

Why Mental Maths is critical for High School

What's 7×8 ?

- How many different ways can you do this?
- Do you need a pen and paper?
- Did you use your fingers?
- Did you do it in your head?
- Do you have the answer memorised?
- How long did it take you to find the answer?

What does the research say?

- Automaticity
 - Three levels:
 - Acquisition
 - Development of Speed
 - Automaticity and Fluency
- Fluency

Benefits of Automaticity and Fluency

- Research shows the link between the gain of automaticity in basic maths facts and being able to understand more complex tasks
- Less likely to have maths anxiety
- Less time and effort spent on maths tasks

Frequent timed drills are essential in developing automaticity

Woodward (2006)

Method

- Two local schools (urban and semi-rural (no-fee))
- Two grade 7 classes
 - Control and experimental group
- Pre-test – 100 questions
 - Available from me
- Experimental group showed how to use drill mode

Method

- Over the four weeks, students played on the EL-W535HT calculator in class at the teacher's discretion
- Post-test – 100 different questions
 - Also available from me

Notes

- Both the pre-test and post-test were a pen and paper test
- The questions consisted of addition and subtraction from 0 to 20 to 0 to 20, multiplication from 0 to 12, and division of these multiplication sums (as it is programmed into the drill function of the Sharp calculator).
- The Urban school found out that the other class was playing with calculators and demanded to play with the calculators as well.

Results – Urban School

Group A

Pretest

Posttest

Sum	3090	3053
Average	93,63636	92,51
Std Deviation	5,878021	6,389
Min Time	04:20	04:49
Med Time	08:20	07:23
Max Time	12:35	14:15

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Results – Urban School

Group B

Sum	3001	3006
Average	90,93939	91,09
Std Deviation	8,188938	6,88
Min Time	02:58	02:41
Med Time	06:25	06:53
Max Time	12:15	10:27

Results – Semi-Rural

Control Group

Sum	2560	2611
Average	88,27586	90,03448
Std Deviation	12,29372	12,45989
Min Time	06:33	05:10
Med Time	14:26	12:38
Max Time	28:33:00	24:58:00

Results – Semi-Rural

Experimental Group	Pretest	Post test
Sum	2463	2509
Average	91,222	92,92593
Std Deviation	7,885397	6,176419
Min Time	09:33	06:09
Med Time	16:05	11:37
Max Time	32:51	19:48

Discussion

- From the results, you can see that the semi-rural schools results' improved dramatically after only two weeks.
- The Urban school's results did not change, however, the teacher said that the kids loved playing with the calculator and that their automaticity improved.

“because practice enhances speed of accurate responding, interventions that occasion higher rates of accurate responding are likely to cause greater increases in automaticity and / or fluency”.

Parkhurst et. al (2010)

So what do we do to improve
our mental maths?

Introducing the Sharp S25

- With Drill mode



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Drill Mode

- Press Q
 - Choose between 25, 50 or 100 questions
- Press + - x ÷ button to choose the type of questions
 - + = 0 – 20 plus 0 – 20
 - - = 0 – 20 minus 0 – 20
 - x = 0 – 12 times 0 – 12
 - ÷ = opposite of times



Drill Mode continued

- Press = to begin
- Answer each question and press = after each answer
- Correct – you will get a tick and new question.
- Incorrect, a cross and the same question appears.



X Table

- Counting in 0 – 12
- See the question at the same time.



Square-root

- Find the square-root of 9.
- Press 9
- Press



Percent

- Find 10% of 205
- Press 205
- \times
- 10



Shortcut for Classmarks

- E.g. Test out of 40, converted to percentages:
- Press $100 \div 40 =$
- Then x and the first child's mark, e.g. $x 33 =$
- Continue typing in the marks and equals after each.



Don't forget the competition 😊

- Win 40 of these calculators for your school 😊
- Fastest time to 100%

Thank you 😊

Check out www.e-classroom.co.za and www.mathsatsharp.co.za

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