

EDUBYTE 1 2020, INTERMEDIATE PHASE

THE POWER OF A POSITIVE ATTITUDE TOWARDS MATHS

PEP Academy helps learners to transition from foundation to intermediate phase. With the change in the language of teaching and learning (LOLT) the literacy the literacy challenge is more obvious than the numeracy challenge.



PEP Academy commissioned research from CASME to inform its approach to maths. The first few editions of EduByte look at what the research tells us that we can bring into our PEP Academy classrooms.

An analysis of historic Annual National Assessment (ANA) results, and other studies – show that most Gr4s and 5s in South Africa are performing well below the proficiency level. Most learners have large learning gaps. What is the maths problem at intermediate phase? Let's look at the last ANA results from the Department of Basic Education in 2004.

Gr 3 average: 52%; Gr 4 average: 36%; Gr 5 average: 38%

In the 2015 Trends in International Mathematics and Science Study – an international assessment – South African Grade 5 learners were amongst the poorest performers in the world. 60% of learners tested did not achieve the minimum competency required at Grade 5 level.

Why do maths results drop from foundation to intermediate?

- Change in the language of learning from mother tongue to English
- Increase in the number of subjects, so less time for maths
- Learners arrive at Grade 4 with gaps in the foundation phase maths knowledge; if it is not attended to this gap grows every year.
- There is a change in the types of assessments learners undertake

How can we help address this at PEP Academy?

There are five interconnected strands of mathematical proficiency: (1) procedural fluency, (2) conceptual understanding, (3) adaptive reasoning, (4) strategic competence and (5) productive disposition. The first four relate to the learner understanding and being able to apply mathematical concepts. While we aim to help learners with all five of these areas, perhaps our biggest opportunity as an after school programme lies in number (5): productive disposition – in other words, a positive attitude to maths.

Remember what we do best at PEP Academy?

We develop learners who are confident, independent and with a positive attitude to learning.

Productive disposition and positive attitude are one and the same thing. In the academic literature, productive disposition is described as:

the tendency to see sense in mathematics, to perceive it as both useful and worthwhile, to believe that steady effort in learning mathematics pays off, and to see oneself as an effective learner and doer of mathematics.

Other research in the CASME report talks about mathematical mindsets:

successful maths users...approach maths with the desire to understand it...and with the confidence that they can make sense of it. They search for patterns and relationships and think about the connections between the different parts of the maths curriculum.

The good news is that studies have shown that learners are open to interventions that help them discover the joy of maths while making sense of the maths – particularly in a less formal environment that we offer at PEP Academy.

Here are a few tips to help the learners in your class develop a positive attitude towards maths?

- When a child walks into a PEP Academy classroom, encourage them to leave anxiety about maths at the door. Let them always perceive mathematics as attainable.
- Make maths FUN. They will participate more!
- Always relate the maths back to what learners see and experience in the world around them. This makes it relevant.
- Let them work at an appropriate level and sustain their confidence. Scaffold the difficulty level to build learners' confidence. Challenge them, but never overwhelm them with complex problems.
- Reinforce that struggle is part of mastering mathematics. Problem solving should be challenging, fun and rewarding.
- Speed is not as important as accuracy. Accuracy with speed will come with practice. Give learners opportunities to practice their maths facts.
- Create an environment in which errors are opportunities to learner; never belittle a learner who doesn't get it right the first time.

*This is an open source educational resource drafted by Social Innovations. This note draws from the research report *Into the Gap*, authored by CASME. The references for the research are cited in the full report which can be downloaded from www.socialinnovations.co.za*