

RESEARCH PROJECT 6

EFAL - Term 1 & 2

Grade 1 Mathematics - Term 3 & 4



BRAINBOOSTERS
learning is child's play



kst

Partnering for Excellence
in Education

EFAL - 33 Schools
Maths - 41 Schools

FEEDBACK
2017



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BRAINBOOSTERS TEAM

Hendrik Marais	MD of Eureka DIY Solutions (Pty) Ltd, Chairman and Founder of BrainBoosters, Eureka Varsity and Eureka Foundation
Karina Strydom	Co-Founder and CEO of BrainBoosters & Eureka Varsity and Director of Eureka Varsity
Ewald Coetzee	Co-Chairman of BrainBoosters and Director of Eureka Varsity
Lizanne van Wyk	Operation Manager
Jean Chilton	Graphic Designer
Bianca Bowie	Graphic Designer
Anri Jansen van Rensburg	Graphic Designer
Sancha Hein	Project Manager
Banyana Maluleke	Project Administrator
Vernon Phillips	Manufacturing
Tebello Khohlooa	Trainer
Lennox Tapera	Trainer



COACHES

There were no BrainBoosters Assistants or daily video recording; however, to support the teachers there was monitoring and evaluation that had taken place through the coaching process.

The Coaching Process involves visitations to schools by the BrainBoosters Coaches (we had employed coaches) to ensure the following:

- The programme is being implemented as per the training and methodology
- The product is being used correctly
- That any errors in implementation is addressed
- That any enquiries from the SMT or teacher is addressed
- To provide additional support and mentoring
- To get feedback on how to improve the programme



Malerato Khoali



Nceba Kotoyi



Lennox Tapera



Tshidiso Ramolahloane



PRODUCT PACKING & DELIVERY

Eureka DIY Solutions (Pty) Ltd delivered the products for both the BrainBoosters EFAL and BrainBoosters Grade 1 Mathematics LTSM to all the participating schools.



Each schools was requested to sign of proof of delivery as proof that they had received their products.



EFAL 2017
33 Schools

PROJECT SUMMARY

BrainBoosters was contracted by Kagiso-Shanduka Trust in 2015 and 2016 to provide learner and teacher resources to 27 schools and 16 schools respectively.

Part of the 2016 contractual duties, BrainBoosters was responsible to conduct Professional Learning Communities (PLC's) with the 16 schools.

As the academic year of 2016 was nearing an end, implementing PLC's so late would prove to be a futile exercise and therefore BrainBoosters and KST had decided to implement the PLC's from 2017.

However, to sustain the PLC's and to achieve the optimum desired results, the schools would need to be implementing the programme during the PLC process.

BrainBoosters provided replenish-able learner products – without the product, the programme could not be conducted. Therefore, Eureka DIY Solutions (Pty) Ltd, the parent company of BrainBoosters, had provided all Grade 1 learners and teachers with the new **BrainBoosters Grade 1 EFAL Programme** for 2017 at no additional cost for all 43 schools.

The Department of Education has also implemented their own EFAL programme, which is being piloted in 9 of the schools that we were working with and therefore had opted to withdraw from these schools while 1 school had changed to a school of skills since 2017. We were therefore left with 33 schools.



GRADE 1 ONLY

The reasons for only implementing it in Grade 1 is that the programmes that were implemented in 2015 & 2016 was a programme that was developed for Grade 1 learners. The programme in 2015 was a 12-Week Catch-Up Programme and in 2016 a Numeracy and Literacy 16-Week Programme.

The greatest impact has been shown in Grade 1 learners and not all learners attend Grade R. Grade 2 learners of 2017 would have already done the programme in Grade 1 and the Grade 3 learners would have already done the programme in Grade 2.

TRAINING

BrainBoosters trained the Grade 1 teachers on how to implement the programme with X6 3-hour workshops during the course of the year.

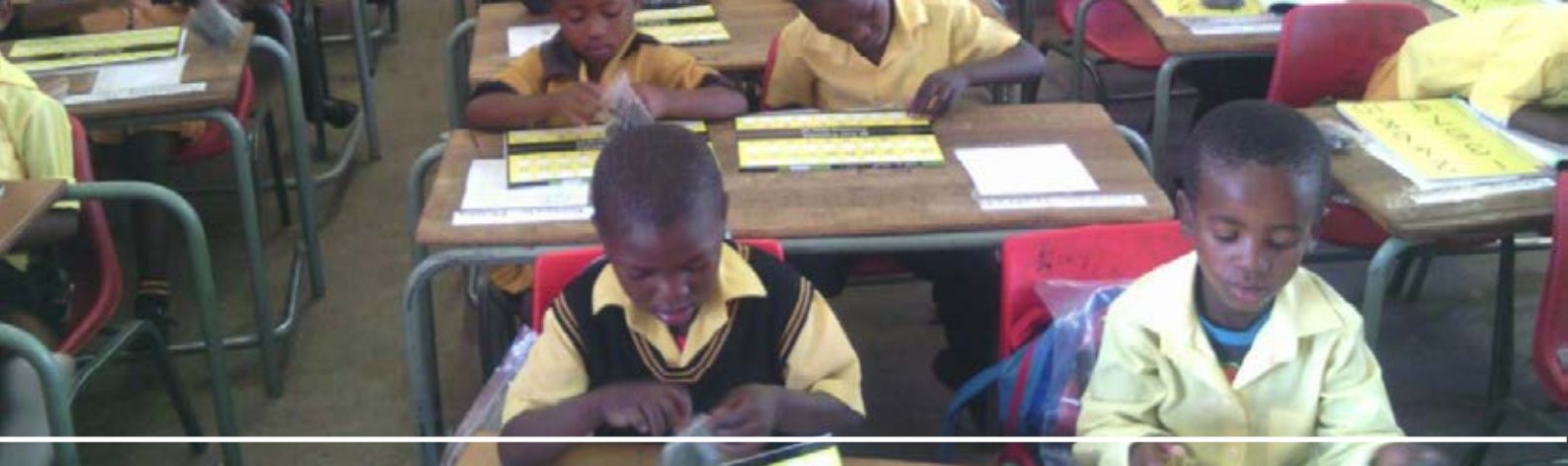


SACE

The BrainBoosters Grade 1 EFAL Programme is registered with SACE therefore teachers are able to gain 15 CPTD points provided they attend all 6 training workshops throughout the year while implementing the programme in their classrooms.

ASSESSMENTS

There were no pre, interim or post assessments conducted with the children. However, interviews had be conducted with Principals, HOD's and Teachers to retrieve information on the impact of the programme.



NUMBER OF TEACHERS & CHILDREN PER SCHOOL

2015 SCHOOLS		
SCHOOL	LEARNERS	TEACHERS
Ditholwana	50	1
Emang	172	4
Gamabetwa	6	1
Lerole	45	1
Maserona	37	1
Matsitselele	6	1
Mmafane	6	1
Moipone	130	4
Mokae	35	1
Mokoto	6	1
Morago	10	1
Motlatla	38	1
Namanyane	50	1
Nkgothatseng	141	3
Phano	60	2
Rankwe	29	1
Sankatane	45	1
Selossha	36	1
Serope	10	1
Tala	15	1
Thubisi	112	2
Totals	1039	31

2016 SCHOOLS		
SCHOOL	LEARNERS	TEACHERS
Fadimehang	87	2
Katamelo	123	3
Lebelo	98	2
Mabela	123	3
Mahlohonolo	52	1
Mmusapelo	74	2
Mokitlane	150	3
Nthapelleng	135	4
Raohang	53	2
Seiphemo	102	2
Semomotela	76	2
Seroki	127	3
Totals	1200	29

Total	LEARNERS	TEACHERS
	2239	60



TEACHER PACK 1



4 x Differently-themed A3 posters



4 x Daily activities posters



X 16 Differently-themed A4 books



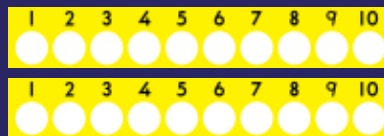
X 1 Record your daily activities



X 90 Counting discs



Crocodile signs



2 x Counting strips



X 1 Learner pack



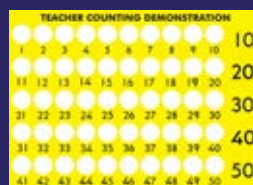
TEACHER PACK 2



4 x Daily activities posters



2 x Differently-themed A3 posters



1 x Teacher counting sheet



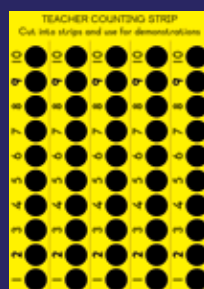
16 x Differently-themed A4 books



1 x Record your daily activities



1 x Learner pack



X 10 Teacher counting strip



90 x Counting discs





TEACHER PACK 3



3 x Differently-themed A3 posters



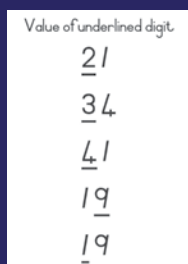
X 4 Daily activities posters



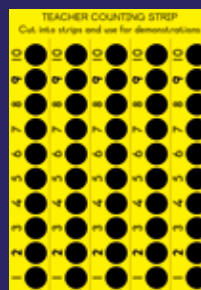
X 16 Differently-themed A4 books



X 1 Record your daily activities



X 1 Digit value page



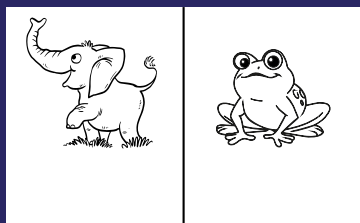
X 10 Teacher counting strip



X 1 Learner pack



X 90 Counting discs

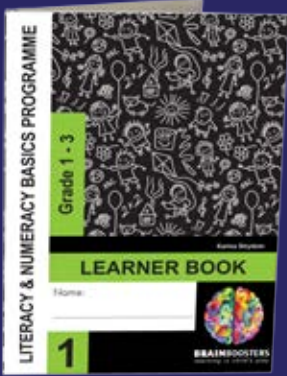


X 1 Halving page

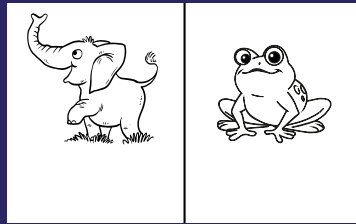


X 1 Halving page

LEARNER & PARENT PACK 1



X 1 A4 Learner book 1



X 1 Learner halving page



X 1 Counting strip



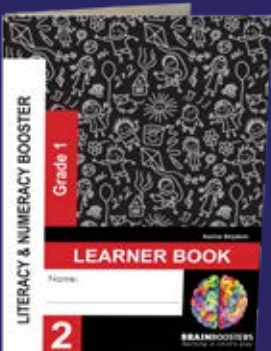
X 1 Spelling list



X 30 Counting discs



LEARNER & PARENT PACK 2



1 x A4 Learner book 1



1 x Counting strip



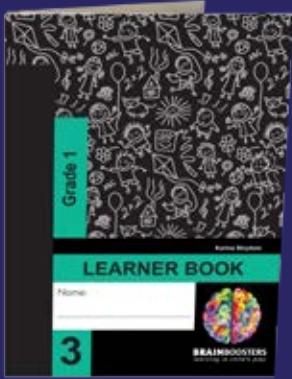
1 x Counting strip (20)



30 x Counting discs



LEARNER & PARENT PACK 3



X 1 A4 Learner book 1



X 1 Homework sheet



X 1 Spelling list

Parent Pack

The Parent Pack includes a grid of fraction cards with various denominators and numerators, a 'Parent Feedback' form, and 'Fractions Dominoes'.

TEACHERS TRAINING



Workshop 1 of 6 on 25th January 2017

REPORTED BY: Lennox Tapera & Tebello Khohlooa
VENUE: Phano and Thubisi Primary Schools

PROGRAMME COVERED

- BrainBoosters Methodology
- Term 1 - Week 1-3
- Term 1 - Week 4
- Term 1 - Week 5
- Term 1 - Week 6



SUCCESES

- Attendance of the teachers, HOD's and principals was very good.
- Teachers were happy to receive Lesson Plans, Teacher Books and Learner Books.
- The teachers eagerly did practical activities throughout the training session.
- The teachers who were attending BrainBoosters training for the first time coped well and enquired freely which was a good thing. They could not wait to get to school to start the implementation.

- The teachers loved the new look of the learners books and teacher books. Furthermore, they loved the packaging of their teacher packs.
- The finger counting was welcomed by the teachers and said it will go a long way to reinforce number concepts in learners.
- The teachers were happy we are now SACE accredited and that they would accumulate professional development points.



CHALLENGES

Some teachers were low on energy since workshops are done until 16h30.

TEACHERS TRAINING



Workshop 2 of 6 on 15th February 2017

REPORTED BY: Lennox Tapera & Tebello Khohlooa
VENUE: Phano and Thubisi Primary Schools

PROGRAMME COVERED

- BrainBoosters Methodology
- Term 1 - Week 7
- Term 1 - Week 8
- Term 1 - Week 9
- Term 1 - Week 10
- Parents Meeting

SUCSESSES

- The attendance was very good.
- The feedback given by teachers about the programme was positive. They said the learners and them are enjoying the programme.
- The teachers were punctual.
- Some schools have received communication from DoE that they support BrainBoosters EFAL and schools must implement the programme. This made the teachers realise we are not working in isolation.
- The teachers did all practicals well with understanding.



- The finger counting is now being done in a better manner. The teachers are well versed with it compared to the first training.
- KST Curriculum Manager, Tebalo Tsatsi attended the training.
- DoE Subject Advisor, Mrs Mochoari briefly attended the training.



CHALLENGES

Almost half of the teachers did not bring their learner books for the training practicals as communicated.





Workshop 3 of 6 on 20th April 2017

REPORTED BY: Lennox Tapera & Tebello Khohlooa
VENUE: Phano and Thubisi Primary Schools

PROGRAMME COVERED

- Term 2 - Week 2
- Term 2 - Week 3
- Term 2 - Week 4
- Term 2 - Week 5
- Discussing the Lesson Plans

SUCSESSES

- The teachers gave positive feedback again concerning the products and how learning is progressing in their respective classes. They are having no great challenges per say other than time management.
- They said the learners and them are enjoying the programme and making headway.
- Furthermore, they stated that some learners could now construct full meaningful sentences in English.
- Mpho Mosiana attended on behalf of FS DoE and she gave a positive and encouraging speech at the end of the training.
- She urged the teachers to do the programme and not deny learners the excitement it brings from its interactive-ness.
- She also said that she would let her supervisor and director know the impact of SADTU on the service providers.
- Sakhile Ncala from KST attended the training.
- The teachers did all practical's well with understanding



CHALLENGES

More than half of the teachers did not bring their learner books for the training.



TEACHERS TRAINING



Workshop 4 of 6 on 10th & 11th May 2017

REPORTED BY: Lennox Tapera
VENUE: Phano and Thubisi Primary Schools

PROGRAMME COVERED

- Term 2 - Week 6
- Term 2 - Week 7
- Term 2 - Week 8
- Term 2 - Week 9

SUCSESSES

- Both attendances were very good.
- All the farm schools in Thaba Nchu were present.
- The teachers stated that they are still copying well with the programme and their learners are progressing well.
- The teachers are happy with the lesson plans and acknowledged that they are helpful in integrating BrainBoosters with EFAL CAPS.
- They said the learners and them are enjoying the programme.
- The teachers did all practicals well with enthusiasm.



CHALLENGES

- Only one teacher from Botshabelo remembered to bring her learner book to the training. The rest forgot.
- Some practicals could then not be done as intended, as there were no cards to use. I had to improvise by asking the teachers from Phano to give us counting discs and at least all the maths activities were done.
- In Thaba Nchu, half of the teachers did not bring their learner books. I made them share the books and all activities were done well.
- In Botshabelo, there was a clash of workshops with DoE. However, it did not affect us that much as it was for grade 3 teachers. Only HOD's who usually attend could not attend this time around, as they had to go to that meeting.



ATTENDANCE SUMMARY

With BrainBoosters workshops, we extend the invitation to the Principals and HOD's, even though we only expect attendance from the Grade 1 teachers.

Grade 1 Teacher Attendance

BOTSHABELO	EXPECTED	ATTENDED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3	Workshop 4
GRADE 1 TEACHERS	34	33	31	25	20
TOTAL %	100%	97%	91%	74%	59%

THABA NCHU	EXPECTED	ATTENDED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3	Workshop 4
GRADE 1 TEACHERS	29	19	20	21	19
TOTAL %	100%	66%	69%	72%	66%

Principal and HOD Attendance

BOTSHABELO	EXPECTED	ATTENDED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3	Workshop 4
PRINCIPALS	24	7	2	0	1
HOD'S	16	11	5	7	6
TOTAL	40	18	7	7	7
TOTAL %	100%	45%	18%	18%	18%

THABA NCHU	EXPECTED	ATTENDED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3	Workshop 4
PRINCIPALS	20	4	3	3	3
HOD'S	7	5	0	2	2
TOTAL	27	9	3	5	5
TOTAL %	100%	33%	11%	19%	19%

ATTENDANCE ANALYSES

- The first training workshop is usually the most successful due to it being a new initiative.



- We encourage schools where only one educator is able to attend, that one educator go back into his or her school and do in-school training with the other educators so that they are able to implement.
- During workshop 3 and 4, SADTU had informed some schools that they should not partake in the activities of service providers and NGO's, hence the drop in attendance.



- There had also been a clash in workshops with BrainBoosters and the DOE during the fourth workshop where mostly HOD's who are also Grade 1 teachers had to attend.
- Some teachers cited that they had other commitments or that their workload did not permit them to attend.
- Others claimed that they had never received the communication regarding the training dates.

PROJECT TRANSITION

In June 2017, we were informed that the National Department of Education would be piloting their own EFAL Project and would affect the schools that we were currently implementing the BrainBoosters EFAL Programme.

A decision was made for BrainBoosters to withdraw from the 33 schools at the end of term 2 as it would have been a duplicate of the National DBE project and teachers would not implement the BrainBoosters programme.

An alternative had been presented were the 33 schools would do the BrainBoosters Grade 1 Mathematics Learning and Teaching Support Material for term 3 and term 4.

The 8 schools who had missed out on the BrainBoosters EFAL Programme had been included to partake in the new project, which totalled to 41 schools that had been fully sponsored by Eureka DIY Solutions (Pty) Ltd.

GR 1 EFAL

THREE BIRDS WITH ONE STONE?



English Literacy Parents involved

Maths basics in English



GR 1 MATHEMATICS



Grade 1 Mathematics

41 Schools



NUMBER OF TEACHERS & CHILDREN PER SCHOOL

2015 SCHOOLS

SCHOOL	LEARNERS	TEACHERS
Ditholwana	44	1
Emang	170	4
Gamabetwa	6	1
Lerole	47	1
Maserona	37	1
Matsitselele	6	1
Mmafane	6	1
Moipone	130	3
Mokae	35	1
Mokoto	6	1
Morago	10	1
Motlatla	32	1
Namanyane	50	1
Nkgothatseng	142	3
Nteboheng	160	4
Nthabeleng	26	1
Phano	59	2
Pontsheng	150	3
Rankwe	29	1
Sankatane	46	1
Selosesha	36	1
Serope	10	1
Tala	15	1
Thari Ya Tshepe	214	5
Thubisi	113	2
Total	1579	44

2016 SCHOOLS

SCHOOL	LEARNERS	TEACHERS
Dibeng Sa Tsebo	155	4
Fadimehang	86	2
Hohle	128	4
Katamelo	125	3
Lebelo	101	2
Mabela	115	3
Mahlohonolo	52	1
Mmusapelo	73	2
Mokitlane	131	3
Monokotswai	140	3
Nthapelleng	134	4
Raohang	54	2
Seiphemo	104	2
Semomotela	75	2
Seroki	129	3
Tlholo	233	4
Total	1835	43

Total	Learners	Teachers
	3414	87

GR 1 MATHEMATICS

The BrainBoosters Grade 1 Mathematics LTSM consists of a unique methodology that utilizes a concrete interactive teaching method, which involves all learners, not just one child at a time. This method provides instant feedback to teachers and all learners in a non-threatening way, making learning easy, fast and fun.

PRODUCT OVERVIEW VIDEO



The BrainBoosters learner book is used by learners to practice the skills before they apply their knowledge in the DBE worksheets. This product can be used throughout the year as it covers all aspects of the CAPS curriculum.

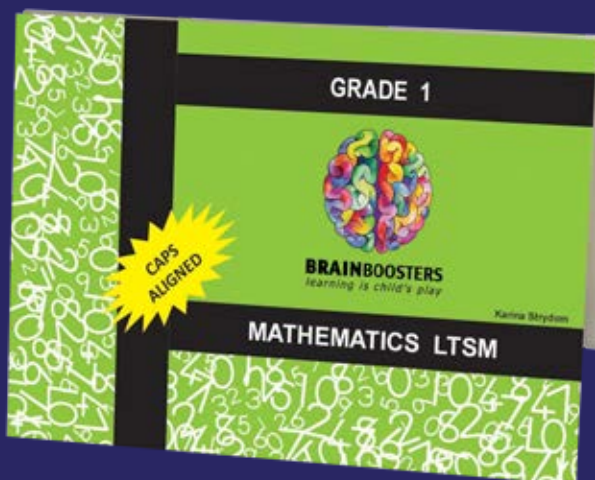
TEACHING TOOL



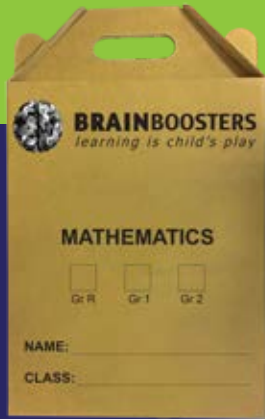
DBE WORKBOOK



COMPETENCE



GR 1 RESOURCES



MATHS IN A BOX

The following learning and teaching support materials are included:

- A re-usable resource book
- Replenishable cut-outs and perforated cards
- 120 Black EVA counting discs
- Dice and tokens for the learning games in the book
- Ziplock bags to organize cut-outs and cards



TEACHERS TRAINING



Workshop 1 on 26th & 27th July 2017

REPORTED BY: Lennox Tapera
VENUE: Phano and Thubisi Primary Schools

STRUCTURE OF TRAINING

- BrainBoosters Background
- LTSM Overview
- LTSM Aligned with CAPS
- Tips and Classroom Management
- Practical's on Counting, Subtraction, Addition, Number Bonds, More or Less, Doubling and Halving



SUCSESSES

- Attendance for the teachers was good from many schools. Sakhile Ncala from KST attended.

- The teachers loved the product and how it will work in their classrooms.
- The teachers did the practical's well eventually as they initially wasted some time with tearing the cut-out cards.
- KST Curriculum Manager, Sakhile, was present at the training.



CHALLENGES

The teachers were getting restless after 4pm and not really focussing, as they wanted to leave for their transport.



Workshop 2 on 14th & 15th August 2017

REPORTED BY: Lennox Tapera
VENUE: Phano and Thubisi Primary Schools

STRUCTURE OF TRAINING

- More about BrainBoosters Programmes
- Word Sums
- Grouping
- Data Handling
- Money
- Fractions
- Space and Shape
- In Class Scenarios

FEEDBACK ON THE PRODUCT SO FAR

- Teachers cited that the learner cutout cards from other pages are falling off from the pack once they tear off cards from one page for a certain concept. One teacher advised them to simply sacrifice a day with learners, tear off all cards, and pack them in boxes for easy use for the following days. I also re-ignited their minds on the tips we gave them in workshop one on Tips on Classroom Management.
- Some teachers in Botshabelo cited that they are struggling to use the product with the DBE books. Their challenge was addressed with the in class scenario that shows them how to link the two to their satisfaction.
- Teachers from Thaba Nchu cited that they have too many learners in their classes and less desks. Six children sit on two combined trapezium shaped tables. As a result, they cannot all put cards, discs and learner books.

It becomes so messy and overwhelming for them. I advised them to lay cards on the bottom page if they are using the top page and have learners hold discs in their hands as a solution because it is beyond us to supply furniture for learners not to sit in a crowded manner.

- The Thubisi teacher cited that she had no idea where to start. The in class scenario on the slides helped her to understand how she can use her teaching plan to use products in her class. She later said she had been empowered.
- Teachers in Thaba Nchu expressed that they would have preferred moneybags to put concepts cards than rubber bands.
- Some teachers are still holding on to the idea of having teacher books as they had in EFAL. I told them that they need to use the cards from their teacher packs to correct learners struggling.
- Some teachers cited that they have everything under control and are happy with the progress learners are making.



SUCSESSES

- The teachers easily were more comfortable with the practical's.
- Most teachers brought their teacher packs as requested and were doing practical's as expected.
- The teachers enjoyed the snap games.
- The data handling steps were well grasped and embraced by the teachers. They even created their own hypothesis using the BrainBoosters products and we tested it.
- The word sums also went very well.
- I emphasized on the importance of PLCs to be taken seriously and for teachers to commit themselves to them.

CHALLENGES

- Some of the Botshabelo teachers always want to leave early from between 15h00-16h00 citing transport problems since they use buses to go to their homes. In Thaba Nchu, I do not have such problems. Teachers are always there until the end.
- Some schools did not come for the training and will have challenges on how to use the books.
- There was a meeting for SMT members with the circuit manager and most HOD's and Principals went for that meeting and could not report for BrainBoosters' training.





Workshop 3 on 5th & 6th September 2017

REPORTED BY: Lennox Tapera
VENUE: Phano and Thubisi Primary Schools

STRUCTURE OF TRAINING

- Parents Meeting
- Practical's: Measurement and Mental Maths
- Lesson Plans

SUCCESS

- The attendance was good in both places.
- Most schools were represented including all farm schools.
- The teachers in Botshabelo were very punctual for the training.
- The teachers embraced the practical's we did.
- The teachers gave positive feedback about the product and are grateful for the support they are getting from the coaches.
- The teachers were very creative with parents evening icebreaker games and we had a lot of fun.
- We completed the workshops to the end with the teachers still there. They signed the register towards the end.

CHALLENGES

None.



ATTENDANCE SUMMARY

With BrainBoosters workshops, we extend the invitation to the Principals and HOD's, even though we only expect attendance from the Grade 1 teachers.

Grade 1 Teacher Attendance

BOTSHABELO	EXPECTED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3
GRADE 1 TEACHERS	62	46	41	48
TOTAL %	100%	74%	66%	77%

THABA NCHU	EXPECTED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3
GRADE 1 TEACHERS	27	24	17	20
TOTAL %	100%	89%	63%	74%

Principal and HOD Attendance

BOTSHABELO	EXPECTED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3
PRINCIPALS	35	2	0	0
HOD'S	17	6	6	8
TOTAL	52	8	6	8
TOTAL %	100%	15%	12%	15%

THABA NCHU	EXPECTED	ATTENDED	ATTENDED	ATTENDED
		Workshop 1	Workshop 2	Workshop 3
PRINCIPALS	21	5	2	3
HOD'S	6	0	2	1
TOTAL	27	5	4	4
TOTAL %	100%	19%	15%	15%

ATTENDANCE ANALYSES

- The first training workshop is usually the most successful due to it being a new initiative.



- We encourage schools where only one educator is able to attend, that that one educator go back into his or her school and do in-school training with the other educators so that they are able to implement.
- Some teachers cited that they had other commitments or that their workload did not permit them to attend.
- Others claimed that they had never received the communication regarding the training dates.
- In Workshop 2 and 3, Attendance Registers were circulated at the end of the workshop and some teachers had left early.



RESULTS

2015

We implemented a 12-week Literacy and Numeracy programme in 27 schools, which was sponsored by FSDoE & KST.

PRIMARY SCHOOLS: 2015

27 schools:

12-Week Literacy & Numeracy Programme

Sponsored by



We did pre & post assessments of basic concepts: colours, shapes, numbers, addition sums and subtraction sums.

Please take note that this assessment was a very basic assessment for example the sums were all under 10.



Numbers: 3, 7, 0, 9, 6



Learners had to draw the number of circles for each number

Addition: $4+3=$ $8+2=$ $3+5=$ $6+1=$ $7+2=$

Subtraction: $9-1=$ $5-2=$ $6-6=$ $4-3=$ $7-5=$

We used the Marais Assessment method for assessment which works well with large numbers of learners (10 000) being assessed.



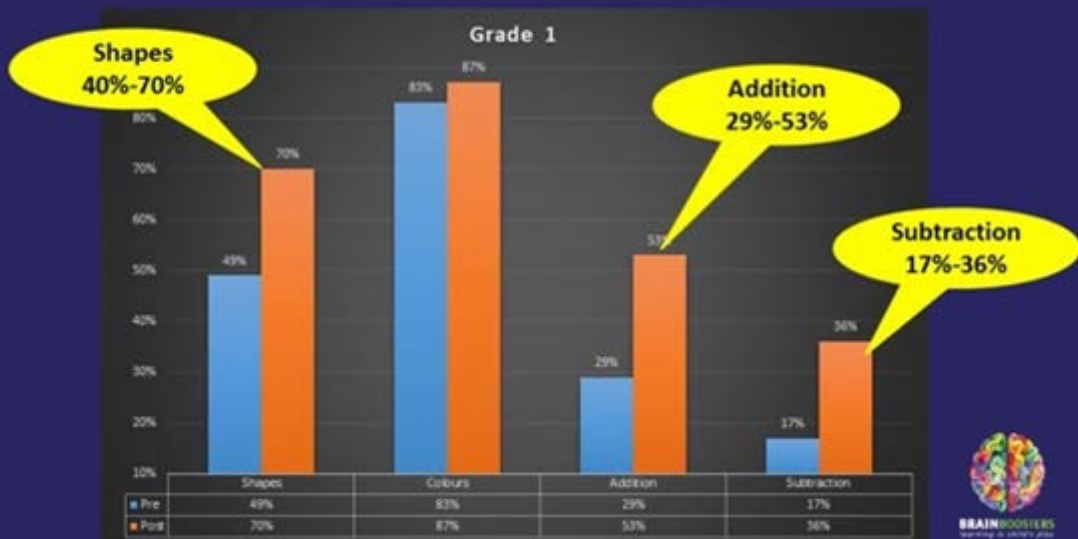
Please read more about our assessment method: https://www.brainboosters.co.za/researcharticles/KST_Feedback_Part_1_2016.pdf

The biggest improvements in Grade 1 after only 12 weeks were:

- Shapes: average from 49% to 70%
- Addition: average from 29% to 53%
- Subtraction: average from 17% to 36%. Learners really do not understand subtraction.

2015: RESEARCH FEEDBACK

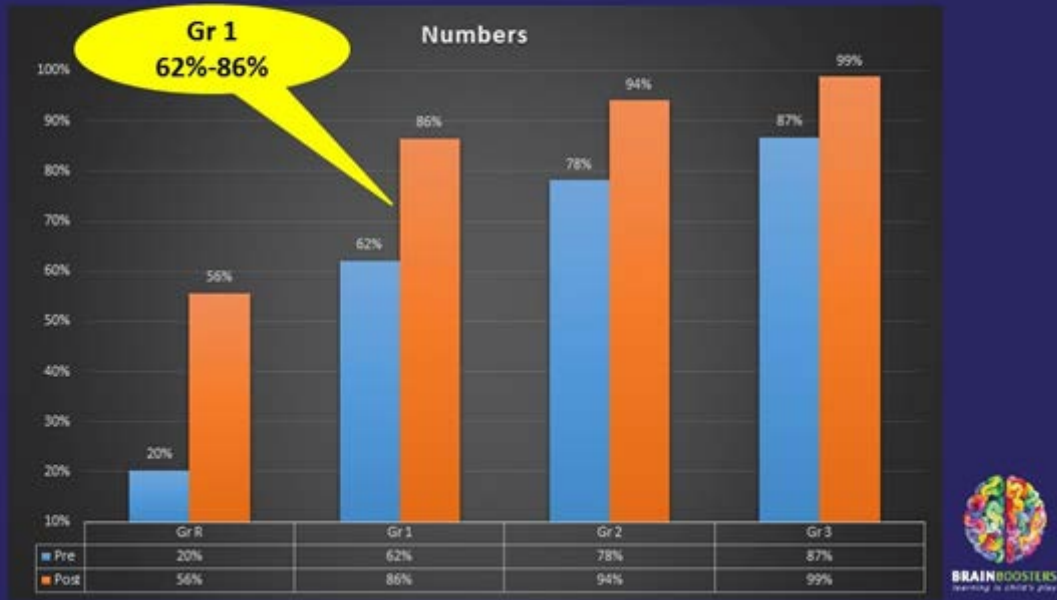
Gr 1 Pre & Post assessment – Shapes, addition & subtraction showed the biggest improvement



Gr 1 learners showed the biggest improvement after 12 weeks in understanding numbers. Their post-assessment (86%) was higher than the pre-assessment (78%) of the Gr 2's.

2015: RESEARCH FEEDBACK

Gr 1 learners showed the biggest improvement with understanding numbers, even higher than the pre-assessment of Gr 2's

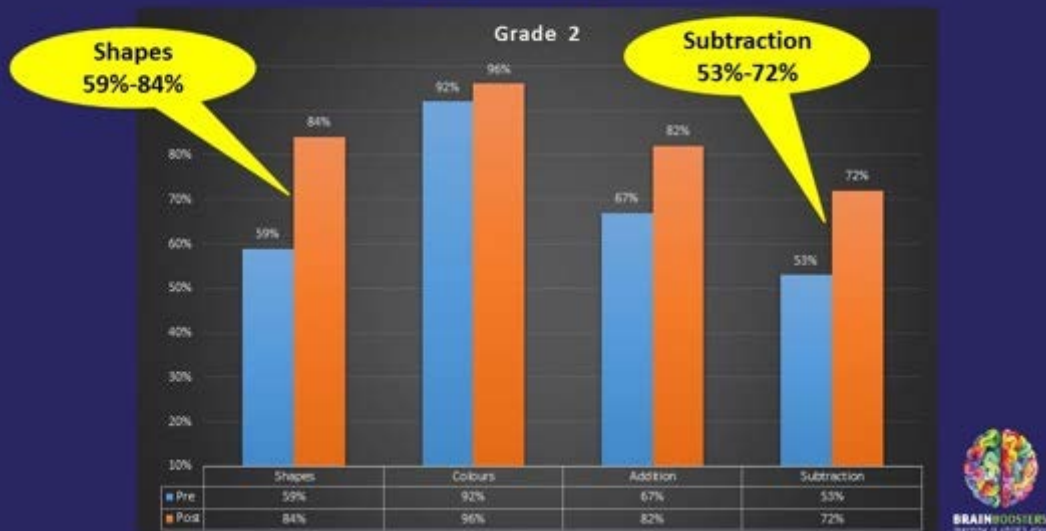


Grade 2 learners showed the biggest improvement after 12 weeks in:

- Shapes: from 59% to 84%
- Subtraction: from 53% to 72%

2015: RESEARCH FEEDBACK

Gr 2 Pre & Post assessment – Shapes and subtraction had the biggest improvement



2016

We provided a 16-week Literacy and Numeracy programme to 43 schools, which was sponsored by KST & FSDoE. Only 14 weeks of the programme were implemented because teachers had to prepare for exams in the fourth term.

PRIMARY SCHOOLS: 2016

43 schools:

14-Week Literacy & Numeracy Programme

Sponsored by:



Once again, the Grade 1 learners did much better with their post-assessment than the Grade 2 pre-assessment. Look at the last two bars indicating the overall average of the concepts between Gr 1 & Gr 2 learners.

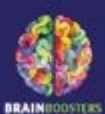
2016: RESEARCH FEEDBACK – Gr 1

Gr 1 average post assessment much higher than Gr 2's Pre Assessment



Gr 1 - 79%

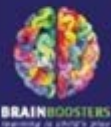
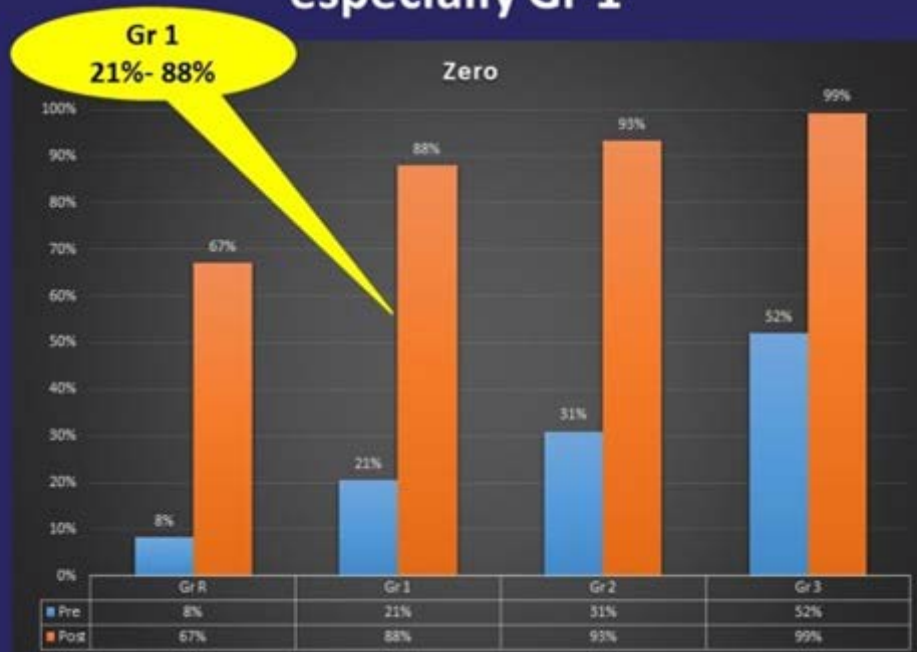
Gr 2 - 64%



Most learners struggled with understanding zero. We have observed that 'zero' is used for the first time on page 42 in the DBE Gr 1 workbook and that there is no previous introduction to zero. The zero just appears on the number line on this page.

2016: RESEARCH FEEDBACK – ZERO

Remarkable improvement in ALL grades especially Gr 1



2016 COMMON QUATERLY TEST RESULTS

3 Groups referred to in the graphs:

1. GROUP 1: 20 BrainBoosters Schools:

We initially started with 33 schools in the project but had to omit schools that did not submit their marks as well as the schools where BrainBoosters queried their marks, such as schools who for example had 69 out of 69 learners failing in Term 4 after they did well in Term 2. We suspect data capturing mistakes.

We provided a list of these schools for your information.

2. GROUP 2: 24 EX-Maths Centre Intervention Schools:

We only started in the schools who did the Maths Centre Intervention programme in the third term of 2017 with 37 schools and we had to omit schools that did not submit their marks as well as the schools where BrainBoosters queried their marks such as schools who for example had 124 out of 124 learners failing.

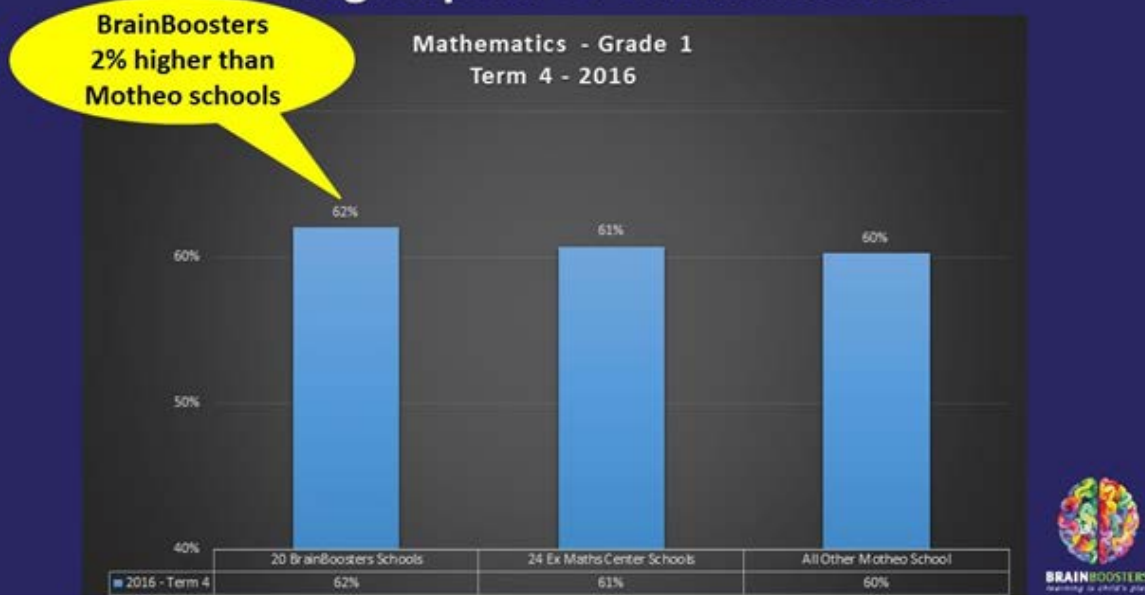
3. GROUP 3: 110 All other Motheo Schools:

We used all the rest of the schools in the Motheo district for comparison

In this first graph the BrainBoosters group did 2% better than all other Motheo schools and yet we did not do a full year programme, only a 14-week Literacy & Numeracy programme.

2016: COMMON QUARTERLY TESTS Gr 1 TERM 4

BrainBoosters schools outperform the other two groups in Gr 1 Mathematics



2017

BrainBoosters became frustrated that we never had a full year programme to properly demonstrate the results of our product.

We had developed a BrainBoosters Grade 1 EFAL programme with a hidden curriculum of Mathematical terms and vocabulary in English.

1. English literacy – communication vocabulary
2. Mathematics basic vocabulary in English
3. Parent involvement – providing games to play

BRAINBOOSTERS GR 1 EFAL PROGRAMME

THREE BIRDS WITH ONE STONE?



English Literacy

Parents involved

Maths basics in English

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If followed through until Grade 3 this would address the problem of learners struggling in Grade 4 transitioning from Home Language to English in Mathematics. Please see the example below of the daily programme starting with counting demonstrations in English, then Maths vocabulary in English and then English communication vocabulary.

GRADE 1 EFAL – Including Maths vocabulary



Day	Activity 1	Activity 2	Activity 3
Day 1	Counting objects	Maths vocabulary	English communication
Day 2	Counting objects	Maths vocabulary	English communication
Day 3	Counting objects	Maths vocabulary	English communication
Day 4	Counting objects	Maths vocabulary	English communication
Day 5	Counting objects	Maths vocabulary	English communication



If followed through until Grade 3 this would address the problem of learners struggling in Grade 4 transitioning from Home Language to English in Mathematics. Please see the example below of the daily programme starting with counting demonstrations in English, then Maths vocabulary in English and then English communication vocabulary.

PRIMARY SCHOOLS: 2017

31 Schools

TERM 1 & 2

BrainBoosters EFAL Programme
which included basic Mathematics in English

TERM 3 & 4

BrainBoosters Mathematics LTSM

Sponsored by:

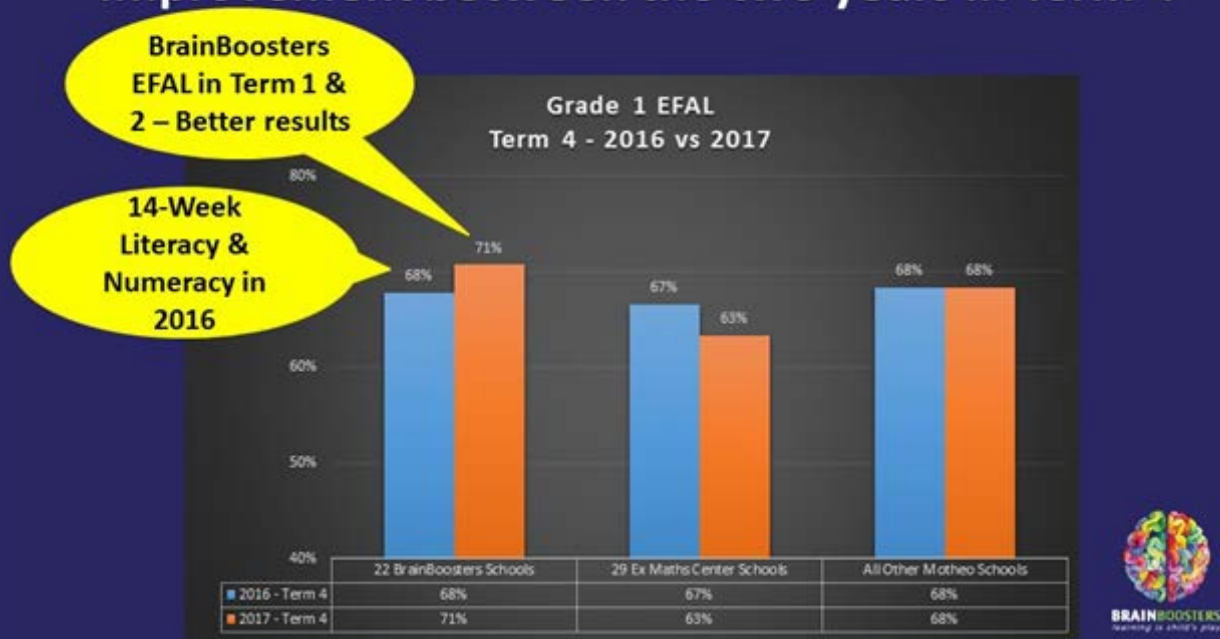


We were told to stop our programme as DBE wanted to implement their own EFAL pilot in Term 3 & 4 in 2017. This was a great pity as the learners enjoyed our interactive fun method and showed excellent improvement in both English and Mathematics. Once again, we cannot assess the impact of a year programme because we have none.

Despite that BrainBoosters Gr 1 EFAL was only used for the first two terms, the BrainBoosters schools outperformed the other schools in the final term quarterly results of 2017.

Gr 1 EFAL COMMON QUARTERLY TESTS RESULTS

BrainBoosters schools only group showing an improvement between the two years in Term 4



KST & FSDoE gave us funding to do our new BrainBoosters Grade 1 Mathematics LTSM in the Maths Centre schools in Term 3 & 4 in 2017. Again, the BrainBoosters product was only implemented in Term 3 & 4 and we all know that not a lot of teaching takes place in the last term.

PRIMARY SCHOOLS: 2017

33 Schools

TERM 1 & 2

Maths Centre intervention Programme

NO BRAINBOOSTERS INTERVENTION

TERM 3 & 4

BrainBoosters Mathematics LTSM

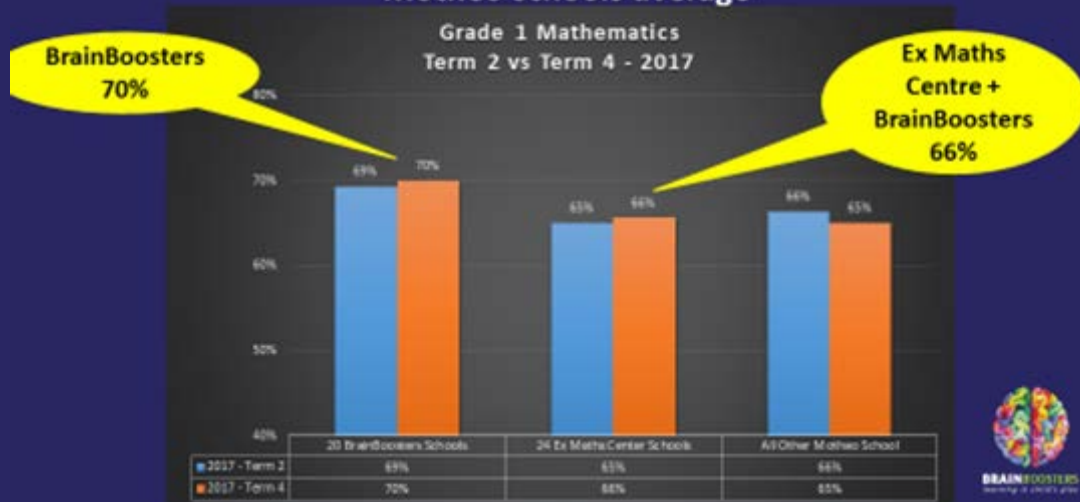
Sponsored by:



The BrainBoosters group which had Mathematics as part of their EFAL shows a better understanding of numbers than the other groups in the following graph.

2017: COMMON QUARTERLY TESTS TERM 2 & 4

BrainBoosters group outperform other groups. BrainBoosters shows a slight improvement in Ex-Maths Centre schools in Term 4 which is better than all other Motheo schools average



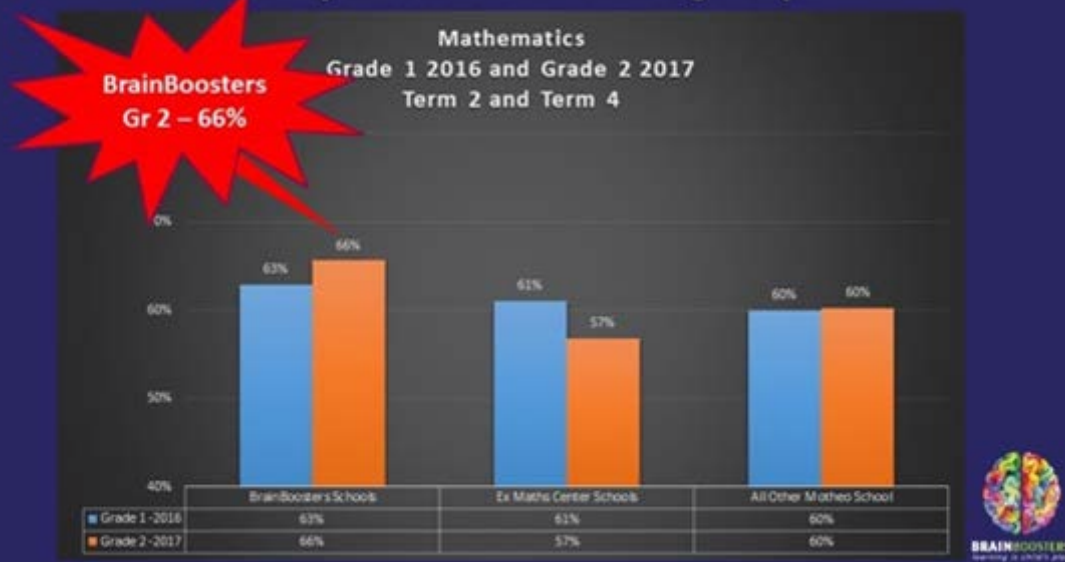
It is interesting to see that the BrainBoosters Grade 2 learners outperformed all other groups.

These Gr 2 learners of 2017 did the BrainBoosters 12-week Literacy & Numeracy programme when they were in Gr R in 2015 and the 14-week BrainBoosters Literacy & Numeracy programme in 2016.

We are excited to see that even the limited exposure to the BrainBoosters programmes still had a measurable effect in the subsequent years.

COMMON QUARTERLY TESTS Gr 1 & Gr 2

BrainBoosters Mathematics Gr 2 learners outperform all other groups.

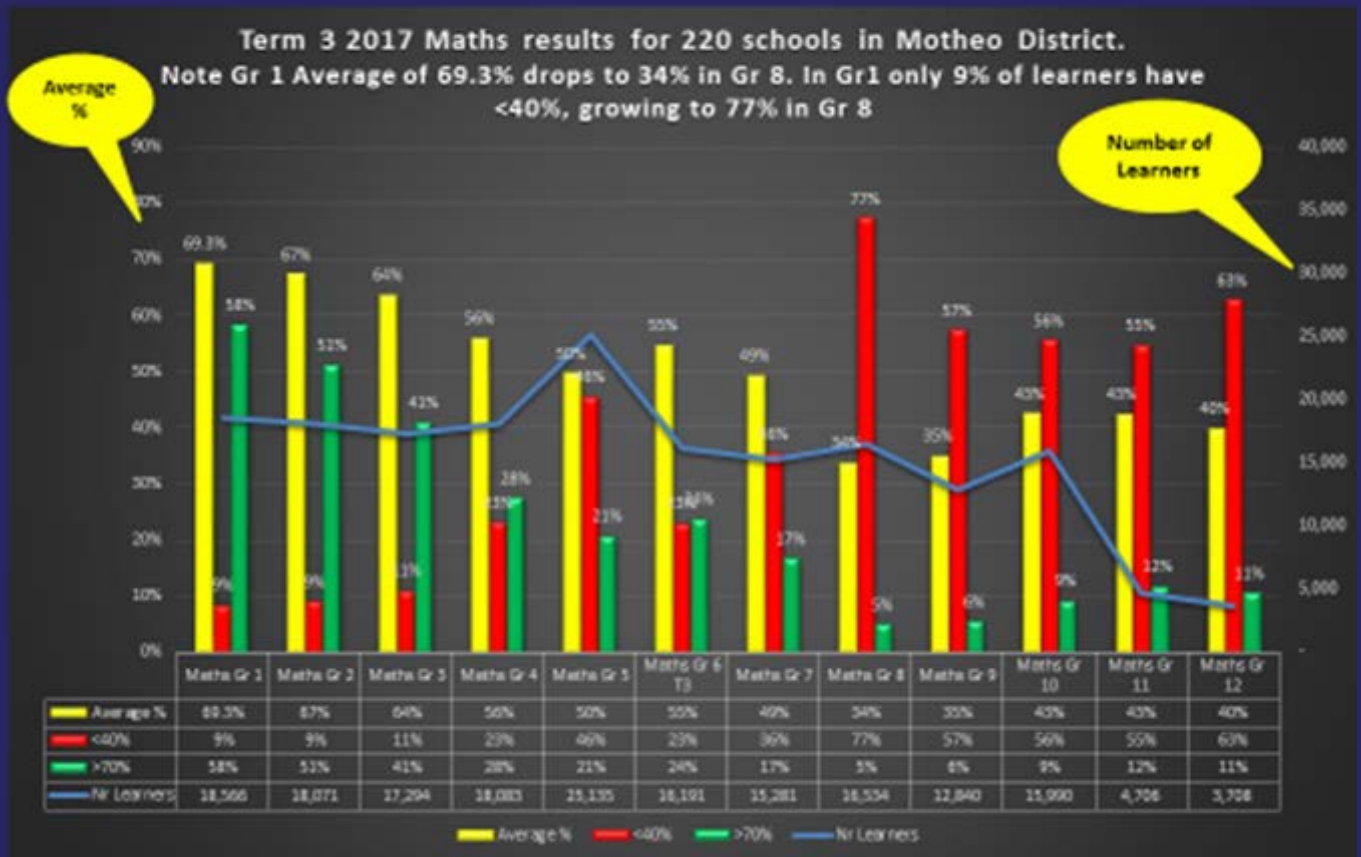


CONCLUSION

THE ELEPHANT IN THE ROOM

If we look at BrainBoosters achievements in the Free State, it is easy to feel satisfied with the progress and improved quarterly results. However, a look at the graph below provides good reason to worry - the aim is to improve Mathematics in Gr 12, not just better marks in Gr 1.

Gr 1 – Gr 12 in Motheo District



Looking at the Gr 1 and Gr 2 results, we see:

- an average mark of 67-69%,
- only 9% of children scoring below 40% and
- almost two out of three learners above 70%.

Really great results – with apparently no problem with numbers or Mathematics in the foundation phase. This is despite many children going to school without much of the underlying cognitive development necessary to climb the ladder of learning.

Then in

- Gr 8 the Mathematics average halves to 34%
- 77% of the learners score below 40% and
- only one in twenty above 70%.

Does this mean the learners slowly lost their original grasp of numbers over the next five years - or could it mean they never fully mastered the concept of numbers in the early grades? Some educators feel mastering numbers is like mastering a bicycle – once you can hold your balance on a bicycle, you do not unlearn it. If the child was still using training wheels on her bike, it could easily look as if she had learnt to balance – but without the wheels she would just fall over.

To serve its purpose, foundation phase should lay the foundation for and be a reliable predictor of a child's future Mathematics ability. Obviously, it is not. Of 12 000 learners who score above 70% in Gr 1, only 800 do so in Gr 8 and just 200 with distinction in Gr 12!

If Gr 1 & 2 results really are excellent, but then deteriorate to terrible, there is a problem - which we have to identify before we can fix it.

Typical reasons proposed:

1. Switching from mother tongue Mathematics to English tuition in Gr 4.
2. Teachers in higher grades cannot teach Mathematics as well as those in the foundation phase (training, dedication, etc.).
3. Foundation Phase results are not a true reflection of the real Mathematical ability of learners, which means either WHAT or HOW Mathematics is taught in the early grades misses the point.

Some ideas on the reasons for the anomalies in Maths education:

1. Mother tongue to English

This definitely contributes to the problems with Mathematics. Ultimately maths is language agnostic as the same numbers, symbols and conventions are used in maths globally, irrespective of country or language.

One solution would be to extend mother tongue for another year, but that might mean translating terms and symbols into the vernacular, only to relearn the concepts again in English the next year.

In BrainBoosters we tried the other approach - learn maths in mother tongue, but learn the English equivalents already from Gr 1 in EFAL. Our EFAL programme followed CAPS, but also included the terms, concepts, vocabulary and word sums used in Gr 1 Mathematics in English as a "hidden curriculum". We tested this programme in 31 schools at our own expense and got outstanding feedback from teachers, learners and parents. Unfortunately, the DBE stopped the experiment to test their own EFAL solution. We still believe learning the terms and concepts simultaneously in two languages could be the answer to address the language problem in Grade 4.

2. Teachers the problem

Again, it could contribute, but there is no reason to think all the good teachers are only in Gr 1-3. One would expect teacher quality and dedication to be evenly distributed over all grades, disqualifying low teacher quality as the reason for grade deterioration over later grades.

3. Foundation Phase testing not accurately testing mastery of number and mathematical concepts

From anecdotal evidence, this seems highly likely, although we have not been able to do proper scientific research on it. However, we saw that Gr R, 1 & 2 learners couldn't do basic addition & subtraction sums under 10.

We know many children in Gr 1 do not learn basic concepts at home like colour, shapes, understanding numbers, greater and smaller, position, addition, subtraction, etc. Our Gr R & 1 Literacy and Numeracy programme addressed this problem very successfully as shown on pages 14 - 17.

If these aspects were better tested early in Gr 1, it could show far worse results than the almost 70% average the Gr 1's now achieve. Realising there is a gap could lead to more attention to these aspects and probably a better foundation for further learning.

4. The curriculum, or the WHAT they learn, i.e. CAPS

We have no reason to query the value or validity of CAPS. Our only suggestion would be more attention at the beginning of Gr R & 1 to those concepts so many children do not learn at home, but is implicitly assumed by CAPS that their parents or pre-school taught them that.

5. The HOW Mathematics is taught in classrooms

We have seen remarkable improvement in class participation, in understanding sharing, money, basic addition and subtraction and overall enjoyment of Mathematics in the classes where the BrainBoosters product was used.

Though the quarterly results were better in Gr 1, compared to schools not using BrainBoosters, we feel the Gr 1 marks are so high in any case, that the difference to the percentage grades we make is not that important. Much more important is that a really good foundation for later Mathematics learning should be laid - that is why Gr 1-3 is called "foundation phase"!

Retention of BrainBoosters Gr 1 learning in Gr 2 appears very positive. See pages 16 and 23. However, no school has ever used our One Year BrainBoosters Mathematics LTSM for much more than only one term, making it very difficult to ascertain the full potential benefit of a fully inclusive, interactive BrainBoosters approach. The value of the BrainBoosters approach, especially if used for Gr R-2 over three full years could possibly prepare learners dramatically better for learning the more abstract sides of Mathematics, which they have to do in later grades.

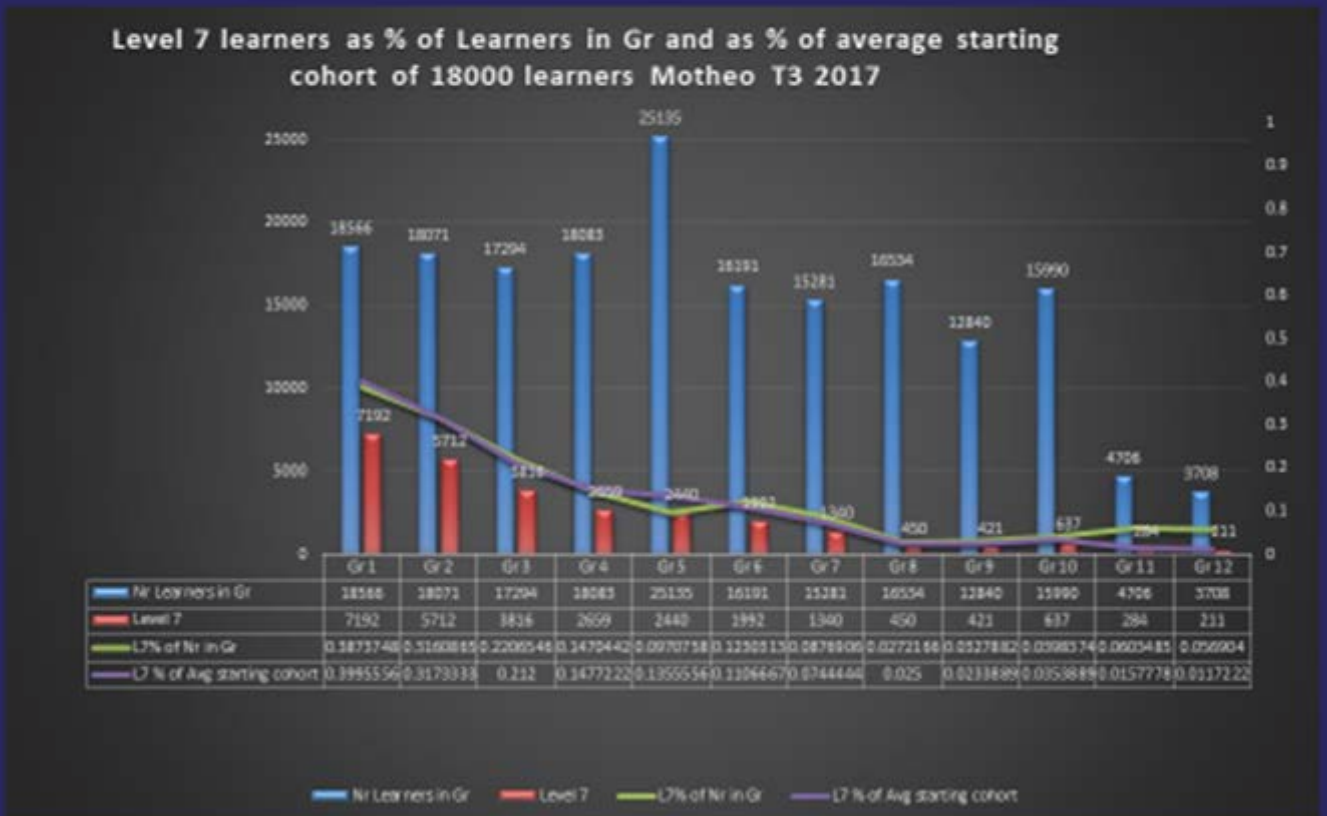
We believe (and hope) that the BrainBoosters methods will lay a much stronger number foundation to build on in later grades.

These are the main reasons:

- Catch-up at the beginning brings all learners up to speed, even from impoverished households.
- Full class participation - very valuable in large classes.
- Interactive learning.
- Instant, stress free feedback for teachers and learners.
- The fact that the learners lose their fear of Mathematics because they have so much fun in class and play so many number games.
- No parrot learning but solid grounding through repetition.
- Giving learners and teachers an 'I CAN' mentality.

OTHER GR 1 – GR 12 GRAPHS

Gr 1 – Gr 12 in Motheo District



Gr 1 – Gr 12 in Motheo District

Level 4,5,6,7 Learners in Gr1-12 as % of Gr Nrs and as % of average starting cohort of 18000 learners (what happened with Gr 5s?)



**We will develop Grade 3 Mathematics LTSM with the input of the FSDoE & Motheo district subject advisors in 2018*



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