

Challenges of public-school elementary mathematics teaching in the new normal

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Abstract

At the onset of the Covid-19 pandemic, educational institutions worldwide needed to continue with their educational mandates for their learners, albeit not in the usual face-to-face modes. The Higher Education Institutions (HEIs) in the Philippines as well had to replace the on-campus teaching-learning modes with several variants of remote teaching. However, the various remote means are something quite new to both educators and learners, especially in mathematics, wherein various onboard instructions and on-desk hands-on exercises had been the norm. This study used of quantitative approach through online surveys to identify the educators' challenges with remote teaching implementations in public schools in the Philippines. The findings reveal challenges related to the actual delivery of mathematics instruction, distractions from non-teaching tasks, curricular adjustments, alignment of materials, and orientation of parents or guardians and teachers. The pandemic may not be the last to impact the education system. Overall, the study shows an increased level of challenges for mathematics teaching. Thus, there is an urgent need to readjust policies and procedures affecting environmental learning conditions such as distractions, family-work-life balance, communication technology, rationalization of non-academic duties, increased participation, and support of parents and guardians.

Keywords: challenges; new normal; mathematics teaching; remote teaching

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Introduction

Schools in the Philippines were suddenly ordered closed starting the month of in March the year 2020 due to COVID-19 pandemic mitigation activities. After several months of closure, the schools were reopened but not in the usual physical face-to-face or onsite learning delivery manner. Instead, the schools were asked to open classes through various remote means of online delivery to comply with mandated health protocols, particularly in physical or social distancing. The remote learning modes also were the perceived means to cope with the severe restrictions brought about by the pandemic mitigations such as isolations (or quarantines), curfews, travel bans, closure or limited shop, production, work and/or office operations, and so on (Torres & Ortega-Dela Cruz, 2022; Tria, 2020).

However, the educational system was not prepared to continue providing academic learning from home and to sustain such in the new normal (Tus, 2021). School officials, teachers, students, and parents tried to figure out how to understand learning from home. The COVID-19 pandemic has resulted in a significant worldwide unprecedented socio-economic crisis. People are losing jobs and income, not knowing when this pandemic will end and when everything will return to normal. Everybody needs to prepare and respond to embrace this new normal.

The pandemic has transformed the education system drastically and has brought a major change in the concepts and practices of teaching and learning. In the education sector,



challenges like digital and telecommunications infrastructure, limited access to the internet or lack of service, learning management systems, and curriculum and educational materials that have to be adapted are faced by schools and universities. The Coping of marginalized and underserved students in the new normal and the readiness of the teachers are some of the issues (Tria, 2020).

Mathematics is all around and in everything everyone does. It is the building block for everything in daily living, including the use of mobile devices, architecture, art, money, engineering, and even sports (Hom & Gordon, 2013). Negativity in mathematics is the number one problem of why students find the subject difficult (Cardino & Ortega-Dela Cruz, 2020). They can hear from their family members since childhood that it is hard. However, in reality, that is not the case. Children who grew up with the mind conditioning that mathematics is fun excel in this subject. They could prefer this over history and other memorization subjects. The student's performance in certain subjects depends on their attitude toward the subject (Lago & Ortega-Dela Cruz, 2021). A positive attitude towards the subjects will encourage a person to learn the subject much better (Setapa, Mustapha, Kanafiah, & Zaman, 2016). Educators should consider different approaches to address low motivation and negative attitudes of the students toward mathematics. Teaching and learning Mathematics has become more challenging within the new normal.

Teaching mathematics is already quite challenging. Moreover, it has become much more challenging with the sudden advent of the pandemic, wherein remote learning modes dominate the educational landscape (Tus, 2021). Mathematics is considered a relatively difficult academic area in which teachers need much effort to provide step-by-step explanations and write computational examples on board (Culaste, 2011; Tria, 2020).

The remote learning modes also highlighted the gap in capabilities, methodologies, resources, technologies, and/or facilities available between private schools and public schools (Abuda & Noroña, 2020; Di Pietro, Biagi, Costa, Karpiński, & Mazza, 2020). Public schools are not too quick to adjust to the new normal, more so with their students who are known to come from low to very low-income families. This gap is generally termed the digital divide.

The primary purpose of this study is to identify the challenges encountered by mathematics teachers in public schools in the new normal. These are assessed and compared with the perceptions of the respondents. These perceptions serve as a basis for developing an Action Plan to improve the existing conditions in mathematics teaching in public schools in terms of mathematics teaching delivery. Specifically, the study: (i) identified the most challenging and least challenging in teaching mathematics; (ii) determined challenges encountered by the mathematics teachers in terms of curriculum adjustment, alignment of materials, deployment of learning delivery modalities, the orientation of parents or guardian of learners, and teacher's training; and (iii) determined the best modality or most appropriate modality during the pandemic based on the perceptions of the respondents.

Methods

The research used internet and library resource materials to gather preliminary data to help in the determination of the challenges encountered by mathematics teachers. Particularly, the researchers used the resource material, DO_s2020_012 Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 In Light of the COVID-19 Public Health Emergency, to determine the challenges.

The aspects of mathematics teaching in the new normal were evaluated via a research survey questionnaire. The questionnaire consists of statements with which the respondents provided corresponding responses reflecting their level of agreement or disagreement, their level of perception of the suitability of curricular adjustments, and their deployment of learning delivery modalities.

Incorporated in the questionnaire are items that asked for identification, specification and/or respondent selection. The identification and specification are mostly structured in the multiple-choice format, while selections are structured in the single-choice format. Listed in the identification and specification choices are items that were picked from various surveyed related literature.

For scaling the responses, a 1 to 5 Likert Scale was used to indicate respondents' level of assessment and/or agreement on each item or statement. A rating of 1 has a nominal rating which signifies the respondent's lowest agreement, while a rating of 5 has a nominal rating which signifies the respondent's highest agreement on a particular item being presented. Any other rating between 1 and 5 corresponds to its respective nominal rating as implied.

Table 1.

Rating scales and interpretations for responses					
Numerical Rating	1 (1.0-1.8)	2 (1.81-2.6)	3 (2.61-3.4)	4 (3.41-4.2)	5 (4.21-5.0)
Nominal Rating	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	Very Sufficient	Sufficient	Moderately Sufficient	Insufficient	Very Insufficient

The research instrument was validated by letting respondents who are not part of the research study but with identical qualifications (mathematics teachers and school administrators) answer the survey instrument. Subsequent modifications were made regarding certain questions or areas which were deemed confusing or inappropriately presented during the validation.

For various assessment levels, the respondents of the study were the mathematics teachers who currently are handling mathematics courses at the elementary level. The respondents were conveniently chosen via being with the current mathematics teachers during the conduct of the survey. The respondents also identified the factors, requirements, and specifications for addressing the challenges of mathematics teaching and for guidance in modifying such.

The respondents of the study are the mathematics teachers from the six public elementary schools comprising the Cabuyao City District. Fifty-five (55) mathematics teachers have provided their responses to the survey. Most of the respondents are female, comprising 91% of the total respondents. The majority of the respondents belong to the 30-39 years (20 respondents or 38%) and 40-49 years (16 respondents or 30%) age groups. Also, most of the respondents have been in mathematics teaching for 6-10 years (14 respondents or 25%) and 0-5 years (10 respondents or 18%). Further, all the respondents are public school teachers with permanent nature of employment.

The researchers used library research, internet research, questionnaire, and interview as research instruments. The said data gathering tools helped the researchers identify the challenges of mathematics teachers in terms of curriculum adjustment, alignment of materials, deployment of learning delivery modalities, orientation of parents or guardians of learners, and training.

The questionnaire set is most frequently comprised of a concise, pre-planned set of questions designed to yield specific information regarding profiles, hospital data, assessment levels, ranking, listing, and identification of items related to board examination preparations. The questionnaire covers both profiles and responses mostly in a structured format.

The data collected were analyzed using descriptive statistics such as frequency, ranking, mean, and percentages. The mean values for assessment levels were computed. The percentage was used to indicate distributions. The frequency distribution of each of the ranked, specified, listed, or selected items shall be computed. The item with the lowest mean is considered the highest ranked, and the succeeding lower means are the items that are second, third, and so on in the ranking. For

specified, listed, or selected items, those with the highest frequency counts are considered as the answers that reflect respondents' collective agreement towards particular items.

Results and Discussion

Challenges in teaching mathematics

Institutional initiatives aimed at calibrating practices, materials, manpower, methodologies, policies, and procedures to identify and address the challenges in teaching, particularly in mathematics teaching, within public schools in the country need to be thoroughly guided so as to better conform with the new normal. The hit-and-miss approach to calibration may not only yield unsatisfactory results. They could also be detrimental to public schools in terms of greater costs, wasted opportunities, and undesirable conditions like worsened student outcomes.

Teaching mathematics, compared with other academic fields, is undertaken with the teacher having a more direct hand in the teaching processes. Unlike certain disciplines or topics which can be taught with minimum teacher-student engagements, mathematics teaching necessitates explanations, the introduction of concepts, analysis of formulas, solving of problems, and others (Culaste, 2011).

Table 2.
Challenges in teaching mathematics

Mean Ranks	Rank	Perceived Challenges in Teaching Mathematics
2.63	1	Problems related to actual delivery of instruction (e.g., coverage of course content, teaching-learning environment, etc.)
4.50	2	Too much additional non-teaching (or extra-curricular/co-curricular) tasks assigned to teachers
4.59	3	Restrictive nature of various government health protocols on curbing COVID19
4.67	4	Challenges related to checking of assessment tasks
5.39	5	Unavailability of / limitation on student-teacher interaction
5.61	6	Stressful situations poised by production of modules/manuals in the delivery of instruction
6.22	7	Coping with difficulties/limitations poised by non-face-to-face teaching modalities (e.g., learning management systems, blended learning, distance learning, etc.)
6.39	8	Unreliability of internet connectivity for students and/or teachers
6.46	9	Lack of (motivational, structural, financial) support from the pupils' family/kinship
7.41	10	Non-equitable access of pupils and teachers to technologies or gadgets needed for teaching/learning

N = 55

Table 2 shows the top challenges in teaching mathematics as perceived by the respondents. The topmost challenge is problems related to the actual delivery of mathematics instruction (mean rank – 2.63). Teaching mathematics prior to the pandemic was already a big challenge since Mathematics is generally considered by students as a difficult subject area (Krasa & Shunkwiler, 2009) that needs utmost engagement with the students. The teachers need to engage the students usually via usual classroom settings like blackboard computations, skills practice, cooperative means of learning with co-students, and seat works (Darkis, 2020).

With the onset of the pandemic, face-to-face engagement was replaced by other modes of delivery like self-phased learning via printed learning modules, digital classrooms as facilitated by learning management systems (LMS), blended learning, homeschooling, and others. The epidemic has significantly compounded the challenges. Moreover this is a serious concern since

the country is struggling with learning losses (Tria, 2020), further aggravated the students' poor performances in Mathematical learning and skills (Culaste, 2011; Tria, 2020).

The second challenge in teaching is perceived to be said on excessive activities and (extra-curricular and/or co-curricular) tasks assigned to teachers (mean rank – 4.50). Prior to the pandemic, this was already a big concern among teachers in the (Banal & Ortega-Dela Cruz, 2022; Verzosa & Vistro-Yu, 2019). These include doing reports, monitoring, undertaking assessments & evaluations, documentation, and others. The onset of the pandemic did not significantly diminish these tasks. Other respondents say that some tasks were eased with the pandemic, but other tasks were merely shifted to the new normal. The new normal has even been said to have spawned other new tasks. The nature of these non-teaching tasks could be in the form of clerical work, online services, and/or liaison activities.

At the bottom of the challenges are concerns regarding non-equitable access of students and teachers to technologies or gadgets needed for teaching and learning delivery (mean rank – 7.41) and lack of support from the student's families or kin (mean – 6.46).

Challenges regarding access to technology were generally recognized even at the start of school planning for instructional delivery in the new normal (Dhawan, 2020; Tria, 2020), so the education department opted for the least technology-based remote mode (the delivery of educational services via printed learning modules). The teachers were tasked to assist the students in their various capacities so they to be able to answer the questions and exercises contained in the printed modules. The pandemic at its initial phases has caught the education department unprepared. It was not aptly able to respond to a new system for creating, printing, and distributing the modules. The teachers were left to attend to these various concerns, like printing and distributing the modules themselves, even at their own expense (Department of Education Republic of the Philippines, 2020). Seemingly, teachers and students alike do not need many technologies and gadgets to be able to carry on with the teaching-learning processes via printed modules.

The lack of support from the student's family or kin is perceived to be among the least of the challenges faced by mathematics teachers. Financial support is not much needed to cover academic expenses since public education is free in the country. Also, since the pandemic restricted the movements of the young children, there was no need to spend on transporting them to and from the schools, no need to prepare meals and provisions, and no need to prepare clothing and/or uniforms. In terms of social support, both parents or guardians and children are confined at home, especially during stricter health quarantine restrictions. In fact, the epidemic provided unprecedented time bonding moments within the family and kinship. There are even widespread concerns among the school authorities that parents may have more direct participation in engaging with the printed modules (Tria, 2020).

Challenges in curriculum adjustments

The respondents were asked about their perceived agreement or disagreement over items about curricular adjustments with which they cannot cope. Table 3 shows that there is a strong agreement (overall mean - 4.21) among the mathematics teachers that they are not being able to face the various challenges regarding curricular adjustments brought about by mathematics teaching within the new normal educational environment as heightened by the pandemic.

The respondents' highest agreement is in challenges brought about by the applicability to real-life situations of mathematics teaching, as there is no strong face-to-face interaction between the learners and the teachers to bridge the gap between abstraction and actual aspects of mathematics learning (Culaste, 2011). Among the actual or concrete aspects of mathematics teaching include demonstrations, emphasis, on-board or setworks, real-life exemplification, gestures, and graphics. The new normal makes mathematics learning for the learners more of a self-discovery or highly dependent on support from the household which may not be at par with seasoned mathematics teachers.

Meanwhile, the respondents agree less that mathematics teachers can compensate for the losses in the practical aspects of mathematics teaching. These practical aspects may include strong dependence of learners on classroom board explanations on problem-solving, a step-by-step showcase of computations, visual explanation of concepts, provision of practical hands-on exercises, and guided seat works (Herbst & Chazan, 2011; Mooney, Briggs, Hansen, McCullough, & Fletcher, 2014). That indicates that remote means of teaching mathematics may not ensure satisfactory delivery of the course contents since it entails dependence on previously cited practical considerations.

Table 3.
Challenges in curriculum adjustments

	Mathematics Curriculum	Mean	Level of Agreement
CA8	Not able to compensate for the losses in the practical aspects of mathematics teaching	4.11	Agree
CA7	Not well within the learning trajectories aimed for their corresponding grade levels	4.18	Strongly Agree
CA5	Not expected to be ordinarily learned by students in school settings only	4.22	Strongly Agree
CA9	Not able to address challenges on parents/household members that are supportive of home schooling	4.22	Strongly Agree
CA10	Not able to cope with challenges brought about by non-conducive home environments	4.22	Strongly Agree
CA4	Not able to instill crucial mathematical skills they need beyond the school requirements	4.24	Strongly Agree
CA6	Not able to cope with the assessment of tasks given to learners.	4.24	Strongly Agree
CA2	Not able to connect the content to higher concepts across other disciplines	4.31	Strongly Agree
CA1	Not aligned with national standards or frameworks as stated, "holistic Filipino learners with 21st Century skills."	4.35	Strongly Agree
CA3	Not applicable to real-life situations	4.35	Strongly Agree
N = 55; Overall Mean = 4.21; Overall Level of Agreement = Strongly Agree			

Challenges in the alignment of materials

The respondents strongly agree that they are not able to align their teaching materials to the expected new normal mode of learning deliveries (Table 4). That indicates that the mathematics teachers have perceived challenges aligning their materials to cope with the non-face-to-face mode of mathematics teaching. Unlike very dynamic educational fields like information technology, mathematics is fairly static and rigid. That is so even with the onset of the pandemic. Thus, there is a relatively little perceived challenge in aligning materials since there are no changes in the type, nature, and mode of delivery of teaching materials. However, the respondents have minimal reservations regarding stating that the alignment of materials in mathematics teaching is at par with pre-pandemic content coverage.

The alignment of needed materials with the curricular instruction is a primary consideration since the materials themselves bridge the gap from conceptual to practical learning. Unlike subject areas which rely heavily on experiments, simulations, or laboratory exercises, mathematics teaching is mostly delivered via textbooks (and other related materials), actual demonstrations of computations, or hands-on exercises. Resetting the materials into modular media does not significantly impede mathematics teaching, as perceived by the respondents.

Table 4.
Challenges on alignment of materials

	Mathematics Instructional Materials	Mean	Level of Agreement
AM8	Not being at par with pre-pandemic content coverage	4.27	Strongly Agree
AM6	Adapt to asynchronous learning	4.31	Strongly Agree
AM7	Provide inflexibility for teachers in preparing for their lessons	4.31	Strongly Agree
AM2	Difficulty ensuring the links between learning goals and course design	4.35	Strongly Agree
AM4	Struggle in considering the language use and degree of difficulties to different types of learners	4.35	Strongly Agree
AM10	Difficulty in coping onto the different modes of non-face-to-face teaching	4.35	Strongly Agree
AM3	Struggles in performing activities and exercises that are suited to the multiple abilities of learners	4.38	Strongly Agree
AM9	Non-alignment of “new normal” methods of content delivery	4.38	Strongly Agree
AM1	Problems regarding integrating the needed key mathematical concepts and learning goals	4.4	Strongly Agree
AM5	Insensitivity of assessment designs to the abilities, interest, developmental preparedness at home of the learners	4.42	Strongly Agree
N = 55; Overall Mean = 4.35; Overall Level of Agreement = Strong Agree			

Learning delivery modalities refer to the different modes of educational delivery other than the usual onsite, face-to-face modes (see Table 5). With the public-school authorities opting for modular distance learning, the respondents find the highest agreement in bridging gaps in access and equity in schooling among the pupils (mean – 4.24) and in keeping abreast with the current remote learning infrastructure and capabilities in the country (mean – 4.24).

Public schools are created and being operated to offer universal access and equity to education at the grade school levels. The public schools offer educational services at the expense of the state. The gap in access and equity is quite visible when comparing public schools with their private school counterparts. Those families who can afford it usually enroll their children in private schools, leaving economically underprivileged families to send their children to public schools (Culaste, 2011). With fewer expenses to worry about, the modular distance learning mode has made education more affordable, thus bridging the gap in access and equity among public school students. That could be the very reason why this is the least of the challenges as perceived by the respondents (mean - 4.24). Also, modular distance learning has kept the public education sector abreast of the current remote learning infrastructure and capabilities in the country, as perceived by the respondents (mean 4.24).

The respondents find it most challenging the ability of the public school system to support distance learning elements (4.40) and the juggling between the demands of home and study for teachers and learners (mean 4.33). Support for distance learning elements entails the acquisition and implementation of information and communication technology infrastructure plus manpower and know-how to which public schools are not known to be fully equipped and prepared. Juggling between the demands of home and work/study for students and learners is the second most challenging in the deployment of learning delivery modalities since the work-from-home (WFH) and remote learning set-ups has erased the distinct demarcation between work and home responsibilities (Tria, 2020). The sudden restrictions and stay-home policies brought about by the pandemic necessitated students and teachers to undertake educational and related activities at home. Most homes in the country were not built to support remote learning, which would mean sufficient ICT capabilities, curb noise and other distractions, and familial distinctions among siblings, parents, and extended family members.

Table 5.
Challenges in deployment of learning delivery modalities

Learning Delivery Modalities		Mean	Level of Agreement
D9	Difficulty in bridging gaps in access and equity in schooling among the pupils	4.24	Strongly Agree
10	Problem with keeping abreast with the current remote learning infrastructure and capabilities in the country	4.24	Strongly Agree
D7	Hardships encountered facilitating learning via social media resources	4.25	Strongly Agree
D8	Difficulty with being attuned with the technology-based implementation of mathematics teaching.	4.25	Strongly Agree
D5	Non-adjustment to home schooling methodologies	4.27	Strongly Agree
D4	Difficulty coping with blended learning requirements	4.29	Strongly Agree
D6	Not thriving well in modular distance learning	4.29	Strongly Agree
D1	Do not adapt fairly well to non-face-to-face learning	4.33	Strongly Agree
D3	Problems related to juggling between the demands of home and study for teachers and learners	4.33	Strongly Agree
D2	Insufficient support for distance learning elements	4.40	Strongly Agree
N = 55; Overall Mean = 4.35; Overall Level of Agreement = Strongly Agree			

Challenges in the orientation of parents or guardians of learners

The main challenge among guardians and parents, as shown in Table 6, is the sufficiency of their know-how in the subject matter (mean - 4.18). Parents need to have enough mathematics background to help their students. And assuming that they know full well the subject matter, they also need to study how to deliver the course contents since they now act as the primary teachers.

Table 6.
Challenges in orientation of parents or guardian of learners

Orientation of Parents/Guardians		Means	Level of Agreement
Or3	The parents/guardians fully know the content and delivery of instruction before the beginning of the classes.	4.18	Insufficient
Or1	There is enough consultation undertaken by the school with the learners and their parents/guardians.	4.27	Very Insufficient
Or2	The consultations are regularly monitored and reviewed.	4.27	Very Insufficient
Or7	Instructions, requirements, deadlines and other requirements are conveyed via various platforms (written materials, audio, social media posts, or messages in learning management systems, etc.)	4.29	Very Insufficient
Or10	Standard procedures and updates are fully documented and coursed through proper channels.	4.31	Very Insufficient
Or6	To properly and appropriately deliver the instruction, guidelines, rules and policies are communicated fully well.	4.33	Very Insufficient
Or5	There is a support team to inform and/or to assist the parents/guardians to meet the educational needs of their children.	4.35	Very Insufficient
Or8	Needed appropriate adjustments related to the “new normal mode of delivery” are specified and provided enough notifications.	4.35	Very Insufficient
Or9	The line of communication among learners, teachers and parents/guardians is constantly open.	4.35	Very Insufficient
Or4	Learning guides are available to the parents/guardians.	4.36	Very Insufficient
N = 55; Overall Mean = 4.31; Overall Level of Sufficiency = Very Insufficient			

Table 6 shows the responses to the various concerns on the orientation of parents or guardians of learners. The respondents perceived the various orientation activities the school provides as very

sufficient (overall mean – 4.31). The least challenging is the availability of learning guides to students, parents, or guardians (mean - 4.36). The line of communication among learners, teachers, and parents/guardians (mean – 4.35) needed appropriate adjustments related to the “new normal mode of delivery” being specified and provided enough notifications (mean – 4.35) and the provision of a support team to inform and/or to assist the parents/guardians to meet the educational needs of their children (mean – 4.35) are the next most perceived challenges.

Challenges in teachers’ training

Table 7 shows the respondents’ perceived level of sufficiency of training provided for teachers as very sufficient (overall mean – 4.30). The perceived most challenging in teachers’ training concerns are group exercises held to enable collaboration and knowledge/experience-sharing among the teachers (mean – 4.24) and tools and mechanisms provided for teachers to make informed decisions on appropriate learning delivery mode for their context (mean – 4.25).

Even teachers somehow acknowledge the need for collaborative engagement and knowledge or experience sharing among themselves. However, the health protocol observances restrict them from doing so. Also, the respondents see the need for tools and mechanisms to make informed decisions on appropriate learning delivery modes for their area of study. They are limited to digital classrooms, and somehow, they need to know how they could enhance or even maximize delivery via these digital platforms. According to Torres & Ortega-Dela Cruz (2022), this lack of teachers’ expertise in the use of various digital platforms, websites, and applications adds pressure to them.

Table 7.
Challenges in teacher’s training

	Teacher's Training	Means	Level of Sufficiency
TT9	Group exercises held to enable collaboration and knowledge/experience-sharing among the teachers	4.24	Very Insufficient
TT5	Tools and mechanisms provided for teachers to make informed decisions on appropriate learning delivery mode for their context	4.25	Very Insufficient
TT1	Series of capacity building workshops for teachers on how to implement the lessons in the new normal	4.27	Very Insufficient
TT2	Teachers training on the specific content of new curricula upfront to be able to implement them well	4.27	Very Insufficient
TT3	Peer training to ensure everyone using the new curricula is prepared	4.29	Very Insufficient
TT8	Trainings on how to use learning management systems or their equivalent platforms	4.29	Very Insufficient
TT7	Technology-based drills integrated in the over-all capability trainings for teachers	4.31	Very Insufficient
TT10	Preparedness of teacher on the new means for content sharing and assessment of tasks	4.33	Very Insufficient
TT6	Teaching guides well available for teachers	4.35	Very Insufficient
TT4	Teachers introduced to a range of delivery modalities that they can utilize depending on the context of their community and the situation of learners and teachers	4.36	Very Insufficient

N = 55; Overall Mean = 4.30; Overall Level of Sufficiency = Very Insufficient

Perceived best modality or most appropriate modality for mathematics teaching in the new normal

Table 8 shows the perceived preferences of the respondents regarding different aspects of teaching during the new normal. Most of the respondents prefer the modular mode of distance learning (37% average preference level). This mode does not necessitate a synchronous virtual

classroom engagement which is quite a challenge for equitability and access to related technologies like gadgets, laptops, PCs, and stable internet connectivity. The blended learning mode comes second most preferred (27% average preference level). The least preferred is the homeschooling mode (0.5% average preference level).

The modular distance learning mode is currently the foremost mode used by public elementary schools within the country as directed by the Department of Education. Since this mode is through printed modules (and/or supplemented by digital modules), it addresses the concerns of parents and households, especially in rural areas, regarding the inadequacy (Dangle & Sumaoang, 2020; Gueta & Janer, 2021).

Modular learning is said to be the most widely used (and most popular) mode of Distance Learning in the Philippines. Currently, this learning modality is adopted and used by all public schools in the country because, according to a survey conducted by the Department of Education (DepEd). Modular learning through printed and digital modules emerged as the most preferred distance learning method of parents with children who are enrolled as an alternative to face-to-face learning (Dangle & Sumaoang, 2020).

The use of modules is also in consideration of the learners in rural areas where the internet is not equitably accessible for online learning. In the modular method, the teacher takes the responsibility of monitoring the progress of the learners when the students themselves are to deal with the lessons in mostly self-paced means. Crucial to this modular method is the assistance in various forms from household members. The support from household members can be in the form of making the household learning conducive, tutorials, morale boost, or material means. There are at times when the household members have a direct hand in answering the questions and activities within the modules.

Table 8.
Preferred modalities for mathematics teaching in the new normal

Teaching Modalities	BL (f)	%	F2F (f)	%	MDL (f)	%	OL (f)	%	HS (f)	%
Monitoring of learners' progress	17	31%	16	29%	18	33%	4	7%	0	0%
Delivery of course content	12	22%	14	25%	23	42%	6	11%	0	0%
Provision of assessment tasks	14	25%	13	24%	22	40%	5	9%	1	2%
Provision of interactivity	15	27%	17	31%	18	33%	5	9%	0	0%
Provision of learning continuity	16	29%	12	22%	20	36%	7	13%	0	0%
Enforcement of health safety protocols	11	20%	13	24%	24	44%	6	11%	1	2%
Maximizing learning outcomes	16	29%	14	25%	19	34%	6	11%	0	0%
Universal access to education	17	31%	11	20%	19	34%	8	14%	0	0%
Providing equitability/ equal opportunities among the learners	17	31%	15	27%	17	31%	6	11%	0	0%
For asynchronous learning delivery	15	27%	11	20%	23	42%	5	9%	1	2%
	150	27%	136	25%	203	37%	58	11%	3	0.5%

BL – Blended Learning (Flexible Learning); F2F – Face-to-Face Learning; MDL – Modular Distance Learning; OL - Online/TV/Radio Distance Learning; HS – Home Schooling

The learners may ask for assistance from the teacher via available technologies like e-mail, telephone, and text message/instant messaging, among others. Where possible, the teacher shall

do home visits to learners needing remediation or assistance (Guan & Benavides, 2021). Printed Modules are delivered to students, parents, or guardians by the teachers or through Local Government Officials. On certain occasions or circumstances, the parents or guardians themselves pick and/or deliver the modules from designated locations like schools, barangay halls or local government centers. Since education is no longer held within the school, parents serve as partners of teachers in education. Parents play a vital role as home facilitators. Their primary role in modular learning is to establish a connection and guide the child (Kintanar, Elladora, & Cuizon, 2021). According to the Department of Education (DepEd) (2020), parents and guardians perform various roles in Modular Learning, such as moderators of modules, time-managers, and as home motivators. As a moderator, they are the ones to ensure that the printed Self-Learning Modules (SLMs) are properly acquired and returned to schools or barangay halls at the pre-determined schedules. As time managers, they must regularly check their child's progress as plotted in the schedule or workweek plan. Because of the number of subjects or activities to be done, they must see to it that they are being followed accordingly to avoid difficulties posed by cramming or delays in submission. These difficulties may affect the child's performance or class standing. And as a home motivator, they must provide their child with a conducive learning environment to help them focus more on Learning. It must be a space free of many distractions like commotion, incessant sounds, inappropriate lighting (too dim or too bright lighting), and poor-ventilated space in the house. Hence, the use of modules encourages independent study with adequate environmental support (Culaste, 2011; Dangle & Sumaoang, 2020).

Conclusion

Overall, the study shows an increased level of challenges for mathematics teaching. Based on the findings of the study, the following conclusions are drawn: (i) There is a perceived high concern on enhancing means for actual delivery of teaching mathematics as well as on too many additional non-teaching (or extra-curricular/co-curricular) tasks assigned to teachers; (ii) there is a perceived high level of challenges in all factors ranging from curricular adjustments, alignment of materials, the orientation of parents or guardians and teachers' training; and (iii) the modality of mathematics teaching deemed best suited for mathematics teaching in public schools is the modular distance learning mode given the indicated concerns raised on other modes of teaching delivery.

Stated here are the summary of identified challenges, as well as, concerns and priorities that could eventually be translated into policies and procedures to improve mathematics teaching: a) address concerns regarding the challenges on actual delivery of mathematics teaching – policies and procedures that will help mitigate environmental conditions affecting mathematics teaching such as on distractions, family-work life balance, information and communication technology, b) governmental rationalization of non-academic or extra-curricular works assigned to mathematics teachers – policies and procedures that will see to it that non-academic activities or requirements (such as reports, teaching plans and other paper works) for teachers are kept to minimum so as the teachers to be able to focus more on their priority – the effective delivery of teaching, c) improve competency of mathematics teaching staff to integrate technologies, other than full reliance on pre-printed modules – policies and procedures that will provide other avenues for mathematics teaching in flexible learning environment that is not detrimental to students who lack the technological facilities, d) new normal curriculum – policies and procedures to adjust engagements of both the schools and the students to compensate for the learning losses, e) adjustment on content coverage to be at par with pre-pandemic levels – policies and procedures for all stakeholders to adapt to asynchronous learning, f) adjustments addressing gaps in access and equity in schooling among the students – policies and procedures to provide provision of technologies and means for the students in the long-term, g) increased participation of parents or guardians in the academic journey of students via engagements in the learning process, not on direct answering or solving of modules, and, h) continuous provision for calibrating teachers via trainings with corresponding structural and material support.

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