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**AMESA 2021 PHASE
COMMITTEE AND TEACHER
EDUCATION REPORTS**

September 2021

Report compiled by Dr VG Govender (AMESA National Executive Member and AMESA 2021 NOC member) with input from phase committee convenors

1. Contents

No	Heading	Page
1	<u>Contents</u>	2
2	<u>Introduction</u>	2
3	<u>Phases, convenors and attendance</u>	3
4	<u>Foundation Phase</u>	3
5	<u>Intermediate Phase</u>	13
6	<u>Senior Phase</u>	14
7	<u>FET</u>	16
8	<u>Technical and TVET mathematics</u>	19
9	<u>Mathematical Literacy</u>	21
10	<u>Teacher Training and Development</u>	24
11	<u>Conclusion</u>	30

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 2021, these phase committee meetings occurred on the first day of Congress, 14 July 2021 in the after-lunch session. One hour was allocated to the Phase committee meetings which took place in 7 virtual rooms. 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 agenda for the phase committee meetings comprised the following items (in addition to others):

- Curriculum implementation and monitoring (especially in the time of COVID-19)
- Difficult content in the time of COVID- 19
- Assessment (in the time of COVID -19)
- Learner performance during COVID-19: Challenges and successes
- Lesson planning and preparation

- Participation in the Mathematics challenge/Olympiad and other problem- solving competitions
- Teacher self- development and in-service training (during Covid-19)

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

- Welcome and introductions
 - Comments on the state of teacher education in 2020/2021 during the time of COVID 19 (Face-to-face classes versus online classes): Successes and challenges
- 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 issues

3. Phases, convenors and attendance

Phase/Grouping	Convenor	Number in attendance
Foundation Phase	Ms Patricia Walaza	36
Intermediate Phase	Ms Kgomotso Pilane	20
Senior Phase	Mr Mzwakhe Sokutu	26
FET Mathematics	Mr Ishaak Cassim	25
FET Technical and TVET Mathematics	Mr Trevor Dube	8
Mathematical Literacy	Mrs Sandra Van Niekerk	5
Teacher Education and development	Mr Gary Powel	15
TOTAL		135

Although the attendance in each phase was not as high as in previous years, we, nevertheless, are certain that the information in this report is a true reflection of the views/comments/experiences of Mathematics teaching/education in South Africa, especially during the COVID-19 era. Additional information was gathered from outside these meetings for FET Technical and TVET Mathematics as well as Mathematical Literacy as the numbers in these meetings were relatively low.

4. Foundation Phase

Curriculum implementation and monitoring (especially in the time of COVID-19)

Impact on COVID 19 on curriculum implementation

- School closures due to COVID-19 have brought significant disruptions to education in the school.
- Lack of personal interaction between teacher and learners who are affected by Covid 19 at home.
- Rotational attendance or time table model
- The fact that when teachers and learners show symptoms of flu, they should isolate and this increases teacher and learner absenteeism which makes it difficult to cover curriculum.
- Children are no longer allowed to play and socialize with one another which is crucial for their development in mathematics; they do not pick up natural social and mathematical skills especially when it comes to counting forwards and backwards; and during problem solving activities.
- Learners are not able to focus and concentrate as needed

Impact of rotation classes on curriculum implementation in the various grades?

- Reduction of teacher- learner ratio per class per day
- The rotational system is not helping learners develop, especially in the foundation phase, as learners are not regularly at school.
- 100 % curriculum coverage is not possible. Foundation phase learners tend to forget easily; learning mathematics can be tricky for some learners and missing lessons may have long-term consequences.
- The learning gaps have increased; learners are struggling and do not remember what is taught
- Rotational classes are time consuming. There is little or no time for revision and remedial activities with learners; absenteeism has increased
- Some teachers travel long distances to get to school; these teachers are unable to spend time after school to support learners who are struggling
- Due to social distancing protocols, it is difficult for learners to work in groups.

What support have they received (in terms of teaching rotation classes)?

- Despite teachers' best efforts, some struggle to effectively manage their classrooms in this pandemic.
- Coaching model by mathematics subject specialist gives strengths to educators.
- WhatsApp links with all parents have been created.
- Video's have been sent out on these groups to explain classwork and advise on work to be done at home.
- Some schools have extended the school day by up to 45 minutes to assist learners who are struggling.

Besides grade 12, are there any catch up plans in place for other grades?

- Some schools do have “catch up plans”. The DBE recovery plan has been implemented with some success at schools. This plan ensures that key content is repeated periodically to enable learners to master the basics.

- Teachers also give homework for learners to do on their “days off”. However, not all learners are able to complete the work. Furthermore, there is a reluctance on the part of parents to monitor or support their young children in the Foundation Phase. In some cases older siblings may help support and monitor the work.

Any other issues

- Children who are on a rotation timetable struggle with routine
- Children watch television for many hours; they play with phones and do not do any work when not attending school.
- Learners struggle to focus and have a limited concentration span.

Difficult content in the time of COVID- 19

What are some of the more difficult topics to teach during the time of COVID-19 pandemic?

- Money
- Word problem
- Measurement especially Time: measurement (length, mass, volume and area) topics are mainly done practically.
- Calendar
- Place value
- Addition and subtraction using building and breaking up method and fractions
- Number patterns with big number range

Have you sought support from your HOD/Subject Advisors/others? Explain?

- Workshops arranged for measurement and time
- Some provinces have online support for teachers eg, Western Cape
- Worksheets have been developed to help teachers negotiate some of the more difficult content
- There is monitoring of the teachers’ work by the SMT, including class visits. Moderation is done by HOD and there is further moderation at the District office.
- Teachers have a common goal when planning our lessons, it is to teach new topics as best as we can; there is also collaboration amongst teachers in a grade/phase with planning and sharing of resources

What content training have they received from the Department, NGOs, HEIs, etc ? (be specific with type and grade level) during the time of COVID-19

- Training received from our subject advisor through coaching during school visit.
- Gr 1 to Gr 3 training on geometric patterns, number operations and relationship.
- Specialist trained departmental heads and teachers were trained by departmental specialists at different schools/circuits
- COVID- 19 regulations make it difficult for content training to be conducted.

Explain the pros and cons of virtual/online training/workshops during the time of COVID-19

Pros (advantages)

- Increased Inclusivity
- Increased Productivity
- Teachers can have access to any workshop from any place in the country.
- Teachers can watch video again
- Teachers don't need to travel to different places to attend these training.

Cons (disadvantages)

- Online training/workshops may increase lack of understanding and access to full services.
- Challenges with virtual teams can result in poor communication, poor connection and incompetent team members
- Online/ virtual training requires more data and this is not usually provided by the department or schools; teachers may have fork out their own money for data.
- Not everyone has access to internet/technology to attend the online training sessions.
- Online training was not done in some schools or district, WhatsApp only was used for communication

What additional content training do they still require? (be specific with type and grade level)

- Time in Gr 2 and Gr 3
- Number patterns in Gr 1, Gr 2 and Gr 3
- Addition and subtraction using building and breaking up method and fractions
- Word problems in grade 1 and 2

Assessment (in the time of COVID -19)

How is assessment curriculum implemented in your grades?

- Assessment is continuous and is school based
- Assessment is based on the recovery ATP and programme of assessment.
- NECT tracker and teacher guidelines are used together with RATP
- Informal assessment done continuously throughout the course of the term on a daily basis.
- Formal assessment done during a set time after a concept have been taught and according to the POA outlined in the ATP.

Would say that the assessment gives a true reflection of teaching and learning in your grades? Explain

- Yes. During the course of assessment, either formal or informal, one may get a clear indication whether teaching and learning took place or not, which topics learners need more help with and where educator can customize their teaching to improve learning.

What are some of the changes with respect to assessment during COVID-19?

- All those learners with challenges in the subject are not attended school frequently; teachers are rushing to cover all the topics so these learners are left behind (and have learning gaps)
- High absenteeism of learners makes it difficult to finish assessment on time.
- Assessment is done over a longer period of time due to rotation timetable being followed.

Comment on the quality of own assessment tasks and those set by clusters and/or department

- Our own tasks cover what we have taught the learners, and the ones from cluster focus in all topics even what the learners did not learn.
- Learners perform better in tasks set by teachers good than from cluster, district or province.
- Tasks are followed from the ATP (Annual Teaching Plan) and POA (Programme of Assessment). These tasks are set within the context of what children should know. Different levels of questioning are being used in all grades.
- Tasks set cover all topics taught

Comment on cognitive levels of assessments

It was discussed that teachers in the Foundation Phase should cater for all ability levels during assessment. In this regard, the meeting affirmed that:

- Different cognitive levels in questioning should be used in all FP assessment tasks
- Questions should cover lower order thinking skills to higher order thinking skills.

Performance in assignments/investigations versus control tests/exams; how to reduce the gap in learner performance

- Children achieve most of the time higher marks in assignments and investigations than test/exams.
- Children enjoy doing investigations and doing work hands-on much more than sitting down and doing a formal test.
- Some teachers were introduced to JICA method of doing evaluating tasks/projects.
- Children in Foundation Phase NEED to learn topics practically, doing things themselves and as stipulated in CAPS not be behind the desks the whole time. Learners need to figure things out for themselves with the teacher guiding them in the correct direction. Children need to do each topic practical before going over to the DBE workbook.

Learner performance during COVID-19: Challenges and successes

Comment on learner performance in the first 6 months of the year

- Most learners are coping taking into consideration the circumstances.

- A clear back log is visible and a lot of effort will be needed to get on par again..
- Absenteeism contributed to poor performance
- WhatsApp is used to communicate with parents about homework given to learners, some parents do not have WhatsApp or do not have phones.
- Learners do not do homework because their parents are illiterate, some just being truant.

How are learners reacting/responding to questions in Control tests and Exams?

- Between 30% and 40% of the learners cannot read questions with understanding.
- Most learners master data handling and addition

What have been the successes at our schools?

- 80% content coverage achieved
- All learners have DBE books
- Most learners passed in term 1
- Protocols for Covid 19 were observed and achieved

What have been the challenges? How have you/your school addressed these challenges

- Rotational time table and the limited contact time is a challenge.
- We use social media and printed worksheets to try and overcome these challenges.

Do we reflect on our learners' performances?

- Yes, intensive support is given.

What has been the role of parents during these trying times?

- Generally, parents have been supportive
- Teachers have found ways to interact with parents so that parents can give the necessary support to their children, especially when children are at home on their "days off".

Lesson planning and preparation

Why is it important to plan and prepare lessons? NB: The text book is not the lesson preparation but a resource!

- To ensure that learning time is maximized and that the learner benefit from it. If we fail to plan, we plan to fail.

To what extent do teachers plan their lessons?

- Teachers use ATPs and CAPS document to plan for each term guided by NECT lesson plan book.
- Planning is done by all teachers teaching same grade in a school. (team planning).

- Teachers plan and prepare teaching resources and teaching aids together per grade.
- Planning helps teachers to know what they are going to teach in class on daily basis.
- Teaching strategies, teaching aids and methods to be used must reflect on the lesson plan.

What is their level of preparation?

- Most teachers prepare reasonably well for their lessons with some being extremely thorough and dedicated

What do they include in their preparation?

Formal, informal assessments activities which includes worksheets.

Teaching strategies, teaching aids and methods to be used must reflect on the lesson plan.

Participation in the Mathematics challenge and other problem solving competitions

Do our teachers encourage learners to take part in Problem Solving competitions/challenges?

- Yes. No competitions and challenges done during term 1 and 2 or during Covid 19 pandemic due to limited available time and social distancing. Spelling Bee will be done intergrade during term 3 and Maths will be done in term 4.

What competitions do learners in the phase take part in?

- Master mind mathematics competitions

Teacher self- development and in-service training (during Covid-19)

To what extent do teachers take responsibility for their own training?

- In school service training is done per term during analysis of results. Challenges and interventions are identified and discussed
- Teachers engage on social platforms where there are different education groups.
- Teachers share ideas/techniques on these groups and educators share these ideas with their colleagues.
- Teachers attend online workshops of their choice.

What opportunities are there for teacher self-development?

- Getting out the comfort zone by attending in-school training sessions. Each educator needs to present a certain topic over time, we share our principles of practice with one another.

What in-service training initiatives are there for teachers in regions?

- Most in-service training initiatives are online.
- SAMF had a problem solving course for facilitators teachers in July 2021. Provinces had had some limited training; the CTLI in the Western Cape has also moved to online in-service training for teachers.

What has been the impact of the in-service training?

- Learning new strategies to use in mathematics teaching, whether face-to-face or virtual
- Helping teachers develop new and improved ways of delivering some of the more difficult content

The role of AMESA in promoting PLCs (Professional Learning communities) in the regions

- AMESA has an important role to play in bringing teachers to meet and discuss various issues in mathematics such as integrating content, getting parents involved, discussing different ways of teaching more difficult content
- In some regions PLCs were involved in lesson planning sessions using the JICA method; Teachers from different schools meet and develop a lesson plan; they all get to teach the lesson we planned in our class. Some teachers may observe colleagues in their classrooms. Later there are follow up sessions where there is reflection on what happened during the lesson; with what worked and what did not work in the class..

5. Intermediate Phase

Curriculum implementation and monitoring (especially in the time of COVID-19)

- **Impact on COVID 19 on curriculum implementation:**
COVID 19 impacted negatively on curriculum implementation because teachers were unable to implement the curriculum due to learner's absenteeism and the pandemic.
- **Impact of rotational classes on curriculum implementation in various grades:**
Rotational time tabling has a huge impact on curriculum implementation. Teachers are unable to cover and implement the curriculum hence it gives anxiety and pressure to learners as well. Stipulated hours per subject are not covered effectively. Grade 4s are suffering more as they are in transitional phase.
- **What support have they received (in terms of teaching rotational classes):**
No support was given to teachers by the department
- **Besides the grade 12, are there any catch up plans for other grades:**
Yes there are catch up plans like using WhatsApp group for learners and extra classes after school.

Difficult content in the time of COVID 19

- **What are some of the more difficult topics to teach during the time of COVID 19?**
Decimal fractions, rounding off, multiplication and division; In grade 6 all topics
- **Have you sought support from your HOD/Subject Advisors/ others? Explain.**
Not enough support from the subject advisors.
- **What content training have they received from the department , NGOs, HEIs, etc (be specific with type and grade level)during the time of COVID -19**
No content training have received from the department in all grades
- **Explain the pros and cons of virtual/ online training/ workshops during the time of COVID -19:**
Network problems and insufficient data. Some learners and teachers from disadvantage communities they don't have gadgets. Some of the teachers still struggle to use online/virtual training.
- **What additional content training do they still require?**

Grade 4 - division and multiplication, problem solving

Grade5 – rounding off, division and multiplication, problem solving

Grade 6- decimal fractions, division, problem solving

Assessment (in time of COVID 19)

- **How is assessment curriculum implemented in your grades?**
Formal assessment is done quarterly while the informal assessment is done daily according to rotational time tabling hence it is not effective due to learner's absenteeism
- **Would say that the assessment gives a true reflections of teaching and learning in your grades?**
Not at all, especially when learners are given assignments; parents assist them at home.
- **What are some of the changes with respect to assessment during COVID 19?**
Learners work individually and teachers are able to see learner's challenges quickly unlike when they work as a group.
- **Comment on quality of own assessment tasks and those set by clusters and department?**
Since COVID -19 each school set their own assessment because of rotational timetabling and different curriculum coverage.
- **Comment on cognitive levels of assessment:**
Most of the teachers are still struggling to put all the cognitive levels of assessment in their assessment. More workshop is needed for teachers to differentiate all the cognitive levels of assessment.
- **Performance in assignment/ investigations versus control test/exam; how to reduce the gap in learners performance:**
Learners perform better in assignments / investigation than control test /exam because they do assignment at home and they are assisted by their parents
Teachers should expose learners to various types of questioning even during informal assessment.

Learner performance during COVID 19: CHALLENGES AND SUCCESSES

- **Comment on learner performance in the first 6 months of the year**
Learners do not perform well. They still adapt to COVID 19 and teaching style.
- **How are learners reacting/responding to questions in control test and exam?**
Most of the learners struggle to understand the questions and tend to give wrong answers. Language barrier is a challenge especially the grade 4 should get used to English as a medium of instruction. Learners struggle also with reading and that hampers their performance.
- **What have been the successes in your school?**
Extra classes made an impact, most of the learners improved well
- **What have been the challenges? How have you/your school addressed these challenges?**
Absenteeism of learners due to the Pandemic – have extra classes
Curriculum coverage- have extra classes
- **Do we reflect on learner's performance?**
Yes: by doing item analysis, reflect on the lesson presentation, do quarterly analysis and baseline assessment
- **What has been the role of parents during these trying times?**
Parents are not supportive even when learners are absent they don't report to school. Learners are not completing their homework and assignments.

Lesson planning and presentation

- **Why is it important to plan and prepare lessons?**
It serves as a guide that teacher uses every day to determine what and how the learners will learn. It is a perfect time management tool in the classroom. The teacher can also measure the understanding of learner's content. It guides the teacher if the objective of the lesson is reached.
- **To what extent do teachers plan their lessons?**
They plan their lessons daily guided by their ATPs
- **What is their level of preparation?**
Teachers during COVID 19 they don't prepare together as before and that makes a huge difference in terms of content delivery; they are not working as a team and that makes imbalance in curriculum coverage.
- **What do they include in their preparation?**
Dates, time, objectives, prior knowledge, learner's activities, content area, topic, reflection, resources, teacher's activities, mental maths, grade, school name, formal or informal activities.

Participation in the Mathematics challenge and other problem solving competitions

- **To what extent do teachers incorporate problem solving activities in their classroom?**
Very few teachers incorporate problem solving activities in their classroom because they have challenges to problem solving activities
- **Do our teachers encourage learners to take part in problem solving competitions?**
Few of schools do encourage learners to take part in problem solving competitions.

- **What competitions do learners in the phase take part in?**
Learners do quiz in school, compete with other neighbouring schools by writing Mathematics competition.
- **What should be done to encourage learners to take part in these challenges/competitions?**
Involve the SES, Principals of the schools and parents; not only the Mathematics teachers
- **What support do teachers need in problem solving?**
More workshops needed for teachers

Teacher self – development and in-service training(during COVID 19)

- **To what extent do teachers take responsibility for their own training?**
During COVID 19 there were few PLCs and workshops. Some provinces they did not have any content workshop. Online webinar was a challenge to most teachers due to 4IR usage.
- **What opportunities are there for teacher self –development?**
Virtual AMESA conferences and congresses, E-learning classroom, webinars, PLCs
- **What in-service training initiatives are there for teacher in regions?**
Since COVID 19 most of the in-service training for teachers did not happen
- **What has been the impact of the in-service training?**
No impact
- **Comment on sessions attended at the Congress**
Few content topics was done; There should be more presentation on the content and errors learners do during their assessment. Strategies should be discussed on how to improve the learner’s performance.
- **The role of AMESA in promoting PLCs in the regions**
AMESA should encourage do teacher development in schools(PLCs) too and more activities should be done in regions especially the content topics that most of the learners are struggling with like CONTENT AREA number 1 and 2(Numbers, Operation and Relationships, Measurement especially conversion)

6. Senior Phase

Curriculum implementation and monitoring, especially in the time of COVID-19

- ***Impact of COVID-19 on curriculum implementation:*** Focus in schools seems to be on FET, SP has not had the same amount of time; Teachers are struggling to cover curriculum and chunk topics.
- ***Impact of rotation classes:*** This had a highly negative impact. Far behind in curriculum, but differ from school to school depending on the size of school and number of learners per grade in this phase
- ***What support has been given to teachers in SP in terms of managing rotation classes?*** No comment received.
- ***Apart from gr 12, are there any other catch up plans and have they been successful?*** The large numbers of learners in gr 8/9 classes makes it difficult to have extra classes; Often gr 8/9 teachers also have a gr 12 class which makes it difficult to look closely to Senior phase classes
- ***What are some of the more difficult topics to teach in the time of COVID -19. For those topics have you sought from your HOD, subject adviser or others?*** It is less that there are difficult topics to teach, but more that there is not enough time to cover the topics because of the rotational timetable. It is difficult to chunk concepts so that they can be taught in the rotational timetable. Learners do not have the foundational concepts which makes it even more difficult to teach the curriculum. Teachers are trying to both bridge the content gap (from previous years) and only have 50% of the time they should have. Thus, even if the curriculum is reduced, we still don't have enough time to bridge the gaps. With regards to Departmental Heads, a lot of them especially in primary schools, have no expertise in the subject.

Virtual/online teaching. Is it successful? Are we able to do it? Do we cover a large spectrum of learners in this way?

- It is difficult to implement virtual/online learning. Setting up the classroom to be able to do this is difficult if you don't have a classroom with projector, whiteboards etc.
- A teacher has found that using an e-academy/e-classroom useful. The web was given to other teachers.
- In the rural areas have difficulty with connectivity. So, it is hard to engage learners.

- Teachers record the lessons or find them online and provide them to learners through WhatsApp. Teachers then discuss with learners what they learnt from the video when they come back.
- Learn.olico.org is a platform with videos and interactive questions for learners in SP. This is data free and learners can use it on cellphones without data. This is important and it is important that ensure that educational resources are available data free as most of our learners do not have easy access to Wi-Fi or data.
- Remote learning is difficult for learners.

How do we implement assessment? Is it a true reflection of teaching and learning?

- Assessment often only having knowledge and routine procedures.
- Some say assessments have been set on what the ATP says should have been done, rather than on what has been done which has been unfair on learners.
- Others say as they are only covering 50% of the work, they are only assessing on half the work.
- Sometimes what we are teaching learners is simpler than what we are testing them on.
- We need to ensure that we have a range of question types to cater for all learners.

Quality of own paper versus quality of district paper

- The papers from the district give an indication of what is expected and does cover all the cognitive levels. But sometimes they include material that has not been covered in class.
- It is not really possible to provide district/provincial papers now because of the different timetables and thus different coverage at schools.
- It is important that we help teachers to be able to develop quality assessments that cover all the cognitive levels.
- Learners can get higher results in assignments/investigations than they do on the controlled test of the same topic. Some teachers also can see assignments/investigations as a way for learners to get marks which is not a true reflection. We should look at mechanisms to make sure that others don't do the assignments for learners and those educators stay in control of the assessment (e.g. do it in class or have some check for this).
- E-academy has helped a teacher set papers by modifying what they provide.
- Quality of assessment at schools is affected by the Departmental Heads – it is important that the Departmental Heads monitors and moderates the papers for them to be good.

7. FET Mathematics

Curriculum implementation and monitoring (especially in the time of COVID-19)

- **Impact on COVID 19 on curriculum implementation:** The CAPS curriculum is not implemented fully.
- **Impact of rotation classes on curriculum implementation in the various grades?** Some grades, especially Grades 10 and 11 are not receiving their full notational time as they do not come everyday to school. In some cases Grades 10 come twice a week only. The Grade 12's however attend daily.
- **What support have they received (in terms of teaching rotation classes)?** Take home learning packs; tutorials; video lessons (where applicable).
- **Besides grade 12, are there any catch up plans in place for other grades?** Minimal

Difficult content in the time of COVID- 19

- **What are some of the more difficult topics to teach during the time of COVID-19?** Most, if not all topics are deemed difficult especially at Grade 10 as the Grade 9's of 2020 did not complete all the prescribed topics. The same applies to Grade 11 and Grade 12 – as the 2020 curriculum in Grade 10 and 11 were not taught in full.
- **Have you sought support from your HOD/Subject Advisors/others? Explain?** Yes. But this is a new normal – they also need support.
- **What content training have they received from the Department, NGOs, HEIs, etc ? (be specific with type and grade level) during the time of COVID-19 :** Differed from Province to Province.
- **Explain the pros and cons of virtual/online training/workshops during the time of COVID-19:** Well- resourced provinces benefitted from remote/virtual teacher training workshops; participants may have logged into a session but may not necessarily be present for the full duration; no interaction like in a face-to-face session; lack of data compromised participation.
- **What additional content training do they still require? (be specific with type and grade level)** Varied from province to Province.

Assessment (in the time of COVID -19)

- **How is assessment curriculum implemented in your grades?** In some cases like in the past (i.e before Covid -19 stepped in).
- **Would say that the assessment gives a true reflection of teaching and learning in your grades? Explain:** No. Assessments are still administered for compliance and not to gauge learners understanding of content taught.

- **Comment on the quality of own assessment tasks and those set by clusters and/or department:** Assessment tasks that were moderated well and aligned to policy prescripts were of a better quality than those assessment tasks that were moderated for compliance only.
- **Comment on cognitive levels of assessments:** The cognitive levels are fine, if the assessment task is moderated well.
- **Performance in assignments/investigations versus control tests/exams; how to reduce the gap in learner performance:** If assignments/investigations and other non -test like tasks are administered as they ought to be administered the gap between traditional tests and these assessment tasks should be narrowed.

Learner performance during COVID-19: Challenges and successes

- **Comment on learner performance in the first 6 months of the year:** In some grades performance was exceptionally high when compared to pre-covid-19 era.
- **How are learners reacting/responding to questions in Control tests and Exams?**
Their responses are not as expected.
- **What have been the successes at our schools?** Some schools registered successes, while others are still experiencing learners failing in large numbers.
- **What have been the challenges? How have you/your school addressed these challenges?**
Teacher absenteeism due to been covid 19 positive; learner attendance due to rotation and instances of COVID-19; catch up programmes in place – lengthen the school day; extra classes over weekends; during holidays, etc.
- **Do we reflect on our learners’ performances?** Not always. We are busy chasing syllabus completion.
- **What has been the role of parents during these trying times?** Parents in most cases are conspicuous by their absence.

Lesson planning and preparation

- **Why is it important to plan and prepare lessons? NB: The text book is not the lesson preparation but a resource!:** Preparation is the best weapon of a teacher- he is aware of the anomalies inherent in the topics if he prepares well. He then comes up with strategies to counter learner misconceptions, etc. It shows learners that he is in charge and not a slave to the text-book.
- **To what extent do teachers plan their lessons?:** It varies. Where teachers are provided with ready-made lesson plans – they implement these sheepishly without adjusting them to address their unique needs. Where teachers tweak/adjust the given lesson plans to address their environments better lessons are presented.
- **What is their level of preparation?** Level of preparation can vary from non existent to excellent.

- **What do they include in their preparation?** The ideal is to include the aim/goal of the lesson; examples to be done collectively; classwork, possibly non-routine sums related to the content taught for high achievers.

Participation in the Mathematics Olympiad and other problem solving competitions

- **To what extent do teachers incorporate problem solving activities in their classrooms?** It depends on the teachers' level of expertise.
- **Do our teachers encourage learners to take part in Problem Solving competitions/challenges?** Yes. Again it depends on the teachers commitment
- **What competitions do learners in the phase take part in?** In both regional and national Olympiads
- **What should be done to encourage learners to take part in these challenges/competitions?** Dedicate 1 period every week to problem solving. It should not be difficult per say. Something novel that pricks their curiosity and gets them thinking differently.
- **What support do teachers need in problem solving?** Be trained in problem solving. Exposed to problem solving sessions – non threatening environment.

Teacher self- development and in-service training (during COVID - 19)

- **To what extent do teachers take responsibility for their own training?** Limited
- **What opportunities are there for teacher self-development?** Depends on the province and the individuals drive to improve their lot.
- **What in-service training initiatives are there for teachers in regions?** Mainly provincial driven
- **What has been the impact of the in-service training?** In some instances, there has been an improvement in teacher knowledge and competence. In other cases, it was difficult to gauge.
- **Comment on sessions attended at Congress (in respect of the given phase):** Sessions were informative and relevant to the phase. Pity the congress was not “live”.
- **The role of AMESA in promoting PLCs (Professional Learning communities) in the regions:** Encourage formation of branches -from school level upwards. Have “How I teach it sessions” for difficult concepts before topics are taught. Have lesson study approach – encourages the idea of team teaching – being criticized not to find fault but to build each other.

8. Technical and TVET Mathematics

Curriculum implementation and monitoring (especially in the time of COVID-19)

- **Impact on COVID 19 on curriculum implementation:** Covid 19 has resulted in lack of adequate curriculum since learners attend school rotationally, most of the learners come back to school forgotten what was done in the previous day. The attendance is dropping
- **Impact of rotation classes on curriculum implementation in the various grades?** Learners do not do homework; they are given work to do on their “off” days. But most learners tend not to do the work; they fall behind.
- **What support have they received (in terms of teaching rotation classes)? How was work monitored?** Online teaching was introduced and few learners do attend online classes
- **Besides grade 12 are there any catch up plans for other grades:** Catch up plans are done online and other grades do rotate on weekend,

Difficult content in the time of COVID- 19

- **What are some of the more difficult topics to teach during the time of COVID-19? Some topics—Content support and content:** All trimmed topics, because these topics are difficult to teach at that particular grade. e.g Grade 10: Euclidean Geometry; Grade 11: angular movement
- **Have you sought support from your HOD/Subject Advisors/others? Explain?** Subject Advisors do virtual training for the 1st 3 weeks of the term to support us and the focus are the topics of that specific term for all grades, they also share learner activities with educators
- **What content training have they received from the Department, NGOs?** Virtual meetings by DBE a maximum of 3 hours per topic per grade
- **Online/virtual learning:** Data provided by the DBE for its workshops
- **What additional training is needed?** Setting exam paper; understanding of level distribution (cognitive levels when setting a Technical Maths paper); teaching with technology; etc. Most still use the chalkboard)
- **Trimmed topics in the curriculum:** Even though the curriculum is trimmed, the work is not completed due to poor attendance by learners. It was suggested that the trimmed sections be included for teaching in the following year

Assessment in the time of COVID-19

- **Assessment in grades 10 -12:** Based on the trimmed curriculum
- **Would say that the assessment gives a true reflection of teaching and learning in your grades? Explain:** Yes: because we assess what was taught in the class

- **What are some of the changes with respect to assessment during COVID-19?** **Grade 10/11:** SBA (60%) (10 AND 11): Exam / Test (20%); PAT (20) **Grade 12:** SBA (25%); PAT (25%); Exam (50%)
- **Performance in assignments/investigations versus control tests/exams; how to reduce the gap in learner performance:** Learners are doing far better in assignment/ investigation when compared to exam/test
- **PAT:** PAT performance is excellent because of the way it is done in class. Learners are given time to go through PAT and teachers come and discuss it before learners complete the PAT
- **Learner performance:** Learner performance in the year 2021 for the 1st 6 months is poor in tech maths
- **Learner responses to Control tests/exams:** Some are making minor mistakes that can be fixed in the next 4 months. Mistakes like operation errors; using wrong formula; integrating instead of differentiating
 - **Successes in schools:** Learners doing well in complex numbers and algebra; Analytical Geometry; Calculus
 - **Reflection on learner performance:** Yes to a certain extent to check where learners are struggling and coming up with remedial support
- **Role of parents:** There is some communication between parents and schools regarding children's performance; some indicate that they would check that children do work on their "days off".

Lesson planning and preparation

- **Why is it important to plan and prepare lessons? NB: The text book is not the lesson preparation but a resource!** Preparation is one of the most essential part in education without preparation you cannot manage your time well; Take your learners from known to unknown; assess what is relevant
- **To what extent do teachers plan their lessons?** Teachers are guided by the policy; when planning they should have their policy document close at hand to check what should be covered in the lessons (the textbook will help as a resource)
- **What do teachers including in their preparation?** The normal basic information, including formative assessment. However, very few included "problem solving type" examples.

Problem Solving Activities

- **To what extent do teachers incorporate problem solving activities in their classrooms?** At present Technical Mathematics teachers still depend on the problem solving questions associated with Mathematics. They need assistance with regard to problem solving within Technical Mathematics
- **Interest by teachers in problem solving:** Teachers try by all means to interest their learners in Mathematics Competitions; but interest on the part of learners is lacking. Thus is it incumbent on teachers to incorporate problem solving questions in their lessons to stimulate learner thinking and motivate them to participate in Mathematics Competitions.
- **Mathematics Competitions/Olympiads:** Some learners do take part in the SAMO and other Mathematics Competitions
- **Support required by teachers in problem solving:** More problem solving workshops

Teacher self- development and in-service training (during Covid-19)

- **Teacher responsibility for their own training:** Teachers attend cluster meetings; they also use their own data for virtual/online workshops; they are keen for further development as Technical Mathematics is a fairly new subject.
- **Opportunities for teacher self-development:** The DBE has arranged for online training for Technical Mathematics teachers in September 2021.

9. Mathematical Literacy

Curriculum implementation and monitoring (especially in the time of COVID-19)

- The covid epidemic had a major impact on the teaching of the content in Maths Lit. Grade 12 were mostly catered for in terms of full-time class time.
- Grades 10 and 11 have been attending school on a rotational basis, thus teachers must try and touch on important topics during the reduced class time.
- Some complaints from teachers are that learners have become even less motivated about attending classes and doing homework.
- Some of the better resourced schools have added online classes to the rotational timetables to do more work with the learners.
- There are mainly grade 12 intervention programs in most schools.

Difficult content in the time of COVID- 19

- Difficult topics are currently dealt with on a one-on-one basis with new teachers.
- A workshop was held in term 1 for new teachers in the subject. We are currently running Friday revision teams sessions for gr 12 learners, in which all new teachers are requested to attend together with the learners.
- It will be ongoing until the start of the trial exam.
- With online training/lessons more people can be reached in one session.
- One of the disadvantages are that underperforming schools normally have a challenge with data and have problems setting up the sessions for their learners.
- Novice teachers need much more training in all topics.

Assessment (in the time of COVID -19)

- Schools have been issued with common tasks, which is done in the class under the supervision of the teachers. Since that has become the norm,
- Marks give a true reflection of the learner's competency in the subject, but not necessarily the teaching of the topic as there is a tendency in some schools to deal with topics superficially for the sake of answering questions. T
- The management of teaching and learning need a lot of monitoring as discipline is a huge problem, which impacts negatively on the teaching and learning environment and subsequently the results.

- Marks in assignments and investigations are still higher than exam and control test marks, but the gap in the marks does show an improvement, as teachers are not allowing learners to do formal SBA tasks at home anymore as per my request.
- The quality of teachers' own tasks in some schools are still not up to standard, hence for now most schools are doing district tasks. Although it is emphasized that schools do not have to do common tests/tasks, there are still clusters/circuits/districts that provide common tasks and tests for standardisation purposes.
- All schools are accommodated when common tasks are set.
- Cognitive levels for assessments are adhered to as per CAPS document in district tasks. Awareness of cognitive levels are always being emphasized so that teachers adhere to CAPS requirements when they set their own tasks.
- Changes suggested by the Recovery document were implemented from this year and will remain until 2023. Formal SBA tasks were reduced in grade 12 from 7 to 5 and in grades 10 and 11 from 7 to 6. There are no more SBA tasks scheduled for term 4 anymore.

Learner performance during COVID-19: Challenges and successes

- Overall, grades 10 and 11 are doing worse than grade 12 since they have less teaching time.
- With the current covid situation, more resources have become available and are distributed to teachers, which assists them in preparing learners for exams.
- Syllabus coverage has improved overall due to increased monitoring and guidance.
- The biggest challenge is discipline of teachers and learners. HOD's are encouraged to monitor the teaching of subjects at school level, but very few HOD's understand (are motivated to) their roles. Schools where discipline is better, curriculum delivery is more effective.
- Results must be submitted every term and discussed with teachers during sessions arranged for SBA purposes and during school visits.
- Parents are supposed to play an important role to monitor the work of the learners at home, but in most cases, they are not equipped to do so. In the better performing schools parents are more hands on and have the financial means to arrange extra tutoring for their children.

Lesson planning and preparation

- Planning is very important in teaching. A teacher needs to know what is going to be taught and when.
- Teachers are guided by HODs and subject advisors on teaching. Topics are broken up into days.
- Some teachers would teach a topic and leave out important aspects in topics,.. They still must prepare their lessons - in terms of important concepts to be taught, examples, exercises to be done by learners. Teachers are encouraged to use more than one textbook to prepare activities.

Participation in the Mathematics challenge and other problem solving competitions

These types of activities are left up to individual teachers and schools to arrange. In future more attention needs to be given to problem solving and competitions, which can be enrichment for the learners.

Teacher self- development and in-service training (during Covid-19)

- Due to the covid situation, most activities had to be arranged via online platforms. There are challenges experienced by teachers wrt online interventions.
- The cost of data, setting up of equipment are some of the challenges mentioned by them. When workshops and meetings are arranged via online platforms, it mostly teachers from better resourced schools who attend, which means that often the cohort you want to reach are not able to participate.
- Most training sessions would have to take place online during the covid situation, which means that most teachers are losing out. There is improvement in the situation of dealing with technology, but it is happening very slowly.
- Several training sessions were held for teachers, but once again very minimal attendance from the people who need it the most.
- Teachers need to be encouraged more about development and training. Principals need to encourage teachers at school level to embrace technology and they need to cultivate an environment of learning.

10. Teacher Training and Development

Gary Powell opened the discussion at 15:00.

- After the welcome and introductions, Alwyn Olivier opened comments on teacher education in reference to the appointment of Cuban teachers in South Africa. He questioned whether expertise could be built by importing expertise.
- It was decided that SA teachers need to be developed, and that AMESA had an important role to play in this development.
- Rajendran Govender reflected on the current situation on our schools, and in the world within the COVID-19 context, and how teaching had moved online. He referred to how the online environment, and non-access to schools for B.Ed. students had negatively affected the teaching practice aspect of pre-service teacher education. Manare Setati added that, while exposure to online teaching had, on some ways, equipped pre-service teachers with that specific (online) experience, online teaching is but one aspect of teaching. Rajendran Govender asked the meeting how flexible models of teaching could be augmented, whether online, blended, face-to-face, or distance learning. He added that one of the biggest challenges was assessment. He also voiced concern as to how lecturers were able to transform their “old” teaching practices to online engagements.

- Alwyn Olivier stated that basic programmes like Excel, PowerPoint, and GeoGebra needed to be included in teacher training, in order to familiarize teachers with “applicable” technology. Gary Powell added that it was important that, when technology was included in teacher education, it was important that the technology was seen as a utility, and that sustained engagement was implemented and encouraged as part of teacher development.
- Melshir Fredericks commented that she had noted that novice teachers struggled to move between the more novel approaches to teaching and more traditional methods of teaching. She added that she felt that face-to-face engagement was more powerful than online development activities.
- Rajendran Govender asked the meeting how AMESA should engage with teacher educators, and what technology should be used. He asked how self-directed learning materials could be designed to effectively teach pre-service teachers. He added that some students had found recorded online lectures beneficial, as these could be watched over and over again.
- Zingiswa Jojo reflected on how the pandemic had caught us all unawares, but commented on how the some presentations and panel discussion at the congress had exposed how effectively technology could be used for teacher development, adding that lecturers need to equip themselves in terms of utilizing technology for teaching more effectively.
- Alwyn Olivier reflected on an experience while teaching a course online, and how participants disappeared, or never participated during a course. Vasuthavan Govender concurred with Alwyn Olivier, reflecting on similar experiences when using technology, especially social media like WhatsApp. Alwyn asserted that AMESA needed to bring out a statement regarding the use of technology for teaching.
- On the next agenda point, Rajendran Govender commented that there seemed to be fewer and fewer mathematics teachers in the school system, and that SA could be facing a huge exit from the system over the next four to five years. This, he added, related to school results.
- Annie (KZN) added that her institute had been trying, for some time, to encourage teachers to attend classes on teaching with technology. She added that teachers were more interested in the SACE professional development points and suggested that in-service teacher education needs to be coordinated.
- On this, Alwyn Olivier added there was a perceived issue in that many teachers enjoy “protected” employment, and there seemed to be no pressure on teachers to develop further as with other professions. SACE was trying to address this, by making the accrual of a minimum number of PD points compulsory over a fixed period.

11. Conclusion

The discussions and deliberations in the various phase committee meetings have provided some valuable insight into the state of Mathematics teaching and learning in South Africa, across the phases, especially in 2020 and 2021, when school in South Africa and the world has been disrupted by the COVID-19 pandemic.

There are also some valuable insights in the Teacher Education sector, in both ITE and CPTD. It is imperative that the information gleaned from the discussions in the phase committees be used to inform stakeholders (DBE; DHET; HEIs; Provincial Departments) on what possible changes and

improvement may be implemented within the Mathematics Education 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 education, especially due to the COVID-19 pandemic, there is a need for AMESA to implement this proposal ASAP; possibly by 2023, the latest.

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. While our 2021 Congress attendance was relatively low when compare to 2017 – 2019, the quality of input from our Phase committees has given us an opportunity to plot the way forward, especially during these uncertain times.