

# Lived Experiences of Mathematics Teachers in Teaching Visually Impaired Students

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## **Abstract**

This study explored the lived experiences of mathematics teachers in teaching the basic mathematics concepts for visually impaired learners for SY 2023-2024. Specifically, it answers the following questions: 1) What are the lived experiences of mathematics teachers in teaching basic mathematics concepts for visually impaired learners? 2) What recommendations can be made/proposed to help mathematics teachers in teaching basic mathematics concepts?

This study utilized qualitative method. Phenomenological design was used in this study. Data on lived experiences of Mathematics teachers in teaching basic mathematics concepts was gathered using in-depth interviews.

Mathematics teachers handling visually impaired learners faced both desirable and undesirable experiences. There is a need for a shared effort to help teachers overcome the challenges experienced in teaching visually impaired students.

**Keywords:** Lived Experiences, Mathematics Teachers, Visually Impaired Students

## **INTRODUCTION**

Globally, access to quality education had been a major concern for all countries. This concern was translated into global community through the United Nations Sustainable Development Goal (SDG 4) which aims to “Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All”. This SDG 4 had been the global mantra for all educational institutions in the entire planet. All educational undertakings were aligned towards attaining a high-quality education that was accessible to all learners to attune with the said mantra. However, a global pandemic came and hinder the process of attaining this mantra. According to UN 2022 Progress Report, COVID-19 pandemic came at a time when the world was already struggling with a crisis in learning: too many children lacked the fundamentals of reading and numeracy. Based on pre-pandemic data from 2015 to 2019, the proportion of children meeting the minimum required proficiency in reading at the end of lower-secondary school was between 70 and 90 per cent in most high-income countries. That proportion fell below 60 per cent in almost all middle- and low-income countries, dropping to less than 10 per cent in some countries.

Learning losses due to COVID-related school closures have been documented in 4 out of 5 of the 104 countries that have carried out such studies. School closures are also likely to deepen disparities in learning: many countries that had poor learning outcomes prior to the pandemic also tended to have longer school closures. The fundamentals of reading and numeracy were two major educational issues that were greatly affected by the advent of the pandemic.

Aside from pandemic, learning impairments had also been a major concern of all educational institutions globally. In the Philippines context, a special curriculum was designed for all learners with learning impairments -SPED Curriculum. Learners with very advanced level of intelligence as well as learners with impairments (blind, mute, deaf and the likes) were schooled following this specialized curriculum. Teachers assigned in this SPED Curriculum went through a rigorous training to acquire the skills in teaching learners with special needs. All throughout the implementation of the SPED Curriculum, SPED teachers had different experiences that would be essential to know for future improvement in educational practices towards attaining the SDG 4 of UN.

Thus, this study explored the lived experiences of mathematics teachers in teaching the basic mathematics concepts for visually impaired learners for SY 2023-2024. Specifically, it answers the following questions: 1) What are the lived experiences of mathematics teachers in teaching basic mathematics concept for visually impaired learners? 2) What recommendations can be made/proposed to help mathematics teachers in teaching basic mathematics concepts?

## **MATERIALS AND METHODS**

This study utilized qualitative method. Phenomenological design was used in this study. Data on lived experiences of Mathematics teachers in teaching basic mathematics concepts was gathered using in-depth interviews. The gathered data through interview was transcribed and analyzed to answer the overarching research questions.

The respondents of this study were selected SPED teachers in the Province of Camarines Sur who handled mathematics subject. Phenomenological study requires sample size of 3 to 15 samples as indicated in similar studies conducted using the same design (Moser A, Korstjens I;2017; Chachar, G. B.;2019; Nuri, A.;2022 and Moser, A., & Korstjens, I.;2017). In the entire duration of the study, 10 respondents had participated. Purposive sampling was conducted to determine the respondents of the study. The participants in the study are selected SPED teachers from Province of Camarines Sur who handles mathematics subjects. The said participants were taken from the list of schools in the Division of Camarines that offers SPED classes as endorsed by the Division office.

This study utilized an interview to gather the necessary information via in-depth interviews. Questions included in the interview guide centers on determining the lived experiences of teachers in teaching basic mathematics concepts for visually impaired students. The gathered data for lived experiences of Mathematics teachers in teaching visually impaired students was analyzed using Husserlian phenomenological data analysis that involves bracketing, horizontalization, clustering and textualization

## **RESULTS AND DISCUSSIONS**

### **Lived Experiences of Mathematics Teachers In Teaching Visually Impaired Students**

Teaching Mathematics concepts for visually impaired learners resulted in desirable and undesirable experiences on the part of the teacher. These experiences had added flavors on the lives of teachers since they helped achieve a sense of realization on the chosen profession. Mathematics concepts alone were hard to teach for a normal student, so much more with visually impaired students. Hence, teaching as the noblest among all professions requires patience, time, perseverance, and sacrifice both on the part of the teacher, parents, and students.

### **Desirable Experiences in Teaching Mathematics for Visually Impaired Students**

Although teaching visually impaired students posed several challenges on general perceptions, it was un-

deniably evident that there were several worthy experiences that cannot be ignored. Based on the respondents’ feedback, there are positive occurrences that are worthy of emphasizing.

**Table 1. Experiences of Mathematics Teachers in Teaching Visually Impaired Learners**

<b>DESIRABLE EXPERIENCES</b>	<b>UNDESIRABLE EXPERIENCES</b>
<b>Warm behavior of the students towards their teacher</b>	<b>Existence of technological barriers in teaching Mathematics</b>
<b>Simplicity of mathematics lesson</b>	<b>Unequal distribution of teaching resources</b>
<b>Availability of assistive technology in teaching mathematics</b>	<b>Lack of specialized curriculum</b>
<b>Availability of Special Education (SPED) Fund</b>	<b>Existence of barriers for medical and psychological assessment for the students</b>
<b>Sufficiency of salary for decent living</b>	<b>Inconsistency of support for SPED students from the Local Government (LGU).</b>
<b>Inclusion of qualified SPED students to regular classes and Alternative Learning System (ALS).</b>	<b>Existence of physical violence experienced by teachers initiated by SPED students</b>

*Warm behavior of the students towards their teacher.* Despite the greatest responsibilities bestowed upon the shoulder of teachers handling students with disability specifically, students with visual impairment, the very human nature dominates the scene. Students with visual impairment and other students with disability has affectionate behavior towards their teacher that makes them more likable.

*“Opo may time na lalambingin ka nila at yayakapin. Kapag aalis sila, kumukaway sila at nagpapa alam na may ngiti. Napaka caring po nila at mapagpahalaga”*

*(Yes, there are times that they will caress and hug you. When they leave, they wave at you and say goodbye with smile. They are caring and appreciative)*

*Simplicity of mathematics lesson.* Mathematics lesson for visually impaired students and special education students in general, was leveled like kindergarten lesson. Lesson started from basic counting and progresses to arithmetic operations. If the students manage to master the lesson on basic counting, multiplication will be introduced, and then functional mathematics lesson will follow. And, on the worse case if the students failed to understand the lesson, it will be re-taught until the students successfully gained understanding of the lesson in mathematics.

*“Ah oo nga po maam, since ang student po namin ay nasa SPED, non graded po sila, kung бага pang kinder lang po tinuturo naming, parang more on addition and subtraction lang po”*

*(Yes maam, since our students are SPED students, their performance are non-graded. Lessons taught with them are for kindergarten level like addition and subtraction)*

*Availability of assistive technology in teaching mathematics.* Assistive technology in teaching mathematics for visually impaired students and other SPED students in general were available. It enables teachers to implement lesson in mathematics with ease and effectively. This assistive technology includes slate with stylus, Braille, abacus, computer, talking calculator and Television sets. This assistive technology was found helpful in teaching basic mathematics concepts.

*“May mga assistive technology naman po kami yung mga cellphone na ng interpret, like ito yung sounds I seset lang yan . ang assistive technology po for VI pati sa computer”*

*(There is available assistive technology for visually impaired students like cellphone that can interpret sounds and even computer)*

*“Pero meron din pong abacus. Abacus na pang kinder level kasi non-graded po. May Braille din po kami at sinubukan naming ipagamit sa student pero hindi pa po nila kayang gamitin”*

*(There is an abacus but for kinder level since it is non-graded. We have Braille and we let our students try it, but they cannot use it correctly.)*

*“Meron din po kaming beads mas magaan gamitin at yung isa po ay mga shapes”*

*(There are beads that were lighter to use and the other one was shapes.)*

**Availability of Special Education (SPED) Fund.** As part of the national program for inclusive education, the Department of Education (DepEd) has allocated funds for SPED. The said fund was used for procurement of additional assistive technology and used for payment of medical diagnosing of SPED students. Additional SPED teacher can also be charged for the said fund in case the allocation was flexible and large enough to cater the funding for additional personnel.

*“May SPED Fund kasi ngayon, two years ago pa po. Buong Pilipinas po ang implementation. Pangatlong beses na naming ito nan aka kuha ng fund. Ang halaga po ay depende sa bilang ng enrollees”*

*(SPED Fund was available two years ago. It was implemented nationwide. It is the third time that our school received this fund. The amount allocated was depending upon the number of enrollees)*

*“Ngayon po kasi since may SPED Fund na, dun na po naka charge yung psychological assessment ng studyante, kasama na din po ang mga school materials.”*

*(Presently, because of SPED Fund, the psychological assessment of students had been shouldered by the said fund including the materials)*

**Sufficiency of salary for decent living.** Teachers for SPED schools have higher salary grade than those regular teacher in the DepEd. Their salary is at least two rank higher than the newly admitted regular DepEd teacher. With proper financial management and budgeting, it allows the teacher to enjoy a salary sufficient to have a decent living. With these, teachers are not worried on their daily expenses, that gives them more time to focus on their teaching.

*“Para po sa akin, okay naman po ang salary. Depende nalang po siguro sap ag budget, at syempre kung may loan ka.”*

*(My salary was okay for me. It will now depend on how you manage your budget, and of course if you have loans that would be different)*

**Inclusion of qualified SPED students to regular classes and Alternative Learning System (ALS).** It was a great achievement and reward on the part of the teacher if their student in SPED was mainstreamed in regular class in elementary or in ALS. The hard work of the teacher was paid off seeing at least one of their students being included in the regular classes. SPED students go through different tracks depending upon the ability of the student. Some of them are academically promoted and some are harnessing their skills other than academics.

*“Nasa high school na po yung isa naming student. Mayroon kaming studyante na matagal bagu nakapag basa halos inabot ng 4 na taon, pero nang isinama naming siya sa palaro, nanalo sya at ngayon ay nasa ALS na.”*

*(One of our former students was already in high school. We have our student once who took 4 years before learning to read, but had a special skill when we joined that student in extra-curricular event, and now that student was already in ALS)*

### **Undesirable Experiences in Teaching Mathematics for Visually Impaired Students**

Although teaching visually impaired students brought desirable experiences for teachers, it was undeniable that it also posed several challenges generally. Along with the positive experiences were adverse circumstances that cannot be ignored. Based on the participants' response, there are negative occurrences that are worthy to be stressed.

***Existence of technological barriers in teaching Mathematics.*** Mathematics teachers handling visually impaired learners must be equipped with more advanced assistive teaching device since the students needs a special attention due to their unique characteristics. Materials provided in the school for visually impaired students are not updated and even worse, lack of technological assistance for more advanced learning materials.

*“Halos ang focus lang po sa materials na ginagamit ay yung mga common, kagaya po ng coloring materials, bond paper lang po yung available at yung medyo related sa technology ay wala po talaga.”*

*(Almost all the materials were just the common learning materials. For example, in coloring, only bond paper was available but not the materials related to technology)*

*“Sa reading po, malalaking letters ang gamit naming, sa Math naman po ay yung materials na may mga butas para sa pagbilang.”*

*(In reading, large letters was used while in Math only those materials with holes as alternative to lesson on counting)*

***Unequal distribution of teaching resources.*** Mathematics teachers handling visually impaired students must be provided with sufficient teaching resources to effectively deliver lessons. However, most of the resources are concentrated to the SPED Center only. Other schools with SPED classes were given limited resources that resulted in poor quality of instruction received by the students. Since Mathematics teaching requires a more expensive assistive technology, most students in SPED Classes other than those in the SPED Center cannot afford to use more advanced technology in learning Mathematics. Although SPED Fund was available nationally, it was only the SPED Center who received more funding than those school with SPED Class only.

*“Mas malaki po ang fund ng SPED Center kaysa sa ibang school na may SPED Class.”*

*(The funding received by SPED Center was larger than those school with SPED Class only)*

***Lack of specialized curriculum.*** SPED teachers handling Mathematics subject must have a specialized curriculum for each type of learning disability. Each learning disability has a corresponding need that varies on each type. Unfortunately, no specialized curriculum was found. The existing general curriculum for K to 12 had been the basis of SPED teachers in determining what competencies should be taught. Aside from inability of the teacher to determine the appropriate content to be taught, determining what assessment methods to used was also a burden on the part of the teacher due to lack of specialized curriculum.

*“Ang curriculum po na gamit namin para sa Visually Impaired (VI) students ay yung sa regular na nasa K to 12. Minomodify lang po naming kasi hindi naman kami pwede mag create nang sarili naming curriculum.”*

*(The curriculum that we are using for visually impaired students was the same with the regular students in the K to 12. We are just modifying them since we cannot create our own curriculum)*

**Existence of barriers for medical and psychological assessment for the students.** Classifying students learning disability helps the teacher in determining what style in teaching was appropriate. Medical and psychological assessment was supposedly a basic requirement prior to acceptance of the students in the classroom. Issues on the medical and psychological assessment varies from case-to-case basis on the part of the parents. Some parents cannot afford to avail the diagnosis of their children's learning disability to its expensiveness. Thus, it was a good opportunity that DepED provided specific fund allocation for medical and psychological assessments of the students. However, due to the existing policy in the procurement and disbursement procedure of government funds, it takes at least 1 year before the diagnosis of the learning disability of the students.

*“Kasali po sa SPED fund ang medical and psychological assessment ng student kaya lang po inaabot ng 1-year bago maipa diagnose ang learning disability nila.”*

*(SPED Fund released by the national government includes item for medical and psychological assessment of the students, however it takes at least 1 year before they will be diagnosed)*

**Inconsistency of support for SPED students from the Local Government (LGU).** Implementation of curriculum requires participation of all stakeholders. Local Government Unit (LGU) plays an important role in the implementation of SPED curriculum. Assistance from LGU depends solely on the leadership of the specific municipality. But because of the political agenda of each municipality, supporting SPED classes sometimes was not included in their priority list. The inconsistency in terms of support provided by LGU to SPED classes has great impact on the learners. Socialization and extra-curricular activities that the LGU could provide was sometimes not evident.

*“Kung means of support ng LGU ang pag-uusapan, masasabi ko po na medyo kulang.”*

*(SPED Fund released by the national government includes item for medical and psychological assessment of the students, however it takes at least 1 year before they will be diagnosed)*

*“Dati nag offer ng school service ang LGU gamit ang ambulance ng munisipyo para sa mga SPED students. Pero biglang natigil ang pag sundo at hatid ng mga SPED students.”*

*(Previously, our LGU provided school service using the ambulance for SPED students. However, the initiative of the LGU suddenly stopped)*

**Existence of physical violence experienced by teachers initiated by SPED students.** Mathematics teachers handling visually impaired students experienced tolerable physical abuse initiated by SPED students. Due to the nature of the students, it was deemed normal that they experienced tantrums and has very short patience and attention span. There were instances when the student seemed to be violent that resulted in physical abuse inflicted to the teacher.

*“May mga pagkakataon po na kinakagat ako ng students. May pangyayari din po noon na buntis ako at sinasabunutan ako ng student. At may pangyayari din noon na yung isang SPED student naming ay nambatu ng gunting at tatamaan yung isa nyang kaklase kaya ako nalang ang sumangga sa gunting.”*

*(There are instances that students bit me. There is also a time when I was pregnant, and my student grab my hair. It is also that time when one of my students throw a scissor that would ultimately hit one of my other students and I use my hand to catch the scissors)*

*“Na headbutt ako dalawang beses ng student namin sa SPED na transferee. Pinaghiwalay ko sila para hindi na mag escalate ang behaviour.”*

*(I was headbutt twice by one of our SPED students who was a transferee. I choose to separate them so that the behavior would not escalate)*

The result implied that Mathematics teachers handling visually impaired students experienced both positive and negative scenario on their teaching. It emphasizes the need for unified support from LGU, DepEd and the community in general to make teaching and learning a better experience for teachers and students. Sufficient assistive technology for teaching mathematics would be a great help to help make learning easier. Parental involvement on the learning of students was highly needed. Assistance on learning tasks at home can be provided for the students by the parents. Since the learners spend more time at home than in school, optimum learning can be attained with the support of the parents.

The findings of this study were supported by the study of Stephan et al., (2015). According to them, teaching mathematics to students with visual impairments presents a multitude of difficulties, ranging from cultural and technological barriers to systemic limitations. Similarly, Lamichhane (2016) highlighted the crucial need for addressing the unequal distribution of resources to guarantee equitable learning opportunities for students with visual impairments. Additionally, Souza & Freitas (2019) emphasized the need for advanced assistive technologies that cater to the unique needs of visually impaired learners.

### **Recommendations To Help Mathematics Teachers In Teaching Visually Impaired Learners**

One of the underlying objectives of this study is to provide recommendations to make mathematics teaching easy. Successful mathematics instruction requires satisfaction of the basic requirements for a successful teaching-learning process. Since the teaching-learning process existed in trifocalized manner, the student, the teacher, and the learning environment must be provided with adequate support system.

***Creation/invention of a unique Braille for visually impaired students.*** Since mathematics is highly technical subject, thus it also requires specialized assistive technology. If budget warrants, a device that aids the visually impaired learners could be developed. A significant improvement in the existing Braille for visually impaired learners could be developed where a unique function for performing basic mathematics operation becomes easy and handy.

**Table 2. Recommendations To Help Mathematics Teachers in Teaching Visually Impaired Students.**

Creation/invention of a unique Braille for visually impaired students
Allocation of higher funds for SPED schools
Provision of monthly hardship allowance to teachers handling SPED students
Observance of higher salary entry position for SPED teachers
Allocation of funds for medical and psychological diagnosis of students learning disability
Creation of specialized curriculum for each learning disability
Provision of classrooms specifically designed for students with learning disability

**Allocation of higher funds for SPED schools.** Since the government had allocation for SPED Fund nationally, increasing the said allocation would bring great positive impact not only to teachers but also on the students. The existing policy on distribution of funds allows only the SPED Center to receive higher funding from the government that resulted into inadequacy of necessary assistive technology in other SPED classes. If equal distribution of funds was not possible, then at least increasing the fund allocation for each SPED school would minimize the challenges encountered by SPED teachers deployed on each school.

**Provision of monthly hardship allowance to teachers handling SPED students.** Since some teachers handling SPED classes are not appointed as SPED teachers, they must be provided with monthly hardship allowance. Given the risk posed by the nature of their work, their lives were in great danger. Due to unstable behavior of SPED students, the life of SPED teachers was at greater risk. Thus, it would be fair to give them monthly hardship allowance not as compensation for their hard work but as provision for the safety of their lives.

**Observance of higher salary entry position for SPED teachers.** Because of higher salary for SPED teachers abroad, most of SPED graduates preferred to work abroad to have financial stability. If this trend continues, then brain-drain scenario would be possible. Competent SPED teachers would work in the Philippines if they received a relatively humane salary in accordance with the danger posed in their work.

**Allocation of funds for medical and psychological diagnosis of students learning disability.** Since the SPED Fund was a collective money allocation for several purposes related to SPED program of the government, the funds allotted for diagnosis of students learning disability was not easily given to each SPED school. Thus, it takes at least a year to diagnose the learning disability of the student. SPED teachers had a hard time classifying the learner's needs because the students are not categorized based on their learning needs.

**Creation of specialized curriculum for each learning disability.** To properly mainstream successful learners into the regular curriculum offered in the DepEd, there must be a specialized curriculum for each type of learning disability. A general curriculum currently offered in the DepEd was not applicable to all types of learning disability of students. Since the design of the general curriculum was for regular students, then SPED students would find it difficult to cope with the lesson once they are promoted.

**Provision of classrooms specifically designed for students with learning disability.** Since DepEd projects related to infrastructure was implemented in general, a classroom especially designed for students with learning disability must be proposed. Signages inside the classroom and inside the school must be friendly and accommodating to students with special needs.

The result implies that there is a need for a collective effort to help teachers overcome the challenges experienced in teaching visually impaired students. Government intervention, parental involvement and stakeholders' engagement were needed to resolve the problems brought by the very nature of the teaching and learning process.

The result of this study was supported by several studies previously conducted. Ahmetovic et al., (2017) emphasized the used of more advanced technology in teaching mathematics for visually impaired students. Similarly, Prado, Gago, and Lopez (2019) articulated the importance of an open curriculum for incorporating play, and presenting challenges, these students not only enhance their academic abilities, but also increase motivation, engagement, and creative thinking. Thus, educating visually impaired students in mathematics has far-reaching implications.

Based on findings, Mathematics teachers handling visually impaired learners faced both desirable and undesirable experiences. There is a need for a shared effort to help teachers overcome the challenges experienced in teaching visually impaired students.

Collective effort from DepEd, LGU, parents and other stakeholders were needed to minimize the undesirable experiences of Mathematics teachers in teaching visually impaired learners. Parental support for SPED students was highly encouraged to build up the confidence of the students. Intervention programs from LGU to further refine the support system for SPED program was highly advised.

Government intervention, parental involvement and stakeholders' engagement were needed to resolve the problems brought by the very nature of the teaching and learning process. Recommendations given by the participants in the study could be considered since it is based on research. Government programs for SPED could be revisited to determine its' effectiveness. Suggestions given to further improve the existing SPED program might be considered.

## CONCLUSIONS

1. Mathematics teachers have both desirable and undesirable experience in teaching mathematics for visually impaired students.
2. Comprehensive program for SPED and cooperation of all stakeholders are important in enhancing the quality of mathematics teaching especially for SPED students.

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