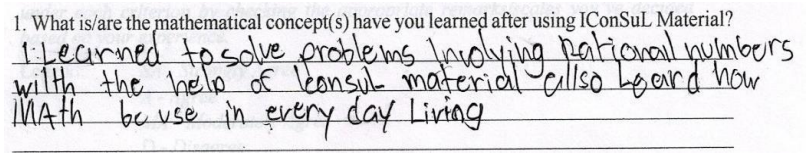
1. What is/are the mathematical concept(s) have you learned after using IConSuL Material?
I Learned to solve problems involving Rational numbers with the help of Iconsul material Also Learn how MAth be use in every day Living

Plate 19: A student's answer to journal question number 1

Some students also said that the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is very interesting because it is connected to other subjects, therefore aside from learning mathematics concept, they gain knowledge on the different subject areas. The examples are also familiar to them which they can relate because some of them are already product of their experiences. The material is also informative and enjoyable because of real life activities. They can do some of the actions at home and can maximize the use of material by incorporating some of its real life activities in their everyday living.

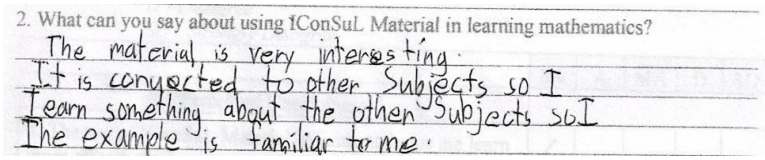
2. What can you say about using IConSuL Material in learning mathematics?
The material is very interesting.
It is connected to other Subjects so I
learn something about the other Subjects so I
The example is familiar to me.

Plate 20: A student's answer to journal question number 2

Some students also said that the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material helped them in learning mathematics better than before. They can always go back to the discussions if they want or need to because the Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material can serve as a reviewer and reinforcement to the topic difficult to understand. Those students who were confused and find the topic difficult to understand had the chance to revisit the discussions and find the answers to their questions from the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material. According to them, the mobile apps helped them learn the topics in their own pace. They also stated in theirjournal that the discussion is clear and the activities are presented in many different ways, that's why they learned a lot.

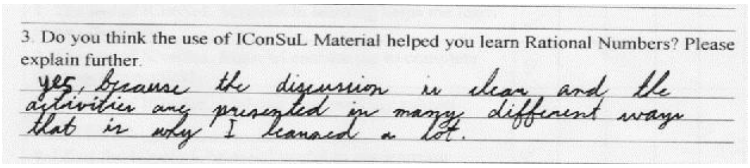
3. Do you think the use of IConSuL Material helped you learn Rational Numbers? Please explain further.
Yes, because the discussion is clear and the activities are presented in many different ways that is why I learned a lot.

Plate 21: A student's answer to journal question number 3

The developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material also developed the positive attitudes of the students toward mathematics. This is shown on their journal. They even said that "…Yes, I am now open to the idea that Mathematics is everywhere." A student also said that "I truly appreciate Math and the other subjects. I am now more patient, active and positive when it comes to answering Math problems." They even confessed that they hate math before, but now they no longer hate mathematics. Evidently, the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material inspired the students to accept mathematics in their way of learning and living. They appreciated that mathematics can also be part of their everyday life.

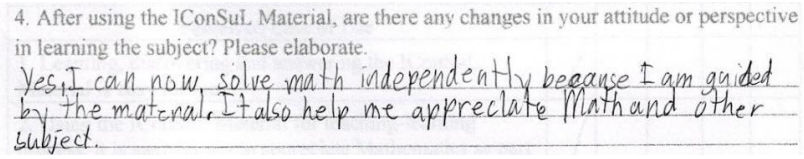
4. After using the IConSuL Material, are there any changes in your attitude or perspective in learning the subject? Please elaborate.
Yes, I can now solve math independently because I am guided by the material. It also help me appreciate Math and other subject.

Plate 22: A student's answer to journal question number 4

The students learn more when students are given the chance to explore and learn math in different perspectives. They appreciate it more. They learn more in such a way that they gain knowledge not only in mathematical concepts but it also gives them the chance to appreciate more their life, the culture and the community they are part of. Moreover, this will help them apply all the different concept to the community they are part of. They are also equipped with more knowledge in Math integrated with other subject areas. This is very helpful because the knowledge is not limited to Mathematics which allow them to maximize their skills and ability in other learning areas. They become flexible individuals who are ready for diverse change and diverse opportunities. These skills are much more likely what a 21st century learners should be.

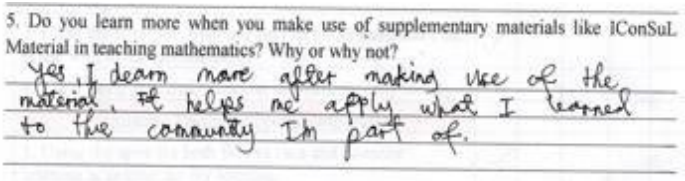
5. Do you learn more when you make use of supplementary materials like IConSuL Material in teaching mathematics? Why or why not?
Yes, I learn more after making use of the material. It helps me apply what I learned to the community I'm part of.

Plate 23: A student's answer to journal question number 5

Overall, the developed is Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material highly acceptable to teachers and to the students who actually used the developed instructional materials in their learning process. The Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material is an instructional material that is useful in the teaching-learning process which can be used to retain, remediate and

reinforce the topics in Mathematics. This only proves that combining the contextualization and interdisciplinary in teaching and learning is highly accepted in the field of mathematics, both for teachers and students.

Based on the gathered data, the following are the major findings of the study, there were five (5) Interdisciplinary Contextualized Supplementary Learning Material. The topics that were covered in the developed Interdisciplinary Contextualized Supplementary Learning Material are performing fundamental operations on integers, illustrating the different properties of operations on the set of integers, expressing rational numbers from fraction form to decimal form and vice versa, performing operations on rational numbers and representing real-life situations and solve problems involving rational numbers. The Education Program Supervisor and mathematics teachers who served as the jurors had validated the developed Interdisciplinary Contextualized Supplementary Learning Material and it passed their standards and can be used in teaching topics involving rational numbers in Grade 7 Mathematics. For the content quality, it has a weighted mean of 31.28, for the instructional quality, it has a weighted mean of 30.94, for the technical quality, it has a weighted mean of 30.46 and for interdisciplinary contextualization, it has a weighted mean of 19.92. Majority of the teachers and students rated the acceptability survey of the developed Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material as "highly acceptable".

Based on the conclusions of the study, the following are recommendations are made. Teachers may develop more Interdisciplinary Contextualized Supplementary Learning Material that are suited for the intended users—teachers and students. In this new normal setting, developing Interdisciplinary Contextualized Supplementary Learning Material like this gives more opportunities for teachers and students to learn more and appreciate real life context. The Interdisciplinary Contextualized Supplementary Learning Material can be useful to other non-mathematics teachers especially that the curriculum deeply encourages everyone to create integrative assessment in the different learning areas. The Department of Education and Commission on Higher Education may initiate training-workshops to teach and enhance the teachers' capacity in developing supplementary learning materials suited to the continuously changing educational set-up. The developed Interdisciplinary Contextualized Supplementary Learning Material may be used by both teachers and students in mathematics. Teachers are encouraged to incorporate the use of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material in the lessons in Mathematics to promote the awareness, appreciation and competence in solving Mathematics problem. The Department of Education and Commission on Higher Education may initiate training-workshops to teach and enhance the teachers' capacity in developing instructional materials which caters interdisciplinary contextualization suited to the needs of the students. The future researcher may expand and use the format of the material from Grade 7 to Grade 12 for further study to determine the effect of Interdisciplinary Contextualized Supplementary Learning (IConSuL) Material to the learning of the students.

4. References

Aina, K. J. (2013). Instructional materials and improvisation in physics class: Implications for teaching and learning. *IOSR Journal of Research & Method in Education (IOSR-JRME), 2*(5), 38-42.

Altintas, E., & Ilgün, S. (2017). Exploring the opinions about the concepts of "formula" and" rule" in mathematics. *Educational Research and Reviews, 12*(19), 956– 966.

Anderson, A & Kalman H. (2010). Reflections on learning in interdisciplinary settings. *International Journal of Teaching and Learning in Higher Education, 22*(2), 204-208.

Awolaju, B. A. (2016). Instructional materials as correlates of students' academic performance in biology in senior secondary schools in Osun State. *International Journal Information and Education Technology, 6*(9), 705-709.

Bada, S. O., & Olusegun, S. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education, 5*(6), 66–70.

Cheng, G., Guan, Y., & Chau, J. (2016). An empirical study towards understanding user acceptance of bring your own device (BYOD) in higher education. *Australasian journal of educational technology, 32*(4).

Chernus, K., & Fowler, D. (2010). Integrating Curriculum: Lessons for adult education from career and technical

education.

Chin, M. (2020). Students' new normal: Modular distance learning. *Unique Philippine*s. Retrieved from https://www.uniquephilippines.com/students-new-normal-modular-distance-learning/

Dangle, Y. R. P., & Sumaoang, J. D. (2020). The implementation of modular distance learning in the Philippine secondary public schools. *International Conference on Advanced Research in Teaching and Education*.

Davis, B. (2019). Which type of research can be categorized as developmental research? Retrieved from https://www.mvorganizing.org/which-type-of-research-can-becategorised-as-developmental-research/

Dhakal, K. R. (2017). Availability and Utilization of Instructional Materials in Teaching Geography in Secondary Schools. *The Third Pole: Journal of Geography Education, 17*, 51-58.

Educational Management Information System (2018). Tabaco National High School Tabaco City.

George, N. R., & Amadi, O. (2016). *Improvisation skills possessed by mathematics teachers in junior secondary schools in rivers state*, Nigeria.

Gillaco, M. (2014). Level of word recognition and reading comprehension: A basis for a reading program. *Asia Pacific Journal of Education, Arts and Sciences, 1*(5).

M. M. (2015). *A Correlation Study between Learning Styles and Academic Achievement among Secondary School Students in Kenya*. University of Nairobi.

Manlangit, P. et al., (2020). *Nanay, Handa na ba kayong Maging Tagapagdaloy? Supercharging Filipino Parents is Key for Successful Modular Distance Learning*. Retrieved from https://www.flipscience.ph/news/features-news/tagapagdaloy-modulardistance-learning/

Official Gazette. (2013). Republic Act No. 10533 (The Constitution of the Republic of the Philippines). Retrieved, January 21, 2019. Retrieved from https://www.officialgazette.gov.ph/constitutions/1987-constitution

Official Gazette. (2013). Republic Act No. 10533 (The Constitution of the Republic of the Philippines). Retrieved, January 21, 2019. https://www.officialgazette.gov.ph/constitutions/1987-constitution

Okobia, E. O. (2011) Repositioning teacher education programme for more effective teaching and learning of social studies in Nigeria. In Adeyemi, K. and Awe, B., Eds., *Rebranding Nigeria Educational System, School of Education*, National Open University of Nigeria, Lagos.

Olayinka, A. (2016). *Effects of instructional materials on secondary schools students' academic achievement in social studies in Ekiti State*, Nigeria. Vol. 6

Rakes, C. R., Valentine, J. C., McGatha, M. B., & Ronau, R. N. (2010). Methods of instructional improvement in algebra: A systematic review and meta-analysis. *Review of Educational Research, 80(*3), 372–400.

Republic Act No. 10533 (2013). Retrieved from https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/

Shell, D. F., Brooks, D. W., Trainin, G., Wilson, K. M., Kauffman, D. F., & Herr, L. M. (2010). *The unified learning model: How motivational, cognitive and neurobiological sciences inform best teaching practices*. Springer.

Singh, V. (2017). Exploring the relationship between cognitive style and learning style with academic achievement of elementary school learners. *Educational Quest-An International Journal of Education and Applied Social Sciences, 8*(sp l), 413419.