



## Building on what works in education

Concise summaries of ongoing policy research aimed at helping to improve the national education system

### Extra Maths Tuition in South Africa

A short summary of an exploratory investigation

*South Africa's public schooling system, particularly Mathematics education, is in crisis. In the 2012 Annual National Assessment the average result for Grade 9 Maths was 13 per cent, with only 2,2 per cent of pupils scoring 50 per cent or above. Maths is recognised as the gateway subject to higher education and career options. Many learners are turning to supplementary classes in an attempt to improve their performance. In addition to thousands of teachers offering extra Maths lessons, supplementary classes run by non government organisations and universities, and supplementary material available in the media, there are several growing franchises. This report focuses on three extra Maths tuition franchise companies that provide differentiated and sophisticated approaches: Master Maths, Kip McGrath and Kumon. Extra Maths tuition provides an example of how small-scale private initiatives and globalisation of innovative educational practices can positively contribute to improved learning.*

#### Background

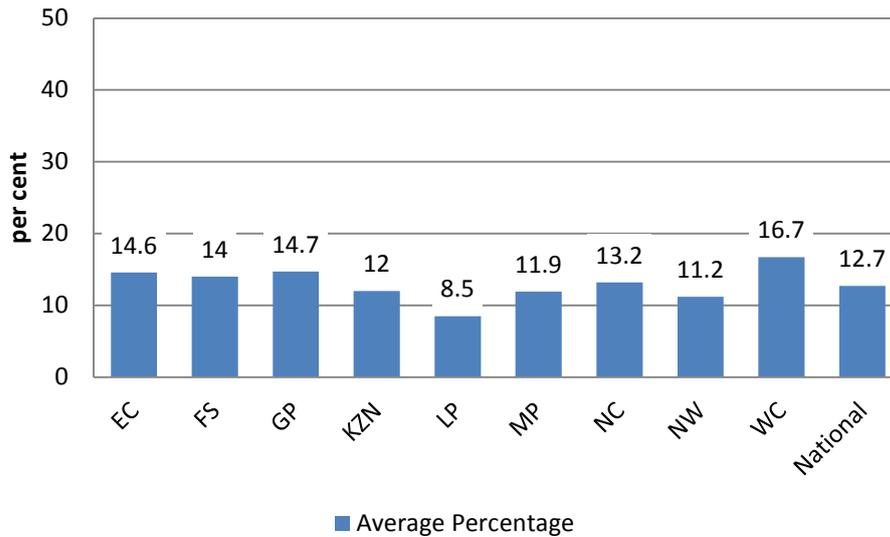
Extra Maths lessons have been part of the education landscape in South Africa since the 1960s, and probably even before then. There is evidence that it is growing in the twenty-first century in response to poor teaching in many schools.

The bulk of extra Maths tuition is provided by individual private teachers, but there are also at least three specialist extra Maths franchise companies operating in South Africa: Master Maths, Kip McGrath and Kumon.



Maths teaching and learning in South African government schools is very poor, and there is more demand for extra tuition in Maths than for any other subject. The Annual National Assessments of 2012 resulted in an average Maths mark at Grade 9 of only 13 per cent; and just 2,2 per cent of Grade 9's in these tests scored 50 per cent or more (see Figures 1 and 2). The point of departure for any discussion about Maths problems is to recognise the distinctive nature of Maths as a subject. Maths is a developed skill, learned progressively by a slow and steady acquisition of concepts, and by building operational and problem solving skills.

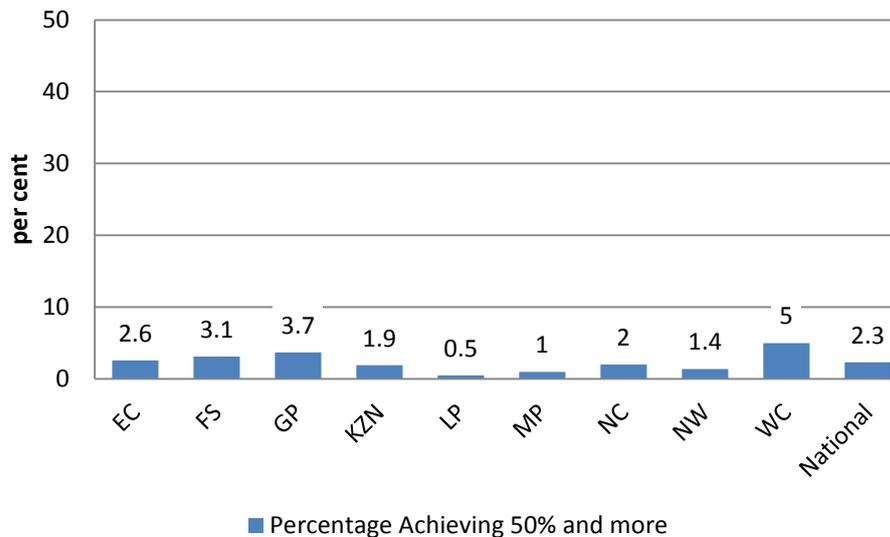
**FIGURE 1: ANA 2012 Grade 9 Maths Results**



SOURCE: CDE 2013

There is more demand for extra tuition in Maths than for any other subject

**FIGURE 2: ANA 2012 Grade 9 Maths Results**



SOURCE: CDE 2013



All Maths teachers agree that the subject requires daily work: it requires an understanding of the structure and logic of the discipline, which is achieved by building up slowly by working at it every day.

South Africa's challenges regarding Maths teaching are:

- A shortage in absolute numbers of specialist Maths teachers;
- Unqualified and under-qualified Maths teachers (the emphasis here being on functional rather than formal qualifications);
- Poor teaching methods;
- Poor learning environments; and
- Lack of resources.

All these factors are exacerbated by the poor socio-economic circumstances of very many students.

Lack of resources with respect to maths tuition needs to be placed in context. In general, average public expenditures on schooling in South Africa are comparatively high in a developing country context with the country spending some 6 per cent of GDP on education, which puts us in the upper bracket of country expenditure. It is therefore worth noting that at least some forms of extra Maths tuition appear comparatively cheap, especially when results (i.e. outcomes) are taken into account. This short research project did not include a careful cost-benefit analysis, but the following observations should provide policy makers with food for thought.

### **How Extra Maths Is Being Provided**

There are several aspects of the changing policy environment in South Africa which, cumulatively, have generated an increased demand for extra tuition in Maths. Amongst these are, significant policy changes in the approach to teaching Maths that have taken place in the last two decades or so, including the switch to Outcomes Based Education (OBE); many changes to the Maths curriculum over the years, including the dropping of Higher and Standard Grade Maths and the replacement with core Maths and Maths Literacy; the removal of Geometry as a compulsory part of core Maths and later its re-introduction; and government's policy not to stream learners before Grade 10, which can result in learners with marks of 26 per cent and 96 per cent being in the same class.

### ***Gateway to higher education***

Maths is recognised as the gateway subject to higher education and career options: many parents insist on their children continuing with core Maths so as not to preclude them from further opportunities. Many adults who dropped Maths or who opted for Maths Literacy discover their mistake later and find few options open to them.

International and South African experience show that there are two traditional categories of demand:

- The 'Battlers': learners who experience problems with Maths and need remedial attention (Grade R to Grade 12). The most common reason for children battling with Maths appears to

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Several aspects of the changing policy environment in South Africa have generated an increased demand for extra tuition in Maths

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lie in a lack of the 'basics', and problems tend to originate in early childhood development, pre-school or primary school, and usually relate to behavioural or learning difficulties. At high school level, problems relate more to discipline, self-confidence, attitude and motivation.

- The 'Achievers': learners who are competent or good at Maths and wish to either maintain their good marks, or to achieve higher marks. These are mainly, but not exclusively, high school learners, particularly in Grades 10, 11 and 12. They are highly capable and motivated learners who seek additional practice in order to achieve an 'A' for Maths in matric. This group also includes those intending to study Maths at university and who have become aware of the significant gap between matric and university Maths.

The bulk of supplementary Maths tuition is provided on an individual or small group basis by thousands of private teachers. Most of this teaching is undertaken part-time by school mathematics teachers supplementing their regular teaching income, retired mathematics teachers or university students.

In addition, there are three specialist extra Maths tuition franchise companies in South Africa, providing differentiated, but sophisticated, products and approaches: Master Maths, Kip McGrath and Kumon.

Over and above these main suppliers, there are a number of individual extra Maths schools mainly in the big cities (e.g. Maths Tutor and Baby Nerds); computer-based programmes; educational supplements in newspapers; extensive extra Maths revision programmes in the holidays run by universities; TV programmes, and specialist education support services such as Brombacher & Associates.

The costs of extra Maths appear to be uniform across the country. Individual lessons range from R150 to R200 per hour (with extremes being R120 and R300). Small groups of two learners pay from R100 to R200 per hour each, and the charge for groups of three to five ranges from between R80 and R150 per hour. The franchised companies charge between about R400 and R800 per month, depending on the number of hours per week.

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### ***Case Study 1: Master Maths***

Master Maths was started over 35 years ago by two South African teachers. They soon adopted the franchise model (then quite new in South Africa) in order to give teachers/managers a stake in the business and provide a vehicle for expansion. In 1996, when the business was bought by a South African business family, Master Maths had 36 branches throughout South Africa. The new owners converted the model to a computer-based system, and later developed new material in accordance with the new curriculum for Maths and Maths Literacy (which was phased in from Grade 10 from 2006.)

Master Maths offers tuition in mathematics for students from Grade 4 to Grade 12 using a computer-based teaching system that combines tried and tested teaching methods with new technology. Students are given individualised interactive teaching at competitive rates.

The teaching method, called M2, has modules for all sections of syllabus for each year for both the National Senior Certificate (NSC) and Independent Examinations Board (IEB) curricula. A student's



problem area and level are identified at an initial assessment, and thereafter the student works through selected modules with support from tutors if needed. Thus, the students have to do the work themselves, which helps them to learn to concentrate.

Master Maths has four tiers of fees, and franchisees are allowed to choose whichever best suits their local situation depending on the affordability of the local community. Fees are around R800 per month for three hours a week, which equates to around R60 an hour.

All franchise and license agreements are signed in the name of Master Maths (Pty) Ltd, the owner of all intellectual property related to Master Maths and Master Science. Franchisees are free to open as many centres as they feel are viable. Franchises cost between R12 000 and R40 000 per area, depending on market potential, and this fee is used mainly for training the new franchisees. It is said that a centre with 300 students can generate a turnover of more than R2,5 million per annum.

New Master Maths franchisees undergo one week's training at the company's head office in Somerset West, Western Cape. Franchisees are chosen for their good people and administrative skills. Having a good knowledge of Maths teaching greatly enhances the franchisee's chances of success as this means having one less employee to pay, although franchisees do not have to be Maths teachers. The company expects compliance to company policy and practices, and payment of royalties. Franchises send monthly reports on finances, sales, student numbers, enrolments, tutors and resignations.

Because the product is very flexible and can be used in centres ranging from 30 students to in excess of 300 students and still be profitable, the company believes the room for expansion is considerable. Master Maths expects to continue to open eight to ten new centres annually for the next few years, and to increase aggregate sales to students by 15 to 20 per cent per annum. They estimate that the market countrywide can accommodate 250 Master Maths centres.

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### **Case Study 2: Kip McGrath**

Kip McGrath began as a small family business in Australia. The main feature of these programmes was incremental learning through small steps in carefully calibrated standardised modules. The founding principle was 'Any child can learn if they are taught properly'.

The Kip McGrath education centres spread throughout Australia, and then New Zealand and the United Kingdom. Today, Kip McGrath is a successful listed company operating over 600 centres in 20 countries around the world. The Kip McGrath business in South Africa has since 1995 grown steadily, and in 2012 there were 67 franchise holders in the region.

The point of departure of the Kip McGrath approach is remedial and child-focused. The Kip McGrath centres in South Africa cater for Grades R to 12, and offer supplementary education in English language and Maths. The approach is conservative. Students learn multiplication tables and bonds (the range of number pairs that make up each number e.g.  $1+6=7$ ,  $2+5=7$ , etc.), and do so in systematic, step-by-step methods.



On the basis of an initial assessment, a tailor-made set of programmes is designed for each learner, effectively taking them back three grades. The learner then works through the programmes in a carefully regulated environment under the guidance of a specialised tutor. The learning environment at Kip McGrath is tightly structured. For each new concept or procedure, a learner is taught a 'recipe' and the steps to be followed to solve a particular problem. They are taught skills which are then tested in problem-solving formats.

The programmes are developed at the head office in Australia and are modified to meet the needs of each country. The Centres cater for both learners seeking remedial assistance, and those wanting to achieve or maintain high marks.

Lessons are standardised to 80 minute tutoring sessions in small groups (four to six students per teacher), using a highly structured learning programme. The average cost is R630 per learner per month for four lessons. The international holding company is Kip McGrath Education Centres Limited, registered in Australia. There is a Master Franchisor in each region. Individual franchises are set up as either sole proprietors or partnerships. About 80 per cent per cent of franchises operate from rented premises, and those who operate from private homes have to comply with strict safety criteria.

The head office collates reports from all its Centres and monitors quality of service and money flows on a weekly basis. Management also makes frequent visits to Centres. In order to protect the company's intellectual property, the software for all teaching programmes is on CD, which are renewed and recoded every three months. Royalties, based on the number of students, are 20 per cent of revenue. The cost of a new franchise ranges from R140 000 to R160 000 (somewhat higher than the others which is explained by the organisation's use of structured/prescribed formats and qualified teachers). Profits vary depending on the number of learners and the management of costs by individual franchise operators.

It is estimated that the number of Kip McGrath Centres could grow to around 100 in Southern Africa (from the current figure of 67). The company's local website identifies over 20 areas available for new franchises.

The number of Kip McGrath Centres could grow to around 100 in Southern Africa

### **Case Study 3: Kumon**

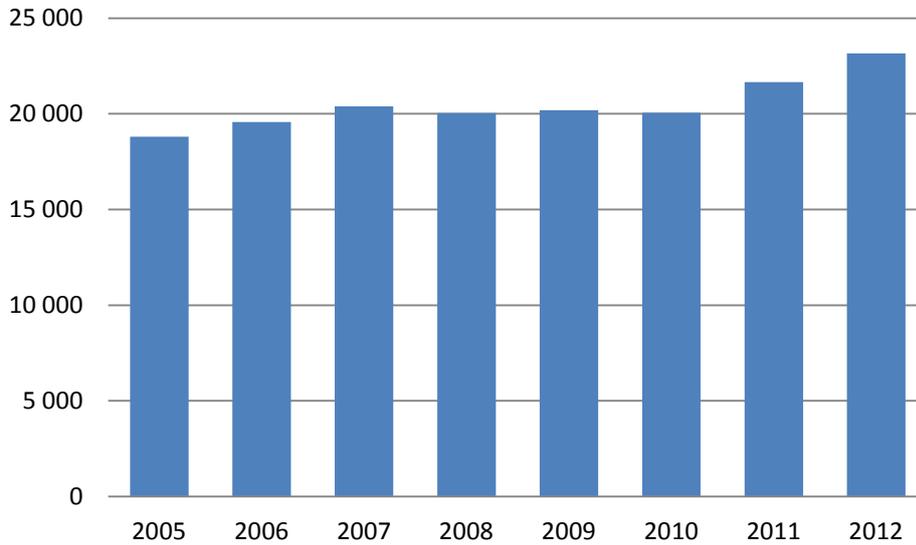
Kumon began in 1954 when a Japanese high school mathematics teacher, Toru Kumon, began teaching his son through the concept of self-learning. In 1955 the first Math Centre, using Kumon worksheets, was opened in Osaka, Japan. The Kumon method became widely known through a book published in 1974 entitled 'The Secret of Kumon Math'. In that year, the first overseas Kumon centre was opened in New York, followed in the next few years by centres in Taiwan, Brazil and Germany. The franchise spread world-wide, and by 2006 there were over four million enrolments. Kumon is now the largest supplementary programme in the world operating in 47 countries and regions around the world. The total number of students in June 2012 was 4 377 000.

In 1992, Kumon South Africa began its franchising operations with seven centres in the Gauteng area, followed by Cape Town and then Durban. Since then, there has been a sustained growth in the



number of centres around the country reaching 18 000 students studying English and Maths in 2010 and growing fast. There are currently 230 franchise owners operating 280 centres in Southern and Eastern Africa. Each business unit offers both Maths and English programmes. By June 2012 there were 23 156 students, ranging from Grade R to 12, registered with Kumon in South Africa (by comparison with two years earlier, about 15 per cent more. See Figure 3 below).

**FIGURE 3: Kumon enrolment**



SOURCE: CDE 2013

In June 2012  
Kumon had 23 156  
students, ranging  
from Grade R to 12

The Kumon approach is an individualised learning method that allows students to study at the level in which they are comfortable. It is a self-learning method which aims to give students basic academic abilities, as well as concentration skills, good study habits, confidence and a sense of achievement. They learn at their own pace, one step at a time. Kumon is a long-term programme which requires work 365 days of the year, and caters for any age or ability.

The Kumon Maths programme consists of 4 620 worksheets with 21 levels which focus on the development of strong calculation skills. All worksheets are reviewed routinely and continuous revisions are made based on feedback from students and instructors.

After an initial assessment, the student starts on easy work in order to establish a routine and boost confidence. Within a year, students are usually working above their school grade level. Parental support is very important as parents are required to check their child’s work and help motivate them daily.

The cost per learner per month is between R380 and R400 for two 30 minute lessons per week. There is a once-off enrolment fee of R210. The Kumon operations in South Africa fall under Kumon Europe/Africa whose head office is in the UK. The South African holding company, which oversees standardisation, is based in Johannesburg.

Franchise owners are called ‘Instructors’ and are carefully selected and trained, and must have well-established roots in the community, but need not be teachers.



The cost of a franchise is R17 000. A franchisee may own two Kumon centres, which have an area of about one kilometre radius (that is each centre is about two kilometres apart). Royalties are fixed at 45 per cent each month, based on the number of students. Numbers of learners vary between 100 and 400, although one Kumon centre in Johannesburg is reported to have over 1000 students.

The potential for expansion lies in increasing numbers of learners, and, according to one franchisee 'the state of public education'. The company's website indicates that there is wide potential for expansion into new areas. Another possible field for expansion is in adult education, and also FET colleges.

### Conclusions and Implications

In addition to the franchise models summarised above, there are thousands of teachers giving private extra Maths lessons to learners from Grade R to 12 in towns and cities around the country. The exact number is unknown, but survey respondents who were teachers in Johannesburg estimated that between 25 per cent and 50 per cent of the Maths teachers they know give extra lessons. The growth of this industry is mostly a reflection of the perceived poor quality of public education.

There are debates about the relative effectiveness of extra maths lessons. While this debate is certain to continue, one should caution against generalisations. Just as the demand is highly differentiated (beyond simply learners needing remedial or extension help), so too are the services that are being provided by a wide variety of suppliers.

Overall, however it is important to be aware of this well-established sector which appears to provide services in an effective manner. It is largely unregulated by government, but is overseen closely by parents, learners, teachers (in the industry) and franchisors (who need to keep their reputations high and show results). It is relatively easy for individuals to enter the field of extra tuition, and while this does have advantages, it can also result in unqualified operators who might not be able to provide a reasonable service. At the same time some participants in the industry say that, because of heavily bureaucratic certification emphases in South African education, lack of registration limits the scope for expansion by some *bona fide*, well-resourced organisations, which could benefit by being able to grant some form of certification.

South Africa's public schooling system is not doing well at Mathematics. The Annual National Assessments of 2012 resulted in an average Maths mark at Grade 9 of only 13 per cent; and just 2,2 per cent of Grade 9's in these tests scored 50 per cent or more. How are grade 10, 11 and 12 Maths teachers expected to cope with such an intake? The main reason that this crisis is not more dramatically reflected in the NSC results is that so many students drop out at or around Grade 10. If South Africa wants to become a society which prizes 'decent work' after school, and seeks to compete, economically, for example with Asia, it will have to do much, much better at school Maths. The extra Maths industry is, for the most part, a good example of how small-scale private initiative, as well as globalisation of educational innovation, can contribute to more effective learning. Its existence and its diversity also provides teaching and learning 'models' and R and D in potential new approaches from which the public sector could learn.

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It is important to be aware of this well-established sector

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Future demand for extra Maths will continue from the two traditional sources (the 'battlers' and the 'achievers'), but it is highly likely that demand from the middle group of learners will persist and even grow. There is also a massive, pent-up, under-served demand from rural schools, and although the policy implications in terms of cost-effectiveness have not yet been thought through, the time has come to consider the possibilities. In addition, there are other un-served segments; adults who did not pass Grade 12 Maths and who now want to study at university (Master Maths report that they receive thousands of queries from such people); FET Colleges; and teachers' training colleges. This last category is hardly incidental. Increasing numbers of studies are showing that the average South African Maths teacher is unable to answer questions that their students might be expected to answer in exams. Thus, these teachers' own preparations have become the priority, and learning from private extra Maths may be one route forward in this regard.



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#### INTERNATIONAL ASSOCIATE

Peter L Berger

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The Centre for Development and Enterprise  
5 Eton Road, Parktown, Johannesburg, South Africa  
PO Box 1936, Johannesburg 2000, South Africa  
Tel 27 11 482 5140 • Fax 27 11 482 5089  
info@cde.org.za • www.cde.org.za

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