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AMESA 2023 PHASE  
COMMITTEE AND  
TEACHER EDUCATION  
REPORTS

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## 2. Introduction

One of the features of the AMESA Congress over the years has been its Phase Committee meetings. Traditionally, these have been part of the Special Interest Groups (SIG) meetings. However, in 2021 it was decided separate Phase committee meetings into a category of its own to allow for AMESA Congress attendees to attend both Special Interest Group meetings and Phase committee meetings.

In 2022, these phase committee meetings occurred on the secondary day of Congress, 28 June 2022. Since our 2022 Congress was face-to-face, the meetings were held in 7 Congress venues. In 2023, due to unforeseen circumstances, the phase committee meetings did not take place at the AMESA Congress in Cape Town. However, it was decided to canvass the views of AMESA members via surveys through Google forms. As in previous years, participants were able to give their views/input on a variety of issues in Mathematics Education, ranging from issues affecting Foundation phase teachers going up to those involved in Mathematics Education at tertiary (mostly University) level.

The Google forms covered the following key mathematics education items

- Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP
- Difficult content in the phase; and support received
- Learner performance in mathematics: Highlights and challenges
- Lesson planning and preparation
- The use of ICTs and digital literacy in mathematics
- Infusing problem- solving activities in mathematics lessons
- Participation in Mathematics competitions
- Teacher development/support needed

The agenda for the Teacher Education meeting comprised the following items (in addition to others):

- Comments on the state of teacher education in Mathematics in the post-COVID 19 era
- New developments in teacher education and development
  - Pre-service teacher education
  - Inservice teacher education
- Current research in Mathematics Education
- Senior teachers as mentors to newly qualified/novice teachers
- The role of AMESA in Professional Learning Communities for Mathematics
- Any other comments

### 3. Phases and completion of forms

<b>Phase/Grouping</b>	<b>Completed forms</b>
Foundation Phase	37
Intermediate Phase	55
Senior Phase	44
FET Mathematics	23
FET Technical Mathematics	8
Mathematical Literacy	12
Teacher Education and development	14
<b>TOTAL</b>	<b>193</b>

The completion of forms in most phases/groupings was quite reasonable. However, there is a need to ensure that Technical Mathematics and Mathematical Literacy teachers also have a role to play under the AMESA umbrella. In this regard, there should be advocacy in districts by subject advisors, senior teachers, university academics and other stakeholders.

Regional representatives should convince local teachers to do presentations on Mathematical Literacy and Technical Mathematics at regional/branch workshops or conferences in the form of:

- Short or long workshops
- Short papers
- How I teach sessions

This is likely to generate new knowledge in these subjects and encourage more teachers to join AMESA.

VG Govender

## **4. Foundation Phase**

### **Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP**

There is no doubt that the COVID-19 pandemic caused a major disruption to teaching and learning across the phases in South Africa. The DBE came up with a recovery plan which included an amended ATP. FP teachers used the amended ATP to plan and prepare their lesson activities. Most teachers agreed that the amended ATP did help. However, some found it limiting and having to do too much work in a short space of time. This did not work well with FP learners since they are learning lots of new mathematical concepts and skills which should not be rushed through. Some subject advisors have been monitoring and supporting teachers in the implementation of the amended ATP. At the same time more support is required across the country.

### **Difficult content to teach; training received**

Most of the teachers were comfortable in teaching the FP content with subject advisors paying special attention to newly appointed teachers in the phase. Most teachers received content training with some teachers pointing out that it was “too vague” and “not enough”. In one case, a teacher mentioned a local AMESA Conference where she was able to pick up a number of teaching strategies and approaches which her learners were able to understand. Teachers identified the following areas where additional support was needed:

- Develop cognition and perceptual skills through play; learners struggle due to a lack of appropriate activities in pre-grade R and Grade R
- Directions/ Mapwork: learners are unable to explain because of poor language skills
- Money and time are topics which are difficult to teach
- Problem solving, building and breaking down numbers, time and other topics. t
- Number patterns and time. The training received was not sufficient; all teachers educators need to be trained.
- Measurement, perimeter and area; no support received
- Time, I have not received training as I am a grade R teacher with ECD honours but I am taken from one grade to the other
- Digital time , fractions, data handling
- Addition and subtraction issues; no training received

## **Learner performance: Highlights and challenges**

Teachers reported that while they were happy with the progress of their learners in the first six months of the year there are still areas where learners require additional support. Teachers also bemoaned the lack of parental support and involvement in their children's work. Some of the comments by teachers were:

- The environment where the children come from plays a huge role in their development. I believe learners learn a lot especially when they get the support from parents. But where I am from there is no external influence and they only practice or study when they are at school. Another thing is absenteeism: a child can be absent for almost a month and we have to see how they receive the work at home knowing exactly that it won't even get done. Mathematics is not a problem; the problem is the attitude displayed by parents
- Learners are underachieving due to limited resources. Teachers are not aware of the methodologies, they don't understand the classroom management and small group teaching
- Although learners are generally performing well, some are still struggling in number relationships and operations
- The performance is satisfactory due to a lack of resources, overcrowded classrooms and a lot of work to be done in limited time
- Learners tend to move at a very slow pace and cannot critically think "out of the box".
- Learner performance is average; challenges include not enough resources to cater for certain topics. For example, during teaching time each learner should have their own clock to manipulate but only the teacher has one
- Learners performance is good but need learning manipulative and teaching aids
- The CPA approach is highly effective, as it allows learners to manipulate resources, in order to develop their critical thinking, reasoning and problem solving skills.

## **Lesson planning and preparation**

Teachers agreed that lesson planning and preparation is very important and always strived to make their lessons accessible and interesting. Some of their comments on planning and preparation were:

- I prefer using NECT Lesson plans as they make preparations easy.
- I use CAPS document, amended 2023/24 ATP. We always use Google for pictures just to make our learning fun. For learners who are struggling I also use old NCS textbooks as these have very good information.
- Teachers struggle to do planning from the ATPs. The preparation also a challenge due to all trainings and responsibilities of schools.
- We put more topics in one week and we end up not emphasizing the concept enough for learners to understand. We also prepare teaching aids to enhance the learning. We are using all the materials that we have like the manipulatives to improve learning and understanding.

- We usually struggle with expanded opportunities for both struggling learners and performing learners and good practical assessment tasks.
- Before school opens for the term, we sit down as Foundation Phase teachers and plan for the term. We help each other to do the lesson preparations. We also plan and prepare the teaching aids to be use from grade R to 3.
- Most of the time I use the ATP and Programme of Assessment to see which topics to teach together with the accompanying resources.
- In every lesson in the introductory phase, I give my learners the lesson objectives, then allow them to do rote counting, and aural counting and ask them mental math questions, and then give them activities that will assist them to achieve the lesson objectives.
- We plan as per grade through groupings and discussions
- We sit together as grade partners, go through an ATP, jot down on the lesson plan template and then create activities to use after introducing lessons, with teaching aids.

### **The use of ICTs and Digital Literacy in Mathematics; learners' reactions**

The DBE has encouraged the use of ICTs and digital literacy in classrooms across the country and ensured that FP teachers were trained. However, it would seem that there is still a challenge with regards to access. At the same time, at schools where such resources are available and used, learners appear to be more interested in the work and easily grasp mathematical concepts.

Some sentiments expressed by teachers:

- I would love to use ICT all the time but our school is in a rural area so there is a lack of such resources.
- Every Monday we use our Maths Lab to get them actively involved in lessons. But we also have a language challenge as most presentations are English and we have to pause time and time again to explain in their Home Language which is Sesotho. My learners love their Monday and I also get excited because I know on Mondays we won't have absent learners. We are pushing to have at least 4 visits to the lab in our school; but we only have one and there are other learners who also use it
- Our school has very limited resources, only a few grades can access. The reaction is very good whenever I use my phone nor laptop
- We have been using the material of books that got from the conference. We can only access the information through laptops and we have a challenge of other devices for learners to learn more and to improve their performance. We are doing our best as a phase.
- I use my cell phone and laptop and learners are excited to view and listen to those activities. But too much paper work make us not to use them all the time because it (paper work) take too much time.
- I haven't yet used that due to contextual factors.
- For patterns and shapes 3D objects we use the computer for them to see the objects and the interactive board. They are really taking part and enjoying it.
- I downloaded math worksheets from the NECT website and the K5 website.

- I use my own projector and speaker to show learners YouTube videos related to the current content we are busy with. Learners get more interest when the screen is on they stay focused.
- Learners interest is aroused and enjoy using tablets
- Once in a while, I use ICT and learners love it as they are able to see and hear.
- They get excited because they love technology

### **Problem Solving and participation in competitions**

Teachers indicated that they do incorporate problem solving in their lessons and enter their learners in local AMESA competitions as well as those arranged by the districts and NGOs.

### **Support and training required**

Teachers indicated that more training was needed in the following areas:

- Both content and methodology,
- Problem solving
- Use of ICTs in Mathematics teaching and learning

The content areas would be the topics stated earlier such as learning through play (online and other games; money and time; directions and mapwork; integrating problem solving and ICTs into lessons; measurement; addition and subtraction in context



## 5. Intermediate Phase

### Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP

The implementation of curriculum implementation and monitoring in the post-COVID 19 era was similar in the Intermediate Phase. Most teachers were able to follow and implement the amended ATP but there were some challenges, including doing too much in a short space of time and learning gaps in children. Teachers stated the following:

- Implementation has been difficult because of the gaps the learners have experienced in the previous grades. This is with regards to the trimmed ATP where some concepts which should not be new to the intermediate are now new and learners have no previous knowledge on these concepts
- The COVID-19 curriculum was too short and skipped many topics, many learners in the intermediate phase are still struggling.
- This has been quite a ride in the implementation of the amended ATP. It has been a bit challenging at first but now we have got to the rhythm of things and the benefits; a lot of the skills and concepts were made easy to understand and are more precise and the monitoring of the activities is more easier. We can address all learners at the same time without any distraction; I can group them and monitor them accordingly and assist those with challenges in terms of understanding concepts
- The amended ATP really it helps a lot because it closed the gaps that occurred during COVID time
- The curriculum Implementation and amended ATP is in a way that helps learners reflect and recover some lessons/topics that were cut and missed the previous grade.
- I've been using the ATP together with NECT Planner and Tracker. The NECT planner and tracker is online with CAPS and is accessible for online download.
- We spend too much time on 1 topic having to teach so many things that learners end up getting confused
- There seems to be a huge gap in the consolidation of previous grades work.
- ATP is too demanding on term 1 whereby all four operational signs are to be covered
- In the schools that have been visited for monitoring and support, teachers were finding it difficult to implement the amended ATP as a whole. The teachers are overloaded with teaching duties such that they are responsible for Mathematics, NS-Tech, NS as well as Technology from Grade 4 to Grade 7.
- ATP has been adjusted but does not necessarily address the big learning gaps caused by COVID-19
- Teaching and learning during COVID- 19 was a challenge due to a certain number which was attending and some learners attending sometimes so it was really a hassle to balance activities

- The amended ATP is much better to use as it has aligned topics relatively and I am able to address a topic to full capacity
- There is a huge gap that need to be filled due to the revised curriculum. The trimming of the curriculum resulted into some topics being left out and today learners are negatively affected.
- The ATP is fine but struggling with Grade 4 learners transition from doing Mathematics in their mother tongue to English
- The amended ATP covers all topics and they are user friendly
- The post-COVID curriculum is doing its best to get all the learners engaged with all the topics. The amended ATP is also doing its job to help the teachers finish their term content.
- I think it was well planned and the implementation is according to plan. The topic on whole numbers which is now 2 weeks is excellent. Previously it was 2 hours and it was very ineffective.
- Teaching Mathematics has never been normal since the pandemic. Many gaps were left unattended and learners proceeded with this some skills lacking
- I do extra classes do cover some of the content
- The curriculum has been implemented accordingly in my phase, following revised ATP.
- COVID 19 has extremely and negatively affected the curriculum. There is a knowledge gap that is affecting the learners.
- Post-COVID 19 curriculum has relieved teachers from being overloaded. However, the other side of this curriculum is denying opportunities for a deeper understanding of other topics, which have been removed.
- Curriculum is implemented well considering that the ATP is amended to make sure that we do justice to concepts and skills. The COVID 19 gaps are now addressed
- There's still a big gap of the previous grades due to learning losses
- COVID 19 made life difficult as learners were used to trimmed ATPS now is difficult for learners to go back to normal life

### **Difficult content to teach; training received**

Despite the move to normal teaching and learning, IP teachers have identified a wide range of content which is still difficult to teach due to a variety of factors. Some indicated that they did receive training; the majority of teachers did not receive training. Teachers indicated that there was still some content which was “difficult” to teach and required training ASAP. This content included the following: Some of the more difficult content are stated by teachers are shown below:

- Common fractions, factors, multiplication and long division.
- Problem solving (word problems); fractions
- Numeric and Geometric patterns. Yes: I received content training from the district and from the Teacher Development programme that supported by Standard Bank in my circuit.
- Area and volume

- Division, Multiplication, Fractions and Decimals
- Constructions and Fractions: I have received training for these topics but still have difficulty with the implementation thereof
- Simple aspects as mental maths and multiplication; the interpretation of word problems due to the lack of reading with understanding
- Fractions, Addition and subtraction, Problem solving, division and multiplication
- Fraction and word problem is a challenge. Content gap amongst learners also a challenge. We receive online workshop. However, attendance is affected by loadshedding and fear of missing contact with our learners as meeting take place during contact time with our learners.
- Problem solving is a challenge to learners. Using BODMAS , Shapes and transformation. Teachers have challenge in setting Mathematics Project.
- Learners are not doing well in common fractions. No face-to-face training received; only virtual. In most cases the links do not open; sometimes the network is a challenge. Notice for training is also given at the last moment.
- We received training on common fractions; the timing was wrong as it should have been at the beginning of the year. We were busy with measurement at the time.
- Problem solving and fractions: district curriculum advisors are doing their best.
- Trying to explain division to a level that the learners can understand, also trying to explain length to learners in Intermediate phase.
- Long division and long multiplication (Column method), the biggest challenge is Place Value, I haven't received proper training from any of the stake holders.
- Problem solving. The district is very supportive; we also have online workshops on difficult topics fortnightly from the DBE.
- Number patterns was given less time in the ATP; so learners have gaps when they go to the Senior Phase
- Geometry (Space and shape). This topic is difficult to teach in a low-tech environment, where there are no resources.

### **Learner performance: Highlights and challenges**

Learner performance for the first 6 months of 2023 was a mixed-bag, with some excelling and others struggling. Teachers responded as follows:

- Fairly good. Learners are experiencing challenges with some topics this year; I have noticed that learners do not know how to study mathematics.
- Most learners (60%) are performing well; the others need more time to grasp the content.
- The performance is not so good. I think the challenge is with the nature of the learners of today, whereby they are not interested in their teaching and learning. You will teach one content area several times but they will still not get it; and there is a lack of support from their parents.
- They are average performers. They struggle to understand the mathematical language or mathematical terminology; and how to approach questions .
- For the Highlights our School for the past 2 years have been taking part in the Mathematics Challenges and for the year 2022 our school was recognized as the best primary school in the province for its top achievement in the Mathematics

Challenge. We do have challenges as we are under- resourced; we are dealing with socio economic problems that has a great impact on the teaching and learning of our learners. Most are either orphaned or are from child headed families and some have serious learning barriers

- Some learners are finding the integration of term 1 topics in other terms difficult solely because they forget how the 4 basic operations works so, I always make it a point to revise. Some learners are very bright and are able to perform very well. They enjoyed the topic length in term 3.
- Lack of resources (manipulatives), we end up having to improvise. Improvising is good but learners are deprived of the true experience they would have with relatable manipulatives.
- They struggle a lot especially with multiplication and long division
- Learners struggle with high order questions because of the language barrier.
- The performance is poor according to the set standards and targets. This policy of progressing learners makes it difficult because most of the learners are not performing according to their grade for example learners in grade 5 are performing at grade 4 or 3 level.
- Learners perform in an average way; some struggle to read questions and instructions
- Learners perform very well. However, we have a challenge with word problems
- Learners are performing at 50 % . There is a content gap, teaching aids to assist our learners are lacking. The Language of Teaching and Learning (LOLT) is a stumbling block. Learners can do expanded notation; division of numbers is a challenge.
- Learners are unable to read on their own; the language barrier is also a challenge. They don't read with understanding; Others cannot calculate
- Learners to perform better in patterns and have difficulty in Measurement and Fractions
- They have this belief that Mathematics is a difficult subject meant for only those who are intellectually gifted. Others give up before even trying. Problem solving is a big challenge caused by language barriers and failure to think "out of the box".
- Learners perform well but the problem is language because they did maths in Sesotho in Grade 3
- Moderate performance, inability to comprehend questions and lack of motivation.
- The performance is poor because learners still have a content gap. the biggest challenge is that there is no time for catch up.
- Learner performance could be more satisfactory. Teachers do not create a platform for learner engagement because of lack of resources (manipulatives)
- Learner performance is poor because there was no extra classes and we gave learners more work to do.

### **Lesson planning and preparation**

IP teachers appeared to plan and prepare their lessons very well, using a variety of lesson plans (the DBE; their own; etc). Teachers stated the following:

- I have pre-planned lesson plans provided by the department and I just add some activities that can cater for slow learners
- We have lesson plans that have been designed for Maths and had adequate training on how to use them and add whatever we feel should be
- We plan and prepare them as the Mathematics PLC in the circuit and we teach using one lesson plan
- When I plan the lesson plan, firstly I write the topic on the board, then I explain the meaning of the topic e.g 2D shapes are the flat shapes and have dimension that is Length and Width.
- I make sure I go through my ATP and the requirements within the different content areas. After that I plan my lesson plans accordingly with it and being mindful of the uniqueness of my learners and try all my means to apply Inclusive Education approaches in my teaching
- I usually plan and prepare based on baseline activities and pre-knowledge content
- I use lesson plans from NECT and DBE. They include the necessary skills that have to be addressed together with the corresponding activities and marking guides for teachers. I like the lesson plans from Platinum textbook, which are inclusive of learners with barriers.
- Lesson plans assist with the curation of the class activities but most importantly I get to reflect upon what was planned and what actually happened during class.
- We have regular meetings where we discussed teaching challenges and we are looking at inviting experts to workshop word problems and the approach in mastering Maths Olympiads
- I always align my lesson plans with the ATP and makes sure that they address prior knowledge, complex procedure and problem solving questions
- We use NECT Lesson plans and teachers prepare individually using ATPs
- Ask questions that test their pre-knowledge. prepare activities and worksheets for learners so that they are engaged. Bring learning and teaching resources to facilitate learning.
- My lesson plans and preparation are done following CAPS and ATP; using my 3 different textbooks and online lessons
- Lesson planning and preparation I do it at home due to lack of resources at our school. And sometimes we are not able to conduct lessons as planned due to disturbances that may come from the school events.
- We plan them in line with the ATP and extract activities from the text book, departmental workbook and the online worksheets as well.
- Preparing for lessons is not a challenge because we have most learning and teaching material at school. Recording lesson plans and keeping up with paper work is time consuming and takes up time for learning and teaching
- We received lesson plans from the Department.
- Plan as a team , PLC and lesson study also using manipulatives
- Planning is done according to the ATP on a weekly basis. You prepare beforehand the topics that you are going to teach. Presentations are done on a daily basis including mental, class activity and home activity. Marking is done daily although teacher learner ratio is bad

## **The use of ICTs and Digital Literacy in Mathematics; learners' reactions**

It was reassuring to note that most IP teachers attempted to use ICTs and digital literacy in their Mathematics classes. Some schools struggled due to lack of resources; loadshedding was also an obstacle. Learners responded very favourably to the use of ICTs and digital literacy.

- 100 % use of ICT in the classroom, and the learners are much open to using ICT in the classroom. They mainly use their tablets or cell phones.
- I use it every time. I am currently an ICT teacher number 1 in the Limpopo province through NTA, I use ICT in my daily teaching and learning.
- I don't have tools and resources for ICT
- From day to day I try making ICT part of my teaching even though I am dealing with constraints due to lack of support because our school is a public school and under resourced and most of the times I use my personal resources to reach my learners.

My learners are excited and eager every time I use ICTs in learning math and that makes it more interesting to learn for them and especially those who have learning barriers.

- Learners enjoy Heymath! And Kahoot for competitions that are part of our revision. We use tablets even though we struggle with network
- The maths antics and other maths videos are providing different angles to our own teaching; However, it is hampered by loadshedding
- I currently use our Maths lab, smart board and tablets which learners get excited for the quizzes
- The use of ICT and digital literacy is not easy to implement in the school because of the fact that there are no resources to use let alone the wi-fi
- I am not able to use digital literacy due to the lack of resources at the school
- Learners are so interested in ICT use. Department should try to avail ICT programmes to village
- I use my laptops and phone to expose learners to digital literacy in Mathematics. The school has challenges regarding internet connection, thus I end up connecting with my personal router. They get very interested and pay more attention when learning using digital technology.
- I have started small with calculators. It is becoming more interesting because mental Maths is done in the form of games. The first 20 calculators I have ordered have made huge difference.
- Once a week, and learners are excited in each lesson.
- For now, I only use it for myself when preparing for lessons because we lack resources to cater for everyone
- I do not use ICTs since the school where I am working is under-resourced. However, I devise the materials that I use to engage my learners. These materials assist in promoting learner engagement.
- Learners react actively and fully participate in the lesson. I use projector sometimes as there's only one projector in the school. The use of Ureka software (on Maths Lab laptop and tablets) makes easier for me explain other concepts to them.
- Since our school does not have a computer center, I use my laptop to show learners in groups videos on YOUTUBE about concepts like fractions and find exciting materials and activities for the learners.

### **Problem Solving and participation in competitions**

Teachers indicated that they did expose their learners to problem solving activities in the classroom. Some schools also entered learners in local AMESA competitions, competitions arranged by districts and NGOs as well as the South African Mathematics Challenge for grade 4 to 7 learners.

### **Support and training required**

Teachers indicated that more training was needed in the following areas:

- Both content and methodology (see topics mentioned earlier)
- Problem solving
- Use of ICTs in Mathematics teaching and learning

The content areas mentioned earlier include common fractions, factors, multiplication and long division; integrating problem solving into lessons; numeric and geometric patterns; area and volume.

## 6. Senior Phase

### **Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP**

Mathematics in the Senior Phase plays a crucial role in the development of learners by building on what was learnt in the Intermediate Phase and ensuring that learners are well prepared for Mathematics in the FET since learners have to choose between Mathematics and Mathematical Literacy at the end of this phase. However, it would appear that there is more focus on Grade 12 Mathematics at schools.

Teachers responded as follows:

- We have extended our learners further than what is required by the ATPs. We have included the sections that have been left out of the original CAPS documents
- The amended ATP is being implemented accurately. However, we struggle with learner discipline especially when coming to doing their homework.
- Learners have no knowledge of certain concepts and instead of just revision as per the ATP. We spend more time trying to develop learners content knowledge in many topics. Homework is not as effective type of assessment as many learners do not bother to complete the work.
- Monitoring is done quarterly by our curriculum advisors. There was a tracker for the ATP. The alignment of tracker appears to be reasonable for learners and all topics link very well in such a way learners can follow. Baseline tests assist in preparing for topics in a term. We are able to zoom in to the concept that is still difficult for learners.
- There are learners who are struggling in other topics due to the content they lost during COVID -19. We have morning study time from 07:30 to 08:00 where learners can study and do their homework. Those who are struggling in certain subjects are given activities and their subject teacher will be assisting them to improve their performance.
- ATP's are easy to interpret and activities are simplified . Activities are well structured and make monitoring easy.
- The amended 2023 ATP allows more time for learners to understand the concepts it is not congested.
- COVID-19 has a huge impact on our learning and teaching, because learners affected by COVID - 19 are struggling to keep up the standard or the level of learning
- Many learners were really left out as they took time to return after the easing of restrictions. There were training mostly remotely by district officials which many of teachers failed to attend due to network challenges.
- They have reshuffled some of the topics for the 4 terms and sometimes it brings confusion to the teacher and the learners as well. The DBE books are no longer straightforward in terms of Book 1 & 2.
- The content has been trimmed and we need to cover the omitted parts
- The ATP has been trimmed and some of the topics were taken out and touched on a little bit. Learners have not mastered certain topics, they are failing to do simple



arithmetic, more especially Grade 8. It becomes difficult to implement the curriculum for learners

- Everything is starting to fall in place, the ATP addresses the gaps left by COVID-19 rotational attendance.
- There are knowledge gaps that are hampering the normal process of learning
- Curriculum implementation is adhered to but time is limited for revision at the end of the term for better performance
- The exclusion of data handling this year will be a threat to learners in the next grades. ATP is a little bit mixed as we were used to previously
- Everything is going accordingly, the only challenge is with the progressed learners.

### **Difficult content to teach; training received**

Teachers were able come up with several areas which were difficult to teacher. Only in some cases did they receive some training.

- Fractions always seems to be a challenge. However, problem solving questions remain the most difficult for learners to grasp. Attending the workshops at the AMESA congress 2023 was the first kind of training ever received. I always offer training to our staff members.
- Financial maths and ratio and rates
- Construction of Geometric shapes, measurements of angles, construction of triangles. Lack of mathematical sets and overcrowded classes hinders skill imparting these important skills
- Integers and Exponents. These topics were covered in the AMESA Congress
- Content training is done quarterly, I'm developing myself using social platforms like You tube, etc for Transformation geometry that is challenging me.
- The learners are struggling with mastering integers and the exponents. The problem is not only in Mathematics; one find them lazy to work /study. The district has offered training via the Mathematics Lead teachers' programme/ Professional Learning Community.
- Geometry: No training was given; one is new in the grade due to changing staff; I am a FET Physical sciences teachers; Maths Grade 8 is also part of my teaching load.
- Fractions, Graphs Interpretation. Materials and Resources have been received
- Surface area and volume of 3D objects. There have been workshop trainings but mainly about setting quality assessments not necessarily content related trainings. Only attended one PLC- organised content training.
- Construction of 2D and 3D shapes , surface area and volume and word problems
- 3D objects as well as volume, capacity and perimeter. These are difficult because without proper resources it gets difficult for learners to understand and grasp the content if they do not do, feel and see physically. Algebra is also very difficult for learners to understand.

### **Learner performance; highlights and challenges**

Teachers reported that their learners were struggling with Mathematics due to a variety of reasons:

- Challenges: there are always those that struggle and fail to pass Maths every term. No matter the slower pace or more attention paid to them, they don't seem to understand the basic concepts in Maths. The bottom set class struggles to reach 40%.  
Highlights: I can extend my class that one step further and challenge them to think beyond what they have been taught in class by using what they know and applying it further. Top set class reach 80% - 90% in tests.
- Learners can solve problems in class under facilitation but face challenges when given homework as some have indicated they have no one to help at home.  
Despite thorough preparation for exam, learners make simple mistakes in exams or controlled tests, therefore fail to perform well in tests. Some in Senior phase require extra time.
- In our school performance is very poor. There is no commitment from learners and parents. Maybe it causes by overcrowding in classes. The pass one pass all principle is killing mathematics. Even those learners who are capable of doing better, they don't put efforts because even those learners which are not performing, progress.
- Learner performance and love for Mathematics is improving as a result of my teaching styles which I use. I make learning fun for learners and make them aware that Mathematics is not a difficult subject. I have learners with learning barriers on other subjects but who have improved and are doing well in Mathematics. Long division is a challenge because many learners do not know their multiples.
- Learners are performing well. However, the habitual automatic progressing of learners is a challenge.
- Learners perform just above 60 percent of which I feel is not good enough. Most of the learners lack problem solving skills, they are unable to link words with operational signs.
- Performance is very average because they are boosted by investigation, projects and assignments.
- Not good. Learners are unable to calculate. You can teach them the skills on how to tackle a problem to get the solution, but when you give assessment they write different things. Not following the steps shown. They rather write answers only.
- Average and main challenge is lack study skills from the learner side. They believe in rote learning.

### **Lesson planning and preparation**

- As Head of Maths, I set the week's work. However, we sit as a collaborative team and discuss difficult areas and if some classes are behind, we adjust accordingly. We also stream Maths so we have learners together with other learners of their ability. This allows for the slower learners to have more focus on them and they are allowed to work at a slower pace, whereas the top set are being extended and challenged beyond what we do in class.
- I have lesson plans from the FSE I also keep preparatory book
- I prepare my lessons according to my class learners' abilities and implement them accordingly.
- Mostly use department lesson plans. I do lesson preparation guided by ATP and tracker.
- I use the ATP and check learners prior learning and build a lesson according to what they know and then move to what they do not know. I use different resources (

textbooks, study masters, worksheets & internet). I also use You Tube videos to expose learners to different teaching methods that may make solving problems easier for them. I also use CPA (Concrete - Pictorial - Abstract ) approach to ensure learners with different learning styles understand the content.

- I prepare my lesson plan with the line of policy document and with the help of 1+4 lesson plan from department
- I check previous year challenges, then plan a lesson that would address those issues before hand.
- My lesson is learner-centred in a form of investigation, I let them do it as a group first then individually.
- We are guided by the ATP, for lesson preparation we meet as a professional learning community to prepare for a whole week's work, for each Grade. We make use of textbook and the DoE Workbooks.
- I follow the ATP and use CAPS during planning which involves activities for learner and my methodology on how best i can present my lesson.
- Lesson plans are provided. I only deal with preparation for presentation
- I make a simplified lesson plan that shows what I will be doing in a topic. Then, I make separate lesson preparation that have daily activities, sources and additional information.
- I take the policy, the ATP and other available resource material and plan the lesson at least 2 weeks before the specific topic.
- We have a Mathematics PLC so we develop each other. I am a member of the District Maths lead teachers' group
- We are guided by the ATP, for lesson preparation we meet as a professional learning community to prepare for a whole week's work, for each Grade. We make use of textbook and the DBE Workbooks.
- Curriculum specialists helped with lesson plans, then I use some of the materials that I received during the Congress
- I prepare lessons based on the how far I teach per day or week; planning a new lesson for each day doesn't work as learners don't get to finishing the work on time always.. However, weekly lesson plans are planned ahead but not used daily as planned.
- I am using the NECT lesson plans and for textbooks I am using mind action and platinum
- I plan per topic and it down to subtopics which becomes my daily planning.

### **The use of ICTs and Digital Literacy in Mathematics; learners' reactions**

- We don't often use any form of digital literacy, due to affordability of the devices.
- I use overhead projector for videos on YouTube
- Currently, none due space and vandalism. We have +- 90 learners in one class in my school. Nyaope boys stole our electricity cables. In the local community, most parents don't have smart phone to create WhatsApp groups. But fortunately, department of higher education promised to create a computer Lap at our school. Hope by March 2024 it will be functioning.
- None: no technology in the classroom
- I use YouTube videos to show learners other ways of solving problems. The learners love technology and their concentration and interaction is more when their are watching a lesson through a projector.

- It's difficult because not all learners have access to computers
- In my previous school I have used smart board, GeoGebra and projector to teach. I would use video from YouTube in class. Currently I am not using ICT in teaching and learning.
- I sometimes use interactive whiteboards, YouTube. Learners get excited when they use computers because they work independently. I just guide them on how to use the gadgets.
- It's easier for them to understand when they watch videos but the challenge is that I am using my own Data and learners are unable to explore ICT themselves.
- The usage of ICT help a lot in terms of playing a video for them, thereafter they answer questions especially lower level learners
- I use ProFuturo tablets to engage the learners. They enjoy working with tablets. You could see their positive reaction as soon as they see the bag of the tablets.
- They are more interested in visual teachings than on the chalk board
- I can't use it due to lack of resources
- It's rarely used and only just showing video lessons to my learners, as I lack the knowledge of integrating ICT in my teaching.
- Most learners do not have cell phone or access to the internet. We've started urging them to make research, watch videos and try other apps like Photo-math.
- ICT usage enhances their learning capacity but what has hampered the process is the lack of quality internet
- We seldom use it by using projector to explain and give informal activities.
- I use ICT every time I introduce a topic. Learners' interest is aroused.

### **Problem Solving and participation in competitions**

Learners take part in the South African Mathematics Challenge (SAMC): grade 7 and the South African Mathematics Olympiad (SAMO): grade 8 & 9; local competitions ; competitions set by the Department and other organisations.

### **Training requirements**

Teachers indicated training was needed in content and methodology; problem solving and the use of ICTs and digital resources in teaching and learning. Some of the topics mentioned earlier include fractions; financial mathematics; ratio and rates; Geometric constructions; integers and exponents; graphs; working with 2D shapes and 3D objects; area, perimeter, volume and capacity; Algebra

## 7. FET Mathematics

### Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP

Despite the need for attention to mathematics across the grades, there has always been a focus on FET Mathematics, especially Grade 12. Due to the significance of the external examinations in Grade 12, the ATP just rearranged topics (none were trimmed due to UMALUSI requirements that all topics must be assessed).

Teachers stated the following about curriculum implementation and monitoring:

- We were not monitored. We had to stop using the amended ATP in March and had to go back to the original ATP. This made it very difficult to complete the work for the first 2 terms, especially in grades 10 and 11.
- There is quite a bit of work to cover and there are too many gaps to address; and not enough time to teach everything properly
- It was not easy but I managed to implement it and currently with the amended one I'm doing my best to close the gap
- The ATP must be reduced, too much content and not enough contact time as per topic. Learners do not study; they don't want to spend time at a desk learning. They lack basic grade 7 to 9 background in Mathematics.
- The pressure to 'catch-up'" is still very intense, since the learners have so much to learn in limited time, resulting in not keeping up with the ATP.
- The amended ATP did not change anything in grade 12; they are assessed in all topics, despite not being taught the topic in the previous grades. So there are lots of gaps in learner knowledge which has to be addressed.
- Teaching in the post COVID-19 is very much difficult as some of the topics were not dealt with during COVID 19

### Difficult content in the phase; and support received

Some of the more difficult content for learners (as stated by teachers) were:

- I find it difficult to teach Euclidean geometry and functions. There is a gap on properties of lines and triangles. There was no content trading for grade 10 and 11 but for grade 12 there was. I learned a lot during AMESA Congress, where I attended 2 workshops specifically for grade 10; I can now show the effect of  $a$  and  $q$  in a parabola through GeoGebra.
- Probability due to time constraints
- Functions, Algebra, Euclidean Geometry
- Probability (permutations and combinations)
- We do receive content training, but the problem is they always focus on grade 12 which is the exit grade. Hence, learners get to grade 12 with big content gaps.
- Probability
- The challenging topics for learners are Euclidean Geometry due to lack of resources. I can't use GeoGebra to approach the lesson for them due to resources.

- Euclidean Geometry and Trigonometry are a challenge. There is a lot of support from the Subject Advisors.
- Euclidean geometry I have not been trained on this content.

### **Learner performance in mathematics: Highlights and challenges**

- My learners are good in factorizing and solve for x.  
Challenges are on functions, drawing hyperbola and interpretation of graphs.
- the performance of my learners has improved significantly
- Below average and more failures than passes
- Most of learners are struggling but through intervention they are doing great
- Hardly no highlights because learners underperform due to extra mural activities.  
Challenge was to have all learners at a Winter school. Highlight maybe is the 90% who did attend but the weaker learner struggled to keep up with the time frames.
- Below average. Most of the learners don't practice and lack interest in the subject.
- Learner performance in mathematics is very much poor . Overcrowding, language barrier and lack of commitment in schoolwork. Lack of digital resources.
- Learners perform at level 1 and 2 they don't know how to answer difficult questions and high level order questions more specially application questions
- Challenges: They don't read questions, they do guess work, maybe it's because of language barrier.
- Euclidean Geometry and functions is posing as a problem to many learners. Most grade 10 learners are doing well in Mathematics
- Poor performance. Learners are not writing their exercises given or even engage the examples given in class.

### **Lesson planning and preparation**

- Prior knowledge of my learners is the one that guides my lesson preparation, i do a simple basic pre-test prior the lesson plan is developed.
- First planning was the term planning and then every week we plan for the week ahead. When we loose periods due to other factors we work extra time in the mornings, afternoons, and days before the school start. No planning is cast in stone - we're changing our lessons on regular basis. My team do their final planning on the weekend before.
- The subject leader sets up a daily teaching plan according to the ATP which is followed as closely as possible by each educator.
- We make use of the 9 + 1 method where we meet as educators and plan and go back and teach.
- I plan weekly lesson plans because if I plan for the month; I won't finish as you have to teach them repeatedly.
- We sit together as a phase and invite other phases as a PLC before we start planning.
- I am currently using NECT lesson plans and using Mind Action, Platinum, Classroom, Clever, Handbook as textbooks. I am also slowly incorporating previous question papers in the informal assessments. I am ensuring that at least everyday I give learners an informal activity

### **The use of ICTs and digital literacy in mathematics**

- I used YouTube videos, during extra classes in the afternoon and Saturdays. I would like to use them during lesson but due to prior organization and preparations of equipment I can't. I wish I have my own class where learners rotate to it so that they find everything well prepared and be able to start the period on time.
- 100% Our school is an eLearning institution
- None no technology in the classroom
- To what extent of using Google classroom and WhatsApp group
- No - maybe only the use of GeoGebra with graphs.
- I only used it for research and learners are responding positively about the use of ICT in the learning of Mathematics. Learners can see drawings in a different position when using ICT and this enables them to interpret shapes better than the traditional method of learning.
- Very little, as the availability of such resources is limited
- Not frequently due to shortage of the resource, one has to book on time.
- It's limited because we must share the resources. 35 teachers share 5 laptops which makes it difficult.
- I hardly use ICT in Mathematics.

### **Infusing problem-solving activities in mathematics lessons**

All teachers indicated that due to the cognitive levels for FET, it was compulsory for them to do some problem-solving activities during their lessons. This was to ensure that they became used to level 4 questions and were able to solve problem-solving type questions in tests and examinations.

### **Participation in Mathematics competitions**

Teachers indicated that some of their learners participated in the South African Mathematics Olympiad (SAMO) for Senior Learners (grade 10 – 12). Their learners also participated to local competitions organised by AMESA, districts and other organisations.

### **Teacher development/support needed**

Teachers indicated that they required support in content and methodology and the use of ICTs and Digital Literacy in Mathematics teaching and learning. In terms of specific content, support was needed in Euclidean Geometry, Trigonometry, Probability (permutations & combinations) and Functions,

## **8. Technical Mathematics**

### **Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP**

Technical Mathematics teachers expressed similar views as Mathematics FET teachers. They said that it was tough to implement the ATP, as you find that certain topics were trimmed in previous grades but needed later to complete the ATP and learners needed to have strong content knowledge; otherwise they move through the FET with content gaps that are difficult to resolve in grade 12 due to time constraints. Some parts of the country are plagued by gangsterism and this causes disruptions to school routines, including the completion of key content in Technical Mathematics.

Some teachers were pleased with the amended ATP, saying it was easy to follow. The post COVID-19 period has not been easy, but schools appear to turn the corner in an effort to achieve academic excellence for learners.

### **Difficult content in the phase; and support received**

There were a number of topics which were difficult to teach. Teachers have been receiving training but more support is needed. Some of the topics (content) mentioned by teachers were:

- Angular movement
- Trigonometry
- Euclidean Geometry, especially Circle geometry
- Finance

### **Learner performance in Technical mathematics: Highlights and challenges**

Generally, learner performance was poor to average. There were very few learners who scored higher marks. Learners struggled with 3D concepts and visualising shapes; they did well in functions, graphs and angular velocity. However, learners rarely put effort into Technical Mathematics, preferring to focus on their technical subjects such as Carpentry and Woodworking.



## **Lesson planning and preparation**

Technical Mathematics teachers are aware of the importance of lesson planning and preparation. There were varying degrees of preparation with some planning weekly, fortnightly or monthly. They ensure that key concepts are covered during the lessons and allow for learners to complete some of their work in class. They agreed that Technical Mathematics learners require more support than Mathematics learners.

## **The use of ICTs and digital literacy in Technical Mathematics**

Technical Mathematics teachers are very interested in using ICTs and digital literacy in their lessons as learners become more interested when this occurs. Teachers responded as follows:

- I use a data projector and laptop in my lessons; I also show my learners appropriate You-tube videos.
- It would be a wonderful idea to use such equipment. However, when you make such requests, you are told that the budget is low, funds are constrained etc. In my opinion it would make a huge difference in the teaching and learning at my school.
- I make use of a visualizer and projector. I also use Geogebra and 3d models to explain difficult topics so that learners can visualiser the shape and what effects certain changes to the formula brings upon the shapes.
- Unfortunately our Maths Lab turned to be a “white elephant”. But learners are happy to use manipulatives.

## **Infusing problem- solving activities in mathematics lessons**

All teachers indicated that due to the cognitive levels for Technical Mathematics, they had to do some problem-solving activities during their lessons. This was to ensure that they became used to level 4 questions and were able to solve problem-solving type questions in tests and examinations.

## **Participation in Mathematics competitions**

There are very few mathematics competitions for Technical Mathematics learners. Those who were interested took part in local AMESA competitions or ones organised by the district.

## **Teacher development/support needed**

Teachers indicated that they required support in content and methodology and the use of ICTs and Digital Literacy in Technical Mathematics teaching and learning. In terms of specific content, support was needed in Euclidean Geometry, Trigonometry, Angular Movement and Finance.

## 9. Mathematical Literacy

### **Curriculum implementation and monitoring in the post-COVID 19 era and implementation of the amended ATP**

Mathematical Literacy responded as follows:

- The amended ATP pushed more work to be covered in a term and not being able to focus more on a specific topic. Also I had to make use of other resource activities as most text books are out dated.
- Every lesson is integrated and accommodates every learner with barriers or not.
- The amended ATP is learner and teacher friendly. We manage to complete the curriculum term-to-term and provision is made for Topic tests, etc
- Implementation is good and monitoring is not effective due to the senior who is not conversant with foundation phase curriculum.
- At TVET level the ATP are done by individual lecturers after receiving the Pacing Document from the curriculum unit.

### **Difficult content in the phase; and support received**

The change in the assessment structure for Mathematical Literacy in 2021 has ensured that there are 2 equally balanced examination papers at the end of the year. This means that all topics are important and that learners must be exposed to all cognitive levels (for each paper). Teachers reported that they did receive training within their districts, but more training is needed.

Some of the more difficult content:

- Models
- Measurement, including area and volume
- Tariffs, taxation and other financial
- Measurement conversions

### **Learner performance in Mathematical Literacy: Highlights and challenges**

Teachers reported a “mixed-bag” in terms of learner performance, thus far, in 2023.

- It was not good because of previous years learning gaps
- Gr 11 and 12 are performing better than grade 10 in the subject. Grade 10 learners struggling to read with understanding and doing basic calculations.
- Teaching aids makes the lesson interesting and increases curiosity in learners. There is, unfortunately, a language barrier when teaching the subject.
- The highlights of Mathematical Literacy remains - that it is real-life content. Learners can relate to what they're taught in class and apply it in real life. Some learners come

back and report that they could teach their parents a thing or two about how their tax and UIF is calculated. Some learners even assist their parents in home renovations when it comes to tiling, painting, thus surface area calculations, etc. The challenge is still that majority of Mathematical Literacy learners lack the passion and drive for the subject. Most aim just for the minimum 30% mark.

- Average, poor attendance of learners and lack of some teaching resources.
- First term they were above average then come second term the results dropped drastically.

### **Lesson planning and preparation**

All teachers surveyed indicated that they did do planning and preparation of their lessons. They reported the following:

- In Mathematical Literacy everything is being prescribed so I found it easier to prepare and teach
- A teacher is assigned to prep and plan lessons for the whole grade. This includes activities and assessments. This teacher is responsible to communicate with other teachers in the grade to discuss the work for the term and make sure they get the required planning and activities.
- Lesson planning/Preparation plays a vital role in the success of the lesson. Daily lesson plans + activities per period indicated; this leads to knowing where you want to be or what you want to receive out of the lesson.
- Lessons are mostly prepared on a quarterly basis
- I use ATP, CAPs documents, text books, study guides, work sheets and previous question papers.
- I plan a lesson based on ATP and keep up to its pace, but I realised that in second term that it's not working because I will move to next topic but learners have not fully understood the concept. I plan and make sure the learners are happy with the topic then I move on and make means to catch up

### **The use of ICTs and digital literacy in Mathematical Literacy**

Not all teachers used ICTs and digital literacy in the subject due to loadshedding and lack of resources. Some of the remarks by teachers were:

- My learners like to be part of this because they got different approaches and method
- Learners are blown away and they get excited and willing to learn.
- I've been using basic technology in teaching Mathematical Literacy. Unfortunately our school does not have resources such as whiteboards, projectors and WiFi for interactive teaching and learning. So printing extra notes & making copies are as far as our digital world expands to at our school.
- Have not used ICT extensively in Mathematical Literacy but working on remedying the situation.

### **Infusing problem- solving activities in mathematical literacy lessons**

Reasoning and Reflecting is the highest cognitive level for Mathematical Literacy (level 4). Thus, teachers ensured that they covered problem-activities, related to this cognitive level, in their lessons

### **Participation in Mathematical Literacy competitions**

There are no national competitions for Mathematical Literacy learners. However, teachers did indicate that their learners may take part in local competitions organised by AMESA and other organisations.

### **Teacher development/support needed**

Teachers indicated that while they were mostly comfortable in teaching the subject, they required support in both content and methodology and the use of ICTs in teaching and learning. Content training is needed in the following topics:

- Models
- Measurement, including area and volume
- Tariffs and taxation
- Measurement conversions

## 10. Teacher Training and Development

This phase committee is an important committee and brings together academics, district officials and other key stakeholders involved in teacher training and development

### Comments on the state of teacher education in Mathematics in the post-COVID 19 era

The COVID-19 pandemic caused havoc in this sector. Higher Education Institutions, Provincial Departments of Education and other service providers moved to online/virtual learning. While some virtual/online learning still takes place in this sector, most institutions have moved back to face-to-face teaching and learning. Participants in this forum had the following to say about the state of teacher education in the post-COVID 19 era:

- Teachers need an integration of pedagogical skills together with technology application skills
- Teacher development was affected negatively during the outbreak of COVID-19 and the scars of that affect mathematics teachers. There is a need post-COVID to equip teachers with technology advanced means of teaching so that they can be able to close the gap incurred during that era.
- The aftermath of the pandemic has demonstrated that now, more than ever, teachers of mathematics need to possess deep understanding of the content that they teach. This grasp of the fundamental ideas (do not read as foundation phase concepts) should empower teachers to implement more effective and flexible approaches to teaching.
- Teachers should be trained more in blended learning; intensive training is required
- Huge strides have been made to improve the quantity and quality of pre-service teachers through some changes in the curriculum.
- We also experience a back log. I find it mostly in pre-service teachers' preparedness to talk or communicate mathematics.
- There's researched evidence that new teachers will require sustained support and efficiency in the use of appropriate ICTs to deal with learning deficits that were exposed and exacerbated by the COVID-19 disruptions.
- The amount of training depends on the recipients. In many instances there are no sufficient resources to be utilized by students and lecturers to deal with such changes. Time was lost time for those who tried innovative methods with few managing.

### New developments in teacher education and development

Mathematics Education academics and others are always at ways of improving the pre-service and in-service experience of teachers. In this regard, some of the new developments in teacher education and development are:

- Teaching in a post COVID classroom
- Teachers are being trained on 4IR- friendly ways of teaching, like the use of technology teaching tools together with accessing free online open education resources to use in teaching mathematics at all levels

- The use of manipulatives in teaching, especially in grades R - 9
- The impact of AI on teaching and learning
- The methodology in the foundation phase remains the same; teachers are encouraged to use ICTs and digital technologies.
- Online teaching, integration of technology in the mathematics teaching, use of open education resources
- Mathematical modelling is getting attention in the STEM approach
- The focus is now on conceptual understanding
- The Prim-TED project provides for the wholistic development of primary school teachers; and their materials should be used in more higher education institutions. A modified version of these materials should be used for in-service mathematics teachers.
- The Primary Teacher Education (Prim-TED) professional community of teacher educators has ushered in a precious dispensation for monitoring the quality of the curriculum offerings in the B.Ed programmes across institutions that still battle to define quality education in measurable and inclusive terms.
- The PrimTED Community of Practice (CoP) is also engaging members in discussions and research on appropriate standards for mathematics teaching and learning with a heavy slant towards using standards-based assessments and monitoring quality using standards.

### **Current research in Mathematics Education**

- Current research is trying to address the gap in both pedagogy and content knowledge caused by COVID-19
- Technology and teaching and learning Maths
- Research in mathematics education should focus on teacher reflections and the use of indigenous material as resources to enhance understanding of mathematics concepts.
- Some interesting research is emerging from the PrimTED 02 test analysis it seems.
- Too much time spent on teaching, not enough research time.
- There is a need to change the attitude that Mathematics is difficult; focusing on conceptual development and teaching for understanding
- Current research is growing in both quality and quantity, especially in new ways of teaching mathematics and the resources required.
- All about the role of technology and its influence; the use of ICTs and digital technologies.
- There has been steady growth in research on the importance and implications for prioritising early grade development in Number Sense which has been found to be a powerful predictor of success in mathematics in later grades. Laying solid and sound foundations in early grade mathematics is antithetic to unsustainable practices that have focused on NSC to improve matric results instead of ensuring sustainable development, research and practices.
- Many papers are written on how teachers managed to teach and assess during COVID and how that is sustained now after COVID.
- Use of ICTs and digital technology

## **Senior teachers as mentors to newly qualified/novice teachers**

- Working together where senior teachers share the teaching approaches to various mathematics topics and how to manage their classrooms
- Good senior teachers can be lead teachers in their circuits such that on one Friday per fortnight, mathematics teachers could come together to share how they teach certain concepts as prescribed by the annual teaching plans
- Mentors need to be in possession of the deeper understanding of mathematical concepts as mentioned previously, and not be ‘drill, drill, drill and practice types’ who, on the surface can apparently produce good test results. They must be able to mentor and convey mathematical thinking among their colleagues, who should pass this on to their learners in turn.
- Mentors can enhance CPTD workshops for teachers by sharing good practices with them
- Ideally, mentors should be from the same school; should this not be possible than mentors could be sourced from neighbouring, functioning schools
- Mentors could be involved through partnerships leading to co-authorships and joint projects.
- By viewing the first year of teaching as an internship, with rigorous assessment requirements agreed on by teacher educators and mentor teachers. The student's teaching qualification is only endorsed by the professional body after this year. And pay senior teachers for this service.
- There is support for establishing sustainable Professional Learning Communities (PLCs) which will provide a "safe space" for both experienced and novice teachers to share ideas, co-create sustainable and research-based strategies for teaching mathematics. Both groups have valuable complementary contributions to make towards improving the quality of maths education in our country.
- Senior teachers can share their expectations and experiences with novice teachers, and they need to be open - minded to what new teachers will be sharing because their vast knowledge of using ICT in the classroom.
- Mentorship is possible if in-service training is initiated at schools. However, this is not easy since University and DBE must collaborate in this, including Unions.

## **The role of AMESA in Professional Learning Communities for Mathematics**

- Establish district and regional projects on continuous professional development of teachers
- Quarterly regional workshops should focus on establishment of working PLC's
- Create network between teachers, department of education and lecturers.
- The PLC met in Congress 2023 and added new members
- Have provincial and local colloquiums frequently.
- AMESA should be able to identify and commission dedicated maths educators who will serve as change agents and 'model" professionalism for maths education in the various provinces/regions. These are professionals who must sell and pioneer the establishment of PLCs and showcase the potency of these formations.

- AMESA can provided a huge support to Maths teachers in terms of development and sharing of new research regarding mathematics in schools.
- I strongly support the notion of establishing sustainable Professional Learning Communities (PLCs) which will provide a "safe space" for both experienced and novice teachers to share ideas, co-create sustainable and research-based strategies for teaching mathematics. Both groups have valuable complementary contributions to make towards improving the quality of maths education in our country.
- Senior teachers can share their expectations and experiences with novice teachers, and they need to be open - minded to what new teachers will be sharing because their vast knowledge of using ICT in the classroom.
- .AMESA can provided a huge support to Maths teachers in terms of development and sharing of new research regarding mathematics in schools.
- PLCs are possible if AMESA gives Mathematics Education academics and other experts leadership roles and space to bring teachers together and explore innovative ways of teaching/learning the subject.

### **Other comments**

- Upgrading knowledge and methodologies; and the use of ICTs and digital technologies
- Teacher developers should also work together as groups that focus on common niche areas.
- AMESA should do aggressive marketing to attract more members
- Increase the entry requirements to teacher education degrees programmes.
- We need opportunities for primary school education students who want to improve their matric results (from Mathematical Literacy to Math) to do that during their degree as an extra subject.
- Teacher educators and teachers should engage actively in discussions on curriculum reviews and implications related to LTSM and assessment. The planning and implementation of curriculum reviews will only be sustainable if teachers and teacher educators accept and prepare for it.
- Universities, the DHET and DBE must collaborate with each other and other stakeholders to make teacher education a success
- All resources for assessment in particular phase to be shared on what's up groups in districts Equipment of subject advisors with professional development skills



## 11. Conclusion

There is no doubt that these phase committee reports have provided some valuable insight into the state of Mathematics teaching and learning in South Africa, across the phases. There is also some very useful and pertinent information in the Teacher Education sector, both in ITE and CPTD. These reports could be used to inform stakeholders (DBE; DHET; HEIs; Provincial Departments) and guide future programmes within the Mathematics Education sector scenario (in both initial teacher education and continuous professional development)

In 2018 AMESA members voted overwhelmingly for AMESA to establish a National Training Academy for Mathematics Teachers. As a result of various challenges in Mathematics Education, across the phases, and in the aftermath of the COVID-19 pandemic, there is a need for AMESA to implement this proposal as a matter of urgency.

In conclusion, we need to be reminded that “AMESA is a key role player in Mathematics Education in South Africa” and is able to interact with various stakeholders on an informed basis, using the input of our members on their experiences in their classrooms. More mathematics teachers and university academics should join AMESA; regional and branch activities should take place in all parts of our country.

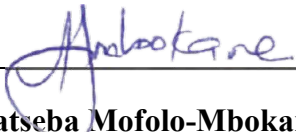
Our 2023 Congress attendance of more than 1500 has shown that our Mathematics teachers are “hungry” for training and development. Furthermore, the immense quality of input from our phase committees has given us an opportunity to plot the way forward in a positive manner and leave the uncertain matters and anxiety behind.



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**Dr VG Govender (Nico)**

**AMESA Coordinator**



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**Dr Batseba Mofolo-Mbokane**

**AMESA Acting President and Vice-President**