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Exploration of Practices and Challenges of Open High School Program Teachers in Mathematics

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***Abstract*—*The Open High School Program is a flexible learning initiative in the Philippines for students who cannot attend regular classes. This research examined the approaches and difficulties encountered by math educators within this program. Two OHSP mathematics teachers participated in the study using one-on-one interviews, focus group discussions, and classroom observations, which were carried out at a four-story, community-centered, and accessible private school in Iligan City that provides diverse and non-traditional students within the OHSP. Key instructional practices were identified through thematic analysis. These included emphasizing the basic mathematical foundations, contextualizing and simplifying instruction in the local language, providing supplementary learning materials, teaching step-by-step with visual aids, utilizing a variety of assessment strategies, and regular feedback and consultations were designed for the flexible nature of the OHSP. However, significant challenges emerged, including insufficient instructional time, varied student learning levels, and the need to accommodate diverse life circumstances. Teachers also reported that irregular access to learning materials, difficulty monitoring student progress, student attendance, and participation issues made it difficult to keep students interested in mathematics. To improve mathematics instruction in adaptable learning environments, the results highlight the significance of responsive teaching strategies and systematic support to strengthen mathematics education in flexible learning environments. Furthermore, this study contributed to the limited literature on mathematics education in alternative education programs like the OHSP by offering useful insights for improving curriculum design, teacher training, learning materials or modules, and learner support in remote learning environments.*

Keywords*—*Alternative Education, Contextualized Instruction, Flexible Learning, Mathematics Education, Open High School Program

I. Introduction

Different pedagogical approaches are needed to address the unique challenges of teaching mathematics in flexible learning environments such as the Open High School Program. Through the Open High School System Act (Republic Act 10665) and DepEd Order No. 46, s. 2006, the Philippine Department of Education established the Open High School Program for students who cannot attend regular classes due to health problems, financial constraints, family and work responsibilities, or other valid reasons (OHSP Handbook, 2008). Mañebo et al. (2022) pointed out that one of the Open High School Program's main advantages is its flexibility and self-directed learning. However, Cruz & Vargas (2021) mentioned that its success relies heavily on strong support systems, well-structured learning materials, and engaging resources to enhance students' achievement and understanding.

Mathematics, a subject often perceived as difficult according to Kunwar (2020), presents unique challenges in the flexible learning setup due to its abstract nature, requiring constant practice and immediate feedback as mentioned by Prayoga & Abraham (2017). The Philippines continued to perform poorly in mathematics, according to the 2022 PISA results reported by the Inquiry Report (2024), highlighting the need to improve mathematics instruction, particularly in alternative learning programs like the OHSP. According to recent research, there is a persistent lack of professional development for mathematics teachers in open and distance learning environments. To maintain instructional quality, Sancar et al. (2021) and Chen & Chan (2022) emphasized the necessity of collaborative planning, structured teacher training, and emotional support systems. Furthermore, teachers in flexible programs frequently lack training in critical-thinking instruction and problem-solving pedagogy, which are crucial skills in mathematics education, according to the study by Dicdiquin et al. (2023). Despite continuous efforts to enhance student outcomes, little has been researched about the perspectives of mathematics teachers, especially in the OHSP.

Therefore, exploring the practices and challenges faced by mathematics teachers in the OHSP was the primary goal of this study. The study looked at how these teachers adjust to the Open High School Program, deal with challenges to students' learning, and deliver instruction with little funding to provide practical advice on how to improve mathematics instruction in flexible learning settings.

II. Methodology

This study explored the practices and challenges of teachers in teaching mathematics in an Open High School Program setting. This study used a qualitative research design, employing a descriptive approach to collect in-depth information from mathematics teachers. This study was

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conducted at the alternative high school program in Iligan City, Philippines. The participants were two mathematics teachers with at least a year of mathematics teaching experience in the OHSP. The study involved only two OHSP mathematics teachers due to program size, teacher availability, and the study focused on in-depth qualitative insights. Semi-structured interviews, focus group discussions (FGDs), and classroom observations were used to collect qualitative data. The experiences, practices, challenges, and strategies of mathematics teachers associated with teaching mathematics in the Open High School Program were assessed through face-to-face interviews and focus group discussions (FGDs).

The interview questions were designed to be open-ended, allowing participants to provide detailed responses and reflect on their experiences, practices, and challenges. For interviews conducted in the local language (*Bisaya*), translations were carefully done to maintain the original intent and meaning as accurately as possible. The information was reviewed through thematic analysis, employing a coding methodology to identify key themes and trends among the feedback. Before starting the study, ethical approval was sought, and it was carefully integrated into each stage of the research process, from the CED Research Ethics Committee's approval to the study's actual implementation.

III. Results And Discussion

The results of this study revealed several recurring themes regarding the practices and challenges of mathematics teachers in the OHSP, specifically in mathematics education.

3.1 Practices of Open High School Teachers in Teaching Mathematics

The responses from mathematics teachers who participated in the Open High School Program were analyzed thematically in this section. Several teaching practices were identified by the data analysis of teacher interviews and focus group discussions used by mathematics teachers when teaching OHSP Students. These practices were categorized into the following themes:

3.1.1 Emphasis on Basic Mathematical Foundations

According to mathematics teachers, many OHSP students struggled with basic mathematics skills like multiplication and division.

Teacher 1*: "I noticed that many students are slow in multiplication, so I replaced the spelling drill with a multiplication drill at the start of the class. Multiplication is essential in many math topics, it is a foundational skill."*

To reinforce basic mathematics skills, the math teacher substituted multiplication drills, like 7 times 8, 4 times 9, 6 times 6, and so forth, for traditional spelling drills. The mathematics teachers found that many students in the OHSP had problems with basic operations like multiplication and division, making foundational knowledge important in mathematics.

3.1.2 Contextualized and Simplified Instruction

Mathematics teachers reported their teaching strategies to make mathematics more accessible and relevant to the OHSP.

Teacher 1: *"Students were struggling with English, so I often switch to the local language (Bisaya) when explaining difficult words. I relate lessons to real life, especially because most of them are working students."*

Teacher 2: *"For me, the way I deliver my lessons, I have to give them practical examples. My way of teaching should go from simple to complex so that they don't have a hard time."*

In addition to improving comprehension, this practice of mathematics teachers made the OHSP students more comfortable and confident in learning mathematics. Relevance and retention were further enhanced by contextualizing the material with examples from real-life situations. Learning becomes more meaningful when concepts are connected to real-life situations because many OHSP students have family or work responsibilities, according to Bruner (1966). Moreover, UNESCO (2003) supported mother-tongue-based multilingual education and encouraged the use of the mother tongue as the bridge to understand abstract concepts.

3.1.3 Provision of Supplementary Learning Materials

To encourage students' independent learning throughout the week, mathematics teachers offered a variety of supplementary learning materials to the OHSP students.

Teacher 1: *"The time from Monday to Saturday is when the students do individual learning. I provide them with modules, lecture notes, and activities for that."*

Teacher 2: *"We provide them materials because they are part of the Open High School Program. Their classes are every Sunday, so as teachers, we make sure that during the weekdays, if they have free time, they can catch up on their lessons through their modules."*

Boelens et al. (2017) mentioned in their study that the fundamental ideas of flexible learning, which emphasize giving students choices regarding how, when, and where they learn, are in line with this practice. According to Bao (2020), the use of modules and other instructional materials promotes autonomous learning by providing students with self-paced, organized, and structured learning materials that improve their engagement and understanding in distance or remote learning environments. This practice is supported by Lee et al. (2020), who highlight how pedagogical flexibility methods aid students in developing mathematical flexibility, particularly when teachers modify their approaches to accommodate different student needs.

3.1.4 Step-by-Step Instruction and Visual Aids

Mathematics teachers revealed that when teaching mathematics, they frequently utilize the board and PowerPoint presentations. This method, known as step-by-step instruction, makes lessons more structured and simpler for students to understand by having teachers explain each step of a mathematics problem.

Teacher 1: *"In delivering the lesson, we mostly use PowerPoint presentations. We also always use the board because math is very hard to teach without it. I use the board when solving problems." Also, she further elaborated that: "Even though the PowerPoint already shows the solution, I still need to write it again on the board so that students can understand how to solve it step-by-step."*

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To help students grasp mathematical concepts, the mathematics teacher underlined the value of giving detailed instructions and utilizing visual aids. Azmidar et al. (2017) attest to the efficacy of this method, pointing out that by making abstract ideas easier to grasp and more approachable, concrete-pictorial-abstract instruction can increase students' interest in mathematics.

3.1.5 Varied Assessment Strategies

To evaluate students' comprehension and development, mathematics teachers used a variety of assessment strategies. These consist of written tests, group projects, seatwork, board work, and oral recitation.

Teacher 1: *"Actually, when I teach, I always include board work and oral activities so I can get the students' attention, so they don't just sit and listen the whole time."*

Teacher 2: *"Adjusting my way of teaching is a bit challenging for me, and I have to change my teaching strategies depending on my students."*

Teachers can assess students in a variety of ways by using a variety of strategies, such as group projects, oral activities, board work, oral activities, and quizzes. This makes learning more interesting and significant, as pointed out by Black & Wiliam (2009). Despite the limited amount of time spent in person, these diverse assessment strategies assist teachers in tracking students' progress. Joseph et al. (2025) found that differentiated instructional approaches led to higher levels of intellectual growth and interest among students, with 90% of participants reporting increased engagement when exposed to varied teaching methods. This finding supports the use of varied assessment strategies.

3.1.6 Regular Feedback and Consultations

Mathematics teachers addressed students' challenges by giving frequent feedback and providing opportunities for consultation.

Teacher 1: *"In terms of giving feedback to students, there are students who come to me almost every time. Since I only give them lecture notes and no one discusses the lessons with them, they often ask for advice and help every Sunday. They usually ask what they should do or ask for help in lessons they find confusing, especially in the problem-solving part."*

Teacher 2: *"Feedback is very important in the Open High School Program because it is very hard to monitor them since classes are only once a week, so we need to give feedback to them right away." She added that: "My specific feedback schedule is every Wednesday and Friday. During feedback sessions, I focus on identifying the topics where students are having difficulty."*

Teachers provide consultation in several ways, such as in-person meetings, home visits, and online consultations via messaging platforms. According to Harbour et al. (2014), giving both behavioral and academic feedback is one of the best ways to maximize student engagement and success.

3.2 Challenges of Open High School Teachers in Teaching Mathematics

The thematic analysis of the OHSP mathematics teachers' responses was presented in this section. The following themes emerged from the data analysis of teacher interviews and focus group discussions, which identified several challenges that mathematics teachers faced when teaching OHSP students:

3.2.1 Insufficient Instructional Time

The OHSP structure makes it difficult to accomplish the ongoing learning and sufficient practice that mathematics demands. Effective learning requires regular and adequate instructional time, claimed by Slavin (2006). The teachers' dedication to making the most of the limited time is demonstrated by their workaround, which includes supplementing videos and stressing step-by-step problem-solving. This theme, however, emphasizes the systematic challenge of scheduling and demands new approaches to instructional delivery.

Teacher 1: *"Actually, it's really hard because each class is only one hour long for each subject, and sometimes we even lose time because we have to wait for students who are late in coming to school. And even in regular classes, one hour isn't enough for a lesson, so it's even more difficult for the Open High School Program."*

Teacher 2: *"In terms of teaching time, it's not enough. It's sad to say that one hour is not enough because face-to-face classes are only once a week, on Sundays."*

Teachers' capacity to adequately address each student's needs and offer thorough explanations is hampered by the short instructional time. Similar findings were made by Cassibba et al. (2020), who discovered that mathematics teachers teaching remotely faced a major challenge in the form of limited instructional time. To ensure efficient content delivery within time constraints, they needed to adapt traditional teaching methods and come up with creative solutions.

3.2.2 Adapting to Learner Backgrounds and Life Circumstances

Mathematics teachers faced additional challenges as a result of the OHSP's diversity of student backgrounds. According to the teacher's generalized responses, the students who were enrolled in the OHSP range greatly in age; some are even older than the teacher, some work full-time jobs or are young parents, and some are unemployed but have significant household responsibilities.

Teacher 2: *"Disciplining is difficult because some students are older than I. Also, many students have different situations like family or work, so teaching methods should vary accordingly."*

Vygotsky's (1978) Sociocultural Theory stated that students' social, cultural, and personal environments have an impact on their learning. To guarantee effective learning, teachers must modify their methods based on the particular circumstances of each student. Maslow's hierarchy of needs (1943) stated that before students can participate in academic learning, they must feel safe and understood. Teachers can create a more encouraging learning environment by adjusting to the unique circumstances of each student.

3.2.3 Varied Student Learning Levels and Backgrounds

Mathematics teachers said it was difficult to deal with the OHSP students' diverse backgrounds and learning styles. Although the offered learning modules are beneficial to

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students, they are not enough for all students. Particularly in a subject as challenging as mathematics, some students might need additional assistance to fully comprehend the lesson.

Teacher 1: *"The current learning modules or materials are effective in helping students, but they still need other support aside from the modules to help them learn mathematics better."*

Teacher 2: *"My way of teaching mathematics in the Open High School Program is quite challenging because it is an Open High School Program, and most of the students have different levels of knowledge."*

Because of this variation in learning levels, teachers must constantly modify their lesson plans and instructional resources. According to Awofala & Lawani (2020), students with varying backgrounds and learning styles benefit from designed instructional strategies, which highlights the need for differentiated instructional approaches to address such diverse learning levels and significantly improve mathematical achievement.

3.2.4 Student Attendance and Participation Issues

Concerns regarding student participation and attendance were voiced by mathematics teachers. Both teachers agreed during the focus group discussion that their effectiveness as teachers is greatly impacted by students' absences. Actual classroom attendance records from three different visits supported this observation. The average attendance was about 67%.

Teacher 1: *"And one of the challenges is that even though classes are only once a week, some students still don't attend the class."*

Teacher 2: *"Most of them also have problems, personal issues, and family problems. So really, their absences are one of the biggest challenges."*

Archambault et al. (2009) indicated that external factors like financial problems, family responsibilities, and emotional problems have a big impact on students' participation and attendance. It is more difficult for mathematics teachers to guarantee consistent progress when students miss classes because they are more likely to fall behind academically and feel disengaged from their education. Similar challenges with distance modalities were noted in a study by Castroverde and Acala (2021), who also pointed out that irregular attendance patterns greatly hinder teacher monitoring of student learning.

3.2.5 Insufficient Learning Materials

Mathematics teachers frequently struggle with the problem of insufficient learning materials in educational settings, especially in programs like the OHSP, where resources may be scarce or not entirely in line with student needs.

Teacher 1: *"Then, in terms of the module provided, the module is not enough, and we're also not sure whether the module given is insufficient or aligned with their needs.*

Teacher 2: *"To be honest, the modules are really not enough, so we still need to give them more activities, and we also need to meet them face-to-face."*

Mathematics teachers were forced to develop extra resources to meet the learning needs of their students due to the lack of sufficient learning materials. One of the main challenges with flexible learning in mathematics, according to Sibaen et al. (2023), is the lack of appropriate learning resources, which makes it harder for students to comprehend mathematical concepts on their own.

3.2.6 Difficulty in Monitoring Student Progress

Due to a lack of face-to-face interaction, mathematics teachers expressed challenges in monitoring students' progress. The nature of distance education, where students might not have regular face-to-face interaction, frequently makes it difficult to effectively monitor their understanding and progress, according to a study by Garrison and Kanuka (2004).

Teacher 2: *"Secondly, it's about monitoring their progress. Sometimes, I have a hard time keeping up with them or monitoring if they understand the topic because our class is only once a week, every Sunday."*

According to Moore et al. (2011), the distance and infrequency of communication in classroom settings can make students feel more alone, which increases the likelihood that they will disengage or not seek assistance when they are having problems. Mathematics teachers find it difficult to provide timely interventions and support because of the difficulty in tracking students' progress. Similar worries among mathematics teachers who teach remotely underscore the difficulties in evaluating authentic student understanding and giving appropriate feedback in the absence of frequent face-to-face interactions, according to Cassibba et al. (2020).

IV. Conclusion And Recommendations

4.1 Conclusion

This study demonstrated the significant instructional improvements made by mathematics teachers in the OHSP to meet the various needs of their students. Teachers have employed strategies that encourage flexibility, independence, and student-centered learning in response to challenges such as irregular attendance, limited instructional time, and particular challenges faced by older or working OHSP students. In line with constructivist theories that emphasized meaningful learning, they used the mother tongue to help comprehension, connected lessons to real-life situations, and regularly practiced basic numeracy. Step-by-step teaching methods and visual aids improved the delivery of instruction and made it easier for students to understand mathematical procedures. To capture a range of student abilities, teachers vary their assessments and offer modules and activity sheets early in the week. Regular feedback via online and in-person consultations sustained learner engagement and progress even with limited contact hours. The following results in this study revealed that the OHSP mathematics teachers were committed to their students' success and were not only sensitive to the system's shortcomings. Their flexibility and creativity highlight how crucial it is to assist teachers in non-traditional learning settings to guarantee high-quality mathematics education.

4.2 Recommendations

Several specific recommendations were proposed to improve the way mathematics education is delivered within the OHSP in light of the study's findings. To better meet the diverse needs of Open High School students, professional

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development should first give priority to training in digital instruction, flexible pedagogy, and adult education principles. Second, to accommodate varying learning styles, learning modules should be updated to incorporate clear objectives, step-by-step instructions, and multimedia aids like videos or simulations. Third, increased teacher-student face-to-face interaction is essential; Weekly classes can be enhanced and student engagement raised with the help of online discussion boards, frequent virtual consultations, or hybrid check-ins. Peer collaboration strategies, such as study groups or tutoring programs, can promote cooperative problem-solving and make students feel less alone. Additionally, to assist students in managing their studies with jobs or family responsibilities, the school needs to provide materials and workshops on time management and emotional wellness. Lastly, learning outcomes and instructional planning can be enhanced by incorporating digital tools for ongoing feedback and progress tracking. The OHSP can become a more welcoming, encouraging, and productive learning environment for both mathematics teachers and OHSP students by putting these suggestions into practice.

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