In this Issue

SM&L

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Leadership Lessons

From feedback we have been getting, it would seem that those who occupy leadership positions in schools are becoming increasingly aware of the need to improve their leadership and management skills. Cynics may suggest that this has to do with the OSD-linked salary packages which we are told will make it possible for good principals to earn substantially more; or to the Education Minister's proposal that the ACE:SL become a requirement for appointment as a principal. We would like to take a more idealistic view, believing that principals increasingly understand that if they are going to be effective leaders and managers of their schools, they will need to set an example to their pupils and staff about what it takes to become a life-long learner.

Besides the ACE: SL courses which are now offered by a number of universities across the country, the drive to improve the management and leadership of public schools has also seen the launch of several other initiatives, mostly driven and funded by provincial education departments. We were recently privileged to have spent some time with the Wits School of Education, learning about their 'Executive Leadership in Teaching and Learning' for principals, which was launched this year with the support of the GED. This issue carries the first of several articles about this interesting and innovative initiative.

Results from the second cycle of Systemic Evaluation at the Foundation Phase (Grade 3) which was conducted in October 2007 were released by the DoE recently. This first phase report – a second more detailed report is to be released in March 2009 – provides some interesting and useful insights into the extent to which our public education system is addressing the challenges of the generally poor levels of literacy and numeracy in our public primary schools. We provide a summary of the most important findings from this report as part of our on-going monitoring of this critical area of schooling. One of the values of the report is that it provides better insights into the extent and nature of the problem than have previous reports.

Brain-based learning has become quite a buzz-word in education over the past few years and those who promote it have featured prominently in a number of educational conferences both here and in the USA. We were therefore intrigued to find an article in a recent edition of the *Harvard Business Review* which suggests that we all need to be a little more sceptical about some of the more extravagant claims that have been made. There is more about this and what neuroscience can teach us in an article starting on

School improvement is a challenge faced by all principals but what exactly is it that they want to improve and what must they do to make it happen? In an article that looks specifically at issues related to the basic functionality of schools and to the planning of teaching and learning, we seek to provide some guidelines on how to develop improvement strategies that work.

Courses

Lessons in Executive Leadership at Wits

The GDE and Wits School of Education has launched an exciting new Executive Leadership in Teaching and Learning for school principals. *SM&L* went along to see what it was all about

Earlier this year, the Gauteng Department of Education and Wits School of Education launched a new and innovative Executive Leadership Programme for school principals. Unlike the Advanced Certificate in Education: School Leadership (ACE: SL) programmes which are running at a number of South African universities, this programme does not provide any formal qualification and is not based on unit standards. Muavia Gallie, one of the course co-ordinators, succinctly summarises the reason for this decision with this simple statement: "This course is not designed to meet the needs of unit standards. It is designed to meet the needs of principals". This is exactly what it appears to do.

Strengths of the course

The two great strengths of the course are its focus and structure. In the course outline document, the title of the course is given as "Executive Leadership Seminars in Teaching and Learning". It is this focus that sets it apart from the ACE: SL courses with their rather bureaucratic approach to the roles and responsibilities of principals. It makes it possible to simplify the course, to avoid the clutter associate with administrative and financial responsibilities of principals and to concentrate on what really matters: the quality of teaching and learning. The course outline, readings and intended learning outcomes are provided elsewhere on this page.

Course structure

The structure of the course is also simple. It is presented as a series of day-long seminars held on Saturdays - one Saturday a month for 10 months, with a different topic covered each month. Interestingly, it runs across two years, starting in May 2008 and ending in February 2009. A total of about 300 principals participate in the course and they are divided into two approximately equal-sized groups of 150. The two groups attend on different Saturdays each month. Course participants are grouped in syndicate groups of 10 to 15 individuals, each with a syndicate leader who is responsible for facilitating and mentoring the group. The syndicate groups are district-based and although most are principals of schools in the district, each group also contains one or two GDE district officials. Syndicate leaders were carefully selected not only for their knowledge, experience and skills but also because the positive outlook and commitment to success. A number of the syndicate leaders are experienced school principals. Each Saturday Seminar consists of two syndicate sessions separated by a keynote session. Both syndicate sessions are reflective in nature; the first normally focuses on the work and activities that have been completed since the previous meeting, in the second, participants discuss, debate and reflect on the keynote presentation and its implication for practice. Although syndicate leaders play a facilitative role in managing these sessions where this is necessary, participants take turns to chair these sessions. Participants are encouraged to make contact with their syndicate partners by phone and e-mail in the weeks between seminars.

Optional skills programmes

In addition to the syndicate and keynote sessions, participants are also offered optional skills programme sessions after lunch. These are ICT-based and take place in the computer room, allowing those with limited access to and/or knowledge and skills in the use of ICT to develop these and to access resources that would not normally be available to them.

Executive Leadership

Learning Outcomes

(As stated in the course documents)

On successful completion of this course you will be able to:

• Use reflection and reflective practice in your professional work

• Reconceptualise, through critical analysis, your current roles and responsibilities

• Carry out action research for improving teaching and learning

• Explain what a 'lead learner' is and its implications for school improvement

• Use effective leadership and management practices, including management of human and physical resources

• Understand the significance of, and develop skills in, monitoring and evaluation.

Prof. Mary Metcalfe, Dean of the Wits School of Education (front right) with some of the principals participating in their Executive Leadership course

Recordings of key-note sessions

One of the interesting innovations of the course is the audio-visual recording of all keynote sessions. These recording are made available to course participants as DVDs five days after the recording of the sessions. This makes it possible for participants who are unable to attend on a Saturday for some legitimate reason to have access to the keynote presentation and the discussion that followed it in the plenary session.

Course requirements

Course requirements are stringent but not overly demanding of participants' time because the course organisers understand the kinds of demands made on principals and district officials by their schools. There are three requirements:

•   The first requirement is 100% attendance at all seminars. Participants who are unable to attend for a legitimate reason such as a death in the family or sickness are required to inform their syndicate leaders, preferably beforehand. Absence, however, is not sufficient excuse for not completing the tasks associated with a particular seminar.

•   The second requirement is that participants complete 80% of the tasks (reflective activities) assigned to them to a standard that is acceptable to their group and syndicate leader. Tasks which are not completed to an acceptable standard are considered to be incomplete. Reports and other written tasks are

expected to be brief, where possible not longer than one A4 page. Every effort was also made to ensure that they formed part and parcel of the normal duties of principals so that competing them was not seen as onerous and unrelated addition to their normal duties.

•   The third requirement is that participants keep a "well-organised" reflective portfolio journal as a strategy for enhancing their professional practice and they are expected to include proof of their learning/ or improvement.

Principals as executives

One of the other interesting aspects of the course is that it deliberately sets out to treat the participants as executives and equally expects them to behave as executives. Tea, coffee, fruit juice and a light continental breakfast were provided in the morning prior to the start of each seminar and a three-course hot lunch was provided in the middle of the day. On the days on which we attended, the quality and service were both very good and there was sufficient variety for most tastes and dietary requirements. The dress code is reasonably formal and there were sharp words for those who drifted in late for sessions, all part of a commitment to creating a strong work ethic and a sense of professionalism.

Selection of participants

As has been mentioned, the school districts were the basis of the selection of participants. The GDE is organised into 15 districts. Two clusters of schools were

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selected from each district, with each cluster consisting of 2 secondary schools and 7 primary schools. A GIS, was used to identify the clusters of schools with the schools in each cluster grouped by their proximity to one another and by their socio-economic profile. This was to ensure that the schools in the cluster were as representative as possible of the community of the district that they served. In addition, two district officials each linked to a school cluster were invited onto the programme. This produced 2 groups of 10 participants each from each of the districts. It was these cluster groups which became the working groups for the seminars and workshops. 10 syndicate leaders were then selected to facilitate the discussion in each of the groups.

Don't complain, make a difference

As often happens in courses of this nature, there was an attempt by principals to complain and to blame the shortcomings of their schools on their perceived failings of the education department and its officials, on the lack of adequate resources and on problems associated with the roll-out of the curriculum. Right from the start, these kinds of complaints were quickly quashed with emphasis moved from "why we can't do things?" to "with good leadership anything is possible". This change in focus from why we can't to why we can is part of the reason for the positive and constructive attitude that we encountered in all of the participants to whom we spoke. These were principals who are energy creators and who seem determined to make a difference in their schools - an approach that is desperately needed in this country.

Leadership Forum

One of the other initiatives associated with the course is a plan to establish a "Leadership Forum" as a means of maintaining the links with and between participants after they have completed the course. The hope is that through their association with the forum, members will continue to grow the knowledge and expertise and become what Schwan and Spade called "Total Leaders" in their book with the same title. A leadership forum of this kind has great deal of potential and SM&L hopes that it will become a reality.

The GDE-Wits Executive Leadership programme is an excellent and innovative initiative with the potential to make a significant impact on the quality of school leadership not only in Gauteng but across the country. Those involved in its planning and implementation are to be commended on their imaginative approach and on being willing to think outside of the formal qualifications box in conceptualising the programme. In future issues we plan to bring you more about the good work that they are doing. ■

Executive Leadership: Course Map

Seminar	Theme (and recommended reading)
1	Where are we in education in South African?
2	How can a leader assess the school's functionality and culture? (Ministerial Report: Schools that Work)
3	What are the characteristics of an effective school? (Alan Clarke, *The Handbook of School Management*)
4	What counts as quality teaching and learning? (Schwahn and Spady, *Total Leader*)
5	What are the leadership challenges (risks, opportunities and strategies) faced in South African schools? (Video – *Coach Carter*)
6	How can you lead and manage effective teaching and learning in a South African schooling context? (Linda Chisholm, *ELRC Workload Report*)
7	What can we do better in our schools? Presentations by four experienced principals on four key leadership tasks that are fundamental to successful teaching and learning. (Alan Clarke, T*he Handbook of School Management*)
8	What models in school improvement have distinguished them to be more effective than others and in what contexts? Presentation by two international speakers, one from Pakistan and one from the USA.
9	What is the opinion of three experts of the school improvement plans presented by participants, and what advice can they give? What will be the value of the school improvement plan in your context?
10	How do we build networks of accountability? and support to ensure that we sustain the quality change in our schools?

News

DoE News

The DoE media release following the final meeting for the year of the Council of Education Ministers includes important information for schools

The DoE media release following the final meeting for the year of the Council of Education Ministers (CEM) included information about decisions that have been made which have important implications for schools.

Dinaledi Schools

The current group of 500 Dinaledi schools will retain their status until 2011. No schools will be added to the group and no Dinaledi schools will lose their status during this period. Human and material support for the schools would continue until 2011. A performance target of a minimum of 50% for both Mathematics and Science has been set for each learner.

Supplementary examinations in 2009

The timetable for matric supplementary examinations for 2009 has been set and all part-time candidates will be permitted to write supplementary examinations in May-June 2009. If the supplementary examination date of a subject falls on the same day as the national election, this examination will be moved to the end of the examination period.

NSC candidates who fail Life Orientation

NSC candidates who fail Life Orientation and one other subject will be permitted to submit their Life Orientation portfolio for re-assessment and to register for the supplementary examination in the other subject that they failed. A period of 3 months will be allowed for the re-submission of the Life Orientation portfolio.

Progression and promotion requirements for Grades R - 8

New, more specific progression and promotion requirements for Grades R to 8 have been proposed with greater emphasis placed on literacy and numeracy. Next year will see the introduction of new criteria which aim to improve the consistency in the way in which districts and provinces apply assessment standards in determining whether a pupil has met the progression and promotion requirements for the grade. External literacy and numeracy competency examinations in grades 3 and 7 are to be introduced in the future.

Monitoring of language choices offered by schools

PEDs will be required to monitor the language choices offered by schools more closely in future to ensure that these choices are equitable for pupils whose mother tongue is an indigenous African language. This decision was made in the light of a ruling by the Equality Court of the Durban Magistrate's Court in a case in which the level at which African languages offered by Durban High School was challenged. The case was featured in a recent edition of *SM&L* (Vol. 2 No. 7.)

Review of school funding

The DoE is in the process of reviewing school funding policy. It has established a Stakeholders Forum consisting of school governing body associations, teacher unions, the South African Principals' Association and a panel of education experts to discuss the matter. Written submissions were also submitted by a number of stakeholder groups. The DoE is undertaking research into no-fee schools, compensation for fee exemptions, the determination of a basic income package for school allocation, and the impact of the National Norms and Standards for school funding. *SM&L* raised concerns about the possible serious funding implications for some quintile 3 schools, should they be declared no-fee schools in Vol. 2 No. 6.

Teacher curriculum and assessment overload

A number of initiatives have been taken in an attempt to quantify and address the widespread complaints about teacher curriculum and assessment overload. A draft circular providing clarity on the requirements for internal assessment has been circulated to the curriculum sections of provinces, national teacher unions, Umalusi, SAQA and HESA for comment. An amended circular has also apparently been sent to as many teachers as possible for their comment in an effort to establish their views. Comments are still awaited from teachers and interested groups and once received, these will be evaluated and used as a basis for a report to the CEM. SM&L is keen to get hold of a copy this circular and hopes that one of our readers may be able to assist us in this regard.

Amendments to the requirements for University admission

Proposed amendments to the matriculation requirements for university admission have been approved and the Draft of Amended Matriculation Endorsement and Exemption Requirements are due for gazetting. *SM&L* will publish a summary of these as soon as they become available. ∎

Research
Report on 2007 Gr. 3 Systemic evaluation

The first phase report on the second round of Systemic Evaluation of the Foundation Phase (Grade 3) provide useful insights into the performance of our public education system

The results of the second round of the Systemic Evaluation of the Foundation Phase (Grade 3) have been released by the DoE. The purpose of these tests is to provide the DoE with a measure of how it is performing as a system in terms of its ability to provide children who are educated at public schools with the knowledge and skills they need to progress. The report released is the first phase of a larger report and provides information specifically about learner achievement. A second report ('second phase reporting') will be released in March 2009 and will provide information about the "context within which learner performance can be understood".

Indications from previous surveys are that pupil performance may be influenced by a variety of factors. The second phase report will seek to confirm or refute the effect of these influences. The influences listed are:

• the language in which learning is experienced

• poverty levels, based on proxy measures such as the number of books in the home, the level of education of parents and the nutritional status of pupils

• the nature and duration of time-on-task in the school

• the level and use of resources at the school

The tests were administered to a representative sample of 53 952 pupils from 2 328 schools distributed across all nine provinces.

The instruments (tests) used to measure performance are based on the National Curriculum Statement and focus on skills and competencies that can be assessed through paper and pencil exercises. They were designed to measure pupil performance in the two key areas of literacy and numeracy. The tests were administered to a representative sample of 53 952 pupils from 2 328 schools distributed across all nine provinces. The sample was taken from representative mainstream public schools with a Grade 3 enrolment of 15 pupils or more. Excluded from the sample were independent schools and special schools. Technical assistance was provided by JET Education Services.

The first round of Systemic Evaluation, conducted in 2001 for Grade 3 and 2004 for Grade 6, was used to

The overall mean performance in literacy has improved by 6%, from 30% to 36% and the overall mean performance in numeracy has improved by 5%, from 30% to 35%.

provide baseline measures – results which could be used for comparative purposes and as a basis for measuring future progress. The second round, which provided the information for this report, was conducted in October 2007 and was designed to measure pupil performance at the Grade 3 level. This data will also be used for the 'second phase report' to be released in March next year.

The report contains some good news as it shows that there has been some overall improvement in both literacy and numeracy since the Gr. 3 base-line assessment in 2001. The overall mean performance in literacy has improved by 6%, from 30% to 36% and the overall mean

19% of the schools performed at or above the 50% level in literacy and/or numeracy and 30,7% of pupils performed at this level. Outstanding performance (a minimum of 70%) was achieved by about 6% of schools and about 10% of pupils.

performance in numeracy has improved by 5%, from 30% to 35%. Although these gains may seem small, it is worth reporting that the Organisation for Economic Co-operation and Development (OPEC) Review Team, in the country at the time of the release of the report, were very positive about this level of improvement and are quoted to have called it "an unprecedented shift at a systematic level".

The report includes interesting statistics, some of which are given elsewhere in this article. A benchmark standard was set at 50% as this is considered to be the minimum achievement level in standardised national assessments. This benchmark was then used to identify the number and percentage of schools and individual pupils who performed at this level. 455, or 19% of the schools, performed at or above this level in literacy and/or numeracy and 16 570, or 30,7% of pupils, performed at this level. Outstanding performance (a minimum of 70%)

Sample Size by Province and Overall		
Province	No. of Schools	No. of Pupils
Eastern Cape	565	12 473
Free State	132	3 055
Gauteng	196	4 863
KwaZulu-Natal	516	12 338
Limpopo	307	7 190
Mpumalanga	228	4 737
Northern Cape	116	2 767
Northwest	132	3 137
Western Cape	136	3 392
South Africa	2 328	53 952

was achieved by about 6% of schools and about 10% of pupils. Interestingly, the authors of the report suggest that this shows that there are a number of pupils who performed excellently despite the fact that they were not in a school that performed excellently.

> Provincial comparisons show that the difference between the mean scores of boys and girls was greater for literacy, with a range of 4% to 6%, than it was for numeracy, where the range varied from 1% to 3%.

The results were also analysed for gender differences. The mean scores by gender showed that girls performed better than boys in all provinces in both literacy and numeracy. Provincial comparisons show that the difference between the mean scores of boys and girls was greater for literacy, with a range of 4% to 6%, than it was for numeracy, where the range varied from 1% to 3%.

One component of the report which has some practical value for schools is the "Skills Audit". They audit was used to identify areas of strength and weakness which were revealed by the tests. In their analysis of the results, the research team was able to measure the performance of pupils separately in each of the three key Literacy competencies and the four key numeracy competencies as defined by the assessment standards in the National Curriculum Statements.

The three key literacy competencies listed are:

LO 1 Reading and Viewing

The ability to make meaning from visual clues (pictures); the ability to read pictorial information on their own and to respond to questions; and knowledge of concepts such as quantity, size, direction, colour, time, etc.

LO 2 Creative Writing

The ability to formulate own text – with appropriate language conventions – using pictures as a prompt.

LO 3 Thinking and Reasoning

The ability to interpret and write text in own words to show comprehension; and the understanding and the use of language for logic and reasoning.

Skills related to "Reading and Viewing" were highest in all provinces. The best performing province in this competency was the Western Cape with a mean score of 56% and the province with the poorest performance was Limpopo with a mean score of 34%. As would be expected, pupils showed the least competence in LO 3 'Thinking and Reasoning' as it requires high-order skills. To do well, children must have the ability to read and write independently and in a logical fashion using correct language conventions such as grammar, punctuation and tense. The best-performing province (Western Cape) in this category had a mean score of 34% and the poorest performing province (Limpopo) a mean score of just 18%.

Key numeracy competencies are:

LO 1 Numbers, Operations and Relationships

Described as the ability to count objects in multiples; the recognition of number patterns and place value digits; knowledge of how to represent fractions, the ability to perform basic calculations (add, subtract, multiply and divide); the ability to solve simple problems that involve money.

LO 2 Patterns, Fractions and Algebra

The ability to extend simple patterns represented by numbers, pictures of objects and shapes.

LO 3 Space and Shape

The ability to describe, sort and compare two-dimensional shapes.

LO 4 Measurement

The ability to carry out calculations that involve measures of time, including converting between hours and minutes.

LO 5 Data Handling

The ability to read and interpret data and bar graphs.

Of these competencies, the best performance for all provinces was in L.O. Space and Shape, with mean score competencies ranged from 65% in the Western Cape to 35% in Limpopo. Lowest performance was in L.O Patterns, Functions and Algebra. The report did not provide the scores for this category.

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The publication of this more detailed information provides some guidelines for schools on specific problem areas. One could argue, given the generally poor performance across the system, that schools should be working to improve in every category. This of course is true but the second phase of the report promises to provide more specific information and to make this information available to the sample schools. One must assume that this information will be also used by the DoE and the PEDs to devise more effective intervention strategies aimed at improving teaching in these areas.

The report also provides information on the extent to which each province has improved its mean score since the baseline measure in 2001. These results are given elsewhere on this page. The best performing provinces in terms of improvement in the mean scores of both literacy and numeracy are the Western Cape (15% increase in literacy scores and 17% increase in numeracy scores), Free State (16% increase in literacy and 13% increase in numeracy). Most disappointing is Limpopo which has managed to increase its mean literacy score by just 2% while showing a decline of 2% in its numeracy scores.

The great value of the information provided by these results is that it gives everyone involved in public education, a clear idea of the state of the system. Literacy and numeracy competence, as described in the Grade 3 Learning Outcomes is essential if a child is to progress at school. There is, therefore, a desperate need for our public education system to tackle the obstacles and shortcomings that are preventing children from acquiring these critical skills. Our concern is that MECs, Heads of Education, district officials, principals and teachers, in fact everyone involved at every level in public education is not sufficiently focused on addressing these critical problems. Is now not perhaps the time to consider linking the employment contracts, salaries and performance bonuses of all involved in public education to improvements achieved in the Systemic Evaluation mean literacy and numeracy scores? Perhaps then we will see those responsible for public education giving this problem the attention it deserves. ■
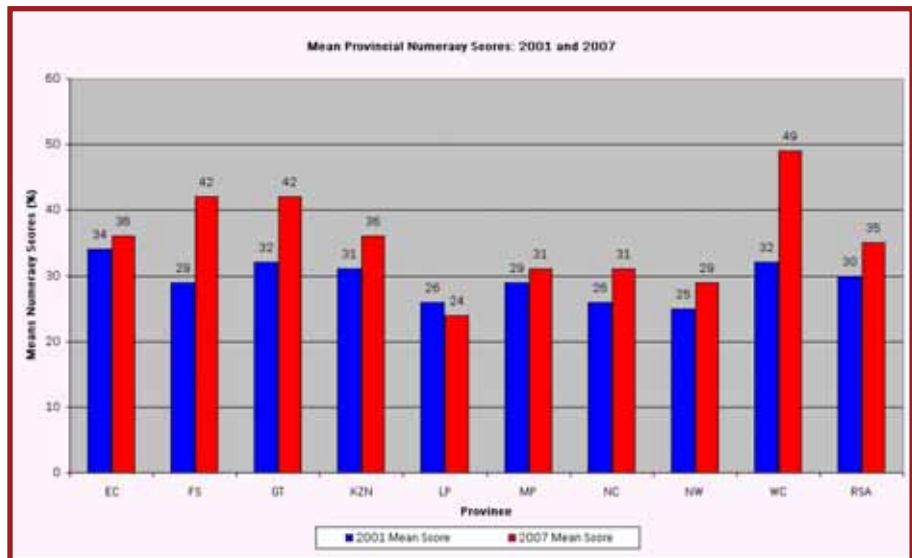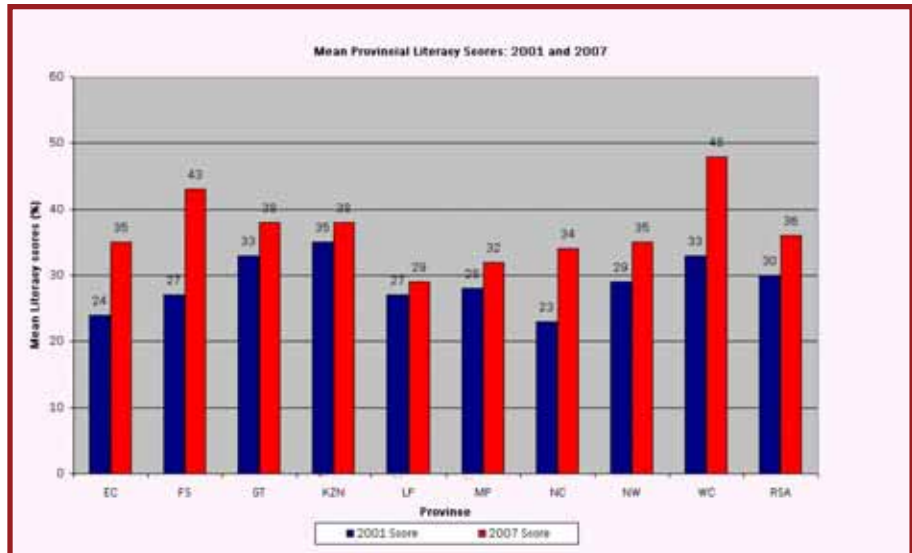
These Grade 1 pupils from Zimasa Primary School in Cape Town have already learnt to read

Research
Brain-based learning – fact or fad?

An article in the *Harvard Business Review* casts doubt on some of the more extravagant claims made by advocates of brain-based learning.

A recent article in the *Harvard Business Review* casts doubt on some of the more extravagant claims made by advocates of brain-based learning. The article, *Different Voice – A conversation with brain expert John J, Medina*[1] is, as its title suggests, a report on a conversation with John Medina a specialist neuroscientist and the author of *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*[2]. Medina responds to a number of questions posed by the author of the article about what we know about the brain and on the extent to which this knowledge has practical application for how we learn and how business leaders manage their organisations.

Medina notes in his responses that despite the fact that neuroscience is giving scientists a better understanding of how the brain works, they still have very little understanding of how to apply this knowledge to real-world situations and people outside of the scientific community understand even less. He suggests therefore that business people should be sceptical about what they read in the popular press as he believes it is too early to tell how the "revolution" in neuroscience is going to affect the way executives run their organisations.

Dr John J. Medina

Dr Medina is a developmental molecular biologist focusing on the genes involved in human brain development and the genetics of psychiatric disorders. He has spent most of his professional life as a private research consultant working mainly in the biotechnology and pharmaceutical industries in research related to mental health. He has won numerous awards for his work and has been a consultant to the Education Commission of the States. He is a regular speaker on the relationships between neurology and education and was the founding director of Talaris Research Institute, a Seattle-based research centre which focused on how infants encode and process information at the cognitive, cellular and molecular levels. Medina has written a number of books on the subject including, *Brain Rules, The Genetic Inferno, Depression, The Clock of Ages* and *What you need to know about Alzheimer's.*

Despite his recommendation that business people adopt a cautious approach to some of the claims made about neuroscience, Medina does acknowledge that there are some areas where the evidence from research is more conclusive. This includes the effect of prolonged stress on learning, with some research suggesting that adults subject to chronic stress perform 50% worse on certain cognitive tests than adults with low stress and that the estimated cost (in the USA) of lost production as a result of this has been estimated at $200 billion a year. The reason for this is that stress releases a group of hormones (glucocorticords) whose purpose is to help our muscles function more effectively as part of a "fight or flight" mechanism. This mechanism evolved to help us deal with the kinds of dangers our ancestors faced in their daily lives – such as a close encounter with a lion! These were short, sharp encounters lasting only a few seconds and at the most a few minutes. The body's ability to process these chemicals is limited and in cases of chronic (prolonged) stress, they accumulate in the body when they do significant damage, including damage to the cells of the brain and the connections between them. These stress hormones seem to have a particular affinity for the hippocampus, a part of the brain that is deeply involved in the process of human learning. As a result, stressed people perform more poorly in mathematics, they are less efficient at processing language and have poorer shorter and long-term memories, all of which are important processes if people are to excel. There is evidence from research, however, to show that some people are more resistant to the effects of stress than others and that this resilience is genetic (i.e. inherited) rather than learned or a result of environmental factors.

One of the other interesting findings which is well supported by evidence from research in the neurosciences is that memory is neither reliable nor permanent. Brains do not operate in the same way as recording devices which you can use to record and then play back an excerpt replica of what was recorded. The moment of learning, the moment of fixing a memory is so complex that neuroscientists have little understanding of what happens during the short period of time when this occurs. According to Medina, their understanding of long-term memory is even worse. Long-term memory takes a long time to settle into a permanent form and while it is becoming "fixed" can easily be modified by patterns of earlier memories. In fact our brains modify our perceptions of reality in order to stay in survival mode

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because that is what they have evolved to do. Based on the evidence from brain-research, the best way to fix memory, that is to ensure that we are able to retrieve what we have learned accurately, is to use a process called "elaborative rehearsal". Elaborative rehearsal differs from rote learning. With rote learning, things are memorised through constant repetition - the same words or statements are repeated or read over and over again until they are remembered – a very inefficient form of learning. The process of elaborative learning requires the learner to develop a greater understanding of the words or material by analysing their meaning and relating the words and ideas to the learner's existing knowledge and experience. Interestingly, it has been found that the best way to recall something is to reproduce the environment in which you first put it into your brain. So if you were sad when something was learned, your best chance of remembering it is to make yourself sad. Pictures and even odours present during the learning process also act as triggers which assist us in our effort to recall what we have learned. This explains why we sometimes have vivid and unexpected memories of events and places brought on by a smell, a picture or a melody.

One of the unambiguous findings of neuroscience is that our brains continue to grow and change throughout our lives and that the more activities that we do and the more experiences that we have, the larger and more complex our brains become. There is also very good evidence that exercise, particularly aerobic exercise is good for the brain. This is because exercise, keeps the blood vessels of the brain healthy, ensuring that the brain cells are well supplied with the oxygen and nutrients they need. Research shows that people who exercise regularly are 50% less likely to contract Alzheimer's disease.

Medina makes it quite clear in his response to a question about the merits of psychological testing such as IQ tests and Myers-Briggs-type tests that these are not based on the findings from studies in the neurosciences and that despite the claims by some, these tests are not based on "sound neurological principles". In fact he admits in his own words "to a certain grumpiness here",noting that most of the tests were developed long before we knew very much about how the brain processes anything. ■

References

[1] Different Voice – A conversation with brain expert John J, Medina, Harvard Business Review, May 2008

[2] John J. Medina, Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School, (Pear Press, 2008)

Medina's 12 Principles for Surviving and Thriving at Work, Home and School

Rule 1: Exercise boosts brain power

Researchers who studied two elderly populations that had different lifestyles, one sedentary and one active, found that exercise had a profound influence on cognitive scores; and executive functions, spatial skills, reaction times and quantitative skills were all positively affected. When the sedentary population became active, there was a vast improvement in executive functions and also an improvement in memory scores, particularly if the activity involved aerobic exercise. The reason for the improvements is linked to the improved oxygen supply to the brain.

Rule 2: The human brain evolved too

Our brains evolved in response to our need to survive in an unstable outdoor environment and to do so in nearly constant motion. It is the ability of humans to solve problems, to learn from their mistakes, to understand one another and to work collaboratively that helped them to survive - not the strength of their bodies. We therefore learn best in an environment where there are good relationships and which foster cooperation. Individuals do not perform well where they do not feel safe or where they feel misunderstood.

Rule 3: Every brain is wired differently

What you do and learn in life physically changes what your brain looks like – "it literally re-wires it" according to Medina. Not even twins have the same brains and there are therefore as many categories of intelligence as there are people. People's brains also develop at different rates and the brains of children are just as unevenly developed as their bodies. Medina is critical of the fact that a child's age is used to determine her grade group as this carries with it the assumption that the brains of children of the same age are at a similar stage of development.

Rule 4: We don't pay attention to boring things

What we pay attention to is profoundly influenced by memory. It is also influenced by our previous experience which predicts where our attention should focus. Culture also affects what we pay attention to. These differences affect how both adults and children perceive a given presentation. Our brains look to answer questions such as 'Can I eat it?', 'Will it eat me?', 'Can I mate with it?' and 'Have I seen it before?' and because of this pay attention to things such as emotions, threats and sex, irrespective of whom we are. The brain is also not capable of multitasking higher level tasks i.e. things other than basic functions like walking and breathing. Brains are sequential processors, meaning that they perform tasks in order one after the other. Large

fractions of a second are used when the brain switches tasks, which is why it is dangerous to talk on a cell-phone while driving. It is equivalent to driving drunk because cell-phone users are half a second slower at hitting the brakes than they would be if they were not using a cell-phone while driving. People who try to multitask are not more efficient than those who complete one task at a time and research shows that the error rate of those who "multitask" is 50% higher than if they performed one task at a time and that they take twice as long to do things.

Rule 5: Repeat to remember

The brain can hold only about 7 pieces of information and can do so for less than 30 seconds. To remember you need to re-expose yourself constantly to the information. To improve your memory, you need to encode it during its initial moments. To help remember things like people's names, link them to more information about them such as their eye colour or the clothes they are wearing. Although this seems contradictory, it is the links to other things that help us to encode the memory. Later repetition of earlier learning also helps. Tests on grade 3 learners conducted by the Universities of Seattle and Washington showed that those who repeated their multiplication tables in the afternoon did significantly better than those that did not.

Rule 6: Remember to repeat

Consolidating memory takes years, not minutes or hours and things that are learned in Grade 1 are not firmly set until about Grade 11. Research shows that repeats or re-learning material 90 – 120 minutes after it was initially learned is most effective. Medina suggests, therefore, that homework designed to consolidate what was learned at schools should rather be done in the afternoons at school rather than later at home. The best way to remember better is through repeated exposure to information at specifically-timed intervals. He also makes the point that forgetting allows us to prioritise events, sorting what is essential for our survival from the clutter of information that we are constantly exposed to through our senses.

Rule 7: Sleep well, think well

The brain is extremely active when we are asleep and the need for sleep may well be associated with the process of learning. Loss of sleep is incapacitating. It reduces our ability to pay attention and to execute functions, has a negative effect on our working memory, our mood, our quantitative skills, logical skills and even motor dexterity. The amount that we need varies according to a range of factors including age, gender, pregnancy and puberty. Napping is apparently normal and the brain prefers to nap about 12 hours after the midpoint of your sleep, which is why most people feel sleepy at about 15:00. Medina suggests that it is foolish

to schedule important meetings at this time. A study involving NASA pilots showed that a 26-minute nap improved their performance by 34%.

Rule 8: Stressed brains don't learn the same way.

The human brain is designed to deal with stress for short periods of time only – periods of 30 seconds to a few minutes. It does not cope well with prolonged stress which actually causes it to shrink, according to Medina. Stress has been shown to damage virtually every kind of cognition and stress over a long period of time has been shown to disrupt our immune response. Stressed individuals get sicker more often, their sleep is disrupted and they get depressed. Emotional stability at home is the single greatest predictor of academic success according to Medina.

Rule 9: Stimulate more senses

We learn best when all of our senses are stimulated. Smell helps stimulate our memory and research has shown that the smell of popcorn improves our ability to remember the details of a film by 10 – 50%. Research has also shown that those who learn in a multi sensory environment always do better than those in a unisensory environment and that their ability to recall detail endures for much longer, with the difference still evident 20 years later.

Rule 10: Vision trumps all other senses

Our brains are very adept at remembering pictures, far more so than text. This is because our brain sees text as a cluster of small pictures – the letters - which it must then identify and interpret. Text is therefore much less efficient than a picture. This has relevance for things like PowerPoint presentations which are often text-rich when they should rather be picture-rich. It also has relevance for the way we teach. Evidence shows that after three days we remember just 10% of the information that we hear. If a picture is added to illustrate the information, this increases to 65%.

Rule 11: Male and female brains are different

The differences between male and female brains express themselves mainly in terms of our emotions and social interactions and the way men and women respond to stress. There are, for instance, significant gender differences in the relative prevalence and severity of certain psychiatric disorders between men and women. Males are more severely affected by schizophrenia than females while females, have more anxiety, are more likely to suffer from anorexia and are more likely to suffer from depression than males.

Interestingly, the parts of the brain that respond to stress are different for men and women. When men and women were shown stress-inducing "slasher" films, the

Leadership
Strategies for school improvement

School improvement strategies need to focus on two key areas: the management of teaching and learning and the quality of classroom teaching if they are to make a difference in terms of pupil performance

Much of this issue and many of the past issues of *SM&L* have included articles on some of the many shortcomings of our public education system. We have also particularly and deliberately focused on the seeming inability of the majority of primary schools to devise and implement strategies which will improve the literacy and numeracy levels of the pupils they teach. Is it possible that there are significant numbers of principals who do not know what needs to be done to tackle the problem and are they served by officials from the district and provincial offices who are equally ignorant? From our own experience, from visits to schools, from hearsay evidence and from the reading we have done, we believe that this may well be true. We have also had a number of principals approach us for advice on school improvement strategies and particularly about the kinds of things that they need to report on when compiling a report on the professional management of their school for their SGB and Head of Department. The following guidelines are provided to help principals who may be struggling to develop a strategy to address this problem.

Step 1

The basic functionality of your school - Ask the man in the mirror

Stand in front of a mirror and pose this question to the person whom you see standing there "How functional is my school?" Thoroughly interrogate your responses, in the same way that a good public prosecutor would.

Below are some of the questions you should ask:

• Do the pupils of this school get the full 200 days of teaching that they should each year or are there some days when little or no teaching takes place at the school?

• Does my school start on time and end on time every day?

• Do teachers arrive at school before the start of the school day so that they are in their classrooms and ready to teach when lessons should begin?

• Do they arrive well prepared for the lessons of the day and knowing what they have to teach?

• Do the pupils arrive at school on time every day and do they have the materials that they need for the lessons of the day?

• Does teaching happen in every lesson or do teachers sometimes become involved in other non-teaching activities during lesson times? Examples of these are

things such as their own studies, school and other administrative work, union matters, marking and discussions with colleagues.

• Does the school have a feeding programme to help children who arrive at school hungry and is it effective?

• Do you as the principal, together with your SMT, have a system to monitor teacher and pupil attendance and late-coming?

• Are those who are frequently absent or late confronted about this and is action taken if it persists?

• Do you have a system for monitoring classroom teaching including such things as class visits, the checking of teachers' portfolios and of pupils' workbooks?

• Is there a system for monitoring pupils' assessment to ensure that it is of the appropriate standard and that pupils are assessed on a regular basis?

• Is there a system in place to ensure that pupils and their parents are informed if the pupil is not performing to a required standard?

There are many other questions that you could and should ask yourself, particularly if your school is one in which pupils are performing poorly or where there are problems with things such as teacher attendance and punctuality.

If your answer to all of these questions is not a confident "yes" then your first step to improving the performance of your school must be to fix these problems. This is because until the basics are fixed, everything else is largely a waste of time. There is no point in providing your school and teachers with additional resources if they are not going to be used effectively to improve teaching and learning.

We have made this the first point and stressed its importance because it would appear from information published by JET that the majority of schools in this country are not functional. Making sure your school is functional is primarily your responsibility as principal. It is about leading from the front in terms of your own behaviour and work ethic and setting standards and insisting that these are met. It requires hard work and a willingness to be assertive and confront those who do not perform. This is not always easy but is something that you have to do if you are a principal. It is in these tasks your qualities as a leader are measured and is what should set you apart from the rest of your staff.

Step 2

Knowing what you have – a resources audit

To develop an effective school improvement plan, you need to have a good understanding of the resources that are available to you. These resources can be grouped into three basic types: human resources, teaching and learning resources, and money. The value of money, of course, is that you can convert it into one or other of the first two.

Human resources

Your human resources are you and your staff, particularly your teaching staff. All the evidence suggests that the principal and the quality of the teacher in the classroom are the two most important determinants of pupil performance. It is therefore logical to assume that some of the reasons for the underperformance of the pupils at your school must be attributable to what you and your teachers are or are not doing. This is a troubling thought but until we accept that the poor performance of the pupils in our schools is our responsibility as principals and teachers and that it is affected by what we do, we are unlikely to see significant improvement in our schools. Answering the following questions will help you get a better idea of the status of your human resources.

• Do I and my teachers have the qualifications that we need to teach at the level at which we are teaching?

• Do those who teach literacy and numeracy have the specific subject knowledge they need to teach these subjects and do they also have the knowledge and skills they need to teach literacy and numeracy?

• Do I and my teachers stay abreast of the latest developments in the teaching of literacy and numeracy by reading professional journals, attending refresher courses and professional development workshops and by discussing strategies with teachers at other schools?

• Does the school have a policy or system in place which encourages and supports teachers who want to develop their professional skills?

• Do teachers visit one another's classes and/or meet on a regular basis to discuss what they are teaching and how they are teaching it?

Teachers should not be embarrassed if they are under-qualified or feel that they do not have the required skills. These are things that can be corrected, provided a teacher is committed and is willing to learn. As principal, it is your responsibility to find ways to make it possible for your teachers to continually grow and develop themselves as professionals. Learning teachers grow into good teachers.

Teaching and learning resources

Conduct an audit of the teaching and learning resources at your school that are available to your teachers. Divide these into two groups: fixed assets such as textbooks, photocopiers, computers, desks and overhead projectors; and consumables such as chalk, stationery, photocopy paper and pens. The fixed assets need to be listed in your school inventory, which should also indicate where the items are located in the school. Consumables should be stored safely under lock and key to be issued to teachers and pupils as and when they are needed.

If your focus is on literacy and numeracy, it is important to do an audit of the textbooks, readers, mathematical games, posters, computer software packages and other teaching and learning resources that are available for teachers and pupils. Once you know what you have you can go about building a set of age and grade-appropriate resources for each classroom so that there are sufficient sets for every child in the class or for pupils to work with in pairs or small groups. If the school has a library or resources centre, check the book stock and other resources to ensure that you know what materials are available and that they are correctly stored for easy retrieval. This is also a good time to check on how the library or resource centre is used. Ask the person in charge of the library to provide records of its use, including the number of times it is used by class groups and the number of books that are borrowed each week. If it is underutilised, the reason for this needs to be investigated and recommendations made to improve its usage.

Step 3

Set strategic goals

In their excellent book Intelligent *Leadership: Creating a Passion for Change*[1] Alan Hooper and John Potter . suggest the following approach to goal setting:

1   Decide what you want – be SMART (Specific, Measurable, Attainable, Relevant and Time-bounded). Some examples of SMART goals are given in the adjacent box

2   Write down your goals in a matrix. An example is given on page 15.

3   Cycle your goals through 'power questions'. Examples are given in a box on page 14.

4   Decide on the price you are prepared to pay to

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An example of a SMART Goal

By the end of 2009 every teacher will have been offered an opportunity to attend at least two professional development workshops or seminars, one on teaching literacy and one on teaching numeracy.

It is Specific, Measurable, Attainable, Relevant, Time-bound.

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reach the goal. This is not just about money: it is also about time, effort and energy.

5   Make a written project plan for each goal. This is the list of things that you need to do to achieve the goal. Start with the goal and the date when you expect to have achieved it and work backwards to identify the tasks and stages. Set dates and deadlines which need to be met for completing these tasks, as well as for each of the stages to ensure that is achieved by the desired date.

6   Do something to start the ball rolling as soon as possible.

7   Anticipate potential barriers to achieving the goal and decide how you will deal with these barriers. Plan right from the start how you will deal with things such as uncooperative teachers or funding short-falls.

8   Visualise what achieving the goal would be like in terms of what you would see, hear and feel. As the leader you need to have a very clear idea about what it is you are trying to achieve and why you are doing it. It helps you to sell the idea to the members of your team and to convince them that not only is it worth doing but that you are determined to do it.

9   Check your progress and make appropriate adjustments. At each decision point, ask yourself if your proposed course of action will take you towards or away from your goals.

10   Review your goal matrix regularly.

11   Focus on the end point, not the process. This is particularly important when you are faced with obstacles and will help you to overcome them.

12   Remember the Laws of Belief, Expectations, Attraction and Correspondence: If we believe strongly enough in a goal, we can achieve it; we produce what we expect to produce; we attract what we think about constantly; and we need to be consistent in terms of what we say we are going to do and our actual behaviour.

Hooper and Potter also make the following distinctions between effective and ineffective goals.

Effective and Ineffective Goals

Effective goals

•   indicate how much is to be accomplished and how well it is to be accomplished

•   are measurable in terms of quality and quantity

•   indicate who is primarily responsible for ensuring that it is achieved

•   forecasts an end result

•   are clear and unambiguous

•   make it clear when the end result is to be achieved

Examples of Power Questions for effective goal setting

(As suggested by Hooper and Potter)

■   What do I want to achieve?

■   How can I create two ways of representing my goal visually to support my goal related activity? (These are used to remind people about what you are trying to achieve and can be used to make cards to affirm people who have done a good job in supporting your goals)

■   Why do I want to achieve this goal?

■   How can I get myself real leverage to achieve this goal?

■   What benefits can I can by achieving this goal?

■   What pain would I avoid by achieving this goal?

■   When do I want to achieve it?

■   Is it realistic and relevant?

■   Is it attainable?

■   If I achieved it what would I see?

■   How will I feel when I have achieved it?

•   are realistic i.e. can be achieved 100%, taking all the circumstances of the situation into account, and the authority and ability of the person concerned

•   are challenging and likely to stretch people

•   are of sufficient magnitude to cover several 'action steps' and extraneous influences

Ineffective goals

•   do not specify any standard of performance

•   are vague and unspecified

•   omit placing responsibility on anyone

•   describe an activity without specifying an end result

•   are open to misinterpretation

•   are open-ended and without any time limit

•   are set unrealistically high, i.e. cannot be achieved in the circumstances

•   are likely to be achieved with minimum effort

•   are merely 'action steps'

Step 4

Develop Action plans

If the goal is to improve the literacy and numeracy scores of pupils, it could be formulated in the following way:

Our goal is to improve the mean scores in literacy and numeracy of the pupils of this school by 10% in the next Gr. 3 and Gr. 6 systemic evaluation tests conducted by the DoE. All teachers, under the leadership of the principal, are responsible for ensuring that this goal is met.

Strategies to achieve this goal will be:

1   More teaching time:

–   reducing the number of hours of teaching time lost through teacher absence and late-coming by 20% in 2009

–   starting school on time every day and not closing school early on more than two days a quarter, one of which will be the last day of the term

2   More knowledgeable and skilled teachers

Every teacher will be provided with an opportunity to attend at least two courses during the course of the year to improve his or her knowledge and skills in the teaching of literacy and numeracy.

3   More teaching and learning resources

–   School funds will be used to make sure that by 1 February 2009, every pupil has the stationery he or she needs and that in every class there are sufficient textbooks for each child to have his or her own textbook. (Responsibility: Principal and SGB)

–   By the end of 2009 there will be at least one complete set of age and grade-appropriate readers in every classroom.

More strategies can be added each should be further developed into a detailed action plan which lists all of the steps that will be needed to achieve the specified outcome.

Questions action plans must answer

The action plan must be able to provide answers to the following questions:

1   What must be done?

Be precise and provide as much detail as possible so that everyone knows exactly what must be done.

2   When must it be done by?

This is not only about the final deadline for delivery. It should also set deadlines that need to be met along the way to ensure that the goal is achieved.

3   Who must do it?

Name the person who has overall responsibility for ensuring that the project or action plan is put into operation and for ensuring that it delivers what it is supposed to deliver by the due date. If other people are to be involved, they must also be named and their exact responsibilities specified.

4   What resources are available?

If there is to be a budget, the amount must be given, as well as the name of the person who may authorise the expenditure. Other resources such as photocopiers, computers and e-mail access should also be listed. In some cases it is also important to stipulate when the person may do the work or when they may not do the work, such as during time when they should be teaching.

Putting together an improvement plan for a school is not a simple matter. It requires time and effort and also the cooperation of staff and of the SGB. In the end, however, it is the principal's responsibility to formulate the final planning document and to drive the process to ensure that it delivers on its promise. ■

References

[1] Alan Hooper and John Potter, Intelligent Leadership: Creating a Passion for Change (Random House, London, 2000)

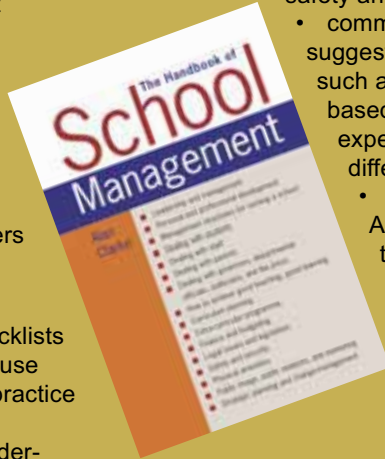| A simple example of a goals matrix			
Timescale	**Strategy 1** More teaching time	**Strategy 2** More knowledgeable and skilled teachers	**Strategy 3** More teaching and learning resources
Month 1	Draft policy on use of teaching time	Research into available courses and costs	Invite teachers to prepare a prioritised resources wish list with costs.
Month 2	Endorsement of policy by staff and SGB	Finalise list of approved courses and costs	Prepare budget based on wish list for SGB
Month 3	Implement and monitor policy	Submit costs to SGB for approval	Submit resources wish list to SGB

response of the amygdale, a part of the brain which has been shown to be activated by stress and which occurs in both the right and left hemispheres of the brain, was different in men and women. In men it was the amygdale in the right hemisphere that responded while in females it was the amygdale in the left hemisphere. The right amygdale interprets the crux of an event rather than the detail, while the left amygdale interprets the detail. Medina suggests that it is the ability of male and female humans working in tandem that allowed us to conquer the world because of our ability to understand both the crux and the detail of stressful events.

Rule 12: We are powerful and natural explorers

According to Medina, babies are good examples of how we learn and the importance of exploration in this process. Learning is most efficient when it is an active process involving observation, hypotheses, experiment and conclusion. Babies methodically explore objects, tasting, touching, banging, throwing and generally manipulating them to see what they will do. This is how the brain learns best - rather than through passive observation and repetition. ■

Reference

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