



wise matters

Learning to Make a Difference:

School as a Creative Community

BY CHARLES LEADBEATER

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Executive Summary

Education should equip young people to shape an uncertain future so they can live more successful lives, on their own terms and together.

They need the confidence and the capabilities to make their world together, in the face of tightening constraints on resources, rising aspirations, exploding opportunities for collaboration and pervasive institutional upheaval. They need an education that prepares them to be collaborative agents of change rather than atomised victims of change, to respond to frustration with creativity and innovation.

The current dominant model of education fails to prepare children for this world. It even fails many children in its own terms: many enter the system full of hope and leave deeply disenchanted with little to show for their years in class. Too much talent is heedlessly wasted. Too many students are bored in school: physically present but psychologically absent.

Children learn to put aside what fires them up and learn to do what gets them by. There is nothing wrong with diligent and obedient hard work but that does not build the true persistence, grit and determination required for living in a world where the capacity to overcome unforeseen obstacles and to recover from setbacks will be vital.

The real core curriculum of education should equip young people to:

- Sense opportunities and respond to interesting, difficult challenges without knowing in advance that there is a single correct answer.
- Interpret and explore ambiguous questions that do not have a clear-cut solution but may have many.

- Collaborate with others to come up with solutions, which will require social and emotional skills, as well as tangible capabilities to make a valuable contribution to the collaborative effort.
- Make something, whether that is a model, a play, a piece of music, an argument, which makes a difference to them, their relationships and the community they are a part of as they seek to solve these challenges.
- Feel the excitement and possibility of power as well as the sense of responsibility that comes from being an agent of change.
- Have the confidence to act creatively even in the face of uncertainty, without having to know every detail in advance.
- Acquire the traits of character, especially persistence, grit and determination to overcome the myriad obstacles that will stand in their way.

The future will not be delivered to us but made by us. Education and learning should equip all of us to play a part in that unfolding process of collaborative creative exploration of possibility.

Education should be modelled on how that kind of innovation and creativity emerges. Innovation stems from creative collaboration, often over a long period, among people with diverse knowledge and talents, brought together round a shared sense of mission and purpose. The fundamental unit of sustained innovation is a creative community animated by a cause. That is true of great cities, companies, universities and social movements.

In a society driven by widely distributed innovation on a mass scale, education should ready people to play roles in these creative communities, just as in the past it readied people to play a role in larger, hierarchical organisations. Schools should be early formative and uplifting experiences for young people of what it is like to be a part of a creative community with a cause, an apprenticeship in collaborative innovation and problem solving.

School should be a creative community with a cause, a place where children go to:

- Explore, create, make, try things out and learn from their mistakes and recover from their setbacks;
- Learn the habits and skills of collaborative and creative self-governance by being part of a community;
- Discover what excites them about life, what their passion and purpose is, what really matters to them and so what they want to learn about.

Teachers, policy-makers, parents, need to come together to help design lessons, schools, curriculum, frameworks of assessment which:

- Encourage children to take the initiative rather than wait obediently.
- Teach children that as well as being able to deliver the right answer at the right time, they need to be able to open up interesting questions, to which there might not be a right answer.
- Involve learning with the head and the hand, in the real world as well as in the classroom, making things together as well as writing papers and sitting tests.
- Test, stretch and challenge children in ways that build their character, resilience and persistence.
- Provide ample opportunities for children to learn how to govern themselves, together, as they work through problems, with a shared sense of purpose.
- Develop the desire, capacity and confidence to be a contributor to solving problems, however large or small.
- Leave young people with a story of achievement and contribution, making and doing, which goes beyond the grades they get in exams and which they can carry with them into the real world.
- Give children a strong sense of who they are and what they want to be. To provide a setting in which they grow as people with a sense of purpose.

For teachers this means approaches to designing learning as a collaborative, problem solving activity. For school leaders it means conceiving of the school as a community in which children learn the habits and values of collaborative, creative self-governance. For politicians and policy-makers it means designing the frameworks for curriculum, assessment and accountability which promote not just better exam grades but the capabilities and character young people will need in the real world.

Education has to reclaim its sense of purpose. It has to stand for something more than getting good grades. It has to persuade people to invest in it, not just financially but emotionally, because it builds character and helps people to lead more successful lives. It has to dare to stand for something more than the pieces of paper it hands out to children as they leave.

Facing the Future

Imagine for a moment that this is the end of 1914. You have been charged with coming up with a list of 20th century skills that learners will need to equip them for the century to come.

The First World War would only just have started. At that stage it would have been impossible to foresee that it would last four years, let alone what lay in store beyond that: the rise of the motor car and the television, Communism and Fascism, decolonisation and the Cold War, rights for women and lower child mortality, antibiotics and the nuclear bomb, the eventual arrival of the Internet and the personal computer, not to mention the contraceptive pill and chemotherapy.

Millions of people stood to benefit from innovations which were difficult to foresee, which no one prepared them for and which they adopted because they made their lives better, from gas heating and indoor toilets to the fridge and the television, as well as much longer life expectancy and taller, stronger bodies. Very little of that could have be foreseen in 1914 by someone attempting to design education for young people entering the world that was about to arrive.

Even if all those changes could have been predicted, how would an education system have adequately prepared people for all of that, in advance? The cautionary moral is that we should take care when we set out to redesign education for the sake of the future. There are many possible futures. The future depends on what we make of it.

There is a deepening sense of unease that schooling ill equips young people for the world as it stands let alone what it may become. Yet even as we respond by trying to make education more relevant and useful we run the risk of becoming obsessed by fads that will prove ephemeral and passing, and mistakenly favour a particular technology, method of teaching, school design or policy tool while completely missing other even more important ones.

To avoid making that mistake we need to stand back, to gain a sense of perspective, to give us a sense of clarity. Amidst the welter of often conflicting possibilities, Charter Schools, Big Picture Schools, religious schools, creative schools; flipped, blended, project based learning and MOOCs; education for capabilities, skills, knowledge, deep mastery and factual content, we need to pick a clear line otherwise we risk becoming lost in a fog of different possibilities. What are we preparing young people for and how should we do it?

“
Innovation is the creative response to the frustrations bred by this conflict between constraints and ambitions. Education should help us to find and assemble those responses.

”

The challenge is to help prepare young people for a world that will be shaped by six forces wherever they are growing up.

Constraints

Theirs will be a world of tightening constraints, especially on critical resources like water but also on energy and many raw materials. Climate change will have a growing impact and so too the responses to it. Everywhere organisations are faced with doing more with less. These constraints far from holding us back should be a spur to more radical innovation.

Ambitions

This is also a world of rising ambitions and aspirations from individuals with an increasingly amplified sense of what their lives could be. All over the world people are moving to cities in search of a better job, house, life and indeed education for their children. Across the developing world a slow but powerful revolution in women's aspirations has a long way to run. Aspirations are rising across the developing world for better standards of living, if only in the form of a decent house, a place to wash, clean energy for cooking, a way to get around and to become connected. In the developed world, despite slow growth, aspirations for standards of living remain high with growing emphasis on a quality of life that is more sustainable and balanced. Demand for education is both a driver of these aspirations and a symptom of them.

This basic tension between tightening constraints on many basic resources, such as water, on the one hand, and rising ambitions and aspirations, on the other, provides the fundamental spur for innovation. Innovation is the creative response to the frustrations bred by this conflict between constraints and ambitions. Education should help us to find and assemble those responses.

Collaboration

The best hope we have of meeting our rising ambitions within the tightening constraints we face comes from the exploding, almost limitless possibilities for creativity and collaboration opened up by digital technologies and communications, which are connecting people all over the world in more creative and powerful ways. Digital technologies have been taken up at such speed and scale because they change our lives for the better with affordable, easy to use tools, devices, software and connections which give us access to more knowledge and information; allow us more choice; get us better deals; connect us to one another in countless new ways as colleagues, friends, fans, dates and mates; enable us to organise ourselves in more flexible ways.

Only 40 years ago the digital economy was little more than arcade games of ping-pong. Now it includes vast multiplayer online games which are the focal point of communities of players and developers in their millions. The web may be an unruly free-for-all but it is also allowing more of virtually everything as more

people pursue what most matters to them. At a time when politics and corporate life often seem so uninspiring, digital technologies have unleashed enormous energy and ambition for change. When did a political party last create something as interesting and life changing as iTunes, Google, Airbnb, Trip Advisor or Wikipedia or as mindblowing as the digital effects in the film Gravity? In the developing world the sense of possibility brought by digital technology is even more palpable. In India or Kenya the acquisition of a mobile phone means you have arrived, you have a number and that means you can be connected to a wider world and so to seemingly boundless opportunities to learn, trade and collaborate.

The role of innovators public, private and social will be to use these opportunities for collaboration to devise better solutions, which meet people's rising aspirations but within the tightening constraints on resources. Education is itself being opened up, challenged and remade by the way digital technologies are creating new ways to learn.

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Upheaval

The trouble with these emerging collaborative models in business, politics, and indeed in education, is that they challenge, threaten and disrupt the organisational status quo. Hierarchy is challenged by more lateral, collaborative organisations. Closed organisations find themselves challenged by more open platforms. Big organisations suddenly find themselves challenged by small players that are able to mobilise networks of support. Long stable markets are destabilised and fractured. Reliable business models become unsteady.

Suddenly people can seemingly take action without asking permission and without needing huge resources up front or an organisation to mobilise them. Large organisations – including public services – are in a state of near constant upheaval as they try to respond to these new more open, collaborative, networked models.

In many organisations and professions this has triggered a kind of civil war as people debate how to respond, with many seeking to stick to tried, tested but increasingly outmoded models and others advocating largely untested but potentially revolutionary and risky new models. Education is not alone in facing these kinds of debates.

Authority

Digital technologies are bringing with them not just new organisational models but a new kind of culture and set of expectations, especially among younger citizens, a kind of amplified and connected individualism. Large, bureaucratic centres of power seem increasingly distant to people who turn to peer-to-peer networks for information, ideas and support. Social media and the web are remaking how we expect to: get information; make our voice heard; connect to others and to receive services. The mobile phone in particular is becoming a multiple entry point into life, from voice, text, data, photographs, video, for entertainment, commerce, education, health and pleasure. People are being inducted into a more open, participative and expressive culture.

Social media and the web are creating myriad spaces in which people can voice their views, connect to others, learn to see the world from new vantage points, gather information on their own terms.

“ People are being inducted into a more open, participative and expressive culture. ”

Uncertainty

The result is that we live in dense fog rich in potential and uncertainty in equal measure. We live in a world of both tightening constraints and exploding possibilities, rising aspirations and growing citizen self-confidence, organisational upheaval and persistent challenges to institutional sources of authority, which appear increasingly obdurate and clumsy. Making sense of this shifting world is difficult.

Aspects of this world are predictable: the growth of population; ageing societies; urbanisation; growing resource constraints especially on water and especially in the fastest growing cities of the developing world. Other aspects are unpredictable because it seems small, easily overlooked developments can have huge impacts: how new technologies will enable new collaborative solutions to emerge; what kinds of new businesses and political movements will emerge.

Above all this is a world in which people themselves will need to be able to devise their own solutions. They will be less willing than ever to accept scripts handed down to them on high.

Those are the main contours of the world we need to prepare young people for. If we do not then it should be no surprise that many will feel defeated, disappointed and dejected. Their lives will lack a structured narrative of progress. Some will be drawn to the certainty provided by a variety of forms of fundamentalism, however illusory. Many more will come to distrust change if they can have no influence over its outcome.

Education should equip people to better shape an uncertain future so they can live more successful lives, in their own terms and together. They need the confidence and the capabilities to make their world together. They need an education which prepares them to be collaborative agents rather than atomised victims of change.

How well does the dominant, traditional educational model prepare them for the task ahead? In short: not at all well.

“ Education should equip people to better shape an uncertain future so they can live more successful lives, in their own terms and together. ”



2

LEARNING TO MAKE
A DIFFERENCE

Comply and Perform

Frustration with traditional schooling is mounting on all sides. The current approach is failing too many children in its own terms: many enter the system full of hope and leave deeply disenchanted with little to show for their efforts. Too much talent is heedlessly wasted. Too many students are bored in school: physically present but psychologically absent.

Children learn to put aside what fires them up and learn to do what gets them through. Diligent and obedient hard work is rewarded, and nothing wrong with that, but obedience does not build the persistence, grit and determination required for living in an uncertain world, in which the capacity to overcome unforeseen obstacles and to recover from setbacks will be vital.

“ If ‘Do No Harm’ were the key design principle for an education system then the one we have would count as an abject failure. ”

Children learn how to stay “on task” – to focus, isolate, analyse, to do as they are told. But they also need to be shown how to make themselves available to the world around them and to worlds beyond their own, to see things as a whole or to spot unusual connections between ideas – the basis of creativity. Too much learning in school locks knowledge in discrete and separate silos. Children who enter the school system as natural entrepreneurs and problem solvers, have that capacity sucked out of them by learning how to sit in rows, memorising answers which drill them to be the same rather than celebrating how they differ.

Children are too rarely taught to open up interesting questions, to which there might be several good answers and as a result it too rarely teaches children to open themselves up to the views and insights of others who might see the world in a different way. It teaches them instead that there is one right answer that the examiner is looking for. In the rest of life, outside school, there are often many answers not just one.

Education has become an increasingly sophisticated sorting system for young people who come round like the parcels on a carousel at a UPS warehouse, waiting to be picked, scanned and delivered to the destination decided for them. The point is not to excite imagination, encourage creativity, build self-reliance, form character, learn self-governance, forge willpower, strengthen resilience nor develop leaders. The most powerful lessons children learn at school are that they can be enthusiastic, punctual, diligent, neat, hard working, get good grades and yet still be bored witless because learning is neither absorbing, challenging nor energising.

Modern schooling too often systematically underestimates the children it teaches and worse teaches them to underestimate themselves. If “Do No Harm” were the key design principle for an education system then the one we have would count as an abject failure. It harms children every day by the way it multiplies their sense of boredom and failure.

“ It is a 16-year apprenticeship in diligent compliance rather than preparation for a life of entrepreneurial exploration. For too many children school spreads self-doubt, feeds anxiety and leaves them feeling vaguely useless. ”

The world they are growing up in is one in which they will constantly have to find a sense of purpose, to identify interesting challenges and opportunities. But school teaches them that the point is to get through exams, to deliver the right answer, and only the right answer, when demanded. It is a 16-year apprenticeship in diligent compliance rather than preparation for a life of entrepreneurial exploration. For too many children school spreads self-doubt, feeds anxiety and leaves them feeling vaguely useless.

The contemporary ideal of universal education through mass schooling was a creation of the late 19th-century Europe and the US in the midst of industrialisation, urbanisation and nation-building. In 1850 most education in Europe and the US was provided by private, voluntary and church groups in loosely regulated schools which relied on independent funding.

A century later, in 1950, most children were attending schools that were state-funded, highly regulated and regimented, with students studying for standardised exams by which they were graded. Yet despite this transformation the underlying logic of schooling has remained remarkably tenacious.

As David Tyack and Larry Cuban put it: “The basic grammar of schooling, like the shape of classrooms, has remained remarkably stable over the decades. Little has changed in the ways that schools divide time and space, classify students and allocate them to classes, splinter knowledge into ‘subjects’ and award grades and credits as evidence of learning.”*

This system brought great benefits, allowing schooling on a mass scale and through that a massive expansion of opportunity for people. In the past three decades the focus has shifted again to honing and reforming this system, through tighter frameworks for curriculum, testing, assessment and accountability.

Yet despite these reforms very few people seem happy with the core curriculum which teaches children diligent obedience, to comply, perform and deliver. Employers are frustrated that schools produce so many young people who have to be retrained to be ready for work. Skills shortages and unemployment abounds: one in eight young people worldwide, 75m, are unemployed and yet employers

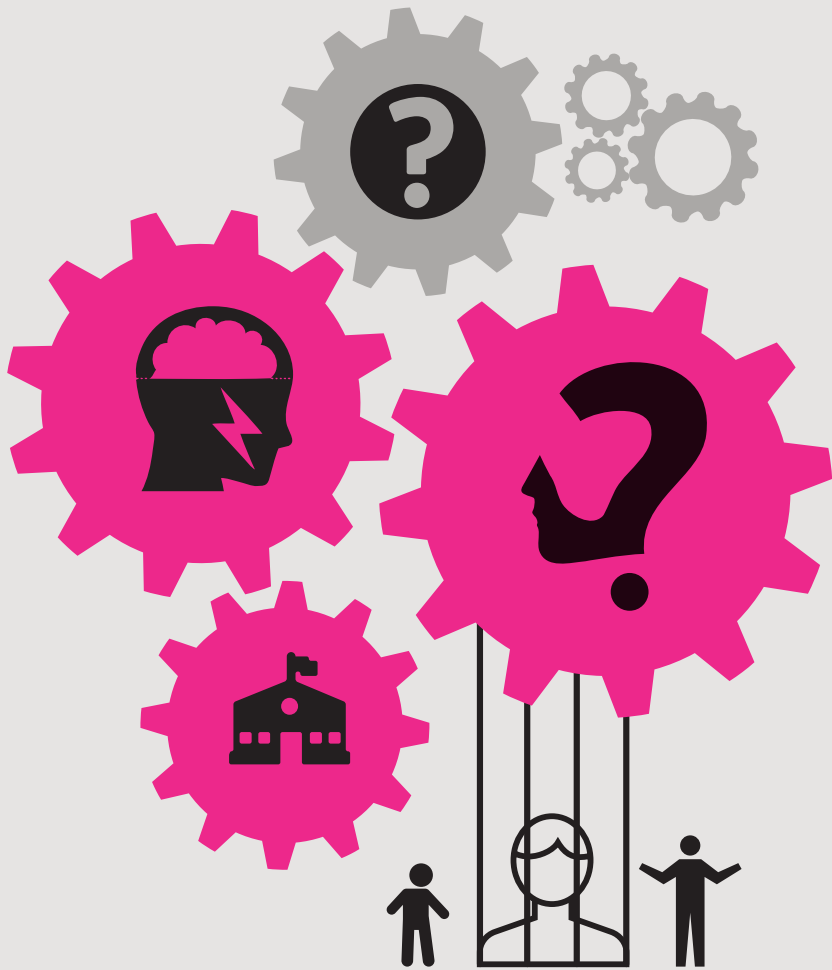
still complain of skill shortages. That discrepancy points to a deep seated, systemic dysfunction in education.

The truth is many of these young people need to be able to invent their own jobs and businesses, to be schooled to see themselves as entrepreneurs rather than employees. Many schools devise their tests with university entry in mind and yet universities complain that too many students who have been coached to get through tests at school are unprepared for more independent, in depth study at college.

Despite these mounting frustrations the system we have holds fast, in part because parents are rightly fearful of taking undue risks with their children’s future, in part because it is familiar. It is almost as if the current approach to schooling is kept in place by a cartel of anxiety and the lack of credible alternatives. No one is prepared to take the first step to create something different in case their school system slips down the PISA rankings.

That may all be about to change, however. New and effective models of schooling are emerging all over the world and they have some key core design features.

* David Tyack and Larry Cuban. (1995) *Tinkering Toward Utopia: A Century of Public School Reform*. Both are professors of education at Stanford University.



3

LEARNING TO MAKE
A DIFFERENCE

A Different DNA

When tight constraints meet rising ambitions the outcome is likely to be frustration and conflict unless we can respond with innovation and creativity to devise better solutions which allow us to deploy our resources more effectively. Innovation, in its myriad forms, philanthropic and commercial, public and private, scientific and social, is needed to help us reconcile these often conflicting, confusing but highly potent forces. That capacity for innovation needs to be a mass capability, widely shared among the population. The capability to be creative, for people to be able to shape their own lives, their communities and to make a difference to their world, is what we need education and learning to develop, on a mass scale.

“ The capability to be creative, for people to be able to shape their own lives, their communities and to make a difference to their world, is what we need education and learning to develop, on a mass scale. ”

“ The future will not be delivered to us but made by us. Education and learning should equip all of us to play a part in that unfolding process of collaborative creative exploration of possibility. ”

We need an education system that equips young people to:

- **Sense opportunities** and respond to interesting, difficult challenges without knowing in advance that there is a single correct answer.
- **Interpret and explore** ambiguous questions that do not have a clear-cut solution but may have many.
- **Collaborate with others** to come up with solutions, which will require social and emotional skills, as well as tangible capabilities to make a valuable contribution to the collaborative effort.
- **Make something**, whether that is a model, a play, a piece of music, an argument, which makes a difference to the learners, their relationships and the community they are a part of as they seek to solve these challenges.
- **Feel the excitement** and possibility of power as well as the sense of responsibility that comes from being an agent of change.

- **Have the confidence to act** creatively even in the face of uncertainty, without having to know every detail in advance.
- **Acquire the traits of character**, especially persistence, grit and determination to overcome the myriad obstacles that will stand in their way.

The future will not be delivered to us but made by us. Education and learning should equip all of us to play a part in that unfolding process of collaborative creative exploration of possibility.

The modern school even now is indelibly imprinted with its original organisational inspirations that stressed order, discipline, hierarchy. For the future we need to organise learning around the need for innovation in all its forms, so that from an early age children learn what innovation is like, how it happens, who takes part, where it takes place, in many different ways. The key to that is not to focus on the latest fashions in technology and teaching practices but instead to understand the organisational principles of innovative organisations and cultures and to model schools around those.

“ Creativity and innovation are primarily social and cultural rather than purely psychological activities. ”

Schools are not made more innovative with more computers, bean-bags, play spaces and bright colours. They are made more innovative when children get a structured, cumulative experience of what it is like to find interesting challenges, devise promising solutions, test them out and put them into practice. Schools designed for the future should take their inspiration from organisations that continually produce successful innovation.

It is commonplace to think of creativity as an individual, psychological quality, a feature of how specially gifted individuals think and imagine. It can be. Yet invariably those talented, visionary individuals achieve nothing unless they are part of a much larger, collective undertaking – a team, club, company, movement, city, an orchestra or ensemble. Creativity and innovation are primarily social and cultural rather than purely psychological activities. Sometimes new ideas can come freshly minted from the heads of specially talented individuals. Much of the time, however, they emerge through a process of dialogue and interaction, in which different people with different knowledge and insight share and blend their ideas. Innovation, turning a creative idea into something real – a film,

play, game, object, service – takes an even greater mix of skills. The original creative idea is just the starting point for what is usually a protracted collaborative process to turn it into a real product or business that can sustain itself.

That is why the basic unit of sustained innovation is *a creative community with a cause*. That is true of great companies, cities, teams and it should also be true of great schools too. First we look at why creative communities animated by a clear shared cause are the core of innovation. Then we go on to look in more detail at what it would mean for schools to be modelled on creative communities of these kinds.

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4

LEARNING TO MAKE
A DIFFERENCE

The Basic Unit of Innovation

Barcelona Football Club reinvented how the game was played, turning it into a collective, creative and collaborative exploration of movement and angles. **Pixar** reinvented the animated film, with *Toy Story* and *Wall E*, setting new standards for compelling storytelling. **Pratham**, perhaps the leading educational social enterprise in the world, has educated millions of pre-school children in India in low cost pre-school balwadis often run from the single room homes of young women living in slums. **Cambridge University's Laboratory of Molecular Biology** unravelled the genome of a complete organism just years after Francis Crick and James Watson had uncovered the double-helix structure of DNA and cleared the way for some of the most radical advances in genetics.

A football club; an animation studio; a social enterprise and a laboratory: all of them leaders in their fields thanks to their track record for creativity, innovation and excellence. They vary in their size, ownership, legal form, culture and geography. Pixar makes money and Barcelona FC is a global brand. In the Laboratory of Molecular Biology staff with PhDs work in tightly controlled conditions. Pratham works with young women who barely have a secondary education in the dusty slums of Indian cities.

What do these highly disparate examples of highly innovative organisations have in common? All had visionary leaders, often several. Barcelona's most recent success came under Pep Guardiola, himself a disciple of the great Dutch visionary Johann Cruyff. The Laboratory of Molecular Biology was created by the brilliant and charismatic Sydney Brenner. Pratham is the brainchild of the educational entrepreneur and maverick Madhav Chavan who built on ideas first developed at Mumbai University. How those leaders lead is what matters. In each case they developed around them what we should now recognise as the basic unit of sustained innovation: a creative community with a cause.

“ A football club; an animation studio; a social enterprise and a laboratory: all of them leaders in their fields thanks to their track record for creativity, innovation and excellence.

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The leaders, remarkable individuals each, only achieved what they did because they became the focal point for a much larger creative community. The most effective innovators mobilise creative communities around a sense of mission and purpose. Understanding each of those elements and how they combine is critical to innovation in any setting, from a company to a school, a city to a social enterprise.

Community

Communities rather than individuals are the basic unit of sustained innovation. That is because innovation invariably stems from creating new recipes, new ways to blend old and new ideas and resources to create new and better technologies and solutions, products and services. Those combinations usually come from people with different ideas, knowledge and insights finding one another and coming together. Out of their conversations and collaboration come new mixes and blends. That kind of fluid combination is often incredibly difficult in organisations where hierarchy stifles communication and rules inhibit the ability to form teams. Small organisations often lack the diversity of skills to come up with complete new solutions, all on their own. Often they have a vital ingredient but need other ingredients from partners to make the recipe work. That is why sustained, successful innovation usually comes from within communities that can assemble all the necessary skills for the complex task of taking an idea from the drawing board and into the real world where it can be used.

Pixar is a prime example of such a community.¹ At the heart of the company is a creative community of artists, animators and storytellers, where communication is very fluid, hierarchy is flattened and creative decisions are made through peer review. The atmosphere at Pixar is not unlike the highly dynamic community Sydney Brenner created in Cambridge. Brenner would convene informal seminars at short notice so people could not prepare in advance and so they had no option but to share what were ill-formed ideas.²

The strongest innovations grow through iteration in many different settings where they develop through facing different tests. Barcelona FC came to be creative thanks to its adaptation of the Dutch principles of total football first developed at Ajax in the 1970s, in which creativity became not a function of individuals but the entire team's ability to rearrange itself flexibly and cooperatively.³ But it did not come from thin-air: it had a long history. That mantle is now being taken up by other sides, not least Bayern Munich. And the Barcelona style has bred its own responses in the form of the speed, athleticism and movement of Real Madrid. Nothing ever remains static.

Communities however are often defensive bastions of parochial conservatism. What makes a community creative?

Creativity

A community becomes creative under four conditions. First, the members have to be reasonably skilled at what they do: they must have something to contribute. Barcelona's footballers go through thousands of hours of training to develop their extraordinary fitness, skills and communication. Second, the community needs to value and respect a diversity of skills, knowledge and outlooks. A community made up of people with the same background, view of the world and knowledge, will come up with very similar solutions. Companies dominated by male engineers often fail to come up with novel ideas which appeal to consumers. Pixar's staff set one another extremely high standards for the work they do, but they also respect the many different skills needed to make a film. Third, a creative community needs to be curious and outward looking, to draw in new ideas and seek out new challenges. Fourth, the community must itself be open to scepticism, questioning, testing, challenge and debate, which means it should be relatively egalitarian, at least so far as where ideas come from.

Communities sustain innovation because as they share ideas they can mutate and grow, especially at they adapt to new

“ Groups with diverse skills and outlooks come up with innovative smart solutions more often than groups of very clever people who shared the same outlook and skills. ”

conditions. That is how the engineers in the Cornish tin mines in the 18th developed the steam engines that would eventually power trains, ships and factories. The super efficient steam engine first developed as miners went ever deeper in more difficult conditions. Only then was it taken up by new communities, in Birmingham among manufacturers and in Glasgow among shipbuilders to power factories and ships. It is also how Dutch sailors in the 17th century tested and then adapted their designs to meet different conditions: first canals, then lakes, larger inland waterways, offshore sailing, the North Sea and then the Atlantic. As the community spread out it encountered new conditions, devised new solutions and so new ideas spread. In the heart of Soho, in London, you will find something very similar happening among a small cluster of companies leading the field of computer generated special effects for films. Ideas breed and cross-fertilise in active, curious, outward looking communities.

Groups with diverse skills and outlooks come up with innovative, smart solutions more often than groups of very clever people who shared the same outlook and skills. A group of experts who think in the same way are probably no better at devising a solution than just one of them. Adding more people who think in the same way is unlikely to improve a group's ability to come up with different solutions. Diverse viewpoints are likely to generate more possible solutions and evaluate those solutions from a wider range of vantage points, and therefore spot potential flaws.⁴

Cause

The challenge with all innovation, however, is how to organise such a creative, curious, diverse community. Here hierarchies, rules, targets and bureaucracy are completely counterproductive. The most effective way to organise a creative community is to ensure it is drawn together and motivated by a cause, a set of values, a sense of purpose, which its members share. Creative communities are best organised through the laws of attraction: people are attracted to one another, what they can learn from one another and gain from cooperation in the name of the cause they share.

Having a shared cause provides people with a sense of momentum and purpose.⁵ Pratham has drawn together its community of many thousands of educators around a common cause to challenge and change India's dismal record in basic education. Madhav Chavan, its inspirational leader, is a former trade union organiser who applied to pre-school education the principles of mass membership recruitment drives.

“ Creative communities are best organised through the laws of attraction. ”

“ Having a cause provides perspective, a vantage from which to make sense of a complex, fast moving world. ”

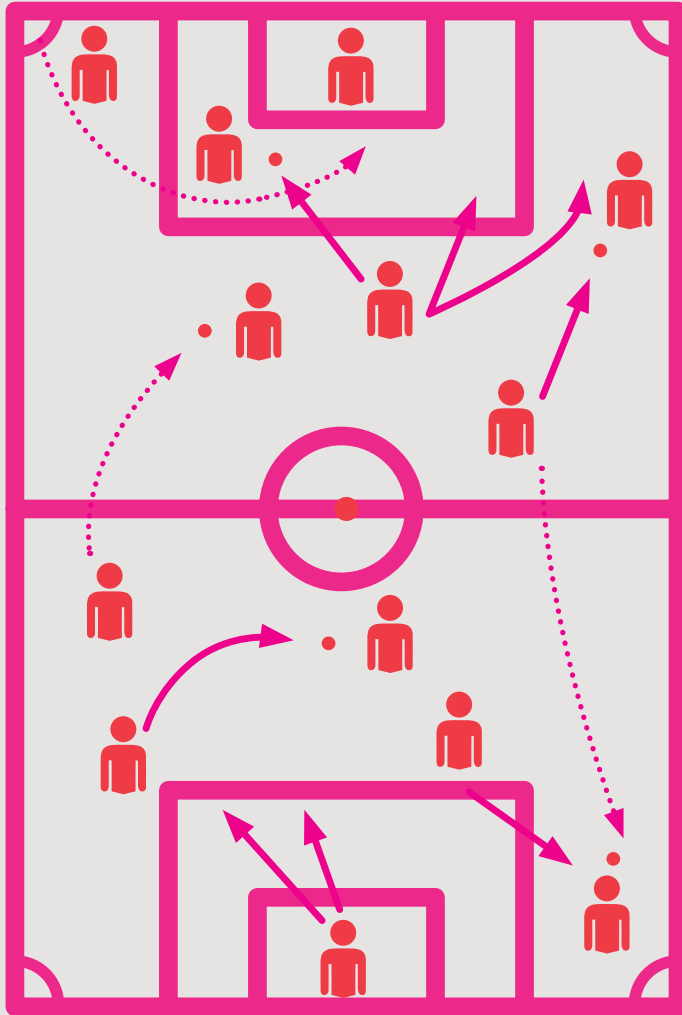
Pixar is propelled by the cause of making the best possible, mould breaking animated films. Barcelona FC is animated by the cause of being more than a club: the way it insists on playing the game puts beauty and grace on a par with efficiency and competitiveness. The football club represents Catalan cultural identity. Sydney Brenner's community at the Laboratory of Molecular Biology was brought together around the sheer audacity of his ambition.

But having a cause matters to innovation in another way as well: it provides perspective, a vantage from which to make sense of a complex, fast moving world.

Perspective is vital to innovation. Radical innovators often challenge orthodoxy because they have a cause that they champion. They create different solutions, because they stand for a different way to do business. Making sense of the world, spotting what matters, becomes a lot

easier if you know what you stand for, what your underlying purpose is.⁶ That is perhaps why innovative communities, like Pratham and in its day, Pixar, start outside and at odds with the mainstream. One of the most potent causes to join is a campaign against a dysfunctional and unsatisfactory *status quo*.

Innovative organisations take many guises: companies, universities, charities, clubs, cities. Underlying each of these however is a more fundamental unit of sustained innovation: a creative community animated by a cause. If we want a more innovative society we need more such communities and people trained to create and contribute to these communities. In a society driven by innovation on a mass scale education should ready people to play roles in these communities, just as in the past it readied people to play a role in larger, hierarchical organisations. Schools themselves should be early formative, uplifting experiences for young people of what it is like to be a part of a creative community with a cause. Let's take the three components in turn.



“ Schools themselves should be early formative, uplifting experiences for young people of what it is like to be a part of a creative community with a cause. ”

5

LEARNING TO MAKE
A DIFFERENCE

Creative

School should be a place where young people go to explore, create, make, try things out and learn from their mistakes and recover from their setbacks.

Through contributing to shared solutions to shared problems they should get sense of the excitement and pride that comes from being able to create and make, as well as the persistence and effort required to make work of high quality. Three principles should be at the core of a school as a creative community.

Broad not narrow

Creativity is associated with the arts and culture. It is vital that young people experience the possibilities of this kind of cultural and artistic exploration and expression, to see the world in different ways and to have the chance to express who they are through language, dance, music and art. That kind of learning, when done well, is considered, disciplined, iterative and demanding.

But creativity should be thought of more broadly, as a capacity for agency, to take on problems and to remake the world, in a wide range of settings using a wide range of forms of knowledge, from maths and science to geography and language. Their experience of creativity should be many and various from writing a story to conducting an experiment, making an argument, building a model, putting on a show, creating a business. Learning should be modelled as a process of inquiry, problem solving and collaborative making.

Some of the most impressive examples of this principle in action come from schools such as High Tech High, the charter chain in California, where team-based, project learning is the norm: disciplined, integrating different kinds of knowledge, collaborative, problem solving.⁷ Young people at High Tech High often work in collaborative teams to respond to testing challenges, which require knowledge and skills from many different domains. Young people are encouraged to make their own guides to courses for other students, with scores of them published online. One of the main ways they show their work and gain credit for what they have done is through regular public exhibitions of the products of their projects, exhibition which parents and members of the community attend.

Head, heart and hand

Learning through creativity in the broadest sense should involve the head, the hand and the heart. It cannot be a purely disembodied, analytical and intellectual experience. To be a rounded experience it has to touch, excite and move young people and involve physical skills and senses.

An excellent model for this rounded approach to creative learning is the way we learn to play music. An outstanding example of a school which has put music at the heart of its community, is Highbury Grove Comprehensive school in north London.⁸

Every child at Highbury Grove learns a musical instrument. Any child who wants a music lesson can have one. The vast majority take part in some kind of music group. What do they learn through music as the common currency of the school?

Learning a musical instrument requires constant practice, effort and discipline. Basic technique has to be mastered. There are no short cuts. Formal systems of notation have to be learned like a formal language. Yet much of the knowledge of how to play is not in the head but embodied in fingers, arms and legs. Butterflies have to be controlled for even the smallest of performances. Of course there are grades to be passed, exams to be studied for; but children learn also by playing in concerts and giving performances. Playing in a group,

“ Learning through creativity in the broadest sense should involve the head, the hand and the heart. ”

ensemble or orchestra teaches you how to be part of something larger, to play your part, to support one another and to take your cues from other players. Instruments have to be looked after and protected; they cannot be tossed around. Learning an instrument and playing it with others, engages virtually every aspect of who we are, from head and hand, to imagination and feeling. Yet it also requires discipline and persistence.

If we were to model all learning – maths, chemistry, languages, technology – on the kind of holistic experience of learning to play a musical instrument, then we would have an education system that engaged mind and body, which was simultaneously systematic and expressive, personal and social. That is the kind of idea we should put at the heart of the new kinds of education we need, rather than focussing on particular tools and technologies, whether those be violins or computers.

Making

Innovation is never just about coming up with creative new ideas. It crucially involves putting them into practice, realising them. Learning to make things should thus be a central part of a creative education, in myriad forms. Young people should come to school not simply to learn in the abstract but to acquire the skills to make things together, whether that be a video, a play, a model or a putative business. Learning should feel like a productive activity and schools places where children learn to make things. At High Tech High children not only make models, experiments, prototypes, music and art; they are encouraged to see themselves as writers, producers, film makers. Again digital technology should play a critical role in this, allowing children to make in all sorts of ways, from animation to software and 3D printing. But so should very old-fashioned and cheap technologies. In schools in some of the poorest places, without electricity and computers, children can learn by making food and furniture, candles and soap.

All of this needs to be married to entrepreneurial capacity, the ability to spot an opportunity, mobilise support to take it, learn how to take risks and recover from setbacks. Many of those at school today will find themselves working in small entrepreneurial companies in future. The urban poor show that many have to hold down two or three jobs to survive. Their education needs to help them become micro-entrepreneurs, adaptive and resilient, fleet of foot.

That in turn means that learning will have to become more connected to and embedded in the real world of work and production. The most impressive and attractive places to learn in future, in the developed and developing world, will give young people ample opportunities to design and make, produce and sell things, with their hands and their heads. They should go to school to learn by working and having fun. They should study by making and building rather than sitting and listening. They should even learn by earning how to make a living.

Making school a *creative community* would mean adopting a broad rather than narrow approach to creativity; encouraging a holistic approach in which creativity comes from a mix of head, hand and heart; seeing schools as places where children come to learn by making and producing.

None of that, however, is worth very much unless young people are skilled at working with other people.



“ Making school a *creative community* would mean adopting a broad rather than narrow approach to creativity. ”

6

LEARNING TO MAKE
A DIFFERENCE

Community

Education needs to give young people a well-grounded experience in social skills so they know how to respond to customers and work well with their colleagues, to find collaborative solutions to problems, to create things together. Some of those skills are social and relational, based on empathy and sympathy. But others are more about collaborative self-governance which is why it is so important that education provides children with ample, structured, challenging opportunities to work together, in groups, on projects which they can make their own.

As social media spreads, it will open up ever more opportunities for people to find one another and come together to achieve common goals. Citizens will need to learn how to make the most of these technologies, for better government, richer culture and more successful businesses.

Creativity and community have to go hand in hand

School should be a place children go to learn the habits and skills of collaborative and creative self-governance by being part of a community. There is no better example of this principle in action than Escuela Nueva, created more than 35 years ago by Vicky Colbert in Colombia.⁹

Colbert, fresh from graduate school of education in the US, faced what seemed an impossible challenge when she returned to teach in rural schools in her native Colombia: she faced sixty children aged five to fourteen in a one-room school. Colbert soon realised that teaching such a large and varied group in the traditional way – standing at the front instructing from the blackboard – would not work. So she devised an alternative, known as Escuela Nueva, the New School, which provides children with written learning guides so they can work through a subject together, in small, self-governing groups, with only occasional direct guidance from a teacher. Since Colbert got started in 1975, Escuela Nueva has spread to more than 17,000 Colombian schools and has been taken up in 19 countries, mainly in Latin America, reaching 5m children.

Escuela Nueva has not just helped get more children into school. By adopting a different kind of pedagogy it has produced better results. The most important ingredient in the Escuela Nueva model is the way it encourages children to collaborate in working together and to take shared responsibility for their work.

Programmes such as Escuela Nueva find the right mix between two ingredients, both of which are essential to make a creative community work.

Systems and empathy

The first is that learning has to have structure, an underlying skeleton of knowledge, capabilities and skills to be acquired. The second is that Escuela Nueva is a schooling in empathy. People learn through open, sometimes intense, relationships between teachers and pupils, but as importantly among pupils themselves. It is these relationships, partnerships in learning, that make learning engaging, exciting and open-ended.

The best places to learn, whether in families, workplaces or schools, have strong underlying systems that support but do not dominate these intense relationships. The best schools the world over, from Kirkkojarvi School in Espoo, Finland, to private sector Brighton College in the UK, have this recipe at their heart: they have robust systems – for keeping track of achievement for example – but combine that with highly intense and supportive relationships so children feel looked after, cared for, motivated, supported and stretched.

That does not mean the warm glow of empathetic relationships alone are enough. The fun teacher who never gives honest feedback is a patronising fake. Learners want a sense of purpose and challenge, to be stretched as well as made to feel good about themselves.

The worst schools are where there are neither systems nor empathy: no sense of structure and little sense of order. Yet schools that become over structured, which teach by routine and to the test, all too easily become busy but dead, systematised but soulless. Creative learning is a ‘with and by’ experience. Learning is frequently and intensely social, collaborative experience, in which knowledge and understanding, insight and ideas are co-created through exchange and dialogue. People are more likely to become independent learners if they have first experienced collaborative, team-based learning.

Of course not all learning can work this way. Sometimes clear instruction is needed. But invariably to master a subject a pupil has to move on, to work out with others how a principle applies in practice and how knowledge learned in one setting can be applied in another. By learning with others, including teachers, a young person is then in a better position to become an independent, self-motivated and confident learner, by themselves. Good schools are structured communities in which young people learn through the relationships and partnerships, teams and social groups they form.

A striking example of that mix of structure and relationships in action is the Sabis group of schools which like most radical innovations started in an overlooked margin of the mainstream education industry: the Lebanon.

“ People are more likely to become independent learners if they have first experienced collaborative, team-based learning. ”

The Sabis group started in an unlikely place: a small Christian school for girls on Mount Lebanon, in the late 19th century.¹⁰ For most of its life, the village school struggled to survive the collapse of the empires and two world wars. What turned Sabis into a radical innovator was the most extreme conditions imaginable: the onset of the war that engulfed the Lebanon in 1975 which brought the original school to its knees. The school's salvation was international expansion. Lebanese who fled the country and found refuge in Gulf states wanted a school they could trust. In responding to their demand Sabis realised that to expand beyond its home it would need a reliable system, to translate its home-grown approach to new sites. Sabis' now applies this approach across a chain of 12 schools from the Middle East, to the UK, Europe and the US.

Strong structures and pupil self-governance

Sabis is nothing if not systematic. It works back from the final exams that students have to do – the International Baccalaureate or A levels – to establish what key concepts children need to learn at each stage of their education. Each subject is broken down into a set of essential and non-essential concepts. In maths for Grade 4, for example, there might be 300 concepts that need to be covered in a year. Those concepts are then organised into a timely flow, like components on a production line, which children have to learn and teachers teach. To check on progress each week, in every subject, children in every Sabis school completes a largely automated test to show what they have learned. Sabis has a central bank of almost 1m questions it has trialled to test student capability. The questions themselves are graded bronze to platinum according to how well they perform in highlighting where students are strong and where weak. The results of the tests, usually done on computers, are relayed to the teachers and to the Sabis group headquarters so they can quickly identify who needs extra help mastering the concepts they learned that week and which teachers are doing the best job. Children are not allowed to fall behind.

These tests, combined with teacher assessments provide the school with reams of data about each child, in each subject and each class and their teachers. In an average school in the UK, for example, a parent might get a report once a term with a brief paragraph from each subject teacher combined with an overall mark of performance. At a Sabis school the file on how a Grade 7 child is doing at mathematics might run to 102 pages. Each concept learned will have a quality mark attached to it, showing how thoroughly it was learned. The data also allow Sabis to check on the quality of teachers. Discrepancies in performance quickly show up. Academic teams, like quality circles, work with teachers to improve the scores their children get.

“Students that finish a task fast because they understand it are encouraged to help those who are lagging behind.”

Yet Sabis is not just a system. It is a social solution not just a technological one; a community not just a system. The most striking aspect of this is how much teaching the students do for one another.

Skilled teachers are the scarcest resources in a school. So to supplement its teachers' efforts students are encouraged to take on some teaching responsibilities themselves. Students that finish a task fast because they understand it are encouraged to help those who are lagging behind. Taking on a teaching role, explaining difficult concepts, helps to embed their own learning. Instead of sitting around getting bored while the rest of the class catches up they contribute to the learning of other students. Each class in a Sabis school will have a couple of 'shadow teachers', pupils, who will take over when a teacher is absent. Students also take responsibility for running large parts of the school, from discipline to sports, through the Student Life organisation of which all are members. The more the children can be self-governing the less time teachers have to spend on non-teaching activities.

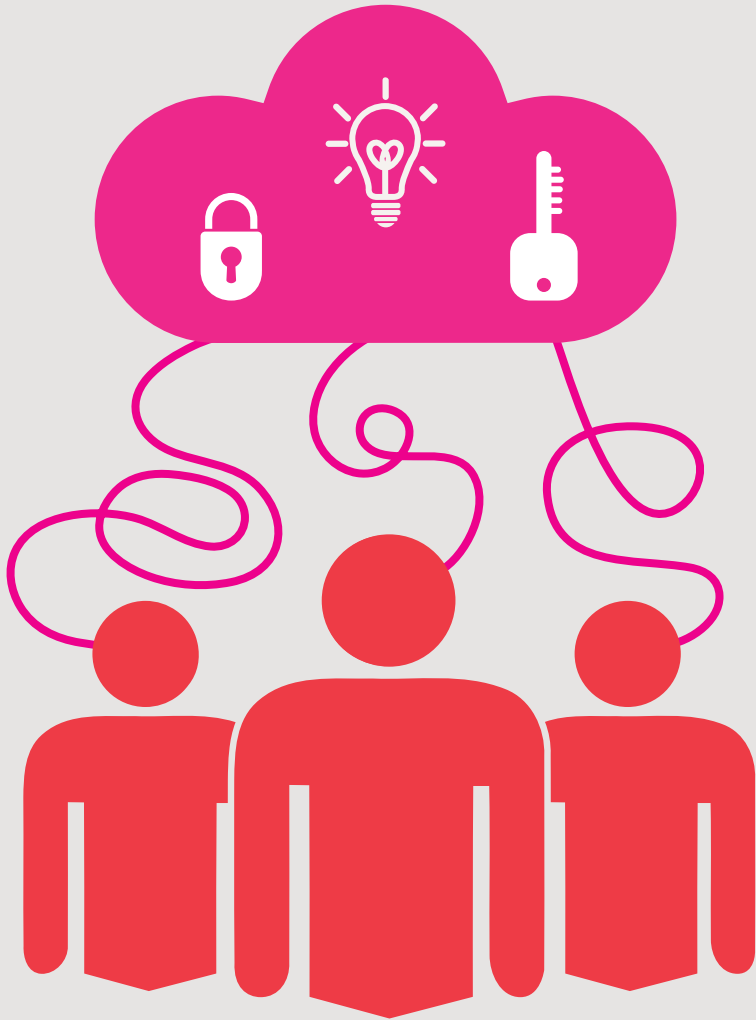
Although Sabis is rigorous and unrelenting it tries to avoid a culture of competition, instead emphasising that classes move forward together, cooperatively. Students are not ranked. As Ralph Bistany, one its

co-founders, explained: “One of the results of rankings is that one kid has an interest in somebody else's failure. It should not be you or me, but you and me. When people cooperate wealth increases and everybody has more.”

Sabis is a system which encourages cooperation. Both learning and creativity are highly relational, interactive, open activities, in which new ideas and insights grow by being shared and blended. Schools should be designed to give children structured and stretching opportunities for learning but as part of a community of relationships with teachers and their peers which support and motivate them. The best schools are not just effective systems, production lines for examinations and qualifications. They should be communities of learners, including pupils, teachers and parents. Increasingly to be effective schools will need to embrace much larger, wider communities, of employers, local businesses, charities and social organisations, to draw in their resources, respond to their needs but also to make the schools resources available to them.

School should be a place where young people go to learn how to be a part of a self-governing, collaborative, creative community.

“The more the children can be self-governing the less time teachers have to spend on non-teaching activities.”



7

LEARNING TO MAKE
A DIFFERENCE

Cause

School should also be a place children go to discover what excites them about life, what their passion and purpose is, what really matters to them and so what they want to learn about.

Too often school is not engaging, because it's abstract and detached from real life which only begins when school ends. Learning becomes engaging when it becomes significant and so meaningful for the learner and that means it has to connect to what matters, to them. Going through school should be a personal journey for young people, to grow and develop their sense of themselves and the contribution they want to make to their community and the wider world. Too often it feels like a sorting system of standardised tests which actually punish efforts at self-discovery.

Schools should be creative communities where young people can find their cause, mission, sense of purpose in life, to discover what matters to them personally. This is the deeper significance of personalised learning.

“ Education should be a process of personal development, in which children are encouraged to dream, hope, experiment and learn about who they are and what they could become. It needs to be an education in purpose. ”

Personalised learning

The ultimate goal of personalised learning should be to encourage children to see themselves as co-investors with the school and the state in their own education.

Education should encourage children and their parents to invest more in learning from an early age and to sustain that investment over a longer period. The goal of personalised learning is to raise the rate of personal investment in education by making learning more meaningful.

Personalised learning – learning tailored to individual need – is not a utopian dream. On the contrary, it is a practical approach to motivate children to learn, which is being applied successfully in a wide range of schools. The teachers pioneering personalised learning are not starry-eyed idealists. They are deeply pragmatic: they have adopted personalised approaches to learning because they believe it's the best way to engage children and families who often check out of learning because they feel it is not for them. The biggest benefits of personalised learning go to those who find the current, standardised and academic system most difficult and unrewarding. All too often children who learn differently come to be seen as difficult because they do not fit well into the system. Personalised learning offers very practical routes to higher attainment for all children, but especially those who feel most de-motivated by current, staid and traditional approaches.

Personalised learning, however, is not for the faint of heart. It requires schools to radically rethink how they operate. Many of the basic building blocks of traditional

education – the school, the year group, the class, the lesson, the blackboard, the teacher standing in front of a class of thirty children – become obstacles to personalised learning. Personalised learning means differentiated provision to meet differentiated needs. All the resources available for learning – teachers, parents, assistants, peers, technology, time, buildings – have to be deployed more flexibly.

Our vast secondary schools are among the last great factory style institutions in society, where people in large numbers go at the same time, to work in the same place, to a centrally devised schedule announced by the sound of a bell. Innovation on the other hand comes from creative communities drawn together around a sense of mission and cause. If we want education to be an apprenticeship in innovation then school needs to be a place infused with a sense of mission and cause.

Start with why

Too often schools are about what young people should learn, when they should have learned it and how they should learn, without engaging them in a discussion about why it matters and why they should bother. Too much learning makes too little impression on young people because they cannot see the point. It passes them by. It seems without purpose, other than to get to the next stage of the education system or to leave with grades that give them access to the jobs market.

The greatest waste of modern schooling is that it writes off too many young people before they have even got started. It condemns them to a self-reinforcing spiral of low expectations and aspirations, which in turn lead to low investment and poor grades, unimaginative lessons and teaching, and eventually disappointing outcomes. The counter to this is not to build self-esteem or resilience as if they were stand-alone qualities, needed to cope with inevitable disappointment. The deeper, lasting answer is that education should be a process of personal development, in which children are encouraged to dream, hope, experiment and learn about who they are and what they could become. It needs to be an education in purpose. The crime is that too many schools, especially in poorer communities, assume children are incapable of aspiring to this larger, more ambitious sense of purpose in their lives.

Learning for and in the real world

One implication of making learning a personal journey with a sense of purpose and direction is that more learning should be designed for, in and with the real world and not just the classroom. The most effective places to learn in future will make the best possible combination of the real world—imperfect, chaotic, unpredictable—and the contrived, protected, artificial and ordered world of the classroom.

“ One way to pull young people to learning is to adopt Highbury Grove’s approach to make learning attractive because it comes about through another activity. ”

At High Tech High in San Diego, students do much of their science by studying science challenges in the real world, in their locality. They do not just repeat experiments which have been done hundreds of times in the lab; they go out into the real world to do real science, testing the local environment for pollutants and measuring the impact of climate change, for example.

Some of the most impressive examples of meaningful, real-world learning are schools and colleges which become social businesses, in which children learn by making a living. One example is the self-sufficient farm school movement inspired by the San Francisco farm school in Paraguay, where children learn by running a real farm business alongside their academic studies. The produce they grow on the farm helps to pay for their education. These innovations are not confined to the developing world. Vocational education is one of the fastest growing areas in Finland, the long time leader in the PISA league tables. InnoOmnia, one of the most innovative vocational colleges in Finland, has created an approach to learning which seamlessly blends lessons with practical vocational studies.¹¹

Paulo Freire, the Brazilian philosopher, argued that learning should equip young people to critically engage with and change the world around them. More schools should follow this lead to ensure learning has a sense of purpose. One practical example of this philosophy in action is the fast growing Apps for Good programme, an outgrowth from CDI, the computer-based learning programme which Rodrigo Baggio started in *favelas* in Brazil and which was heavily influenced by Freire's thinking.¹² Apps for Good is a structured programme for young people to work in teams to come up with an idea for an app for a mobile phone which addresses a need they face.¹³ In the past students have designed apps which help them wake one another up in time for school; to help autistic children learn; to help parents who do not speak English communicate with teachers. The team then researches the market and need for the app; design it and often using simple software tools build a prototype which they test. The point is to engage them in learning through making a product which counts to them, addresses a real world need and using smart phone technology which is a familiar and fun part of their everyday world. Through the programme they learn skills of collaboration and design, research and marketing. They are helped both by teachers and by mentors from companies who they consult with through Skype. In 2014 about 25,000 British students were enrolled on the Apps for Good programme, which is spreading

rapidly in the UK and internationally. Apps for Good is just one small example of what is involved in making learning purposeful and so meaningful by organising learning around ideas that matter to young people and locating it in both the school and the world outside it.

Pull not push

Too much schooling is a push system: attendance at school is mandatory as are tests and in some countries a national curriculum. Instead it needs to become more like Apps for Good, a pull system, pulling children into learning by making education intrinsically more interesting, for example by building pedagogy around play and creativity and making it extrinsically more rewarding by making it pay and solve practical challenges they face.

One way to pull young people to learning is to adopt Highbury Grove's approach to make learning attractive because it comes about through another activity, whether sport, dance, arts, photography or music.

“ Pull systems of learning have to be strong on purpose. The only way they attract learners is by constantly answering the question: why? ”

School usually starts from a curriculum to be learned. Activities such as drama and sport are often seen as interesting add-ons. Yet learning often becomes more engaging when it starts the other way around, with an activity that attracts and motivates children into which more formal learning is structured. The most famous example is El Sistema in Venezuela which has produced a world class orchestra from children brought up in poor communities.

Pull systems of learning have to be strong on purpose. The only way they attract learners is by constantly answering the question: why? Pathways to Education, started in Toronto, Ontario in Canada is an excellent example.¹⁴

When community workers Carolyn Acker and Norman Rowen set out to improve the educational performance of young people from the blighted housing estate of Regent Park in the centre of Toronto their natural first port of call were the local schools. Why did no more than one in ten of young people from Regent Park go from secondary school to college and university they asked? Time and again the answer they got was that Regent Park kids found it all too easy to play up to the stereotypes many of their teachers had of them, stereotypes that condemned them to a damning cycle of low aspirations, expectations and so outcomes. When Rowen went to one school to talk to the teachers about how to do better by the difficult kids from Regent Park the vice principal replied: “These kids? Why bother?”

Rowen talked to more than 200 young people and their parents, building up a detailed picture of the many obstacles that blocked their path to college. They also talked to a small number of young people who had escaped from Regent Park to reach college. Each of them said their success was due to having a powerful and committed mentor – a teacher, sports coach, priest – who stood by them and helped them to commit to learning. The mentors did not just provide knowledge but a sense of purpose and self-confidence.

Acker and Rowen went on to design what has become a highly successful programme, Pathways to Education, which has a simple yet effective way of motivating young people to continue to learn. Once a child enrolls in Pathways they get a free bus pass to travel to and from school. Each year the child is on the programme C\$ 1,000 is deposited in an account towards the costs of university tuition. To claim those benefits the child has to attend school at least 85 percent of the time and they have to get the credits they need to move to the next stage of education. Pathways gives children intensive support to make sure they make it. Children have to attend homework sessions that are run four evenings a week in a local community centre staffed by volunteers. A couple of times a month they go to see volunteer mentors in the community – doctors, lawyers, teachers – who will link them to opportunities to work. Crucially each is allocated a support worker, to act as their mentor and to liaise with parents and school.

“

What Acker and Rowen created was a motivation machine to keep students wanting to learn even when the going gets tough.

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Pathways got going in 2001. The impact was almost immediate. About 95 percent of eligible children enrolled in the programme. Only 11 percent of Regent Park children now do not make their grades at 14. The drop out rate has fallen from 56 percent to 15 percent. A study by Boston Consulting Group suggests a dollar invested in Pathways yields a 24-fold return across a lifetime, in terms of higher incomes, taxes and lower public spending. Eight out of ten children who complete the Pathways programme go onto further education, most of them to university.

The support worker is like a personal trainer, but for schoolwork, motivating, supporting, setting higher targets, building strengths in areas of weakness. They are not teachers imparting knowledge; they are coaches building self-belief and commitment. They help young people see the point of learning and build the habits to do so.

Acker explained: “The support worker is vital. They are not teachers, nor are they social workers. They come from around here. They provide tough love. We want to build up a sense of discipline in these kids, an internal guidance system so they do not give in to the immediate urge but invest in the longer term.”

What Acker and Rowen created was a motivation machine to keep students wanting to learn even when the going gets tough. That motivation is partly extrinsic and immediate: the offer of a free bus pass which they can use to get around town and not just to go to school. The incentives are also deferred, teaching them to wait for a pay off: the fund that is waiting for them when they start college. But just as important are the social spurs they get, from peers, support workers and mentors and the kick they get from doing well at school. Pathways creates a community of committed learners who motivate one another. It is an education in having a purpose and a clear sense of direction.

Learning should be a highly charged activity: it involves challenges and failures, setbacks and triumphs, as children overcome obstacles and solve problems. Those challenges excite emotions ranging from elation to defeat. When children feel negative emotions they are more likely to disinvest from learning. Monique Boekaerts, from Leiden University in the Netherlands, an expert in the emotional aspects of learning, argues children feel positive emotions when they feel competent and in control, they are self-regulating and yet also working well with their peers.

Children are more likely to feel positive about a challenge if they feel they have the resources to complete it successfully. That makes them open to new ideas and feedback; they become more playful and energised. If students fear they will lose face and be shown up by their lack of knowledge they become more closed and defensive, unwilling to accept feedback and averse to taking risks.

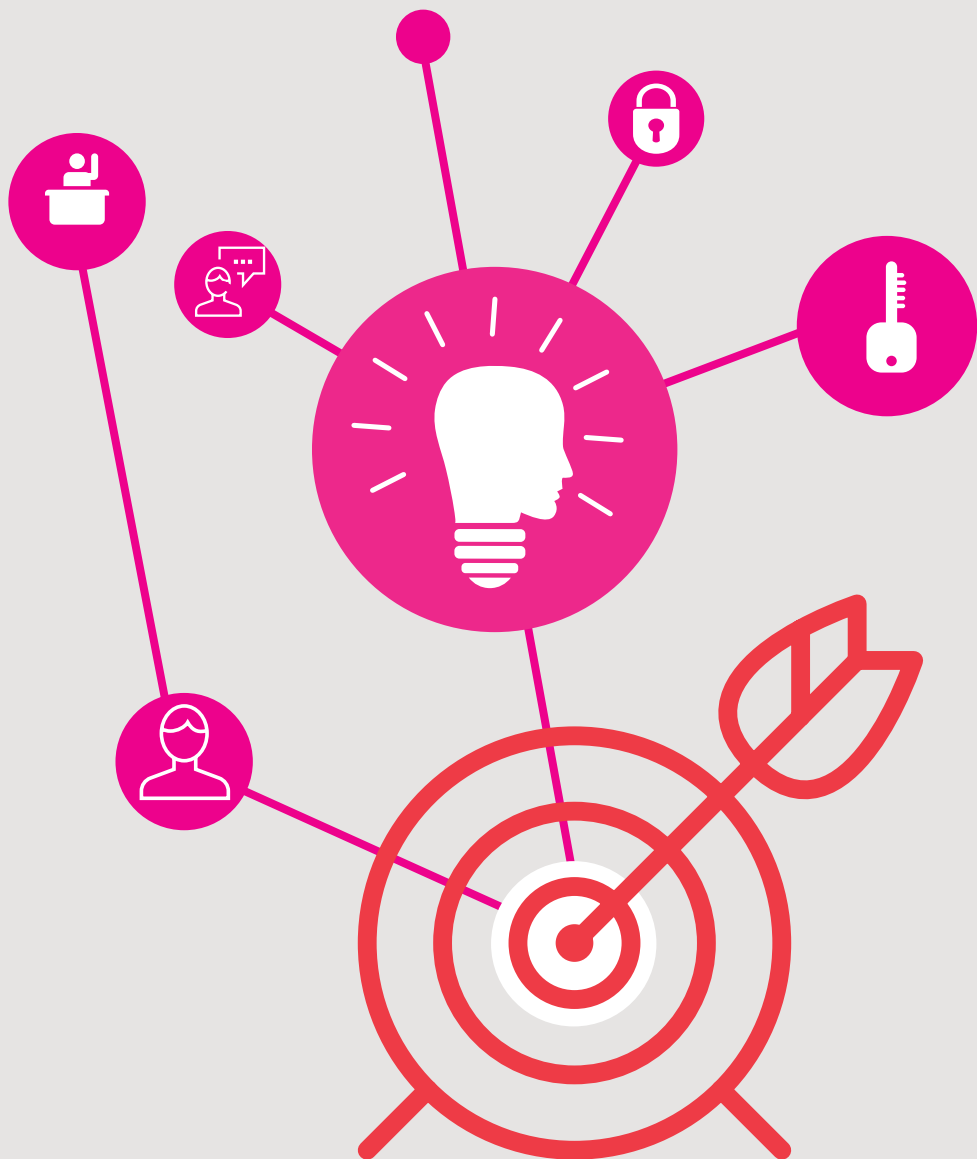
As cognitive scientist Daniel Willingham argues in ‘Why Don’t Students Like School?’ to be motivating learning has to be meaningful. Students have to see where what they have learned fits into what they already know and what the point might be. Learning has to excite people’s curiosity but then help them safely navigate their way across the unfamiliar terrain. Nor does it count for much, Willingham says, if a teacher is strong on empathy, personable and tells good jokes, only for their lessons to be poorly organized, badly planned and without a clear purpose: “The brilliantly well organized teacher whom fourth graders see as mean will not be very effective. But the funny teacher, or the gentle storytelling teacher, whose lessons are poorly organized won’t be much good either. Effective teachers have both qualities. They are able to connect

personally with students, and they organize the material in a way that makes it interesting and easy to understand.”

Education without motivation becomes a deadening routine. Children can get through it and even learn how to do it well, emerging with excellent grades. But it will never be an education in having a purpose, finding a cause, seeing something through because it really matters.

School should be a place where children go to explore the many different purposes that they might have in life. Learning takes persistence and commitment. That is easier if it comes with a strong sense of purpose. That means learning has to be moral in the broadest sense of the world, engaging young people in why they should learn and what really matters to them, in the life they want to lead.

“ School should be a place where children go to explore the many different purposes that they might have in life. Learning takes persistence and commitment. ”



Future Schools: Creative Communities With a Cause

School should be a place where children go to:

- **Explore**, create, make, try things out and learn from their mistakes and recover from their setbacks;
- **Learn** the habits and skills of collaborative and creative self-governance by being part of a community;
- **Discover** what excites them about life, what their passion and purpose is, what really matters to them and so what they want to learn about.

Mass schooling took its cues from the organisations of the time of its creation: the factory and the church, the prison and army. Reimagining education as an apprenticeship in innovation means remodelling schools as creative communities with a cause, rather than as conveyor belts to process people towards examinations. Where should we look for inspiration now for schools as places to provide an apprenticeship in innovation?

“ We would all learn from outside education as much as inside. Schools would have to become hybrids. ”

We would all learn from outside education as much as inside. Schools would have to become hybrids. Highbury Grove is a school which is a simultaneously an orchestra. Barcelona FC is a football club with a school at its heart. Pixar is one of the world's most commercially successful creative company's and yet it is also a cooperative community of storytellers and animators learning from one another.

Another source of inspiration should be open innovation communities and platforms which harness the connectivity and reach of the web to bring together a wider range of people in problem solving. Platforms of this kind are now increasingly used in: massive, multiplayer online games and worlds; collaborative, multidisciplinary scientific research; open source communities supporting software development;

business innovation programmes. One example is Zooniverse, the UK-based citizen science site which systematically organises collaborations between scientists and amateurs to engage in real world research.¹⁵

It gives young people an opportunity to become participants in real scientific research. A variant is the growth of crowdfunding inspired by the site Kickstarter which has raised more than \$1bn from small investors for more than 600 projects. What if schools were to learn from the likes of Zooniverse and Kickstarter to model themselves as creative, problem solving communities which mobilise resources for good ideas?

As innovation has become ever more important so a variety of new spaces and processes have been devised to encourage its development, which schools could learn from. The Social Innovation Camp has become an international movement by applying the principles of hackathons to social challenges. What if more schools were places where children learned to hack solutions together?

The institutional innovation that has recently excited most interest, however, is the ‘accelerator’ made famous on the US West Coast by the likes of Tech Stars and Y Combinator and now widely emulated around the world. Accelerators do exactly what it says on the tin: they accelerate the development and scaling of an idea or technology that is past the prototyping stage. The classic ingredients include: shared free workspace; a cohort of companies; competitive entry; business

“ The most exciting setting for business innovation is now the accelerator. What if going to school felt like going to an accelerator? ”

mentoring, inspiration and support; exit from the programme through an opportunity to pitch to funders; access to follow up funding. The atmosphere in an accelerator is hard working, informal, intense, collaborative and yet highly competitive. Accelerators are pull places.

The most exciting setting for business innovation is now the accelerator. What if going to school felt like going to an accelerator? Children would be working in teams, on projects that counted to them and which involved bringing together different kinds of knowledge and skill. They would have to collaborate, learning through testing their ideas in the real world and show what they had learned by making presentations to parents, the local community and potential investors. Of course this would not be the only activity of the school. There would be periods of study, reflecting, learning through instruction. But imagine a school where children spent half their time in a learning accelerator and half their time in more traditional forms of classroom based, collaborative learning. Then imagine what the children from that school might be capable of in the real world, whatever their exam grades might be.

Education has to reclaim its sense of purpose. It has to stand for something more than getting good grades. It has to persuade people to invest in it, not just financially but emotionally, because it builds character and helps people to lead more successful lives. It has to dare to stand for something more than the pieces of paper it hands out to children as they leave.

Reclaiming education does not mean following a fad, nor using a particular set of technologies. No one innovation – project learning, real world learning, flipped classrooms, blended learning, open schools – will restore the idea that a good education is about building character, providing moral purpose, encouraging creativity and collaborative problem solving. If we can minimise the industrial aspects of education by making the process as lean as possible, then that should open up more time and space for children to learn in new ways – collaboratively, in the real world, using digital technologies – and to restore the lost idea that education should build character, inspire the imagination, teach useful, practical skills, to all.

Education should:

- Be hard work and good fun.
- Encourage children to take the initiative rather than wait obediently.
- Teach children that as well as being able to deliver the right answer at the right time, they need to be able to open up interesting questions, to which there might not be an easy answer.
- Involve learning with the head and the hand, in the real world as well as the classroom, making things together as well as writing papers and sitting tests.

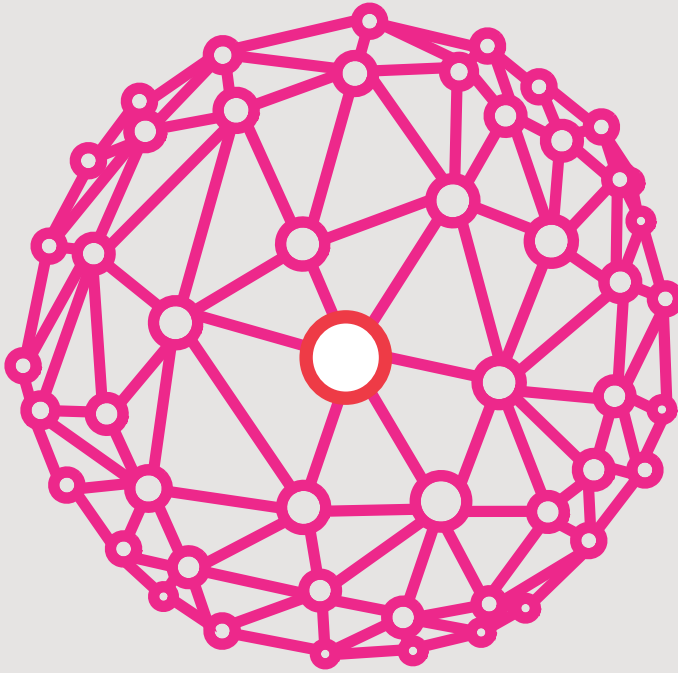
- Test, stretch and challenge children in ways that build their character, resilience and persistence.
- Provide ample opportunities for children to learn how to govern themselves, together, as they work through problems, with a shared sense of purpose.
- Develop the desire, capacity and confidence to be a contributor to solving problems, however large or small.
- Leave young people with a story of achievement and contribution, making and doing, which goes beyond the grades they get in exams and which they can carry with them into the real world.
- Give children a strong sense of who they are and what they want to be. To provide a setting in which they grow as people with a sense of purpose.

The different stakeholders in education all have a role to play in making this change possible.

Policy-makers and politicians need to be brave and clever enough to question the status quo and admit to what is not working in the traditional models of schooling. Innovative teachers and pedagogues, inside and outside the system, need to develop tangible, effective new models rather than offer vague promises. Parents need not panic, considering that academic success is not the same as success in life.

We live in a world in which the capacity to innovate will be more important than ever. Sustained innovation does not come from lone individuals. Sustained innovation comes from creative communities of passionate and committed people, creative communities which share an animating sense of purpose, a cause.

“ We live in a world in which the capacity to innovate will be more important than ever. Sustained innovation does not come from lone individuals. Sustained innovation comes from creative communities of passionate and committed people. ”



Notes • for further reading

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13. Apps for Good: www.appsforgood.org/
14. Pathways: www.pathwaystoeducation.ca/
15. Zooniverse: <https://www.zooniverse.org/education>



Learning to Make a Difference: School as a Creative Community

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Education systems are failing to meet the needs of too many learners today because it ill equips them for the challenges of an uncertain, turbulent world in which they will have to find solutions to challenges with other people. Drawing on some of the most innovative organizations in the world, including Pixar and Barcelona FC, the author builds a case for schools as a place where children go to explore, create, make and learn together in a creative community with a cause. School should be the place where learners can discover their passions and purpose – and inspire their active and collaborative, problem-solving learning.

Charles Leadbeater is a Nesta fellow and Chair of the Nominet Trust and the mobile education programmes Apps for Good. He has worked around the world on innovation and creativity in both the private and public sectors. He is the author of several international bestselling works and of the first WISE Book *Innovation in Education: Lessons from Pioneers around the World*.

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