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PUTTING MATHS LEARNING ON FAST-FORWARD

I trialled the Kinetic Education "Maths Wiz" and "Maths Doctor" programs extensively in the second half of 2010 as I was looking for an efficient and effective way to identify individual needs and to bring a large number of students up to the expected level of numeracy achievement.

In 2005, when I returned to teaching after working in the corporate sector and doing postgraduate studies, I was quite staggered to find that computers had not penetrated the classroom to the extent that I had expected. I remembered being quite amazed by the high level of engagement that I'd seen quite a few years earlier, so, I started looking for suitable programs to modernise the learning process.

Ideally, I was looking for a program that would guide children through the syllabus in a very engaging manner. Educational games and one off 'learning modules' have a place but I was looking for more than that. I was looking for a program(s) that could re-engineer the teaching and learning process and deliver so much more. I was looking for programs that had the potential to deliver highly significant levels of improvement.

I compiled a list of the criteria I considered to be essential:

1. Highly engaging.
2. Covers the whole curriculum (not just one small bit).
3. Automatically assesses the children's strengths and weaknesses.
4. Help the students to learn the things they didn't understand.
5. Provides reports that make a teacher's life easier, in the sense that it keeps tabs on what the child does and does not know.

Now my task was to: find it; research it; implement it.

Along the way I looked at a variety of programs. I looked at "Eduss", "Maths Made Easy", "Target Maths", and tested learning modules prior to their release by the "Curriculum Corporation". Nothing that I found covered all five of the criteria set out above. That said, the search continued – there had to be something out there. Children need to be highly engaged and they need to have a structured program.

With those thoughts in mind, I spent much of my spare time researching the problem.

I was sitting up late at night searching the web, when I found a program called Maths Wiz – developed and marketed by a local software house, Kinetic Education of Moorabbin, Victoria. I'd Googled the USA, I'd Googled the UK but I ended up in Warrigal Road, five kilometres from home!

The program is trademarked "Maths Wiz" and supports the curriculum (in great detail) from Prep to Year 12. On contacting the company, I found that they have been developing and marketing the system for the last twenty years, and now have around a thousand schools using Maths Wiz.

Furthermore, they had recently developed an Assessment test, called "Maths Doctor" and they were happy for me to trial it in the classroom.

THE PRE-TEST

Being the sceptic that I am, I wanted to test the efficacy of the Maths Wiz tutorial program (to see if it could be used to improve the teaching and learning of Maths at St Peters). I wanted to make my own assessment, before presenting the idea to the other staff. I selected a group of 14 students who needed help.

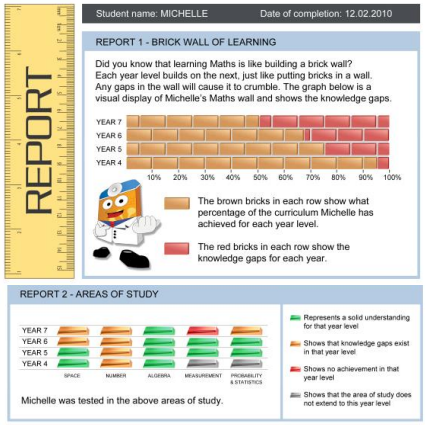
The children selected for this study were in Year 4. They were below the expected level and lacking in confidence.

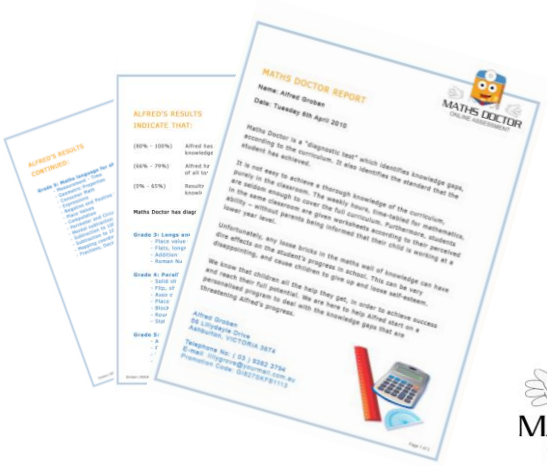
I told them that they would be using a program called "Maths Doctor" and the doctor would be finding out what they did and did not know. Then, as a result of the doctor's diagnosis, the Maths Wiz would wave his magic wand and make them OK. The kids accepted this concept with good humour, and one anxiously asked "But will he be able to make *me* well too?"

The kids were very comfortable with the Maths Doctor and enjoyed the process, even though it was a maths test. They completed it, in about thirty minutes. It is a time economic test, in that it responds to students test answers and then feeds them individual specific and suitable questions.

The Maths Doctor automatically produces an individualised learning plan for the child. The reports gave me a better insight into the children's strengths and weaknesses. Each report identified the specific Year 1, Year 2, Year 3 and Year 4 weaknesses for each of these Year 4 children. Furthermore, these reports are instantly and automatically generated – a very significant time-saver.

Each child's overall report was very visually presented – I could quickly see their level of achievement. In fact, knowledge gaps really hit you in the eye. This instils a sense of urgency. It makes you want to take action so that you can remedy the gap.





MATHS DOCTOR
ONLINE ASSESSMENT

THE STUDY PROGRAM

1. A specific set of lessons (i.e. Maths Wiz lessons) was identified for each child. Given that the trial was short (approx 8 weeks), our aim was to tackle prior year weaknesses (Yr 1, 2 & 3) before we tackled Year 4 weaknesses.

2. Students used the Maths Wiz tutorial for thirty minutes, twice a week for ten weeks: i.e. they completed extra maths on a weekly basis. Eight of the original 14 students took part in the learning program.

3. The teacher could access the online Maths Wiz program and review summary reports showing each child's progress at any time.

4. At the end of the ten week period the children completed the Maths Doctor test for a second time. Note that the program automatically generates an individualised test from the database, so that they were not resitting the same test.

In the end and for a variety of reasons only 8 of the 14 Year 4 children completed the entire process i.e. the Maths Doctor pre-test, the twice weekly Maths Wiz tutorials and the Maths Doctor post test.

THE POST TEST

All the kids were quite happy sit the maths doctor test again. Really, 15 weeks down the track to go down and do it again and have those weaknesses ironed out, would never have happened in the classroom, not to that extent and not to that number of children. The results of the Maths Doctor/Maths Wiz trial are as follows and they speak for themselves.

43 weaknesses were identified at the Year 1 & 2 level. After the 8 week tutorial period this was reduced to 11. Furthermore, 109 weaknesses were identified at the Year 3 level. This was reduced to 59.

The increase in confidence was quite remarkable. In fact, kids that had no confidence had started contributing in the classroom. They were particularly proud to show that they had grasped some concepts which the “smarter” kids were finding difficult! Symmetry was one such example.

As a result of the success of the pilot program, we are now putting 60 Year 3 to 6 students into a Maths Wiz program. We will be starting each student at a point where there is significant challenge, yet it is not too hard. (Zone of Proximal Development). The objective is to put them into a learning environment where they are comfortable.

Programs like Maths Wiz can make teaching exciting. They give teachers a glimpse of an efficient and effective future equipped with tools that can help to deliver much better results. I look forward to a future that delivers many more of these ‘smart’ programs’ i.e. programs that really understand the entirety of the teaching process.

SPECIFIC RESULTS

Note: The term "weakness" in the table below refers to a specific skill weakness (eg1: cannot identify how many axes of symmetry a shape has -or- eg2: cannot skip count by twos)

Student #1	**Pre-test** **Year 3 weaknesses = 8** **Year 4 weaknesses = 20**	**Post Test** **Year 3 weaknesses = 4** **Year 4 weaknesses = 19**
Student #2	**Pre-test** Year 3 weaknesses = 10 Year 4 weaknesses = 24	**Post Test** Year 3 weaknesses = 0 Year 4 weaknesses = 9
Student #3	**Pre-test** Year 1 weakness = 1 Year 2 weaknesses = 12 Year 3 weaknesses = 24	**Post Test** Year 1 weaknesses = 4 Year 2 weaknesses = 7 Year 3 weaknesses = 15
Student #4	**Pre-test** Year 2 weaknesses = 10 Year 3 weaknesses = 18 Year 4 weaknesses = 28	**Post Test** Year 2 weaknesses = 0 Year 3 weaknesses = 7 Year 4 weaknesses = 23
Student #5	**Pre-test** Year2 weaknesses= 6 Year 3 weaknesses = 17 Year 4 weaknesses = 34	**Post Test** Year 2 weaknesses = 0 Year 3 weaknesses = 14 Year 4 weaknesses = 27
Student # 6	**Pre-test** Year 2 weaknesses = 7 Year 3 weaknesses = 20 Year 4 weaknesses = 35	**Post Test** Year 2 weaknesses = 0 Year 3 weaknesses = 8 Year 4 weaknesses = 30
Student #7	**Pre-test** Year 1 weaknesses = 4 Year 2 weaknesses = 3 Year 3 weaknesses = 4 Year 4 weaknesses = 26	**Post Test** Year 1 weaknesses= 0 Year 2 weaknesses = 0 Year 3 weaknesses = 7 Year 4 weaknesses = 25