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Development of Playlist Model Lesson Guide in Algebra

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Abstract**—***This study sought to develop a lesson guide aligned with the DepEd K-12 Mathematics Curriculum and MELCs, emphasizing foundational algebraic concepts and to utilize the Playlist model. This study utilized descriptive research design to develop and evaluate the lesson guide utilizing the Playlist model. Additionally, the Backward Design Framework was used to develop a lesson guide for Grade 9 Algebra using the Playlist Model. Backward design is a systematic instructional planning approach that begins with identifying desired learning outcomes, followed by determining assessment evidence, and concluding with the planning of instructional activities. Videos and handouts integrated into the lesson guide enhanced learning by supporting visual learners and providing clear problem-solving strategies. Students valued the structured guidance on improved outcomes from well-designed materials. Collaborative problem-solving fostered engagement and understanding, while real-world applications of quadratic functions boosted appreciation and critical thinking, underscoring the Playlist Model's effectiveness. This study recommends aligning learning outcomes with curriculum standards, using accurate assessments to track progress, planning diverse activities suited to students and resources, adapting strategies during lessons, and incorporating student feedback to refine instruction.*

Keywords**—** *Blended Learning, Playlist Model, Student Engagement*

I. INTRODUCTION

Blended learning has gained widespread recognition as a student-centered approach that combines face-to-face instruction with online resources to create an interactive and flexible learning environment. By prioritizing active student engagement and fostering self-directed learning, blended learning enables students to take greater control of their educational journey while overcoming the physical and temporal constraints of traditional classrooms [5][7]. Research highlights its distinct advantages, such as enhanced academic performance, increased flexibility, and improved student engagement compared to fully online or face-to-face models [1][3].

Numerous studies have explored the potential of blended learning in various educational contexts. For instance, [13] found that incorporating blended learning into mathematics instruction improved students' academic performance, self-study skills, and learning attitudes. The integration of blended learning approaches has also been linked to enhanced collaboration, increased resource accessibility, and greater student ownership of learning [11]. Moreover, specific models such as the flipped classroom have consistently demonstrated their effectiveness in improving engagement and outcomes by allowing students to learn theoretical content online and dedicate classroom time to practical application [17][12].

Among the various blended learning models, the Playlist Model stands out for its emphasis on customization and autonomy. This model provides students with a series of tailored learning activities, enabling them to progress at their own pace while teachers offer targeted support and guidance [14]. Despite its potential, research on the Playlist Model, particularly in secondary education and subjects like Algebra, remains scarce. While studies like those by [3] and [16] have examined other models, such as flipped classrooms and lab rotations, there is limited exploration of how the Playlist Model influences student engagement, self-directed learning, and academic performance.

Addressing this gap, this study focuses on the implementation of the Playlist Model in teaching Grade 9 Algebra. The research aims to develop a lesson guide aligned with the DepEd K-12 Mathematics Curriculum and MELCs, emphasizing foundational algebraic concepts and to utilize the Playlist model.

II. METHODS

This study utilized descriptive research design to develop and evaluate the lesson guide utilizing the Playlist model. Additionally, the Backward Design Framework was used to develop a lesson guide for Grade 9 Algebra using the Playlist Model. Backward design is a systematic instructional planning approach that begins with identifying desired learning outcomes, followed by determining assessment evidence, and concluding with the planning of instructional activities [15].

Several instruments were employed to develop, validate, and assess the Playlist model lesson guide. Content and learning activities in the lesson guide were derived from the competencies outlined in the DepEd K-12 curriculum and the Most Essential Learning Competencies (MELCs) for Algebra in the third quarter. A structured Playlist model lesson guide was created based on the curriculum requirements. Its validity was assessed by a panel of validators to ensure alignment with learning goals and proper integration of blended learning

principles. A blended learning rubric adapted and modified from [9] was used to validate the developed lesson guide.

The data collection process followed a systematic approach. The Playlist model lesson guide was designed to address the competencies in the third quarter Algebra curriculum. Activities included diagnostic assessments, digital tasks, paired activities, and practice worksheets. The guide underwent expert review to ensure its content validity and alignment with the blended learning model. Suggestions from the review were incorporated to refine the final version The lesson guide was implemented in a classroom setting over one week, with the cooperating teacher observing the students' interactions and performance. Journals and questionnaires were collected from the students to gain insights into their experiences. Follow-up interviews further contextualized their responses. Data from the journals, teacher observations, questionnaires, and interviews were analysed to assess the effectiveness and practicality of the lesson guide.

III. Results and Discussion

A. Development of the Lesson Guide

The development of the lesson guide followed the backward design framework, which ensures that learning objectives, assessments, and activities are aligned for intentional and effective instructional design [18]. This structured approach involves three stages: (1) identifying desired results, (2) determining assessment evidence, and (3) planning learning experiences and instruction [16]. The background design framework is shown in fig. 1.

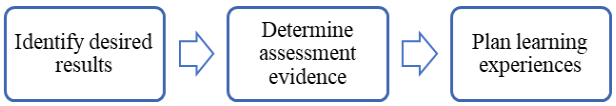

Fig. 1. Background Design Framework

The first stage focused on defining the competencies students should master by the end of the lessons. Learning competencies were aligned with the K-12 Mathematics Curriculum Guide and the Most Essential Learning Competencies (MELCs) for Grade 9 Algebra. The identified objectives were as follows: 1) solves problems involving linear functions, 2) define quadratic functions, 3) represent a quadratic function using: (a) table of values, (b) graph, (c) equation, and 4) transforms quadratic function defined by $y = ax^2 + bx + c$ into the form $y = a(x - h)^2 + k$.

In the second stage of backward design, we create the assessments students will complete in order to demonstrate evidence of learning and even progress towards achievement of the learning objectives. Assessment activities designed to assess prior knowledge, formative assessments, and tests were included which provides insights into what the students know or can do. This includes paired or group activities where students need to coordinate with a pair and group were included to engage with other members of the class, solving word problems, and choice board where students provide evidence that they understood in the concept by choosing an activity on the choice board. At the end of each lesson, a quiz is given to determine learners' achievement of each learning objective. Learning activities that can increase student engagement were also included such as presenting information using videos and interactive websites.

In the third stage of backward design, teachers plan the most appropriate lessons and learning activities to address objectives identified in the first stage. Listing of activities such as pair practice, video explanations, personalized skill practice with online resources were included. The sequence of learning activities incorporated to the playlist were determined to succeed on the assessments. One common activity incorporated in each of the learning objectives were video explanation from online resources, paired activities, and placing teacher checks to provide the teacher with the opportunity to spend with individual learners to review and discuss their progress, and provide focused feedback.

In planning for learning activities incorporated to the playlist, it is important to consider the classroom setting. The playlist was made with a view that the classroom has limited space and limited internet connection. Considering the standard of a blended learning classroom which encourages a conducive learning environment to implement blended learning, the activities included such that the limited space and limited internet connection were considered. Activities where access to internet, helpful websites and videos, were necessary to ensure that it falls into the category of blended learning. The scope of a playlist varies dramatically. Playlist can be large-scale that may span a couple of weeks. In a large-scale playlist, students may walk through the process of conducting an experiment and writing a lab report or working through a multi-step project. It can also be a small-scale playlist which focuses on introducing a particular concept or skill. Small-scale playlists to be accomplished in each learning session were made considering the objectives identified and the classroom setting. Each small-scale playlist was made such that it can be accomplished within one learning session.

B. Validation and Implementation

The lesson guide underwent a validation process involving review by a panel of validators. The validators validated the lesson guide using the blended learning rubric adapted from [10]. The panel of validators is composed of three mathematics teachers with diverse background and experiences. Two teachers are public school mathematics teacher. The third teacher is a mathematics university professor. Feedback focused on content relevance, activity feasibility, and alignment with the Playlist model principles. Following revisions based on these suggestions, the finalized guide was implemented across two sections of Grade 9 students.

C. Sample Learning Activity Sheets

The use of videos in the playlist model was helpful in providing a summary and reference of what the learners needed to learn. One benefit of using videos in learning is that it provides the learner the opportunity to go back and rewatch

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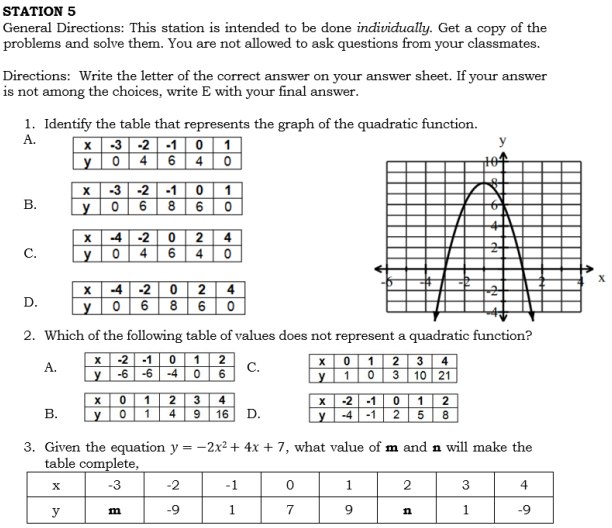
the video to fully understand the lesson. It also improves the learning of visual learners which made the materials easier to grasp.

"Ang videos kay ginalantaw nakog balik balik hangtod masabtan." (I watch the instructional videos repeatedly until I fully understand the content.) – SB3

In addition, providing handouts and worksheets were frequently mentioned as an effective way to reinforce learning. Students preferred activities that allowed them to apply what they had learned. The study of [11] showed that using handouts, student's learning outcomes have increased because students read the material and finally understand the material being studied. The handouts in particular gave them reference to see how to approach and solve problems. Like the videos, the handouts provided them the steps on how to solve the problems which were the reasons of the students' engagement. Fig. 2 is one of the worksheets used in the study.



STATION 5

General Directions: This station is intended to be done *individually*. Get a copy of the problems and solve them. You are not allowed to ask questions from your classmates.

Directions: Write the letter of the correct answer on your answer sheet. If your answer is not among the choices, write E with your final answer.

1. Identify the table that represents the graph of the quadratic function.

A.

x	-3	-2	-1	0	1
y	0	4	6	4	0

B.

x	-3	-2	-1	0	1
y	0	6	8	6	0

C.

x	-4	-2	0	2	4
y	0	4	6	4	0

D.

x	-4	-2	0	2	4
y	0	6	8	6	0

2. Which of the following table of values does not represent a quadratic function?

A.

x	-2	-1	0	1	2
y	-6	-6	-4	0	6

B.

x	0	1	2	3	4
y	0	1	4	9	16

C.

x	0	1	2	3	4
y	1	0	3	10	21

D.

x	-2	-1	0	1	2
y	-4	-1	2	5	8

3. Given the equation $y = -2x^2 + 4x + 7$, what value of **m** and **n** will make the table complete,

x	-3	-2	-1	0	1	2	3	4
y	**m**	-9	1	7	9	**n**	1	-9

Fig. 2. Sample Worksheet

Many students highlighted the benefit of working with their classmates to solve problems, which created a support network that enhanced their understanding. Although in their usual classes, students can ask their classmates questions, it didn't encourage deeper discussions about the methods used by their classmates.

"Katong makaask sa classmates, makapangutana man pod mi sa classmates before pero not like makapangutana jud giunsa. Katong kay sir rovic kay makapangutana ra mi kung unsay naanswer, unsay nakuha. Katong bag-o na setup kay pwede mag-ask sa pair or group dayon magpasabot lang ka giunsa pagkuha." (Previously, while we could ask our classmates questions, it didn't encourage deeper discussions about the methods we used. In the new setup, I appreciated that I could ask my partner or group members for explanations about how they arrived at their answers.) – SB7

The term collaboration typically describes the process of working jointly. In education, collaboration and collaborative activities involve two or more students coming together to acquire knowledge, address a problem, accomplish a task, or produce something [9]. Collaboration among students encouraged the students to clarify any confusion with the topic and help one another understand the material better.

Learners gain sense of accomplishment from solving problems and the clarity gained from seeing the real-world applications of quadratic functions contributing to a deeper appreciation for the subject.

"Learning about quadratic functions seemed hard at first, but I grew to like how they work and their real-life uses. Changing numbers in equations to see how graphs change was interesting. Solving these equations was challenging but fun. Drawing the graphs helped me understand better, and I saw how useful they are in different areas. Overall, I ended up liking math more because of it." - SB4

Fig. 3 shows a sample learning activity utilizing real-world application included in the lesson guide.

DAY 4

Learning Objective: Represent a quadratic function using: (a) table of values; (b) graph;

Activity	Directions	Notes
1. Think it Up: Application of Quadratic Functions	In this activity, students are expected to make their own quadratic functions and represent it by table of values and graph. Choose in the choice board your way of presenting your quadratic function. Application of Quadratic functions rubric.docx Think of an application of quadratic function in your life and perform the following task. 1. Create a quadratic function relating to your real-life application. 2. State a scenario to create a table of values using your given quadratic function.	
	3. Graph your quadratic function.	

Fig. 3. Sample Learning Activity

Real-world applications in learning actively enhance engagement and strengthen intrinsic motivation and personal satisfaction by making the learning process meaningful. Learners increase their sense of purpose when they recognize the direct relevance of their studies to practical scenarios, which reinforces their intrinsic drive to engage deeply with the material [7]. This connection fosters satisfaction as they see the value of their efforts extend beyond the classroom, transforming academic content into skills applicable to everyday life and future careers [2].

IV. Conclusions and Recommendations

The development process highlighted the importance of intentional instructional design, particularly in blended learning environments. The Playlist model's flexibility allowed for targeted interventions, promoting self-paced learning while maintaining teacher guidance. This approach proved to be adaptable to the challenges of limited resources, providing students with opportunities to engage actively and meaningfully with Algebra concepts.

The process of creating a Playlist model lesson guide emphasizes alignment with educational standards, clear

assessment strategies, and engaging instructional design. Regular reflection and iterative adjustments are integral to maintaining the lesson's relevance and effectiveness for diverse learners.

In addition, the researcher would like to recommend the following:

1. Actively identify and align learning outcomes with curriculum standards.
2. Focus on determining assessment evidence that accurately reflects student progress.
3. Plan diverse, engaging learning experiences tailored to student needs and the available classroom resources.
4. Incorporate a reflective process and adapt instructional strategies in real-time during lesson implementation.
5. Regularly collect and incorporate student feedback to address challenges and refine lesson design.

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