The *VALUE* of RESEARCH AND DATA ANALYSIS

All public schools in the country will have just completed the latest round of the Annual National Assessment (ANA) test. They will probably have heaved a collective sigh of relief that these tests are over for the year and will have moved on to their preparations for the final term of the 2014 school year. The learners' test scores from these tests will have been captured either in hard copy or electronically depending on the location of schools and the availability of internet access, with the information sent off to the provincial Departments of Education of the DBE for further collation and analysis. In every grade for each school a sample of scripts will have been sent off for external moderation, with this information used by the DBE as a way of ensuring that the school's results are a valid and reliable representation of learners' performance. In due course, probably at the start of next year, every school will receive an official report on the performance of its learners in each of the grades tested, which is likely to include some form of comment on the extent to which the learners' performance has changed relative to the previous year.

This may be all well and good but if principals are really interested in understanding what is going on in their classroom and the extent to which learners are learning what they are expected to learn they need to make greater use of this data. In the article 'Making the most of your 2014 ANA data' we have provided an example of how one primary school in Cape Town has captured its 2014 ANA data on a question-by-question basis using an Excel spreadsheet and then analysed this data in a way that will assist the principal and teachers in understanding just what the learners can and cannot do. You will see from the charts that were generated from this data just how informative this information can be. If you are interested in doing this same analysis for your school you are welcome to contact me and I will gladly email you the templates that we have developed to assist the schools that we are working with in this regard.

This edition also includes three other research-related articles. Regular columnist Erich Cloete makes a welcome return with his article drawn from recent findings from research undertaken by the University of Stellenbosch Business School. His article with the title 'Using research data to inform school leadership' reports on these findings and their implication for school leaders. There are also two articles that take a critical look at the quality and relevance of education research from an international perspective. The article 'What value educational research?' reports on the findings of a study that evaluated the quality of 9 000 research

reports and that found that just 79 of these studies were of sufficient quality for their findings to be used as a valid basis for policy and funding decision-making. The second article reports on the work of a consultancy that has worked mostly in the medical field, and that provides donors with advice on how best to direct their funding. The organisation does this on the basis of its analysis of reports from organisations seeking funding support, to determine the extent to which their interventions are having a meaningful impact. The consultancy, Giving Evidence, has extended its work to the field of education but has found that the kind of evidence that is being generated in education is not only largely irrelevant but also mostly of questionable quality. Their publication 'Getting better: What education systems in less developed countries can learn from evidence-based medicine' outlines their proposals for addressing this shortcoming.

In conclusion, there is an article that is, at least in part, a celebration of the Springboks' rare victory over the All Blacks at Ellis Park on Saturday 4 October. In describing the work and mindset that had helped the team to achieve the victory Springbok captain Jean de Villiers is reported to have said that the team is driven by the simple philosophy

'Know your job, do your job'. How good could our education system be if all involved adopted this same philosophy?

Finally, it is with regret and a little sadness that we must inform our readers that School Management & Leadership will cease publication at the end of this year. We are committed to providing our current subscribers with the full 10 editions for the year that they have paid for but Volume 8 Number 10 will be the last. When I launched SM&L in 2007 I always realised that its chance of survival in the longer term would require backing from a publisher and my replacement as writer and editor. Our move to the Juta stable was an attempt to make this work and I was grateful to Juta for their faith in the publication. However, after taking a hard look at where we are at the moment and a realistic evaluation of the increasing demands on my time from my consulting work, I have had to accept that I will not be able to devote the necessary time to keep the publication going, hence the decision to cease publication at the end of this year.

Alan Clarke
Founder and General Editor

# Making the most of your
2014 ANA RESULTS

We have written in the past about the opportunities that the Annual National Assessment test provide for schools, and how, if school leaders are prepared to take the trouble to capture learner performance data question by question, they will have access to a data source that will provide a valuable insight into not only learner performance but also teaching quality and curriculum coverage.

In an effort to demonstrate just how useful this data can be we have used the data captured by a primary school located in one of Cape Town's long-established townships. The predominant language of this township is isiXhosa but the language of teaching and learning of the school is English except in the Foundation Phase where it is isiXhosa. This is a school that we have worked with for several years and that on the surface at least appears to

be well run. The buildings and grounds are well maintained, the grass is cut, hedges are trimmed and classrooms are neat, clean and mostly litter and graffiti free. It has a working computer room and a small library, which is well stocked and has a part-time librarian, has been established in a converted container. Children have textbooks and there are effective systems in place to deal with late-coming and absenteeism. The teachers appear to be diligent and one of the larger retail chains is funding an after-school programme to assist learners in the Intermediate Phase with language (English FAL) and Mathematics. Although the school is located in an established township where most of the houses are solid structures built from bricks and mortar and with many being revamped by their owners, the majority of the children at the school are drawn from the shack lands at the periphery of the township. The principal is hardworking and keen

to improve the quality of education that his school provides and, more importantly, the performance of learners. An example of this commitment is the fact that he chose to capture the data himself for this project because he felt that the process of capturing the data would help him to better understand what was happening in his classrooms.

We have selected the charts that are presented below to demonstrate how our analysis of the raw data can be used to highlight problem areas. But identifying these problem areas is only the beginning of the process that needs to be followed. Addressing the problems identified will of necessity require further investigation into their root cause followed by carefully developed strategies developed in collaboration with the teachers involved that address the underlying problems in a sustainable way.

ANA 2014: Chart 1
Grade 3 Home Language: % of learners who scored 0 by question
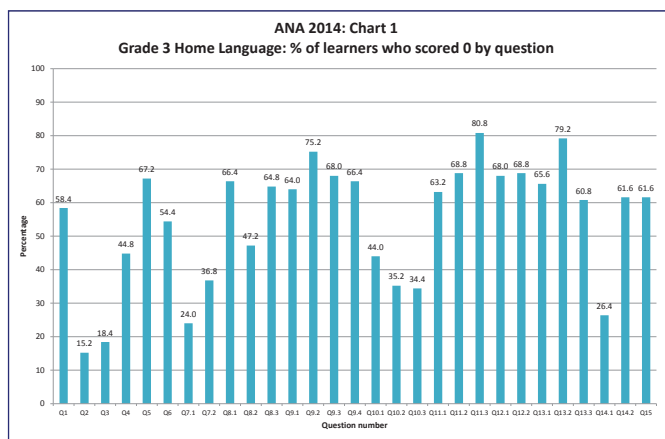
The purpose of Chart 1 is to help teachers to identify the questions in which learners performed poorly and to look for reasons that will help to explain their poor performance. While there are several questions where this school's Grade 3 learners performed poorly, for example questions 11.1, 11.2 and 11.3 where the percentage of learners who scored 0 was 63,2%, 68,8% and 80,8% respectively, the reasons for this may have more to do the wording of the question than the learners' knowledge of punctuation. It is the poor performance of learners in question 15 that should be of real concern to the school. Question 15 counts six marks, not just one or two marks like most of the rest of the questions and reads as follows:

'Write a paragraph of at least 8 sentences in total about friends. Make sure that you use the correct punctuation, grammar and spelling. Do not number your sentences.'

A detailed analysis of how the Grade 3 learners performed in this question is illustrated by Chart 2, which shows that 77 of the 125 learners were not

ANA 2014: Chart 2
Grade 3 Home Language Question 15: Distribution of learner marks out of 6
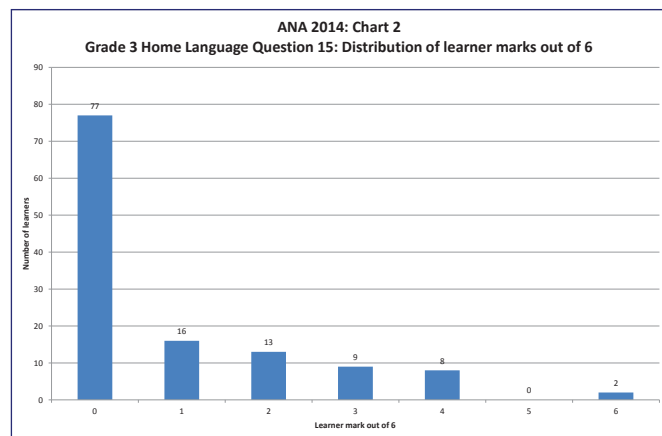
able to score a single mark for the question and just two learners were able to score the full six marks out of six. Although we have provided these questions from the English version of the 2014 ANA Home Language question papers, these children, for whom isiXhosa is their home language, were working from the isiXhosa version of the same paper. These results suggest that there may be a deeper underlying problem here that needs to be investigated and the first place to look should be the learners' exercise books to determine if their teachers are giving them sufficient practise in writing paragraphs of this kind.

ANA 2014: Chart 3
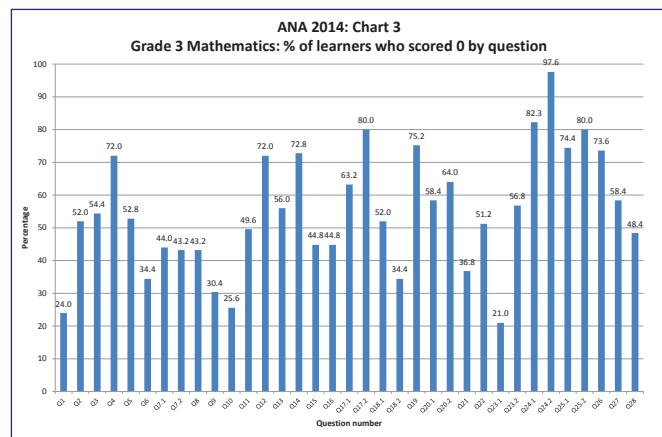**Grade 3 Mathematics: % of learners who scored 0 by question**

Chart 3 provides a question-by-question analysis of the performance of these same learners in Mathematics and, once again, the results should be a huge cause for concern. The Grade 3 ANA Mathematics paper consisted of 35 questions in total (if we include all subsections). More than 50% of learners scored 0 for 21 of these questions and more than 70% of learners scored 0 for 10 of these questions. This clearly points to a massive failure on the part of the teachers to teach learners basic mathematical concepts. While in the case of the language paper the question of poor learner performance may be attributed to lack of classroom practise, the reasons for the poor performance of learners in Mathematics my well

be symptomatic of an inadequate understanding of basic mathematical concepts (number sense) by the teachers of these learners. This may well be exacerbated by teachers not devoting sufficient time to mental maths drills and practise in basic calculation exercises.

ANA 2014: Chart 4
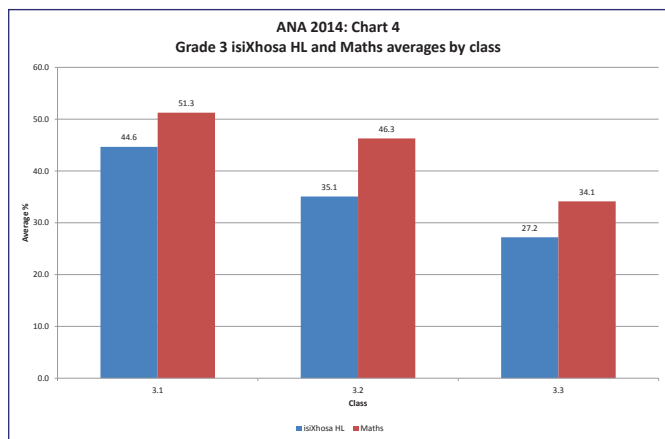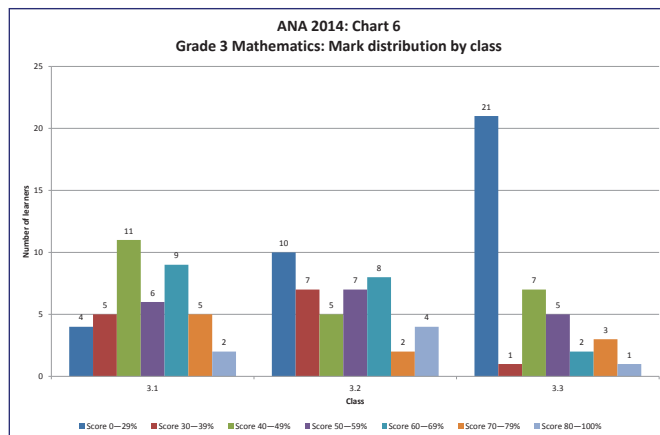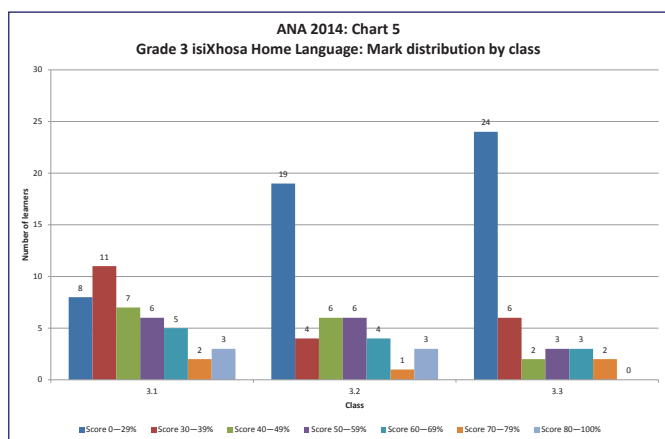**Grade 3 isiXhosa HL and Maths averages by class**

Chart 4 illustrates how the three different classes performed, remembering that in the Foundation Phase learners are taught all subjects by a single teacher who may not have specialist training in any of the subjects that he or she teaches. The chart illustrates very clearly that the learners in Class 3.1 performed better in both language and Mathematics than those in Class 3.2, who in turn performed better than those in Class 3.3. The three classes in this grade have not been intentionally streamed, so once again the analysis provided by the chart points to the need for an investigation as to why these differences have arisen, followed by the implementation of some form of carefully structured support programme to address the problem. While the presentation of this kind of data may be a sensitive issue it would be wrong to ignore it because one or more teachers may be hurt or offended by its implications. The issues of inadequacy have to be addressed in the interests of the learners and the sooner we tackle the problem the sooner we can rescue our schooling system from its current failings.

ANA 2014: Chart 5
Grade 3 isiXhosa Home Language: Mark distribution by class

ANA 2014: Chart 6
Grade 3 Mathematics: Mark distribution by class

Charts 5 and 6 show the mark distribution of this same group of learners by class for isiXhosa Home Language (Chart 5) and Mathematics (Chart 6). Both charts reinforce the message of Chart 4 that there are major problems in Class 3.2 and even bigger problems in Class 3.3, where 24 learners scored less than 30% in isiXhosa Home Language and 21 scored less than 30% in Mathematics.

Charts 7, 8 and 9 provide an analysis of similar data for the school's Grade 6 classes and appear to show that the teachers in the Intermediate Phase are managing to address some of the shortcomings that the data depicts in the Foundation Phase. The caution, however, is that these are not the same learners and that it will only be possible to get a proper understanding of what is really happening at the school once sufficient data has been captured to track learner performance across the school over a number of years. This is something that we hope to do.

ANA 2014: Chart 7
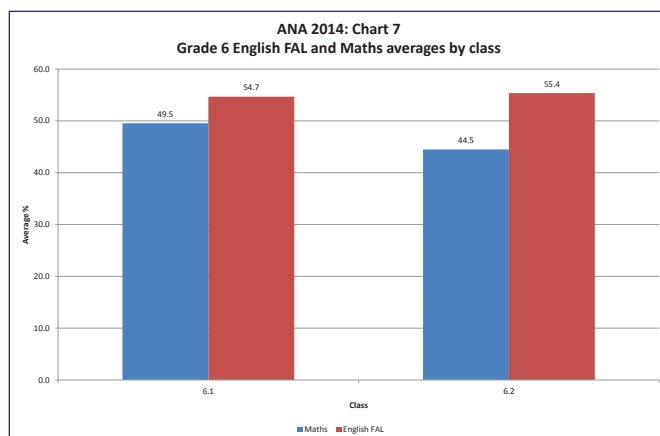**Grade 6 English FAL and Maths averages by class**

Chart 7 shows the class averages for the two Grade 6 classes in English First Additional Language and for Mathematics. The reason that there are only two classes in Grade 6 relates to the fact that the school's staff establishment forces the school to reduce the number of classes from three to two in Grades 4 to 7 together with a resultant increase in class size in these grades. The first thing of interest to

point out is that the class averages in both Maths and English FAL are better than those in Grade 3. It is also clear that the performance of learners in these two classes is relatively similar.

ANA 2014: Chart 8
Grade 6 English FAL: Mark distribution by class

ANA 2014: Chart 9
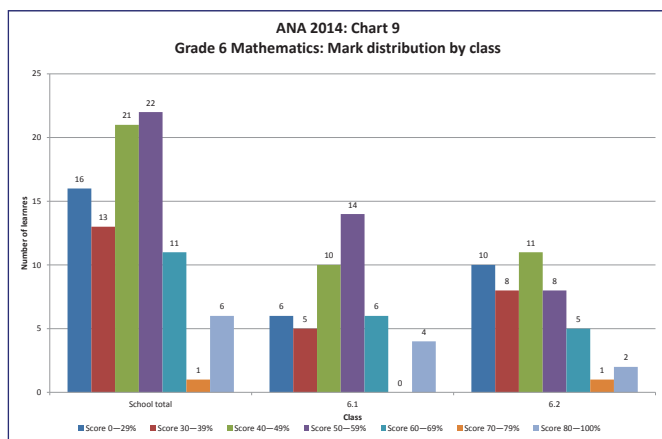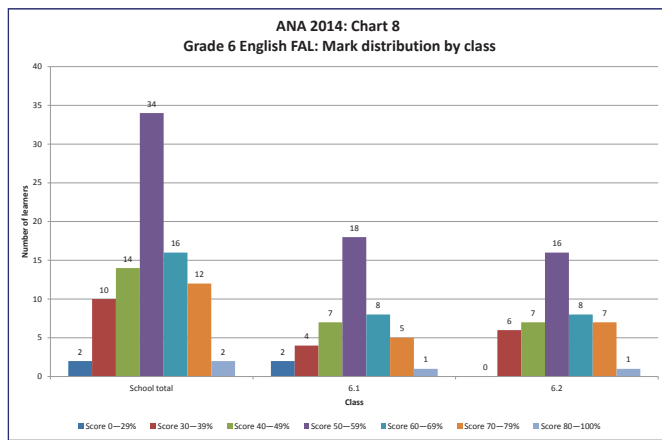Grade 6 Mathematics: Mark distribution by class

Chart 8 and 9 illustrate the mark distribution for each of the two Grade 6 classes and for the grade as a whole. The picture that emerges is that these results are significantly better than those of the Grade 3s. There are just two learners who scored less than 30% in English FAL and 16 learners who scored less than 30% for Mathematics. Pleasingly, there are also a number of learners who are performing exceptionally well – six with 80% and more in Mathematics and two with 80% and more in English FAL.

We hope that this brief overview of what schools can learn from a thorough and detailed analysis of their ANA results will encourage you to dig into the data of your own school and to use it to better understand what is happening in your classrooms both good and bad. In the case of the school whose results have formed the basis of this article, the school is in the process of capturing the ANA data from every grade. Once the data has been captured and analysed the results will be used, not only to unpack some of their failings, but also to benchmark their own internal results.

> If any of our readers would like copies of the Excel templates that we have developed for this purpose please feel free to email me at editor@ednews.co.za

Using RESEARCH DATA to inform school leadership

Written by Erich Cloete

There is abundant evidence to support the positive impact and influence good school leadership has on school success, which highlights the importance of developing school leaders and building their capacity. This is why many countries continue to place strong emphasis on the development of their school leaders.

In this article we consider new research on leadership and management carried out by the University of Stellenbosch Business School, and identify what we can learn from this research and how we can apply what we have learnt to enabling our school leaders to be good leaders in

their schools. The study, the USB-ED Management Index,[1] undertaken by Dr Carly Steyn and Dr Diane Bell, is a first of its kind in South Africa. It is based on the Ashridge Management Index, which has been published regularly in the United Kingdom over the past decade, and provides a detailed exploration of key leadership and organisational challenges facing South African managers. It is, therefore, a valuable indicator of what South African organisations can improve on. The management index report, researched by means of a survey, has ten key themes of leadership across a representative section of the public and private sectors in the South African economy and summarises the key

messages that have emerged from the study. Given the universal nature of leadership, these findings are also applicable to schools. Although the study does not provide solutions to the findings, it provides plenty of information that management teams can reflect on and benchmark themselves against.

The USB-ED Management Index also compares the information gathered with the most recent Ashridge Management Index, released in 2013. It is interesting to see that the findings of the two indexes are generally in line. A few interesting aspects of the research that principals would be able to use to improve the schools they manage, as well as their own practices, are briefly discussed below.

Motivation

The index reports on different aspects of motivation. It indicates the ranking of motivational factors at work, comparing the top five motivators by age group, and also compares personal versus organisational motivators. Challenging or interesting work is regarded as the most important motivational factor. Apart from managers in the under-30 age group, who indicated that the opportunity to continually learn and develop skills and knowledge is the most important factor, all the other age groups from 31 years of age and older indicated that they preferred challenging and interesting work. The motivational factor that ranked second in importance is being treated with respect, followed by the opportunity to continually learn and develop skills and knowledge, knowing that decisions have an impact on the organisation, the opportunity for employees to use their creative abilities, working in an innovative environment with performance-related incentive schemes.

Job security, working for an organisation that takes social and environmental issues seriously, formal recognition of success, regular feedback on performance, working with like-minded people and a high basic salary are regarded as the least important factors that motivate people.

It is interesting to see that what many organisations and schools offer in terms of motivational factors, does not match personal needs. Organisations offer and regard respect, job security, performance-related pay, working for a leading organisation and working in a pleasant environment as the most important motivators. Challenging and interesting work, which is seen by employees as the most important motivator, is regarded as not so important and is ranked only number 11 on the list of 19 motivators that companies offer to their employees.

The data further suggest that teachers will be more motivated if schools and school leaders offer creative learning environments in which they can

function. This could lead to more effective schools. Creative learning environments are not limited to time or space, but comprise a variety of support systems that take into consideration the ways in which teaching and learning take place as well as the unique learning needs of each and every learner. To be prepared for the world of the 21st century, teachers and learners need to be inspired. School leaders and school governing bodies can provide the framework or atmosphere necessary to encourage teachers to become intellectual risk-takers and creative problem solvers. School leaders need to praise teachers for generating ideas and encourage innovative thinking, and they must challenge teachers to push further to refine their most unique ideas into high-quality projects. The creative learning environment is complemented by the third most important motivational factor, which is the opportunity to continually learn and develop skills. This fits very nicely into the newly Continuous Professional Teacher Development System (CPTDS) that has been implemented in 2014 for principals and deputies and which will be implemented from 2015 and 2016 on post levels two and one respectively.

Fairness and organisational trust

Looking at data provided by the survey it seems that there is a clear distinction between the perceived levels of trust in the private sector and those in the public sector. The public sector lags behind the private sector on a number of indicators, the most notable of these being organisational trust. Only 62% of managers surveyed believe that a strong culture of trust exits in their organisation. Guidelines for school leaders to improve trust at all levels include the following:

• Be transparent and communicate effectively. Transparency means to provide enough information for teachers to feel that they are receiving the full picture and not just the parts that top management would like them to know.

• Communicate the direction of the school effectively through all levels.

• Share information freely as this builds trust.

• Deliver a consistent message.

• Be honest, truthful and open at all levels.

• Walk the talk, make time to listen, let staff provide open feedback.

• Make trust a value in the school.

Learning and development

The index reports that organisations can do more to provide managers with appropriate learning and development opportunities. Only 54% of

the managers surveyed felt that sufficient time is allocated to their learning. The data indicates that in-company courses run by in-company training, open-enrolment courses run by external providers, customised courses run by external providers and degree programmes are most used, although they are not necessarily the most effective. The most effective approaches, as indicated by the managers, are customised courses run by external providers, qualification programmes, corporate university and external coaching. Although 22,4% and 28,8% managers respectively indicated that they participated in internal and external coaching activities, 70% of the managers surveyed were of the opinion that their own development would be enhanced by a personal coach.

The researchers also tried, through the survey, to identify the skills and competencies that are essential to the managerial role. They found problem solving to be the most important competency. Self-management and strategic thinking were both ranked second followed by leading a team and decisiveness. Creative thinking, financial management and managing technology were regarded as the least important. This is interesting to note especially with regard to creative thinking as a skill because a creative environment is actually indicated as a motivator in the survey.

Engagement and organisational pride

The data suggests that the majority of managers believe their organisations are well placed to address the challenges of the 21st century. They feel good about the levels of employee engagement and believe their organisation is a good place to work and they would therefore recommend it as a preferred workplace. School leaders need to reflect and look critically at the schools they manage and determine to what extent their actions and practices encourage high levels of engagement and equip staff members with the necessary skills. It is a well-known fact that high levels of engagement lead to joyfulness, which in turn improves productivity. When this happens most employees will perceive their workplace as a place where they would want to be.

Leadership

We know that leadership factors such as effectiveness, trustworthiness, support, purpose and direction are key elements in any organisation. The index indicates that most managers, in organisations, believe that all is going well with regard to these factors. It seems, however, that effective communication is an area that requires development. Approximately only two-thirds of the managers indicated that their immediate managers spend sufficient time communicating with them and even fewer believe that their managers communicate clearly. Managers indicated further that they believe top management spends insufficient time communicating with staff. These are important factors to look at especially from a leadership perspective, as time spent communicating with staff members is time well spent. It is through communication that leaders connect and engage with staff, and once connected it is much easier to have a positive influence on individual members.

Change management

In our opinion, this is an aspect that needs ongoing attention at all management levels in schools. Change is often so subtle that the opportunity to manage it is sometimes not spotted. Some principals overlook the importance of change and valuable opportunities to strengthen the school and teach individual staff members about change are lost. The data in the research project indicates that only 53% of managers believe that leaders in their organisations are well developed to lead change well and only 64% are of the opinion that the leaders in their organisations have the skills they need to lead change well.

This discussion has highlighted only a few aspects of the USB-ED Management Index 2013/2014 and suggested some ideas for possible application by school leaders. The study contains much more valuable information that could be of use for school leaders who would like to improve their leadership practices. The full document is available from the University of Stellenbosch Business School and can be purchased at a price of R1 300.

REFERENCES

1. USB-ED Management Index 2013/2014, Dr Carly Steyn (PhD) and Dr Diane Bell (PhD), University of Stellenbosch Business School.

What VALUE educational research?

It was while reading the pdf version of the publication 'Getting Better: What education systems in less developed countries can learn from evidence-based research' that I came across a reference to a research paper with the title 'School Resources and Educational Outcomes in Developing Countries: A Review of the Literature from 1990 to 2010',[1] which made me aware of just how flimsy some of the research findings are that are used to justify state spending on education projects touted as drivers of improved learner performance.

The authors of the paper, Paul W. Glewwe, Eric A. Hanushek, Sarah D. Humpage and Renato Ravina, searched both the economic and the educational literature in an effort to identify which specific school and teacher characteristics (if any) appear to have a strong positive impact on learning and time in school. Starting with more than 9 000 studies, they carefully evaluated the quality of each, eventually whittling them down to just 79 studies that they considered to be of sufficient quality for their findings to be used as a valid basis for policy and funding decision-making. These 79 studies where then subject to more rigorous vetting in terms of the econometric methods used. This process reduced the number further leaving just 43 studies that the authors considered to be 'high quality studies'. Of these 43 just 13 used randomised trials, which are considered to be the methodology that is most rigorous in determining the relationship between two or more variables.

The authors of the research are all economists and the purpose of the research was to gain greater clarity on the factors that have the greatest influence on educational outcomes, more particularly on learner performance. Solid evidence and a good knowledge of what works and why, in terms of educational outcomes, makes it possible for policy-makers and funders to use this knowledge to direct spending to those school improvement processes that have been shown to lead to better results.

There is strong evidence from across the world that education improved workers' productivity and that increased productivity results in better income for these workers. There is additional evidence that shows that improved education also results in improved health and lower rates of crime and, at a country level, in increased economic growth. Good education matters and it is understandable that economists and governments are keen to use education to leverage greater prosperity for their citizenry.

It is because of this relationship between education and prosperity that governments across the world have increased spending on education. The authors note that since 1980 government expenditure in real terms has doubled in Latin America and Sub-Saharan Africa, trebled in the Middle East, increased more than fivefold in East Asia and by nearly eightfold in South Asia. Yet despite this massive increase in expenditure there has been little improvement in learner performance outcomes. This does not mean that there have not been improvements in other educational outcomes. In most of the developing world over this period there have been very significant increases in the proportion of children enrolled in school, particularly in primary schools. There have also been dramatic increases in the number of schools built – one of the factors that have resulted in greater enrolments, simply because it is easier for children to go to school when there are more schools.

In their paper the authors group the factors drawn from the 79 studies into three groups that we have listed together with the subsets of each as set out in the paper. We have included the number of studies that included that factor as a variable, and the generalised findings of those studies. We have also provided the results for the subset of 43 studies that the authors characterised as 'high quality studies' and of the 13 studies that took the form of randomised control trials (RCTs).

	Variable	All 79 studies	43 High quality studies	RCTs
1	**Infrastructure and pedagogical supplies, which include the provision of:**			
1.1	Textbooks and workbooks	21 Mostly positive	8 Inconclusive	2 No significant effect
1.2	Desks, tables and chairs	11 Almost all positive	4 All positive	–
1.3	Computers and electronic games	8 Mostly positive	6 Ambiguous	Inconclusive
1.4	Electricity	6 Mostly positive	3 No significant effect	–
1.5	Blackboards and/or flipcharts	6 Mostly positive	3 Positive/Ambiguous	No significant effect
1.6	Libraries	6 Mostly positive	3 Mostly positive	–
1.7	School buildings with a solid roof, walls and floor	4 Mostly positive	4 Mostly positive	–
2	**Teacher and principal characteristics, which include:**			
2.1	The educational level of teachers	24 Mostly positive	6 Inconclusive	–
2.2	The experience of teachers	20 Positive/Ambiguous	6 Inconclusive	–
2.3	Teacher knowledge of the subject they teach	9 Mostly positive	5 All positive	–
2.4	Teacher gender	11 Inconclusive	2 Inconclusive	–
2.5	Teacher in-service training	11 Mostly positive	3 Positive/Ambiguous	–
2.6	Professional qualification of teachers	2 Positive/Ambiguous	–	–
2.7	The experience of principals	2 Mostly positive	–	–
2.8	The educational level of principals	2 Inconclusive	–	–
3	**School organisational factors, which include:**			
3.1	Pupil–teacher ratio	29 Negative/Ambiguous	14 Negative/Ambiguous	1 Negative
3.2	Teacher absenteeism	5 Mostly negative	2 All negative	–
3.3	Teachers' assignment of homework	5 Mostly positive	–	–
3.4	Provision of meals to pupils by the school	4 Positive/Ambiguous	2 Positive/Ambiguous	1 No significant effect
3.5	Multi-grade teaching	4 Inconclusive	2 Inconclusive	–
3.6	Hours of the school day	4 Positive/Ambiguous	2 All positive	–
3.7	Tutoring (after school hours)	3 Positive/Ambiguous	2 All positive	1 Positive
3.8	Teacher salaries	3 Almost all positive	–	–

3.9	The use of contract teachers	2 Positive/Ambiguous	2 Positive/Ambiguous	1 Positive
3.10	Expenditure per pupil	2 Inconclusive	–	–
3.11	The cost of attending school (for pupils)	2 Inconclusive	–	–
3.12	Total school enrolment (i.e. the size of school)	2 Inconclusive	–	–
3.13	The use of group work	2 Mostly positive	–	–
3.14	Teachers provide learners with examples of work	2 Inconclusive	–	–
3.15	Pupil attendance	2 All positive	–	–
3.16	Parent follow-up	2 Mostly positive	–	–

In their conclusion the authors' make the following point:

'Perhaps the clearest finding is that having a fully functioning school – one with better quality roofs, walls or floors, with desks, tables and chairs, and with a school library – appears conducive to student learning. Of course, these attributes may partially signal an interest in, and commitment to, providing a quality education. On the personnel side, the most consistent results reflect having teachers with greater knowledge of the subjects they teach, having a longer school day, and providing tutoring. Additionally, and again unsurprisingly, it makes a difference if the teacher shows up for work; teacher absence has a clear negative effect on learning.'

NOTES

1. Paul W. Glewwe, Eric A. Hanushek, Sarah D. Humpage and Renato Ravina School Resources and Educational Outcomes in Developing Countries: A Review of the Literature from 1990 to 2010, Working Paper 17554, National Bureau of Economic Research, Cambridge, Massachusetts, October 2011. The paper can be downloaded from http://www.nber.org/papers/w17554

Where is the EVIDENCE?

Public education in most countries is a large and unwieldy beast and one that appears to stubbornly refuse all efforts to change its ways and improve the quality of its service. Our own public education system is no different and has shown little improvement over the past two decades despite significant increases in spending and the introduction of other interventions directed at improving learner performance. It is also not only government that is investing heavily in education. There are also any number of aid agencies and not-for-profit organisations investing time, money and 'expertise' in an effort to improve the quality of schooling and, more importantly, better outcomes in terms of learner throughput and learner performance.

The limited success internationally of education-related interventions has attracted the attention of Giving Evidence, a consultancy that helps donors and charities to understand the impact of their work. Through its work Giving Evidence promotes charitable giving based on sound evidence. Much of its work is focussed on helping charities and donor organisations to appreciate what evidence is available, what additional evidence may be

needed to properly assess the impact of their contributions or work, as well as what evidence is not worth gathering.

Giving Evidence's initial work was mostly associated with medicine, partly because evidence is such a central tenant of medical sciences. Examples of the use of evidence include the diagnostic use of a patient's temperature and pulse rate by general practitioners when visited by a patient, to the extensive research undertaken by pharmaceutical companies in their search for new and better drugs and the follow-up testing regimes that they need to follow to demonstrate both the efficacy and the safety of these drugs before they can be brought to the market and made available for general use.

Caroline Fiennes, the founder of Giving Evidence, teamed up with Liora Wulf to examine the extent to which the work that Giving Evidence had done in the medical field could be used in education, and one of the products of their collaboration is the document 'Getting Better: What education systems in less developed countries can learn from evidence-based medicine',[1] which was first published in May this year. The aim of the 'Getting Better' project is to identify 'institutions, skills, resources, relationships, culture and funding systems' that can be used to improve the use of evidence in education. More specifically its aim is to change the behaviours of those involved in education, including policy-makers and teachers, in a way that ensures that practice is based on good evidence.

The authors of the document stress the need for an 'evidence system' in education, which they define as a system that covers not only how evidence is produced and its validity but also how this evidence in disseminated and used. There is a need they suggest for an evidence-based system similar to that used in medicine, which they define as the 'conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients'.

Based on their research, the authors make a number of 'emerging' recommendations, which they believe could improve the evidence system in education and which, in turn, could lead to improved outcomes for students. A brief summary of each of these recommendations is provided below.

1. Goals of education
1.1 There is a need to clarify the goals of education beyond literacy and numeracy.
1.2 Funding needs to be provided for studies that track interventions to their intended effects. They give as an example 'life-time earnings'.

2. Production of evidence
2.1 Provide funds to assess and improve the quality of education research by non-academics.
2.2 Increase funding to produce better and more comprehensive baseline date in education.
2.3 Make it easier for NGOs to find, assess and use research findings that may be of relevance to their work. This may be best achieved by creating a centralised repository of education research.
2.4 Improve the quality of research by NGOs and non-academics by making funds available that could be used to fund partnerships between NGOs and professional researchers.
2.5 Develop mechanisms to ensure that research is undertaken on issues prioritised by educators, policy-makers and communities.
2.6 Facilitate greater interaction between the two 'tribes' of researchers. The two tribes that the authors identify are the educationalists, i.e. those looking specifically at school-related issues, and the developmental economists whose interests lie in the economic impact of education.
2.7 Increase funding for research into the effectiveness of interventions. This recommendation is based on the authors' findings that there is very little available research on this topic.

3. Dissemination of evidence
The three recommendations on the dissemination of evidence all stress the importance of increasing the accessibility of research to teachers, policy-makers and NGOs working in the field.

4. Use of evidence
4.1 Involve users in prioritising research topics as a means of ensuring that research is relevant and useful.
4.2 Establish structures and systems that can be used to guide and train funders about the differing kinds of evidence and of the extent of their validity and reliability.
4.3 Establish structures and systems that can assist practitioners in identifying and making sense of evidence that may be of use to them in their work. This could include the use of checklists, which have proved to be very effective in medicine. An example of this kind of checklist in medicine is one used in Karachi (India), which included the use of soap when washing hands and which resulted in 50% decline in the incidence of diarrhoea amongst children.

4.4 Examine the possibility of using binary conditions in education. These are questions that ask the user to make a series of choices between two options and that are often used in medicine as an aid to diagnosis. These kinds of binary-choice options could be used to assist teachers in identifying weaknesses or gaps in the knowledge and skill set of individual children or in class groups to help focus remedial interventions to address these.

Taken as a group these recommendations provide a helpful and refreshing view of education, partly because they are the product of the work of people who have mostly worked from outside the broader education sector. However, in our view, it is their comments about a number of specific differences in the way in which educational and medical research is focussed and used that we found most thought provoking. Some examples of these are described below.

The nature of the goals of education and of medicine

The authors note that in medicine most of the goals are articulated as outcomes. So, for example, the Millennium Development Goals for medicine include reduced child mortality, improved maternal health and the combating of HIV/Aids, malaria and other diseases. In the case of education these goals are mostly inputs and include such things as enrolment in primary education, which while this may be laudable in itself, tells you nothing about the likely outcome of that enrolment. Although not specifically mentioned, South Africa is a good example of the consequence of a goal formulated in this way. Close to 100% of children who enter primary school go on to complete seven years of primary education with almost the same percentage completing nine years of schooling, yet at the end of those nine years the proportion of those who perform at the requisite level in language and mathematics is less than 50% in language and less than 10% for mathematics, if our Annual National Assessment results are used as the benchmark. A direct result of this failure is the massive exit from the system of those children for whom nine years of schooling has provided very little benefit.

One of the examples that the authors use to justify their contention that the use of 'input' goals is problematic comes from the work of Professor Karthik Muralidharan of the University of California, who noted that 'Improvements in school quality as measured by inputs has improved considerably in the last decade … For instance, pupil-teacher ratios have fallen nearly 20%. However, inputs have not translated into improvements in learning

outcomes, which may be partly explained by the fact that education policy in the last decade has not prioritised learning outcomes.'

One other comment by the authors in relation to the manner in which goals are articulated in education will also strike a chord with principals and educators in this country – 'The abandonment of learning as a goal is perhaps clearest in cases where teachers are required to follow the curriculum irrespective of whether pupils are keeping up or learning anything. India's Right to Education Act obliges teachers to complete the curriculum every year, with no consideration or incentive to ensure that children are benefitting.'

An attempt to produce learning indicators that can be used to track performance in education, has been made by a group known as the Learning Metrics Task Force, which is based at the Brookings Institution in Washington. They propose the use of the following seven:

- **Learning for all:** This indicator will combine measures of completion rates in primary schooling and reading proficiency at the end of primary schooling.

- **Age and Education matter for learning:** This indicator will measure timely entry, progression, completion of schooling, and population-based indicators, to provide information on those who enter, progress and complete their schooling.

- **Reading:** This indicator will measure foundational skills by Grade 3 and proficiency by the end of primary school.

- **Numeracy:** This indicator measures basic numeracy skills by the end of primary school and proficiency by lower secondary school.

- **Ready to learn:** This indicator measures acceptable levels of early learning and development across a range of domains at the time when a child enters primary school.

- **Citizens of the world:** This indicator measures the extent to which young people (the youth) can demonstrate competence in the values and skills they need to succeed in their communities, countries and the world.

- **Breadth of learning opportunities:** This index would assess exposure to learning opportunities across all seven domains of learning.

The seven domains of learning identified by the Task Force are:

- Physical well-being
- Social and emotional well-being
- Culture and the arts
- Literacy and communication
- Learning approaches and cognition
- Numeracy and mathematics
- Science and technology

The authors make some important points about the goals of education and why they are contested, all of which are relevant for South Africa. These include the fact that the schooling system is, in many ways, geared to feed post-school education rather than the broader needs of the individual, the labour market and the nation as a whole. As an example goals linked to labour market needs could include such things as life-time earnings, productivity and economic efficiency. Goals based on social outcomes, on the other hand, could include such items as individuals who are less likely to become involved in crime, or who would require less social support or even a willingness to vote.

Clarity in defining the goals of schooling is clearly an essential starting point because it is only possible to measure the extent to which goals are achieved if there is certainty about their nature. Once these goals are clearly articulated two things become possible:

- Assessment systems can be developed to measure the extent to which these goals are being achieved.

- Research can be directed at determining which kinds of processes are most efficient at achieving these goals.

Perhaps it is time for our education system to be far more specific about the kinds of knowledge and skills that children should have mastered at each stage of the schooling system and less about the specifics of what teachers should be teaching each day. Once these goals have been defined it should be possible to provide examples of teaching best practice, founded on solid research, that is most efficient at ensuring that learners acquire the knowledge and skills they need within pre-established time frames.

'Getting Better' provides education with some useful lessons from the medical field, about defining goals and about focussed research. We just hope that those involved in developing educational policy and in education research learn from a field with which it has much in common.

NOTES

1 Caroline Fiennes and Liora Wulf, 'Getting Better: What education systems in less developed countries can learn from evidence-based medicine', May 2014. *Getting Better* is a publication of the charitable consultancy Giving Evidence. For more information go to http://giving-evidence.com/. The full document can be downloaded from https://givingevidence.files.wordpresscom/2014/05/getting-better-full -version-may-20141.pdf

PRODUCTION OF EVIDENCE	DISSEMINATION OF EVIDENCE	USE OF EVIDENCE
• What evidence is produced?	• What channels are used?	• What promotes the use of evidence?
• What is the quality of that evidence?	• Who disseminates the evidence and why?	• What hinders the use of evidence?
• Why was it produced and by whom?	• Which channels of dissemination work and why?	• How does the use of evidence vary between the type of user and the type of evidence?
• How was it funded?	• How is dissemination funded?	
• What isn't produced that could be useful?	• What isn't disseminated and why not?	
• Why is this evidence not produced?		

'KNOW your job, DO your job'

Following their historic victory over the All Blacks at Ellis Park on Saturday 4 October, Springbok captain Jean de Villiers explained how the words 'Know your job, do your job' had become a catchphrase for the team. This was in response to a question from a reporter about his decision to give replacement fly-half Patrick Lambie the option of a 55-metre kick at goal which, if successful, would put them into the lead with just minutes to go before the final whistle. Lambie confirmed to De Villiers that the kick was within his range and the rest, as they say, is history. The win brought to an end a 22-match winning streak by the All Blacks, who is the number one team in the world at the moment by some margin, and brought the Boks their first win over their nemesis since 2011.

What struck me about the statement 'Know your job, do your job' is how simply yet powerfully it epitomises the basic requirements of success. It makes no difference whether you are working as an individual, or as a member of a sports team or choir or teacher in a school, your first priority is to know your job. What is it that is expected of you and do you have the knowledge and skills to perform not just well, but with the energy and vigour that will help you and your team to excel? Top athletes and champion sports teams spend hours honing their skills so as to ensure that they are able to perform those tasks entrusted to them with a high degree of success. But honing your skills is not sufficient for those who would be champions. They also need to develop a deeper understanding about the team's game plan and tactics, what is expected from them on defence and attack. Equally important is a good understanding about the strengths and weaknesses of the other members of the team and how they understand their roles and responsibilities. Mental strength and resilience are also vital elements of the makeup of successful sportsmen and women and of teams. How do you respond when your team is down or when you or one of your team members has made an error?

For sports teams the 'know your job' part of the statement is primarily the responsibility of the coach and captain, but in schools this responsibility clearly rests with the principal and the SMT. School leaders with the ambition to turn their institutions into champion schools need to respond honestly to the following three questions:

1. **Does every member of my team – teachers, support staff, parents and learners - know exactly what is expected of him or her?**
You cannot expect people to perform well if they are unsure of what it is that is expected of them. This lack of clear job descriptions and performance standards is one of the most common failings of schools that underperform.

2. **Does every member of my team have the knowledge and skills to perform the tasks that have been allocated to him or her?**
Players are assigned to particular positions in sports teams based on a particular set of attributes that their coach has identified. These attributes are then developed and honed through coaching, training and practise, including match practise. In many of the schools that we work with the assignment of duties and responsibilities appears to be entirely random or based simply on the individuals' personal preferences or status. School leaders also appear to give very little thought to equipping members of their teams for the tasks that are required of them, through coaching and training.

3. **Does every member of the team have the resources that they need to perform the duties that have been entrusted to him or her?**
For sports teams these resources are likely to include specialist equipment together with expert advice that can be used to build strength, stamina and speed and to hone specific skills. So, for example, there will be a kicking coach who will help train key players to kick out of hand and to kick for goal, and other coaching staff who focus on training players to pass accurately or to catch the ball in the air. In schools the required resources are more likely to be items such as textbooks, computers, laboratory equipment and interactive white boards. Having items of this kind is, however, insufficient. Teachers need also to be trained in their use.

The second part of the statement 'do your job' is, in our view, almost more important than the first. We have visited many schools where there appears to be, on paper at least, clear job descriptions for all members of staff but where, for reasons that are sometime difficult to fathom, most people seem determined to do as little as possible. One of the common management failings of these schools is the absence of any form of monitoring system. When teams lose there are inevitably questions about the underperformance of coaches and players. Individuals are held to account and those who fail are expected to either up their game or be replaced by others with more ambition and better skills. This is clearly not the case in education, for if it were we would long since have replaced our Minister of Basic Education, most of our MECs, Heads of Education, principals and even teachers. However, visits to top performing public and independent schools provide good evidence that proper monitoring of performance is a critical contributor to school success. Teachers in these schools are held to account for the performance of the learners whom they teach and for the proper functioning of their subject teams. One simple form of monitoring what is taking place in classrooms that we have found to be effective is the simple analysis of the amount of written work in learners' exercise books. Checking a sample of five exercise books from every teacher provides valuable insights into what is happening in those teachers' classrooms. There have been a number of occasions when we have witnessed the aghast surprise of principals who have undertaken an exercise of this kind only to discover that six or more months into the year there are children in some classes and subjects who have fewer than five pages of writing in their exercise books.

Getting the 'know your job' part of the equation right is just half of the job. If you want to coach champions and turn your staff into a winning team, take a leaf from the Springboks' book by making 'Know your job, do your job' the mantra of your school. But before you do so make sure that you have established the systems and support that your team will need to grow their knowledge and hone their skills.

The ESSENTIAL reference set for every school!