Asking More

THE PATH TO EFFICACY

Edited by Michael Barber and Saad Rizvi
With a preface from John Fallon, Chief Executive, Pearson plc
About Pearson

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Our education business combines 150 years of experience in publishing with the latest learning technology and online support. We serve learners of all ages around the globe, employing 45,000 people in more than 70 countries, helping people to learn whatever, whenever and however they choose.

Whether it’s designing qualifications in the UK, supporting colleges in the US, training school leaders in the Middle East or helping students in China learn English, we aim to help people make progress in their lives through learning.

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## EDITORS’ CONCLUSION

Asking More: The Path to Efficacy
Measuring success in education is a fraught business. You might say that Pearson, as an organisation that already plays a huge role in teaching and learning all over the world, should know all about that. Perhaps it is strange for Pearson to be convening a conversation which starts with the view that, in education, ‘efficacy’ – making a measurable impact on someone’s life through learning – is an aspiration, rather than a current reality.

Yet we are at a crossroads in education. On the one hand, there is the huge opportunity offered by the growing evidence of what works, advancements in technology and our enhanced ability to harness the power of data. It is increasingly possible to determine what works and what doesn’t in education, just as in healthcare. The elements of learning can be mapped out, the variables isolated and a measurable impact on learning predicted and delivered. This can be done at every level – a single lesson, a single individual, a classroom, an institution or a whole system. It can also be done for a product or service that’s designed to help people learn. As a result, there has been progress and there is now a real sense that we are on the brink of a revolution.

On the other hand, the progress we have seen is largely incremental; education systems still fail many students of all ages, and youth unemployment around the world is at record levels. The challenge of how to make learning more effective and accessible for all students is increasingly pressing, and we know that opportunities for a high-quality education are not reaching as many students as we would like. The education Millennium Development Goal, in spite of progress, will not be met. We owe it to the families around the world who spend an ever-growing proportion of their income on gaining knowledge and
developing skills (rising to become the third largest budget line after food and shelter), to ensure that this investment is as powerful as possible.

The opportunity, therefore, is too large, and the challenge too urgent, for bashfulness. Which path we take is not going to be determined by an individual person, company or even a country. It will be a matter of how the decision-makers in the global education community act collectively to shape the evolving direction of the education debate. Pearson, as the world’s largest learning company, has both the responsibility and the potential to pursue this conversation.

In my decade and a half at Pearson, we have been evolving from a media holding company into a global organisation immersed in education. The privilege of that position is that we now have within our grasp a powerful knowledge base about teaching and learning. I believe it is our responsibility to share it, harness it and improve it. I believe that our focus should unfalteringly be on honing and improving the learning outcomes we deliver, and we should be ingenious, creative, brave and bold in the means we use to get there.

The idea that education is an important engine for economic, societal and personal growth is neither new nor by itself transformational, despite the numbers involved. Similarly, the view that things which are important, and which command a high level of investment, should be approached in a systematic, evidence-based fashion, sounds like common sense.

There are and always have been many people working hard to strengthen teaching and learning based on evidence. Education has a lively research community helping to interrogate practice and determine which pedagogies and approaches work best, and for whom. Governments increasingly hold themselves and those they fund to account on the basis of results, and require a greater degree of transparency about the data which informs decisions. In the United States, the What Works Clearing House and Race to the Top initiatives both aimed to align incentives towards the gathering and deployment of evidence to improve outcomes. Refining and expanding the scale and impact of these efforts is a challenge for the whole education community.

This publication brings together a small sample of the very many individuals who are driving high-quality learning and a relentless focus on outcomes. Their stories represent drops in an ocean of efforts taking place all around the
world. Reading their contributions together, three particular insights resonate with, and will drive further, the agenda we have set ourselves at Pearson.

The first insight is the importance of a clear purpose and goal, in addition to a compassionate intent. Barbara Chow and Geoff Mulgan eloquently set out the transformative power of high standards and clearly-defined outcomes, when combined with a consistent commitment to defining and delivering ‘what works’. Jon Iwata builds on these ideas, to illustrate how we will be able to deliver outcomes with increasing confidence by combining quality research with real-time learner data. If the objective of education is to help people make measurable progress in their lives through learning, then we have to set high standards, be transparent in our progress and find valid measures of our success.

The second insight is the impact of acting with urgency, and working tirelessly to drive change. Stories of transformation like those shared by Vicky Colbert and Rukmini Banerji, and Michael Crow at higher education level, occur where a passion for the needs of all learners and a commitment to evidence and clear accountability collide. Andreas Schleicher’s contribution illustrates the role of measurement in increasing the quality of education policy at system level. Learning is an emotional, deeply personal, empowering experience: it is so important that planning and evaluation should be unerringly applied and ruthlessly objective. The expansion of education models that deliver measurably better outcomes, combined with the growing transparency of results, is leading to increased consumer expectations and demand for quality, as well as access.

The final insight is the necessity today to build the sophistication of our measurement for tomorrow. I, and colleagues across education, have often relayed the wisdom of Einstein that “not everything that counts can be counted”, but this cannot become an excuse for leaving something important to chance. Peter Hill highlights ‘21st century skills’ as a missing piece in the education puzzle. These are the intangibles – of communication, initiative, insight and invention – that, after literacy and numeracy, appear most frequently on the lists of wants and needs of employers, higher education, and indeed learners, yet they are rarely measured in school. As Ken Robinson cautions, creativity is the powerhouse of individual and economic development. If we take our definition of ‘efficacy’ at a high bar and judge education by its capacity to
empower and support progress, we need to deploy our collective minds to teaching and tracking these skills more credibly and consistently. We regret that Einstein is not around to help.

On the part of Pearson, I am inspired now to accelerate our action across these areas. We are already being more deliberate in our investments to ensure that all our work is driven by a clear vision for improving learning and backed by a significant evidence base which indicates that it will work. This way of working is being embedded across our organisation and is putting learning metrics alongside financial metrics in governing our decisions.

Investment in research to improve education is also critical — in financial terms, but also through the sharing of our experiences and intellectual property. Greater openness around educational content is driving access to education, especially where coupled with technology. We believe that the real opportunity for sustained improvements in learning outcomes will be driven by the sharing of educational practice both when it works and when it doesn’t — and collaborating to solve problems together. The next phase of innovation in education requires shared endeavour and collective action to address enormous and evolving challenges.

We commit, too, to tell you about how we are doing. We will share our progress and be transparent about where and how we think we could do better. This pamphlet, and the accompanying *Incomplete Guide to Delivering Learning Outcomes*, starts to share the story of the steps Pearson is taking to channel all of its energy towards learning outcomes. The next phase is to build a dialogue with the education and business community, and to ask you to work in partnership with us to address some of the most intractable educational challenges. We hope that, by working together, we can challenge and provoke each other to achieve more. The most important phase will come over the next few years, as we start to be able to report back on the outcomes of our products and services in line with learners’ goals.

Learners are *Asking More* of education. The articles in this pamphlet show the progress we stand to make if we come together to embrace those demands.
Education in the 21st century is a place of rapid change. We face unprecedented levels of demand to address increasingly complex and diverse learning needs, and our challenge is continuously to update and evolve practice to reflect new knowledge and rising expectations. Yet as the articles in this pamphlet illustrate, it is our good fortune too that the growing body of learning research, sophisticated technology and analytics, combined with the continued dedication of education professionals all over the world, gives us a unique opportunity to adapt and make progress.

Pearson is fully immersed in the practical challenges of delivering learning outcomes in this context. We operate in virtually every sphere of that shifting educational landscape, from schools to higher and professional education; from publishing textbooks to operating entire institutions. We hope that understanding how we can best deliver learning outcomes across the breadth of our company, and sharing widely the insights gathered along the way, will prove to be a major step towards delivering educational outcomes to learners everywhere.

As a company, we have set ourselves the aspiration to get to a place where we can as easily measure and point to our success in terms of delivering learning outcomes as we can by financial returns. We have called that effort ‘efficacy’ – a nod to the progress and rigour of the healthcare industry – and eighteen months ago set about rolling out a process which tethers everything we do to the goal of having ‘a measurable impact on improving people’s lives through learning’.

To achieve this requires us to embed into the business the support and the incentives necessary to direct all our energies towards that goal, and to leverage and to grow knowledge and skills inside and outside of Pearson to meet evolving learner demands. Crucially, the outcome is our ‘north star’ – we are encouraging employees to be imaginative, to broaden their horizons from a constrained set of inputs, and to challenge and improve existing ways of doing things.

The sister publication to this pamphlet, *The Incomplete Guide to Delivering Learning Outcomes*, is an explanation of the journey, the means, the successes, the failures and the lessons learnt so far. It is incomplete because it is just one view of the complex world of learning, and we are aware that we have a long way to go.

Over the past year and a half we’ve learnt a tremendous amount about what it means to deliver learning outcomes in a variety of settings. We have also begun to understand what it takes to truly embed an idea into the heart of a company.

To go further on this journey, we now need to engage more in deep and fruitful debate on what it means to truly deliver outcomes. *Asking More: The Path to Efficacy* is an important step in this direction. By inviting some of the world’s leading educators and thinkers to define the challenges ahead, to identify the new tools that can enhance learning, and to outline potential paths to progress from their own work, we’ve learnt a great deal and welcome this opportunity to share their insights.

Now, we would also like to invite you to tell us what works and what doesn’t. Show us how we can improve our approach, and share with us your own. We welcome collaboration with all those interested in this broad agenda and want to see the world of education joining us and challenging us to move faster along the path to efficacy.
The opportunity ahead
Editors’ Introduction

The Hewlett Foundation’s education programme, under Barbara Chow’s leadership, has made a major contribution to educational thinking by emphasising ‘deeper learning’ as the key to the 21st century.

She defines deeper learning as an “amalgam of ‘higher order skills’ combined with foundational academic knowledge” and argues that in an age of globalisation, success in deeper learning needs to be for everyone.

Barbara also argues that better standards will demand better tests, which would require students “to apply what they’ve learnt to real life situations”. The case she makes is echoed by Andreas Schleicher and Peter Hill later in this publication.

For efficacy, the messages are clear: define the outcomes that matter; find sophisticated means of measuring whether they are being achieved; and apply the lessons back into policy and practice.

In short, we know what we need to do; the central challenge is getting it done.
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DEEPER LEARNING

Looking back, one question has haunted me from the day my first child was born, and has only grown larger in my rear-view mirror as I reflect on each of my children walking across the dais to receive high school, and then college, diplomas. It is about the efficacy of today’s education: are our school systems preparing our children to succeed in a world that is changing so rapidly?

The bare, unsparing facts are that technology and outsourcing are shredding the traditional safety net of middle-income jobs, the chasm between rich and poor has seldom yawned so wide, and the world our children will inherit is riskier, more complex and more interconnected than at any time in human history. Education is no panacea, but, if done right, it provides each generation with the surest path to prosperity and stability.

The problem that vexes America is that the typical classroom in 2013 bears a remarkable resemblance to the typical classroom of 1913, a time when the shift from our agrarian to industrial economy was at its apogee and Henry Ford’s Model T was only five years old. Together, parents, communities, government, and philanthropists must ask, “What skills and knowledge will our children need to be successful in 21st century work and civic life and what form of schooling will deliver these outcomes?”

A few years ago, we at the William and Flora Hewlett Foundation spent an entire year pressing education experts, labour force economists and practitioners to answer just that question. We sifted through their data and pored over the research they provided, and the answer that emerged was that our children will need to be critical thinkers and adept communicators, skilled at problem-solving, and able to work in teams. They must learn how to learn — and acquire what is known in the field as an ‘academic mindset’ — and they’ll need to combine that creative energy with a mastery of truly rigorous academic content. We’ve dubbed this bundle of knowledge, skills, and dispositions ‘deeper learning’.

Deeper learning is not new; indeed, it has defined an elite education since formal education began. But in an age of computerisation and globalisation where routine, rules-based middle income jobs are giving way to automation, these deeper learning skills will increasingly spell the difference between the
‘haves’ and the ‘have nots’. Consequently, as we consider an ‘efficacy and equity educational framework’, the ‘north star’ for our efforts is this amalgam of ‘higher order skills’ combined with foundational academic knowledge.

So, how do we pull this off?

It starts with great teachers, working in tandem with supportive school systems to puzzle out with colleagues the challenges of the day-to-day classroom. It means wonderful principals and adaptive district leaders who can manage everything from school buses to escalating academic standards, often on an uncertain and shoestring budget. It requires state leaders who set ambitious goals and have the chops for implementation but simultaneously afford educators and district leaders the space for creative problem-solving. And lastly, it demands a federal system that balances state and local autonomy with the federal government’s fundamental responsibility for ensuring educational equity.
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Over the past three years, the Hewlett Foundation has grappled with the best role for philanthropy to play to help produce this high-functioning education system and what yardsticks best measure success. This led to ancillary questions: What is the best way to leverage relatively tiny philanthropic dollars to reroute a leviathan education market? How can we best foster change in large, complex, and inherently conservative organisations? How do we overcome the current paucity of empirical evidence on which we can ground our policy decisions? What is the actual distance between the day-to-day reality of K-12 classrooms and our ideal educational environment?

Helping us answer these questions was work that was already underway to lift up our academic standards and improve the patchwork of state standardised tests that had become the pass/fail benchmarks of K-12 schools. Fuelled by unprecedented federal spending, 44 states and the District of Columbia have banded together in two large consortia to develop a common set of high-quality standardised tests of maths and English language arts. These tests, known as the Common Core assessments, eschew didactic, rote learning measurements in favour of richer and more probing assessments that emphasise writing and academic interrogation, and do a far better job of measuring what matters. Central to its effectiveness is the axiom “tell me how you’ll measure me and I’ll tell you how I’ll behave”. In other words, standardised tests that put a premium on the storage and regurgitation of dry facts tend to produce students who merely ‘mimic’ learning or understanding. If instead we ask questions that require our kids to not only master basic content and perform procedural operations but to apply what they’ve learnt to real-life situations, we will better approximate the world of college, work and civic life that lies ahead of them.

The Hewlett Foundation has invested in studies done by the National Centre for Research on Evaluation, Standards and Student Testing, which underscore the ‘dramatic increase in intellectual rigour relative to current state assessments’. Better yet is that we do not have long to wait: these new tests will be available as early as the 2014/2015 academic year.

Better standards and better tests alone will not fix our education system. They are only guideposts that set forth our aspirations and a system for measuring progress. Serious capacity-building to create the aligned high performing education system that we dream of must accompany the march to higher expectations and improved measurement. But we have started on the right path and, if we stay the course, we will be well on our way to creating the effective education system we owe all our children.

Barbara Chow joined the Foundation in 2008, coming from the House Budget Committee where she served as policy director. From 2001-2007 she was executive director of the National Geographic Education Foundation and vice president for education and children’s programmes at National Geographic.

Barbara served in both Clinton administrations, her roles including special assistant to the President; associate director for education, income maintenance, and labour; and deputy director of the White House Domestic Policy Council. She previously worked on the staff of the US Senate Budget Committee, as a manager of federal budget policy at Price Waterhouse, and was on the presidential transition teams for Clinton and Obama.
In government, and as the leader of some of the world’s most innovative social enterprises, Geoff Mulgan has long advocated practising evidence-based policymaking and investment. Recently his attention has been drawn to consider the application of this principle in education, noting that, “a remarkable amount of education practice doesn’t apply basic principles of good education to itself. It ignores the lessons of experience and evidence… The result is that ideas in education often spread more because they’re appealing or convenient than because they work”.

In this contribution, Geoff warns against appealing policies, products or services which, for all their intuitive charm, are lacking in evidence. He cites, for example, the numerous ‘one laptop per child’ initiatives which may begin with little basis in evidence. He points to some positive trends that are emerging to support the realisation of true, evidence-based policy. Digital technologies make feedback and the aggregation of data easier than
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ever; governments in the UK, France and the US have shown a commitment not just to evaluation but to applying ‘what works’ at the front end; and the spread of free websites such as the Best Evidence Encyclopaedia is helping to create a better-informed community of practitioners and learners.

Geoff contends that efficacy – measurable impact – is thus emerging as the acid test for the public, decision-makers and investors across many policy areas. This much wider trend is tipping into education, and this is a movement to which we can contribute, and from which we can learn.

REALITY CHECKS

It’s a statement of the obvious that education should be about learning: drawing on the world’s stores of accumulated knowledge and acquiring critical faculties. Yet a remarkable amount of education practice doesn’t apply basic principles of good education to itself. It ignores the lessons of experience and evidence, and doesn’t build in reflection and evaluation. The result is that ideas in education often spread more because they’re appealing or convenient than because they work.

You can see this in almost every field. Take digital technologies, which at their best are a powerful tool for providing feedback and making evidence more widely available. Several decades of experiment mean that there is now a great deal of evidence and experience on what actually works best in the use of computers, whiteboards, laptops and interactive media. But most of this evidence is routinely ignored. Teachers and heads have very little useful information to draw on when making spending decisions. Spurious claims are taken seriously – like the advocacy of one laptop per child in the developing world, or the idea that giving every pupil an iPad makes schools more efficient. As a result, millions are wasted, and children miss out on the real potential from technology which usually requires a change in how learning is organised, and not just in the hardware.

So what is to be done? I believe that a revolution in how we think about education and evidence is long overdue. It can be greatly helped by digital technologies which make feedback, and the aggregation of data, easier than ever before. But it needs to start with some simple principles: that any new
method should be tested and improved in the light of experience; that what’s already known should be orchestrated and made easily available to the busy people who have to make decisions; that what doesn’t work should be ditched and what does should be spread.

Four sets of players can put these principles into effect. The first are governments, which need a much more visible commitment to evidence. Here in the UK, the Alliance for Useful Evidence was recently set up, bringing together the hundreds of organisations responsible for creating, interpreting and using evidence and helping them to be more adept at putting evidence into effect. The government has also committed to setting up a network of ‘What Works Centres’, providing policymakers and practitioners with up-to-date insights into the state of knowledge, and making evidence available in forms that make sense to front-line practitioners. One of these is the Education Endowment Foundation (EEF), and 36 per cent of education leaders now use

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its Teaching Learning Toolkit to inform their purchasing decisions. Similar things are happening elsewhere. The US has had the i3 fund, and France ran the FEJ – ‘Le Fonds d’Expérimentation pour la Jeunesse’ – with large-scale trials and control groups on issues such as parental involvement in schools. All of this work on evidence needs to run alongside innovation and experiment – which by its nature has to go beyond what's known from the evidence. But a wider commitment to ‘what works’ would be a radical and immensely useful step.

The second group who can bring evidence to life is business. The work Pearson is doing to embed efficacy reviews has huge significance. It signals that business too should be evidence-based and that there’s no excuse for selling goods and services without grounds for believing that they work. This work is part of a bigger shift in business towards greater accountability and a tougher commitment to excellence. This is leading companies such as Unilever to adopt much more stringent approaches to environmental impacts, and it’s leading banking to become more like a profession: if you sell a product that’s against the interests of the buyer, you’ll lose your licence to operate. The best firms recognise that they’ll gain competitive advantage by being ahead of the curve. But most have barely begun to understand that this is a lens through which they will increasingly be judged.

A third group with the power to change behaviour is international bodies such as the Organisation for Economic Co-operation and Development (OECD) and World Bank. The OECD has already had an extraordinary influence through PISA. The World Bank has the Strategic Impact Evaluation Fund to generate evidence of what works in various policy areas, including education. That knowledge will often be complex. What works in one place may not in another; what works at one time may not at another. But knowing the state of knowledge is at the very least the starting point for effective practice.

The fourth group is the public, in their role both as direct purchasers of educational materials and as influencers of schools and governments. The ultimate cause of the growing interest in evidence is, of course, education itself. Societies in which many more people have degrees and a grasp of science and statistics are bound to be more demanding, and less tolerant of sloppy
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thinking. Users are already being served by free sites such as Best Evidence Encyclopaedia, Graphite and Blueprints for Healthy Youth Development, edSurge and Classroom Window which make it easier to understand the outcomes of initiatives. They’ve been helped by a handful of journalists who have become champions of better use of evidence. But there are still too few well-organised parent groups or student groups demanding that what’s provided meets higher standards.

The drive to apply the principles of evidence and learning to education itself has a long way to go, not least to catch up with health and medicine. It’s taken for granted that a firm selling drugs has to prove that those drugs work before they get to market. But in schools, many new ideas are implemented without any evidence that they work. That’s why the steps Pearson is taking are so important. They involve some risk, and some challenge. But the net result will be better education for millions of children who surely deserve nothing less.

About the Author

Geoff Mulgan is Chief Executive of Nesta, an organisation that combines investment, grant programmes and research. From 2004-2011 Geoff was the first Chief Executive of the Young Foundation, a leading centre for social innovation. Between 1997 and 2004 Geoff worked in UK government as director of the Government’s Strategy Unit and head of policy in the Prime Minister’s office. Before that he was the founder and director of the think-tank Demos. He has also been Chief Advisor to Gordon Brown MP, a telecoms lecturer, an investment executive and a BBC reporter. He is a visiting professor at LSE, UCL, Melbourne University and a regular lecturer at the China Executive Leadership Academy. He advises governments around the world, and is a board member and chair of several organisations.
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A NEW ERA OF LEARNING EFFICACY ON A PLANET OF SMARTER SYSTEMS

Jon Iwata

EDITORS’ INTRODUCTION

Jon Iwata leads IBM’s Marketing, Communications and Citizenship organisation. He led the creation of the highly acclaimed ‘Smarter Planet’ strategy, which is reshaping our understanding of how data and analytics can enable smarter decisions. Jon is also a member of IBM’s Strategy and Operating Teams.

In his essay, Jon identifies the emerging trends that are reshaping the world today. First is the emergence of ‘Big Data’ and the ability to measure real time outcomes in previously unimaginable ways. Second is the advance of intelligent computing that now allows for more effective analysis, synthesis and use of this data. And finally, pulling all this together is the fact that, due to this information, ‘every system today is becoming a learning system’.

For efficacy, there are two implications – the first is that learning is no longer restricted to the formal and informal education industry. As Jon says, every business, every industry and every individual will have to be constantly...
learning and improving to make the most of the opportunities provided by the data revolution. Secondly, this learning can now be measured and adopted in ways that would previously have been considered the stuff of science fiction. We have the opportunity to make smarter decisions and drive learner outcomes based on both evidence and real time, individualised performance data.

A NEW ERA OF LEARNING EFFICACY ON A PLANET OF SMARTER SYSTEMS

A profound shift in our world is underway. The planet is becoming instrumented, interconnected and intelligent, with computation being infused into things nobody would think of as a computer. Intelligence is now being embedded in the systems that enable services to be delivered, physical goods to be made and sold, everything from people and freight to oil, water and electrons to move, and billions of us to work and live.

There are upwards of a trillion interconnected and intelligent objects and organisms on the planet – what some call the Internet of Things. Among their components are a billion transistors for every human being on the planet. We are producing more transistors every year, and at a lower cost than grains of rice.

Approximately 2.7 billion people are now connected, a number that is growing rapidly in every part of the world, in significant part thanks to the spread of mobile technology. It is estimated that there are more than 10 billion wireless devices out there today – a number that one research firm projects to triple by 2020.3

The result is a planet awash in information. Some call this ‘Big Data’. How big is it? By one estimate, there will be 5,200 gigabytes of data for every human on the planet by 2020.4

Some are daunted by the sheer scope of this. Many are concerned – with good


reason – about the issues it raises for privacy and security. Those questions are serious, and require serious technological and policy responses.

However, I believe the overall import of this new era is enormously hopeful. The emergence of Big Data constitutes a vast new natural resource, which promises to be for the 21st century what steam power was for the 18th, electricity for the 19th and hydrocarbons for the 20th. All were disruptive, but all fuelled new wealth and societal progress, once we learned how to translate them into new value.

The good news is that a new generation of technologies can do just that. We are entering a golden age of information science. New computing capabilities can store, analyse and make sense of Big Data nearly instantaneously. All of this can happen far more efficiently, effectively and with broader access in the new architecture known as ‘The Cloud’. And, aided by the rapid spread of social media – by one estimate, one in four people worldwide will use social networks this year – the spread of these and other insights, ideas and deepened expertise becomes exponential, not linear.

Drawing on advanced analytics, police chiefs from Memphis to Madrid are lowering crime rates not with more officers and weapons, but with data and citizen engagement. Government leaders are drawing on analytics, behavioural science and social media to engage with citizens, not as voting blocs or demographic segments, but as specific individuals. Cities from Rio de Janeiro to Miami-Dade County are being run not from the proverbial smoke-filled rooms, but from Intelligent Operations Centres that integrate and visualise data from dozens of city and regional systems and agencies.

Further, we are now seeing the birth of a new model of ‘cognitive’ computers that are built for Big Data. These systems aren’t programmed, they learn – from their own experience and from our interactions with them.

For instance, using IBM’s cognitive system called Watson, doctors today are dramatically expanding their access to the latest medical research, integrating it with patient test results and genetic information, and increasing confidence levels about diagnosis and treatment. We are also working with leaders in finance, retail, insurance and other industries to accelerate the discovery of precise answers to questions they could not even address before.

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This is enormously promising – and it is just the beginning. When we infuse instrumentation, cognitive capabilities and social media into our economic, societal and natural systems, we change not just how the world works, but how it learns. Every system becomes a learning system.

A generation ago, two big ideas emerged – hope-filled ideas that never fully realised their promise. One was the notion of ‘artificial intelligence’. The other was a belief in a ‘knowledge economy’. In both cases, theory largely failed to translate into praxis.

“...The spread of insight, ideas and deepened expertise becomes exponential, not linear...”
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Perhaps these ideas were ahead of their time. Today, our world of Big Data, cognitive systems and social businesses enables a radical new fusion of technology and organisational operations. It dramatically shrinks the gap between theory and practice, allowing analysis and improved decision-making to take place far more broadly and in something close to real time.

This is a wholly new level of learning ‘efficacy’. We are far beyond mere measurement for outcomes. Indeed, if we open our eyes to what is now possible, we can see a world taking shape before us that is literally being infused and transformed by knowledge. And once we see it, it is incumbent upon us to seize this transformation, and to come together to ensure that it happens in ways that are safe, secure and available to all.

ABOUT THE AUTHOR

Jon Iwata and his global team are responsible for the marketing of IBM’s portfolio of products and services, communications and corporate affairs, and stewardship of the IBM brand. They lead development of IBM’s ‘Smarter Planet’ strategy, the company’s view of the future of IT and its impact on business and society. Jon is chairman of the IBM Strategy Team, a member of the IBM Operating Team, and vice-chairman of the IBM International Foundation. He also serves on the Technology Committee of the Museum of Modern Art and the Board of Directors of the Japan Society. Jon is chairman of the Arthur W. Page Society, a professional association of chief communications officers.
Taking action
Editors’ Introduction

Andreas Schleicher of the OECD has been at the heart of the global education debate through both his leadership and mastery of international benchmarking data and his advice to education ministers all over the world on how they should respond to that data.

In this essay, he shows how an independent, internationally-benchmarked data set such as PISA can provide insight for national governments, drive up expectations and, crucially, be put to practical use. It is not just the overall ranking that matters; indeed, much more important is which students are benefitting and why, and which aspects of the curriculum and student development need most attention. This data has also enabled countries around the world to learn from others and shape their policies to deliver better outcomes.

As Schleicher points out, it is as a result of PISA that, in Germany, the achievement of students of low socio-economic status has been put firmly
Asking More: The Path to Efficacy

on the educational agenda. Similarly, in Japan, the achievement of students in open-ended questions was brought to the attention of policymakers.

There are clearly lessons from this work for anyone trying to deliver student outcomes. First, we need reliable data on a time series; second, we need independent, third-party perspectives; and third, much of the learning about how to improve our pedagogy, products and services will be in the detailed analysis.

THE IMPACT OF COMPARATIVE DATA

In a globalised world, the yardstick for educational success is no longer national standards alone, but those of the best-performing education systems internationally. Comparative reviews such as PISA have become powerful instruments for educational research, policy and practice by allowing us to look at education systems through the lens of intended, implemented and achieved policies elsewhere. They show what is possible in education, in terms of quality, equity and efficiency in educational services, and they have fostered better understanding of the different factors that relate to educational outcomes. Most importantly, by providing an opportunity for policymakers, researchers and practitioners to look beyond the experiences evident in their own systems and thus to reflect on some of the paradigms and beliefs underlying these, they hold out the promise of transformational change.

Revealing what is possible in education

The level of public awareness raised by comparisons has in some countries created important political momentum and engaged educational stakeholders, including teacher and employer organisations, in support of policy reform. International evaluations have sometimes had a significant impact in countries that found themselves confronted with results that differed from how educational performance was generally perceived.

In Germany, for example, equity in learning opportunities across schools had often been taken for granted, as significant efforts were devoted to ensuring that schools were adequately and equitably resourced. The results from the PISA 2000 evaluation, however, revealed large socio-economic disparities in educational outcomes between schools. Further research separated the
equity-related issues that relate to the socio-economic heterogeneity within schools from those that relate to socio-economic segregation through the school system. It suggested that German students from more privileged social backgrounds are directed into the more prestigious academic schools which yield superior educational outcomes while students from less privileged social backgrounds are directed into less prestigious vocational schools which yield poorer educational outcomes, even where their performance on the PISA evaluation was similar. This raised the spectre that the German education system was reinforcing rather than moderating socio-economic background factors. The fact that an international dataset revealed that the impact which socio-economic background has on students and school performance varied considerably across countries; and that other countries appeared to moderate socio-economic disparities much more effectively, showed that improvement was possible and provided the momentum for policy change.

Such results, and the ensuing vivid public debate, inspired a wide range of equity-related reform efforts in Germany, some of which have been transformational in nature, resulting in significant gains in educational performance as well as equity in the distribution of educational opportunities.

A broader perspective
International datasets have also played an important role in putting national performance targets into perspective. Educators are often faced with a dilemma. If, at the national level, the percentage of students achieving good exam scores in school increases, some will claim that the school system has improved. Others will claim that standards must have been lowered, and behind the suspicion that better results reflect lowered standards is often a belief that overall performance in education cannot be raised. International datasets allow those perceptions to be tested against a wider frame of reference. More than half the industrialised world has now introduced PISA-referenced performance targets for education and is measuring progress towards these.

The pace of change
A third important aspect is that comparative data provide a frame of reference to assess the pace of change in educational development. While a national framework allows progress to be assessed in absolute terms, international datasets allow an assessment of whether that progress matches the pace of
change observed elsewhere. Indeed, while all education systems in the OECD area have seen quantitative growth over past decades, international datasets reveal that the pace of change in educational output has varied markedly. Furthermore, some educational variables, such as the volume of instruction time or teacher salaries, show no or little variation within countries. By introducing an international dimension to these data, it is possible to study the effects of their variability on outcomes.

A tool for reform
International datasets have also played an important role in assisting the process of reform implementation. Mexico provides a good example for this. In the 2007 Mexican national survey of parents, 77 per cent of those interviewed reported that the quality of educational services provided by their children’s school was good or very good. However in OECD’s PISA 2006 evaluation, roughly half the Mexican 15-year-olds enrolled in school performed at or below the lowest level of proficiency established by PISA.

There may be many reasons for such a discrepancy between perceived educational quality and performance on international evaluations. In part it may be due to the fact that the educational services Mexican children receive are significantly better than those their parents experienced. However, the point here is that justifying the investment of public resources into areas for which there seems no public demand poses difficult challenges for the political economy of reform.

One response by the Mexican presidential office has been to include a ‘PISA performance target’ into its new reform plan. This performance target, based on the outcome of an international dataset, will serve to highlight the gap between national performance and international standards and monitor how educational improvement feeds into closing this gap. It is associated with a reform trajectory and a delivery chain of support systems and incentive structures, as well as with improved access to professional development to assist school leaders and teachers in meeting the target.

Japan is one of the best-performing education systems on the various international evaluations. However, PISA revealed that while students tended to do very well on tasks that require reproducing subject matter content, they did much less well on open-ended constructed tasks requiring them to
demonstrate their capacity to extrapolate from what they know and apply their knowledge in novel settings. Conveying that to parents and a general public who are used to certain types of tests poses a challenge for the political economy of reform too. One policy response in Japan has been to incorporate ‘PISA-type’ open-constructed tasks into the national evaluation, with the aim that these important skills become valued in the education system. Similarly, Korea has recently incorporated advanced PISA-type literacy tasks into its university entrance examinations, in order to enhance excellence in the capacity of its students to access, manage, integrate and evaluate written material.

Across countries, these changes represent a transformed policy focus that would have been much harder to imagine without the challenges and possibilities revealed by PISA.

Andreas Schleicher oversees the OECD’s work on the development and use of skills and their social and economic outcomes. This includes the Programme for International Student Assessment, the OECD Survey of Adult Skills, the OECD Teaching and Learning International Survey and the development and analysis of benchmarks on the performance of education systems. He was previously Director for Analysis at the International Association for Educational Achievement. Andreas has received widespread recognition, including the Theodor Heuss Prize for ‘exemplary democratic engagement’ and an honorary Professorship at the University of Heidelberg.
EDITORS’ INTRODUCTION

Vicky Colbert has been a leader of transformative education in Colombia and many other countries for almost 30 years. Escuela Nueva has repeatedly demonstrated its effectiveness in improving educational outcomes for children in challenging circumstances. The Escuela Nueva model has reached more than five million children. For those committed to bringing efficacy into education, Vicky’s insights are valuable because they force us to step out from theory and into the reality of application.

A critical lesson here is that educational outcomes over time cannot be achieved through the will of government alone. Indeed, Vicky argues that “public-private partnerships and the role of civil society are indispensable for quality and sustainability in educational institutions”.

This implies that we must emphasise investment in mechanisms (Vicky’s own foundation is one example) that enable the sharing of successes globally – to
inspire high ambitions and to encourage and support the adoption of proven quality models.

Escuela Nueva draws admiration not only for its profound impact on children in Colombia, but also for its successful migration across contexts and international borders to improve outcomes all over the world. This underlines the importance of establishing a rich, shared, global knowledge base in learning.

IMPROVING QUALITY AND EQUITY IN EDUCATION

The lack of quality education is one of Latin America’s great blights, but pockets of excellence exist that serve as inspirations for the future. In Colombia, the Escuela Nueva (EN) system is an example of a local innovation that became an effective national policy. It enabled Colombia to provide complete quality primary education in areas where little or no educational opportunities existed before.

EN dates back to the mid-1970s. Within a decade it became an effective national policy and was implemented in approximately 20,000 rural primary, typically multigrade, schools. In 1989, the World Bank selected it as one of the three outstanding reforms in the developing world that had successfully affected a national policy.6

EN has been visited by many countries and has inspired educational reforms worldwide. Several LAC (Latin American and Caribbean) countries have adapted the model to their educational systems, and in some it became a national programme.

A more recent example is Vietnam, which decided to take the EN model to scale nationally for both rural and urban schools. To date, the model has reached more than five million children. It is now one of the longest running bottom-up educational innovations in the developing world.

Aware that innovations fade within bureaucracies and are very vulnerable to political and administrative changes, I took the initiative with several former ministers of education and the original Escuela Nueva team to create Fundación Escuela Nueva (FEN) in 1987, a Colombian NGO that promotes the model worldwide and sustains its quality and integrity. Innovations are more likely to be sustained if they are grounded on key stakeholders and non-state actors are involved.

As part of its objectives, the Fundación also innovates the model and pedagogy, adapting it to new populations and contexts. For instance, with the support of the Inter-American Foundation (IAF), FEN was the first to adapt the EN model to urban settings, calling the new programme Escuela Activa Urbana. In 2001, with USAID’s7 support, FEN designed and piloted the Escuela Nueva Learning Circles programme for migrant and displaced populations, an innovation that also became a national policy in Colombia. Escuela Nueva shows that the issue is not only coverage or impact. The issue is sustainability and quality.

7 US Agency for International Development
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Jomtien mandate about multiple actors in education is still valid: public-private partnerships and the role of civil society are indispensable for quality and sustainability in educational institutions.

EN transforms the conventional school and way of learning from teacher-centred instruction to a child-centred, participatory learning approach. It integrates curricular, community, teacher training and administrative strategies in a systemic and cost-effective way, involving all stakeholders. This system makes provisions for active, co-operative learning, a close relationship between school and community and a flexible promotion mechanism that allows students to advance from one grade or level to another and complete academic units at their own pace. Additionally, it instils democratic behaviours, a new role for the teacher as a facilitator and a new concept of ‘interactive, self-instructional, dialoguing’ learning guides. Teachers are trained in similar methodologies as those they will use with their students through practical, experiential workshops. They exchange, support each other and promote positive attitudinal change through teachers’ learning circles.8

Finally, the model assumes it is essential to develop mechanisms that are replicable and financially, technically and politically viable. In other words, from the outset, the system introduced strategies to facilitate replication of processes and expand on a national scale.9

Different evaluations by national and international agencies have shown that EN significantly improves academic results in rural and urban schooling, as well as the self-esteem and peaceful behaviour of children, whilst also reducing dropout and repetition rates. The First International Comparative Study of UNESCO10 in 1998 concluded: “Colombia is the only country in the region, after Cuba, where rural schools obtain better performance results than urban schools, except for those in mega cities, primarily due to EN”. A study on the impact of EN on the peaceful social interaction of children in Colombia,

8 Riggio, R. E., Psychology Today, 2011, Leading from the ground up: How to transform U.S. Education, [online] Available at: http://www.psychologytoday.com/blog/cutting-edge-leadership/201103/leading-the-ground-how-transform-us-education


published by the University of London in 2006, demonstrates significant results in the formation of democratic behaviour and peaceful social interaction of children in comparison to conventional schools.\textsuperscript{11}

A strong research base and evidence that demonstrates results, effectiveness and efficiency are major reasons for Escuela Nueva’s impact on national policy and its continuing success. Proving effectiveness has helped the model scale to other countries. The issue is not only coverage or impact. The issue is quality and sustainability.

Escuela Nueva is known worldwide for improving the quality of basic education. Vicky Colbert has developed, expanded and sustained this innovation as EN National Coordinator, Director of Distance Education of the Open University of Javeriana, Vice-minister of Education of Colombia, UNICEF’s Regional Education Advisor for LAC and now from the Escuela Nueva Foundation, a Colombian NGO that she founded to promote the quality and the sustainability of the model. She is recipient of several national and international awards for her work, and has served as member of the Global Agenda Council of the World Economic Forum in Education.

Rukmini is the director of the ASER Centre and a member of the national leadership team of Pratham. Rukmini is also Co-Chair of the Learning Metrics Task Force, an initiative seeking to build consensus around the most important learning outcome measures, and drive policy making and practice towards them.

Rukmini tells the story of ASER, which literally translates as ‘impact’. Her work in developing and scaling the ASER process represents a significant innovation in large-scale assessments in emerging markets, leading the charge towards shifting from inputs to outcomes in evaluation of elementary education in India and beyond.

Rukmini argues that, as the debate in education shifts from access to quality, assessments like ASER will become increasingly important to demonstrate genuine system-wide improvement. Yet this is not just a story of the power
of measurement. In order to meet the new challenges of large-scale change, systemic innovation is critical.

To achieve true efficacy in the most challenging contexts we’ll need constantly to innovate and to experiment with new solutions, just as Rukmini and her colleagues did with ASER. Finally, we will need to focus on engaging with communities to encourage them to demand, in addition to access, high quality educational experiences which have strong evidence of better learning outcomes.

**FROM SCHOOLING TO LEARNING: ASER’S JOURNEY IN INDIA**

Everyone understands schooling. Parents want their children to go to school. They find schools, procure books, bags and often spend their money and time to send their children to school. Governments too want children to go to school. They build schools, find teachers, provide facilities, and spend money so that children can go to school. Going to school is a very visible activity. Everyone knows who is going to school and who is not. If you ask parents or governments about how schools can be improved, you will get many answers – but most will involve more inputs and more expenditure. The assumption is that more is better.

In many countries even in South Asia and sub-Saharan Africa, school enrolment levels are very high. How did so many children across the world get to school? The high enrolment level is a result of having a clear definition and understanding of what schooling means. Parents understood it. Governments understood it. All realised that it is a good thing. Periodic stocktaking was and continues to be done. Concrete numbers are available. Different strategies were tested and tried to increase enrolment and improve access. Everyone worked together to make it happen and visible progress was made.

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12 ASER stands for Annual Status of Education Report. It is a unique large scale citizen-led exercise for measuring basic learning outcomes.
Back in 1995-96 when we \(^{13}\) started working in the slums of Mumbai, we also found that the majority of children were enrolled in school. Those who were not in school knew that they should be in school. In our work, we began to sense a more invisible problem. Children were in school. But parents and teachers had a sense that they were not doing as well as they ought to be. Everyone was uneasy and not sure how to articulate the problem; after all children were in school so they must be learning. There was no clear definition of the problem. And therefore not much measurement. If you don’t exactly know what the problem is, how can you even think about solutions?

By 2000-2001, Pratham was working in several places around the country. We could see that in rural communities and in urban areas, there were many children who had been in school for several years but still could not read. If you cannot read, you cannot propel yourself forward and remain dependent on others. Similarly with arithmetic, without basic knowledge of numbers and some understanding of operations it is hard to progress in maths. Without these two skills, there can be no foundation and without a foundation you could not build a building.

\(^{13}\) ‘We’ refers to Pratham (www.pratham.org), a large non governmental organisation working to provide quality education to underprivileged children in India.
In 2002-2003, we tried a month-long exercise. Everyone took a group of 20 to 25 children – all eight years old or older. None of these children could read a simple story. Our challenge was to first understand what these children could do and then see how far we could take them in a month. We used this simple tool to figure out what children could read and what they couldn’t. The ‘story’ level was our goal. If a child could read the ‘story’ fluently, then we knew our work was successful.

We learned a lot in that month. The simple tool helped us not only to figure out how many children were at what level but it also helped us to design our instructional practice to help them to learn to read. We learned that it was possible in a short period of time to transform children into ‘readers’. We learned the simple set of reading tasks (the reading tool) was helpful in explaining to parents and others what ‘reading’ was. Pointing to the text and getting children to read helped uneducated parents understand the current status of their child as well as the goal. In a fundamental way, for illiterate or uneducated people, this exercise ‘demystified’ what learning was. The assessment led directly to action on one side and to awareness on the other.

The annual ASER exercise came out of experiences like these. With enrolment levels reaching well over 90 per cent by 2005 it was clear that almost every child was in school. Now it was time to turn the country’s attention to whether children were learning. Since 2005, every year in every rural district in India, ASER looks for answers to three simple questions: are children enrolled in school? Are children able to read? Are children able to do basic arithmetic? Across the country over 25,000 volunteers fan out to more than 300,000 households reaching close to 600,000 children to bring back district-by-district estimates for enrolment, basic reading and arithmetic. ASER is facilitated by Pratham but conducted by local organisations and institutions in every district. Every year the findings are hotly debated and discussed in the national, regional and local media as well as within the government and outside. The ASER model clearly has appeal and applicability well beyond India. In the last five years, it has been transplanted and is being used by civil society groups in Pakistan, Kenya, Tanzania, Uganda, Mali and Senegal.

The word ‘ASER’ in Hindi and Urdu and in several South Asian languages means ‘impact’. See www.asercentre.org for reports 2005 to present. It continues to be the only source of annual data on children’s learning from a nationally representative sample of children in India. Data is available at the level of the district as well as at the state level.
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In India, even critics of ASER agree that the annual exercise has contributed in a major way to bringing children’s learning to the centre of the stage in discussions on education. Today, the government acknowledges that a lot has to be done to improve the very unsatisfactory situation with basic learning and that a first step in this process is to clearly define and measure the problem.¹⁵

The big challenge locally and globally is to make learning the main anchor for educational policy and practice. Now that so many children are in school, they must learn. Only then will the investment in schooling be worthwhile. It is imperative that the government begins to focus on measurement of learning and starts experimenting with how learning can be improved. But it also needs all of society to think about learning outcomes as the end result of education. Every citizen must not only know what outcome needs to be achieved, but also where children are today. It is only when there is widespread understanding and conviction in society that big social change becomes possible. An effort like ASER is designed to energise people to take action. In societies with little previous experience of thinking about outcomes and in economies with no culture of measurement, ASER-like initiatives are an important first step.

ABOUT THE AUTHOR

Rukmini Banerji has been with Pratham since 1996. One of India’s largest NGOs in education, and reaching close to three million children a year, Pratham works with local communities as well as with governments to run large-scale interventions for improving learning. Rukmini heads the ASER (Annual Status of Education Report) initiative which reaches over 600,000 children every year and generates annual estimates of reading and arithmetic at district, state and national level. In the nine years since it was initiated, the ASER effort has been widely recognised for its innovative use of large-scale citizen participation in assessment.

¹⁵ Government of India, Planning Commission’s 12th Plan document outlines the importance of improving learning outcomes and suggests assessments. Several large states have started their own assessments at the primary level. For example see the Gujarat government’s ‘Gunotsav’ initiative (www.gunotsav.org), Rajasthan does ‘Sambalan’.
As President of Arizona State University, now the US’s largest student community, Professor Michael Crow has overseen the development of a higher education institution that is both research and student focused. He has drawn upon his own academic background in science, technology and policy development to pursue a new approach to higher education management and delivery that is designed to motivate his faculty members and enable them to reach more learners.

In this article Professor Crow outlines his ambition and motivation to create the ‘New American University’, where the (false) dichotomy of high quality and access, which often so dominates discussions in education, can be overcome. He shares the power of technology and digital learning to engage more learners in both senses of the word: offering the opportunity to scale, but also to shape educational programmes around individual student needs.
TAKING ACTION

The other insight offered is that of urgency. The growing demand for higher order skills means that widening participation in higher education, challenging ourselves to offer its benefits to all, is not a choice but an imperative. The opportunity to make progress, and to be able to prove and communicate that learning and those skills to future employers, must be open to all. In short, achieving efficacy at system – or global – level is inextricably tied to our success in overcoming challenges of access.

THE NEW AMERICAN UNIVERSITY

Today there is a growing urgency to increase accessibility, excellence, and impact in higher education. This is driven both by the rising demand for global citizens, and the increasing supply of students with a desire to make a difference. Just as societies require global citizens able to understand and solve the world’s greatest challenges, we are seeing students with the drive and desire to learn at higher levels, to understand, to create, and to drive new solutions forward.

As educators, it is our role to bridge this gap between students eager to make an impact, and communities in need of leaders and changemakers. This is a new vision for the university, a vision where the institution enables and leads change in its communities. It builds on a long history in American higher education, especially since the late nineteenth century when some land-grant institutions and public colleges and universities evolved into modern research universities. Today, the university continues to evolve to meet the needs of the 21st century. We require a new model, and a new set of assumptions about what a university can achieve and how it can be organised.

At Arizona State University, we call this vision the New American University. We strive to create a new model for the university that could define the next generation in this evolution. A university that is able to systemically innovate at scale rather than just in classrooms. A university that is locally embedded and globally relevant. A university that is focused on the outcomes for our students rather than the inputs. A university that is committed to inclusion and accessibility rather than exclusion and elitism.
Accessibility is central to our mission because this is what allows us to have a significant impact at scale. When people talk about disruptive innovation, they mean the possibility to change an entire system – the possibility to reach scale. Yet many of the world’s greatest universities invest significant time and effort in the process of excluding students. At Arizona State it is our commitment to admit any student with the requisite skills and help them to succeed. We are committed to turn the dreams of every student into a reality.

Eight Design Principles of the New American University:

1. Leverage our place
2. Transform society
3. Value entrepreneurship
4. Conduct use-inspired research
5. Enable student success
6. Fuse intellectual disciplines
7. Be socially embedded
8. Engage globally

We reject the notion that excellence and accessibility cannot be integrated within a single institution, and have sought to redefine the notion of egalitarian admissions standards by offering access to as many students as are qualified to attend. Freshmen from Arizona families with annual incomes below US$60,000 are able to graduate with baccalaureate degrees debt free. During fall semester 2009, the programme included more than 1,700 freshmen. We pledge that no qualified student will face a financial barrier to attending ASU.

We measure our success as a university not based on who we exclude, but on who we include and how they succeed. While the freshman class has increased in size by 42 per cent since 2002, for example, enrolment of students of colour...
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has increased by 100 per cent, and the number of students enrolled from families below the poverty line has risen by roughly 500 per cent.

In America we have many excellent globally ranked institutions. We also have many other universities that are spending considerable sums trying to replicate these models. Yet the number of students that are able to access and graduate from these universities is small relative to the scale of the national and global education challenge. Rather than trying to replicate the existing elite model, we need new models of higher education that are able to deliver outcomes for students at scale. For example, at ASU 40 per cent of undergraduate students are taking one course online to help us to keep costs down while we invest in interactive, adaptive learning technologies. Our aim is to develop new models that would allow larger numbers of students to be educated well at lower cost.

Our success doesn’t stop at enrolling students or graduating them. Our success is realised when our students engage in their communities and become contributing members. Mere access to higher education is in itself inadequate and will not produce the outcomes we desire. We must also educate greater numbers of individuals and help them to reach higher levels of attainment.

As an academic community comprising faculty, students, and alumni, we see ourselves as equally responsible for the outcomes of our students and the success of our local communities. We are taking on responsibility for the social, cultural, environmental, and health outcomes. To make this a reality, we have made our university more inclusive, scalable, adaptive, challenge-focused, and willing to take risks. This is why we have built new schools and transdisciplinary research initiatives, such as the Biodesign Institute. And we have expanded our involvement in local communities by taking on the management of a local charter school, for example, and transforming it into the number one charter school in Arizona. Thus as we build accessibility we also unleash change.

At the end of the nineteenth century, there was a great increase in our national ambition and, with that, an unprecedented growth in the establishment of four-year institutions. Today, we need another new generation of academic leaders and informed citizens with equal ambition. We need to recover the core egalitarian values that drove the original expansion of higher education, to increase accessibility and excellence for all. We need a new model for higher education.
As an academic community... we see ourselves as equally responsible for the outcomes of our students and the success of our local communities.

Michael M. Crow became the 16th president of Arizona State University in 2002. He is guiding its transformation into one of America’s leading public metropolitan research universities, combining academic excellence, inclusiveness and societal impact – a model he terms the ‘New American University.’ During his tenure, ASU has established major transdisciplinary research initiatives, witnessed an unprecedented academic infrastructure expansion, tripled its research expenditure, and attained record levels of diversity. He was previously executive vice-provost and a professor at Columbia. He is also an author and fellow of the American Association for the Advancement of Science and the National Academy of Public Administration.
New challenges
NEW CHALLENGES
Sir Ken Robinson is a global leader on the development of creativity and innovation in education and business. His ideas on the importance of creativity and the means of achieving it have influenced millions of people.

In his piece, Ken talks first about how he defines creativity: “the process of having original ideas that have value”. He then debunks the common myths around creativity – that it is for a selective few, limited to the arts and lacks discipline. In fact, Ken argues that creativity is important for everyone and can be universally applied. He then talks about what to keep in mind when measuring the outcomes from creativity – that it’s a process not an event, that it generates value, and that even the act of judging creativity involves creativity.
NEW CHALLENGES

On the path to efficacy there are two major lessons to take from this piece. The first is that creativity is an essential education outcome that is often ignored by the status quo. Every education product, service and institution should make a concerted effort towards teaching these skills. The second is that, with some thought, the outcomes from creativity, entrepreneurship and innovation could be as measurable as those for literacy and numeracy.

COULD YOU MEASURE CREATIVITY?

Creativity has an ambiguous place in education. Governments everywhere say that promoting creativity in schools is essential for economic growth and cultural vitality, yet the dominant strategies for education reform in many countries do little to promote creativity and in some ways actively inhibit it. One of the main inhibitions is the growing culture of standardised testing. Another is the pressure many educators feel for conformity and compliance in school culture. A third is the widespread view that creativity is an indefinable, amorphous process that cannot be taught, let alone assessed. So, what is creativity and can it be measured?

I define creativity as the process of having original ideas that have value. Creativity is not a single ability that some people have and others do not. It is a process that draws on a wide array of aptitudes that we all have. The roots of creativity are in the unique powers of human imagination: the ability to bring into mind things that are not present to our senses.

Through imagination you can dwell in the past; you can see the world through other points of view; and you can anticipate the future. In imagination you can conceive alternative realities and envisage new possibilities. Imagination is the source of creativity, but creativity is a step on. Creativity is putting your imagination to work. Imagination may be a wholly internal process with no outcomes beyond your own private ruminations. To be creative, you have to do something. Creativity has outcomes. The outcomes of creativity are evident in the endless torrent of theories, ideologies, inventions, artifacts, performances, compositions, jokes, narratives and designs that constitute human culture.
NEW CHALLENGES

Recognising that creativity is a pervasive and practical process, not an elite, abstract concept, helps to counter some persistent misconceptions. One is that only special people are creative. In truth, we all have deep capacities for creativity. We may not develop them, but that’s a different matter. Consequently, creative education is for everyone, not a select few.

A second misconception is that creativity is limited to particular activities, such as the arts. When people say they’re not creative, they often mean they’re not artistic. In fact, creativity is possible in every field of human activity, from science to music, sport to architecture and beyond. Consequently, creative education involves the whole curriculum, not part of it.

“Creative education is for everyone, not a select few.”
A third misconception is that creativity is somehow the opposite of rigour and discipline. On the contrary, creativity in all disciplines involves increasing mastery of cultural knowledge, concepts and practical disciplines. I defined creativity as the process of having original ideas that have value. Understanding these dynamics is the key to teaching and assessing creativity.

Creativity is a process, not an event. New ideas or works sometimes occur to us fully formed: but more often the idea or project you start with evolves as you work on it and may change fundamentally in the process. Along the way, there are often false starts, dead ends, mistakes and second thoughts. Teaching for creativity means enabling students to practice and use this process for themselves. It involves a wide range of teaching techniques, from direct instruction to facilitating group inquiries, stimulating curiosity and cultivating critical judgement.

Creativity is about original thinking. To count as original, your ideas don’t have to be new to all of humanity, but certainly new to you. Teaching for creativity means enabling students to challenge their own thinking and to generate fresh ideas and perspectives. Some approaches to measuring creativity have focused on the number of ideas that people generate. While quantitative measures touch on some essential aspects of creative thinking, including fluency and flexibility, being creative in any domain is not only about generating novel ideas. Creativity is also about value.

Creativity involves a reciprocal process of critical judgement about the aptness, feasibility and merits of those ideas. Teaching for creativity means enabling students to look critically at their own ideas so that they can evaluate and evolve them. To that extent, assessing the outcomes of students’ creative work necessarily involves qualitative judgements too. Defining which values are appropriate in judging creative work in any field is an essential part of teaching and assessment.
Over the past 60 years, there have been intense research efforts, within and across many disciplines, into the nature of creativity and the efficacy of various methods of teaching and assessment. There have been countless successful programmes and practitioners. Anyone with a serious interest in promoting creativity will find that these efforts have generated a rich, substantial body of literature and know–how to help them do it. Creativity can be taught and assessed. But doing so means expanding the boundaries of conventional teaching and testing to allow the real spirit of imagination and creativity to breathe in schools.

ABOUT THE AUTHOR

Sir Ken Robinson, PhD is an internationally recognised leader on developing creativity, innovation and human resources in education and business. He works with governments and education systems in Europe, Asia and the USA, international agencies, Fortune 500 companies and some of the world’s leading cultural organisations. A world-leading speaker, his 2006 TED talk, *How schools kill creativity*, was the most viewed in the site’s history. In 2011 he was listed by Fast Company magazine as “one of the world’s elite thinkers on creativity and innovation” and was ranked among the Thinkers50 list of the world’s top business thought leaders. He is married to Therese (Lady) Robinson, they have two children and live in Los Angeles, California.

17 Robinson K (1999) All Our Futures: Creativity, Culture and Education, National Advisory Committee on Creative and Cultural Education
NEW CHALLENGES
Peter W. Hill is one of the world’s leading experts in the field of assessment and testing. He has contributed in leadership roles to policy on curriculum and assessment in Australia, Hong Kong and the US.

In this piece, Peter reiterates the importance and potential power of assessment for improving teaching and learning and as a tool for efficacy. Yet he also highlights a tension: how can we reform and refresh assessment techniques to measure credibly the knowledge and skills that matter for the 21st century – even Ken Robinson’s elusive ‘creativity’? And what potential for the transformation of assessment lies in digital technologies?

The collection and sharing of data about pupil achievement has proved central to the collaboration and knowledge exchange required to drive improvement and to the setting of high expectations. This is true at both system and school level. The additional challenge set by Peter is that we should use assessment
NEW CHALLENGES

to gain insight into increasingly nuanced dimensions of teaching and learning. Increasingly, we should evaluate our students, schools and systems against this more demanding standard.

THE ROLE OF ASSESSMENT IN MEASURING OUTCOMES

There is little doubt that we live in a world in which education and the capacity to constantly learn and adapt are critical to our success as individuals, as nations and as inhabitants of planet Earth. What goes on in our schools is of paramount importance, and thus we must be relentless in ensuring their efficacy.

School education is built around the answers to three questions:

1. What do we want students to learn? (curriculum)
2. How should we teach it? (pedagogy)
3. How should we evaluate what has been learnt? (assessment)

These are the big questions that have preoccupied me in a career spent leading organisations responsible for developing curriculum, assessment and certificating student achievement. Of the three, the toughest has been assessment and the measurement of the outcomes of schooling.

I would nominate two global assessment challenges that demand solutions.

Challenge 1: Using assessment to improve teaching and learning
Teaching in a class of 20-40 students is tough work. Students differ widely in terms of their readiness to learn. Within a single year cohort, the achievement gap can be as much as 5-6 years. One-size-fits-all instruction cannot be effective in a classroom in which students are at very different starting points.
To be effective, a teacher must have detailed and continuously-updated information on those starting points in order to personalise instruction, together with ongoing assessment information on outcomes that can be used as feedback for the teacher to modify instructional strategies and for the student to adjust their learning strategies. Assessment for the purposes of improving teaching and learning is what is called ‘formative assessment’.

There is compelling evidence from meta-analyses of hundreds of studies to indicate that formative assessment, when used to provide feedback on a daily basis to both teacher and students, is one of the most powerful interventions ever recorded in educational research literature. But it is rarely practised. The time and effort involved in making, recording and analysing daily observations of student learning defeats most teachers.

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The importance of teaching at the point of need and of personalising learning has been known for decades, particularly through the writings of Vygotsky and his theory of ‘assisted development’, but it has proven almost impossible in practice, even when teachers have good assessment data on students’ starting points.

So here we have a fundamental challenge: for schooling to have maximum effectiveness, teachers need to continuously use assessment data to monitor the learning of each student on a daily basis, and they need the time to use the data to personalise their instruction.

Challenge 2: Assessing 21st century competencies

It is imperative that we ensure that students acquire the cognitive, interpersonal and intrapersonal competencies that enable them to be lifelong learners and effective workers and citizens in a rapidly changing world.

We urgently need new assessments that can reliably and validly measure deep learning, problem-solving, metacognitive strategies, the ability to work collaboratively, leadership and self-management, to name some of the more important competencies. It is true that teachers have always observed such behaviours and written about them in end-of-year reports, but if we are to take them seriously, we need to be able to measure them. Until recently, this has seemed a challenge beyond our grasp.

The digital age and a new era for education

Answers to both challenges are emerging through harnessing the power of new digital technologies to transform assessment and indeed the whole learning environment. Touchscreen tablets allow teachers to assess and record on the run, and to collect more detailed information about each student.

Developers are embedding assessments into the learning process as an integral part of high-quality learning systems that provide real-time, instant feedback through automatic scoring of assessments, including the marking of essays and short response questions. Meanwhile, researchers are working on developing sophisticated online assessments of hard-to-assess competencies using games, simulations, interactive tasks and authentic problem-solving activities.

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Behind the screens, algorithms that make use of Big Data analytics are being used to interrogate assessment data on an ongoing basis and provide feedback on the learning and teaching process, thus facilitating personalised instruction and maximising the power of formative assessment. Better still, teachers’ time devoted to preparation, marking and reporting is being saved, freeing them up to give more time to students’ personal learning needs.

Yes, all too many schools currently lack the connectivity, hardware, training and resources to take advantage of these developments. Yes, much more work needs to be done before we can have confidence in the new online learning and assessment environments. Yes, there will still be limits to what they can achieve. But we can say with confidence that a new era is dawning.

ABOUT THE AUTHOR

Prior to his time at ACARA, Dr Hill was an educational consultant on projects in Australia, Canada, Hong Kong, the Middle East, UK and USA. From 2004 to 2007, he was Secretary General of the Hong Kong Examinations and Assessment Authority, where he played a key role in major reform of curriculum, assessment and certification. He has also been head of the Victoria Department of School Education, Professor of Education at the University of Melbourne and Director of Research and Development at the National Centre on Education and the Economy in the US.

Peter Hill

Former Chief Executive of the Australian Curriculum, Assessment and Reporting Authority (ACARA)
While each of the contributors to this publication brings unique insights to the challenges facing global education, there are some clear, underlying themes.

The first is the emphasis on the transformative power of education to change individual people’s lives – and also the fate of communities and humanity as a whole. Churchill’s comment at Harvard on 6 September 1943 that, “the empires of the future are the empires of the mind” was prescient.

A second theme is the growing emphasis on data, evidence and evidence-informed policy. While, as Geoff Mulgan points out, there is a long way to go, it is encouraging to see both the growing evidence base becoming more powerful and its use at every level in systems becoming more widespread.

The third theme is the growing sense that there is a real opportunity in the decade ahead to transform education; that we can move from the
incremental progress of the past two decades to something faster, deeper and more dramatic.

We at Pearson want to be part of the global conversation about how to effect that transformation. More importantly, we want to get started. We are putting efficacy at the heart of every part of our business, and making the pursuit of measureable learning outcomes which address the world’s most pressing unmet educational needs our driving priority. The sister publication, The Incomplete Guide to Delivering Learning Outcomes, describes how we are taking up that challenge.

Educators globally have already embarked on the path to efficacy. We hope to collaborate with them and learn as we go, in the interests of students of all ages, all over the world.

“Educators globally have already embarked on the path to efficacy. We hope to collaborate with them and learn as we go.”
As Michael Barber, leading authority on education systems and reform. As Chief Education Advisor, he heads Pearson’s worldwide programme of research into education policy and efficacy. Previously a Partner at McKinsey and Head of their global education practice, he is also Distinguished Visiting Fellow at the Harvard Graduate School of Education and holds an honorary doctorate from the University of Exeter. He served the UK government as Head of the Prime Minister’s Delivery Unit (2001-2005) and as Chief Advisor to the Secretary of State for Education on School Standards (1997-2001). Before joining government he was a professor at the Institute of Education at the University of London.

Saad leads a global team to ensure delivery of learning outcomes and performance across all of Pearson’s products, services, investments and acquisitions. Previously he was at McKinsey where he led innovation and strategy work for several Fortune 100 companies. Saad has advised education systems in Asia, Europe, Africa and North America on delivery, reform and systemic innovation. He graduated with distinction from Yale University with degrees in economics and international studies, and currently serves as a non-executive director at a number of companies in the education and technology spaces. Saad is based in the UK.
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