Education

Abstract

In this booklet, you will understand the following:

1. A history of education
2. The purpose of education
3. Issues in education
   (a) Gender issues
   (b) Sciences versus the Arts
   (c) Home schooling
4. The Singapore education landscape
5. O Level Topics

Quotes for Reflection

1. Education is the most powerful weapon which you can use to change the world.
   Nelson Mandela
2. The doer alone learneth.
   Friedrich Nietzsche
3. An investment in knowledge pays the best interest.
   Benjamin Franklin
4. The roots of education are bitter, but the fruit is sweet.
   Aristotle

Reading 1

Question: How did education begin and how has it developed until its present form today?
Read the article below by Robert Gilman

How We Got Here

A brief history of education (adapted)

By Robert Gilman

Education in traditional cultures was remarkably in tune with whole brain learning. Children learned by watching and imitating, with lots of immersion in the adult world they would grow into. Specialized training, was either through apprenticeship or in special initiation schools, both of which used experience and drama as well as direct instruction. There were definite limitations in terms of a lack of creativity and occasional harshness of methods, but in general these societies managed to pass on complex cultures from generation to generation in largely informal ways that were both efficient and effective.

Characteristics of traditional education

In early civilizations, the education of most children continued to follow this pattern, but for those who learned to read, a new social invention—the school—became the focus for learning. Clay tablet accounts from Sumer[1] describe a school life that is remarkably familiar, with drill, homework, and recitation, pranks by students, corporal punishment by teachers, and "gifts" from wealthy parents to influence poorly paid teachers. Indeed, the basic pattern of "schooling" has remained remarkably constant throughout the past 5000 years. The main elements of this pattern are:

- It is ***authoritarian***. The children are grouped in classes supervised by a teacher. The teacher, or his/her superiors, decides what, when, and how the children will study.
- It ***dominates childhood*** time. While there have been many variations throughout history, serious schooling normally takes the best hours of the day while school is in session, most of the months of the year, and most of the years of childhood.
- It ***separates the child from the world***. It normally occurs at a special location devoted solely to schooling and walled off from the outside world.

[1] Sumer—an ancient civilization

Frequently, students lived at this location, further isolating them from the rest of life.

- It has ***a left brain emphasis***. From its beginnings, schooling has emphasized the predominantly left brain subjects of reading, writing and arithmetic. Not surprisingly, those who became teachers of these subjects tended to have a left brain style with its (reptilian?) emphasis on order, structure, and discipline.
- It is ***a competitive social filter***. The social and economic rewards for successful completion of the schooling program have usually been attractive enough to draw more students into school than the society needed as graduates. The school has been expected to winnow out the "successes" from the "failures."

These characteristics were quite consistent with the needs of pre-modern civilization, which used schooling as a means of training a small elite of scribes, priests, scholars, and occasionally nobles and merchants. While we may bemoan the emphasis on rote learning, we need to remember that the printing press is a relatively recent invention, and before that books were rarer even than scribes and scholars. We may bemoan the lack of creativity and personal freedom, but these societies provided very little outlet for these anyway. The scholar was expected to conserve the past, not create the future.

Spread of education

The social conditions surrounding schooling began to change with the coming of the printing press in the 15th century. As books became more available and as the Protestant Reformation encouraged more people to read the Bible, the demand for literacy grew. The rising tide of European activity—the ages of exploration, mercantilism, and then industrialism—led to an increasingly complex society with still more need for literacy. These broad social trends had three major impacts on the role of schooling: It spread, gradually becoming part of the lives of an ever larger percentage of the population. In parallel with this, attendance shifted from being a privilege, to a right, and finally to a legally enforced requirement. And third, as schooling spread, the debate over methods grew.

Most reformers during these centuries favored universal, publicly supported, compulsory education, and schooling seemed the only practical approach. Individual tutoring would be too expensive, books were too scarce for independent study, and no one knew any other alternatives. Besides, schooling seemed to offer an excellent way to "mold" children into a culture different from their parents'.

The political revolutions in the late 18th century, and the rising tide of na-

tionalism, added more fuel to the drive for public education. Schooling was seen as a way to instill the revolution's values into the new generation and provide the needed skills for fulfilling those values (such as literacy).

Issues in education

The argument over establishing these schools sounds curiously contemporary. Those who wanted them argued that ***education brought general social benefits***—eliminating poverty and improving citizenship—so it should be available for everyone. Those against were not opposed to the goals (such as literacy) or the use of schooling as the means, but to the taxes supporting public schooling. Religious leaders, especially of the stricter groups, wanted to continue the control they had over shaping the moral character of children, and did not like "Godless" public education. Taxpayers grumbled as they usually do. Others objected that the state should not intrude on what was seen as ***a parental responsibility***.

Once the basic idea of public education was established, the political battle shifted to ***the question of compulsory attendance***. As mentioned above, this had been a goal of many reformers for centuries, but there was strong resistance to it on the part of those who felt ***it was incompatible with the values of a free society***. There was also economic resistance from the poor who needed their children to work to help support the family, and from others who benefited from child labour.

The different methods in education

As schooling shifted from an elite activity to a more general and public one, ***the debate about methods*** developed around three basic attitudes towards children. Those whose religious orientation stressed original sin often looked on children's natural tendencies as inherently evil, and thus wanted schooling to have strong discipline aimed at shaping the moral character of the child. A second group agreed with John Locke (a philosopher) that the child was a "blank slate," and thus wanted an appropriate curriculum that would fill the child with the right skills and knowledge. A third group was more sympathetic to the natural tendencies of children, and thus wanted schooling to work with those tendencies and be "child centered." The child centered approach has a rich history that offers both insights and questions to present day reformers.

One of the prime reasons that child-centered approaches did not have more influence was that the idealism and dedication to freedom that characterized the early 1800s was progressively pushed aside by the rush of the industrial revolution.

Built on the factory model, mass education taught basic reading, writing, and arithmetic, a bit of history and other subjects. This was the 'overt curriculum.' But beneath it lay an invisible or 'covert curriculum' that was far more basic. It consisted—and still does in most industrial nations—of three courses: one in punctuality, one in obedience, and one in rote, repetitive work. Factory labor demanded workers who showed up on time, especially assembly-line hands. It demanded workers who would take orders from a management hierarchy without questioning. And it demanded men and women prepared to slave away at machines or in offices, performing brutally repetitious operations.

The schooling patterns set in the 19th century have continued up to today, and have spread to essentially every nation on earth. These patterns may not appeal to us, and they are probably not what the early promoters of mass education, had in mind, but they did fit the overall social conditions (until World War II). Since that time, however, there have been major cultural shifts that paradoxically weaken the effectiveness of schooling as a means of preparing children for adulthood, and yet strengthen the entrenchment of schooling as an institution within society.

Shifts in the idea of education

The first important shift is that the quantity and availability of information (indeed learning resources of all kinds) is enormously greater today than it was in the 19th century. Surrounded as we are by TV, radio, movies, print of all kinds, as well as easy means of travel, it is difficult for us to fully realize that a century ago many people had no books other than the Bible, there were few libraries, and people rarely traveled more than 50 miles from their birthplace. For most people at that time, school was one of the few sources of access to the wider world. Our new information environment opens up vast new educational options. It also shifts the goal of education away from amassing knowledge and toward building the general skills required to be a creative participant in a rapidly changing world. While simple training might have sufficed for the single career lives of the past, the need today is for a much higher level of adaptability and creativity, as well as inter- and intra-personal skills, and these skills are not well learned in the authoritarian and artificial setting of schooling.

At the same time, the alternatives for children other than school have gradually dwindled as the economy has shifted and the fabric of community and household life has steadily eroded. No longer are children (or even young adults) wanted as apprentices, as farm or factory laborers, nor are there many close knit communities and extended households to provide a natural environment for childhood activities. Outside of the schools, the burden of child care frequently falls on one adult (whether married or not) with little help from anyone else, and that is simply too much of a burden for most people. The change in

the age structure of the population has also contributed to making ours an increasingly adult oriented society with most of our major institutions (business, government, etc.) designed on the assumption that children will be elsewhere.

Thus at a time when cultural changes are requiring children to develop skills that are not effectively learned in today's schools, and when brain research is showing how "anti-brain" most current educational methods are, we have become increasingly committed to schools as an institution for primarily non-educational reasons, such as child-care and the postponement of employment. Social critics like John Holt, Ivan Illich, and George Leonard have been pointing to these trends since the 60s, and since then the contrast between the needs of our children and the functioning of our schools has simply grown starker.

What is to be done? Can schooling, which has survived for so many thousands of years, be reformed to meet the needs of the present, or do we need a fundamentally different approach to, not only education and learning, but also the role and place of children within our society?

Reading 2a

Question: Why is there a need for education?

What Is The Purpose Of Education?

By Kim Jones, CEO, Curriki

From an early age, we've been told that education is the key to one's success in life. Study hard! Get good grades! Go to college! And by making education freely available to all children, we're giving everyone an equal opportunity to succeed in life. But the path to success and even middle-class existence is no longer so straightforward, if indeed it ever was.

At OAS 2006, a notable conference, the well-known professor and visionary scholar Nicholas Negroponte stated,

"No matter what global problem you are dreading, whether it's the elimination of poverty, whether it's the creation of peace, whether its solving environmental energy problems, the solution—whatever it is—multiple solutions, the solutions always include education, never is it without an education component and sometimes cannot be done without education." And he went on to state, "The children should be making things. The children should be writing computer programs. They should be learning by doing. The thing is not to learn excel or such programs, it is to learn to learn."

It's Personal

But what is the purpose of education? Is education about preparing students for a specific career? Or is it about teaching students lifelong values, discipline, and the ability to explore new ideas and to think independently?

Over the decades, the following have all been goals of education:

- To prepare children for citizenship
- To cultivate a skilled workforce
- To teach cultural literacy
- To help students become critical thinkers
- To help students compete in a global marketplace

Is this happening in your school? Look at each bullet point above and explain how your school is meeting the goals of education.

While these are related goals, they demonstrate the diversity of expectations and prioritization that society and its educators must manage.

Education does not have a single purpose; it serves multiple objectives, and the relative importance of each of these objectives can be very personal. The varied emphasis is a result of the diverse economic, social, spiritual, cultural, and political realities of our individual lives. Likewise, how we deliver instructions, and how we measure success in school as a predictive indicator of our future success in society and, indeed, one could argue the metrics for society's success as a whole, must be updated to match.

It's Ever Changing

In his book, A Whole New Mind, Daniel Pink argues that, as a society, we have transcended the so-called Knowledge Age and are now in a Conceptual Age where our problems no longer have a single verifiable answer. Success in the Knowledge Age was mainly determined by a "SAT-ocracy": a series of tests throughout the education system that required logic and analysis to identify a single correct answer. This does not meet the needs of the Conceptual Age, which requires creativity, innovation and design skills. He further asserts that education is still firmly geared towards the needs of the Information Age, a quickly disappearing era. It's as if our children are moving along an assembly line, where we diligently instill math, reading, and science skills and then test them to see how much they retained, making sure they meet all the "standards" of production. Today, a successful member of society must bring something different to the table. Individuals are valued for their unique contributions and their ability to think creatively, take initiative and incorporate a global perspective into their decisions.

The Trillion Dollar Question

With a widespread awareness of the basic frame conditions outlined above, the question is when is our mainstream education system going to adapt to the needs of our post-modern society?

I believe that we all have a role to play in coming up with a satisfactory answer to this question.

Reading 2b

Question: What is the real purpose of education?

What Is Education For?
By David Orr

One of the articles in **The Learning Revolution (IC#27)**
Originally published in **Winter 1991** on page 52

We are accustomed to thinking of learning as good in and of itself. But as environmental educator David Orr reminds us, our education up till now has in some ways created ***a monster****.*

Before you read on, can you attempt to predict his reasons for making the underlined statement above?

If today is a typical day on planet Earth, we will lose 116 square miles of rainforest, or about an acre a second. We will lose another 72 square miles to encroaching deserts, as a result of human mismanagement and overpopulation. We will lose 40 to 100 species, and no one knows whether the number is 40 or 100. Today the human population will increase by 250,000. And today we will add 2,700 tons of chlorofluorocarbons to the atmosphere and 15 million tons of carbon. Tonight the Earth will be a little hotter, its waters more acidic, and the fabric of life more threadbare.

The truth is that many things on which your future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, the beauty of the natural world, and biological diversity.

It is worth noting that this is not the work of ignorant people. It is, rather, largely the result of work by people with BAs, BSs, LLBs, MBAs, and PhDs. Elie Wiesel made a similar point to the Global Forum in Moscow last winter when he said that the designers and perpetrators of the Holocaust were the heirs of Kant[2] and Goethe[3]. In most respects the Germans were the best educated people on Earth, but their education did not serve as an adequate barrier to barbarity. What was wrong with their education? In Wiesel's words: "It emphasized theories instead of values, concepts rather than human beings, abstraction rather than consciousness, answers instead of questions, ideology and efficientcy rather than conscience."

[2] Kant—a famous German philosopher
[3] Goethe—another famous philosopher

Is there a difference when we say the following—

- He/She has an education

versus

- He/She is an educated person?

The same could be said of the way our education has prepared us to think about the natural world. It is a matter of no small consequence that the only people who have lived sustainably on the planet for any length of time could not read, or, like the Amish, do not make a fetish of reading. **My point is simply that education is no guarantee of decency, prudence, or wisdom**. More of the same kind of education will only compound our problems. This is not an argument for ignorance, but rather a statement that the worth of education must now be measured against the standards of decency and human survival—the issues now looming so large before us in the decade of the 1990s and beyond. **It is not education that will save us, but education of a certain kind**.

What KIND of education do you think he will propose? Can you articulate it in the line below before continuing your reading?

He is proposing an education based on _____

WHAT EDUCATION MUST BE FOR

Measured against the agenda of human survival, how might we rethink education? Let me suggest six principles.

First, ***all education is environmental education***. By what is included or excluded we teach students that they are part of or apart from the natural world. To teach economics, for example, without reference to the laws of thermodynamics or those of ecology is to teach a fundamentally important ecological lesson: that physics and ecology have nothing to do with the economy. That just happens to be dead wrong. The same is true throughout all of the curriculum.

A second principle comes from the Greek concept of *paideia*. ***The goal of education is not mastery of subject matter, but of one's person.*** Subject matter is simply the tool. Much as one would use a hammer and chisel to carve a block of marble, one uses ideas and knowledge to forge one's own personhood. For the most part we labor under a confusion of ends and means, thinking that the goal of education is to stuff all kinds of facts, techniques, methods, and information into the student's mind, regardless of how and with what effect it will be used. The Greeks knew better.

Third, I would like to propose that ***knowledge carries with it the responsibility to see that it is well used in the world.*** Whose responsibility is Chernobyl? Ozone depletion? The Valdez oil spill? Each of these tragedies were possible because of knowledge created for which no one was ultimately responsible. This may finally come to be seen for what I think it is: a problem of scale. Knowledge of how to do vast and risky things has far outrun our ability to use it responsibly. Some of it cannot be used responsibly, which is to say safely and to consistently good purposes.

Fourth, ***we cannot say that we know something until we understand the effects of this knowledge on real people and their communities.*** I grew up near Youngstown, Ohio, which was largely destroyed by corporate decisions to "disinvest" in the economy of the region. In this case MBAs, educated in the tools of leveraged buyouts, tax breaks, and capital mobility have done what no invading army could do: they destroyed an American city with total impunity on behalf of something called the "bottom line." But the bottom line for society includes other costs, those of unemployment, crime, higher divorce rates, alcoholism, child abuse, lost savings, and wrecked lives. In this instance what was taught in the business schools and economics departments did not include the value of good communities or the human costs of a narrow destructive economic rationality that valued efficiency and economic abstractions above people and community.

My fifth principle follows and is drawn from William Blake. It has to do with ***the importance of "minute particulars" and the power of examples over words.*** Students hear about global responsibility while being educated in institutions that often invest their financial weight in the most irresponsible things. The lessons being taught are those of hypocrisy and ultimately despair. Students learn, without anyone ever saying it, that they are helpless to overcome the frightening gap between ideals and reality. What is desperately needed are faculty and administrators who provide role models of integrity, care, thoughtfulness, *and* institutions that are capable of embodying ideals wholly and completely in all of their operations.

Finally, I would like to propose that *the way learning occurs is as important as the content of particular courses.* Process is important for learning. Courses taught as lecture courses tend to induce passivity. Indoor classes create the illusion that learning only occurs inside four walls isolated from what students call without apparent irony the "real world." Dissecting frogs in biology classes teaches lessons about nature that no one would verbally profess. Campus architecture is crystallized pedagogy that often reinforces passivity, monologue, domination, and artificiality. My point is simply that students are being taught in various and subtle ways beyond the content of courses.

1. Do you agree with the writer's views?
2. Do you think your current education is sufficient in ensuring your success as a person and the success of this world? Why or why not?

Reading 3

Question: Co-ed or Single-sex schools—which is better?

Single-sex education: the pros and cons

Should boys and girls be taught separately? Does single-sex education boost academic success? Read the arguments for and against.

By Kristin Stanberry

Single-sex education (teaching boys and girls in separate classrooms or schools) is an old approach that's gaining new momentum. While single-sex education has long existed in many private schools, it's a relatively new option for public schools. The National Association for Single-Sex Public Education estimates that approximately 400 public schools now offer some form of single-sex education. What is fueling this movement? And what are the risks and benefits of single-sex education?

A driving force in the single-sex education movement is recent research showing natural differences in how males and females learn. Putting this research into practice, however, has triggered a debate that extends beyond pure academics. Political, civil rights, socioeconomic and legal concerns also come into play. As the debate heats up, it helps to understand all sides of the issue.

Nature vs. nurture

Before weighing the pros and cons of single-sex education, consider the influences of "nature versus nurture." Many factors affect each child's learning profile and preferences:

- Some factors relate to the child's nature, such as gender, temperament, abilities (and disabilities), and intelligence.
- Other influences stem from the way parents and society nurture the child: Family upbringing, socioeconomic status, culture and stereotypes all fall under the "nurture" category.

According to Leonard Sax, founder of the National Association for Single-Sex Public Education, "...whenever girls and boys are together, their behavior inevitably reflects the larger society in which they live." Depending on one's point of view, this statement can trigger arguments both for and against single-sex education.

Making the case for single-sex education

Those who advocate for single-sex education in public schools argue that:

- Some parents don't want their children to be in mixed-gender classrooms because, especially at certain ages, students of the opposite sex can be a distraction.
- Leonard Sax and others agree that merely placing boys in separate classrooms from girls accomplishes little. But single-sex education enhances student success when teachers use techniques geared toward the gender of their students.
- Some research indicates that girls learn better when classroom temperature is warm, while boys perform better in cooler classrooms. If that's true, then the temperature in a single-sex classroom could be set to optimize the learning of either male or female students.
- Some research and reports from educators suggest that single-sex education can broaden the educational prospects for both girls and boys. Advocates claim co-ed schools tend to reinforce gender stereotypes, while single-sex schools can break down gender stereotypes. For example, girls are free of the pressure to compete with boys in male-dominated subjects such as math and science. Boys, on the other hand, can more easily pursue traditionally "feminine" interests such as music and poetry. One mother, whose daughter has attended a girls-only school for three years, shares her experience on the GreatSchools parent community: "I feel that the single gender environment has given her a level of confidence and informed interest in math and science that she may not have had otherwise."

What critics say about single-sex education

Those who claim single-sex education is ineffective and/or undesirable make the following claims:

- Few educators are formally trained to use gender-specific teaching techniques. However, it's no secret that experienced teachers usually understand gender differences and are adept at accommodating a variety of learning styles within their mixed-gender classrooms.
- Gender differences in learning aren't the same across the board; they vary along a continuum of what is considered normal. For a sensitive boy or an assertive girl, the teaching style promoted by advocates of single-sex education could be ineffective (at best) or detrimental (at worst). For example, a sensitive boy might be intimidated by a teacher who "gets in his face" and speaks loudly believing "that's what boys want and need to learn."

- Students in single-sex classrooms will one day live and work side-by-side with members of the opposite sex. Educating students in single-sex schools limits their opportunity to work cooperatively and co-exist successfully with members of the opposite sex.
- At least one study found that the higher the percentage of girls in a co-ed classroom, the better the academic performance for all students (both male and female). Professor Analia Schlosser, an economist from the Eitan Berglas School of Economics at Tel Aviv, found that elementary school, co-ed classrooms with a majority of female students showed increased academic performance for both boys and girls. In high school, the classrooms with the best academic achievement were consistently those that had a higher percentage of girls. Dr. Schlosser theorizes that a higher percentage of girls lowers the amount of classroom disruption and fosters a better relationship between all students and the teacher.
- The American Council on Education reports that there is less academic disparity between male and female students overall and a far greater achievement gap between students in different racial, ethnic and socioeconomic groups, with poor and minority students children faring poorly. Bridging that academic chasm, they argue, deserves more attention than does the gender divide.
- Single-sex education is illegal and discriminatory, or so states the American Civil Liberties Union (ACLU). In May 2008, the ACLU filed suit in federal court, arguing that Breckinridge County Middle School's (Kentucky) practice of offering single-sex classrooms in their public school is illegal and discriminatory. The school doesn't require any child to attend a single-sex class, yet the suit argues that the practice violates several state and federal laws, including Title IX and the equal Education Opportunities Act.

Question: What is your conclusion?

Taken and adapted from *http://www.greatschools.org/find-a-school/defining-your-ideal/1139-single-sex-education-the-pros-and-cons.gs?page=all*

Reading 4

Question: Are the Sciences better than the Arts?

Science Versus Arts

'Space flight can be as luminous as any novel' by Tim Radford (The Guardian)

Why we are still having the old arts versus science debate? There is only one culture, and you need an open mind to absorb as much as you can of it, argues Tim Radford.

Which branch of learning, in the last century, has delivered the ultimate recipe for adventure; has expanded our intellectual horizons, quickened our understanding of the world around us, and opened our eyes to the astounding possibilities of the past and the future? Piece of cake: the answer is mathematical physics.

So far, whose side do you think he is on?

A century ago, the Milky Way was all there was. It took great intellect with a great telescope to take a closer look at a smudgy object called Andromeda and realise—and what a thrill that moment must have been—that Andromeda was not a star, or a nebula, at all. It was another galaxy, another entire cluster of stars, more than two million light years away.

In the course of the next few decades, Edwin Hubble and later astronomers discovered that Andromeda was only one of millions of galaxies, each containing billions of stars.

In the course of the following few decades, mathematical physicists morphed into experimental and theoretical physicists, geophysicists and astrophysicists; they started with the very small and confirmed that the universe was indeed made of atoms—the idea might be ancient, but the confirmation is hardly older than Einstein—and then they looked at the whole cosmos and realised that they didn't know the half of it: 96% of all the universe seemed to be made of some unknown stuff, and all the stars, planets, moons, asteroids, comets, continents, countries, parish councillors and coin-operated vending machines in 100 billion galaxies across 13 billion light yeats of space added up to a trifling 4% of all there is.

Who made this epic achievement possible, and who is now providing the instruments that illuminate the history of creation back to the first unimaginably small flicker of a second, such as the space probes that will make the journey

to the distant stars and scan the void to understand why, in an apparently lifeless cosmos, the universe seems to have been fashioned so that life might be possible? The answer is another piece of cake: engineering graduates, can-do people who understand rigour and precision and stress and the limits of load-bearing structures, but whose achievements right now are opening new worlds of understanding and delight.

None of these discoveries has direct practical value. Science is part of human culture, like literature, like painting, like history. It is above everything an intellectual delight. You could call cosmology the ultimate leisure activity: it does not win bread to feed a single mouth. You could call spacecraft design a dreary, painstaking trial-and-error labour that certainly helps beam live coverage of international sporting fixtures to a billion homes (and what a preposterous fantasy that would have seemed 50 years ago), but adds nothing to the economy when it comes to sending a little planetary automation to land on Saturn's moon Titan. You could say that and be right, but you'd also be wrong: the Cassini-Huygens mission to Titan in 2005 was an adventure as luminous as any novel, painting or science fiction movie.

I started with mathematical physics and engineering, but I could as easily have composed a hymn to physical chemistry, or biology, or palaeontology—sciences which in the same short timespan have told us the most astonishing things about ourselves, our history, our kinship with creation and our intimate relationship with the substance of the planet we share. And this hymn would have nothing to do with money-making, or idle leisure activities; it would have to do with the ultimate wealth, the only riches really worth having: the stuff in our minds.

I cannot think why we are still having the old arts v science debate. The nine muses of the ancient Greeks stood for intellectual adventure and inquiry: an attempt to impose order and fashion meaning from the flux of events, substances, actions and reactions around us. There are lessons in history (there are always lessons in history: the trick is to work out which is the right lesson for now) and in literature, in music, in architecture, in the plastic arts.

The literary achievements of the last 3,000 years—from Homer, the Pentateuch, Ovid and Dante to Dickens, HG Wells, Marcel Proust and Thomas Mann—have provided a seam of human understanding, the riches of which are probably inexhaustible. But you could say exactly the same thing about the research of Newton, Humphry Davy, Faraday, Darwin, Einstein and the latest generation of mathematical physicists, engineers and biologists who have provided the parallel great adventure. I find the kind of arguments running right now—about what kind of student British universities ought to be producing—absolutely bizarre.

An engineer with mathematics and business skills? What use would such a person be unless he could also argue his case elegantly and persuasively in

the language of Shakespeare and Dickens and JBS Haldane (science, peculiarly, is conducted almost everywhere in English)? And what would be the point of learning 17th- or 18th-century literature, or Victorian history, without also marvelling at the science that informed Newton and his Enlightenment inheritors, or Darwin and the hectic world of exploration around him?

More than 50 years ago, CP Snow, novelist, boffin and man about the corridors of power, put the "two cultures" question, as if science was somehow qualitatively different from the arts. But we cannot live without literature and art: it is through these that unique minds that lived a thousand years ago and ten thousand miles away speak directly and separately to each one of us, here and now. We cannot live without science, not because it gives us MP3 players and MMR vaccines, but because it tells us something concrete and reliable about the physical world around us. The poet shares his world with me. The scientist lights up our world for all of us. If we really only had one way of understanding the world, what kind of understanding would that be?

So we are back to the great British intellectual airport dilemma: which bit of cultural baggage should you carry into the cabin for your flight through life, and which should remain sealed in the hold? Here is the answer: it is a bogus question. There is no check-in clerk. There are no intellectual baggage limits. The destination is unknown. The flight duration is uncertain. The take-off is right now. You should take both, because you will need them on the journey, and there is carousel at the other end.

Question: Are you surprised by his conclusion? Are you convinced by his argument?

Reading 5

Question: Shouldn't all children go to school?

The Pros and Cons of Homeschooling

by Isabel Shaw

The positives

Introduction

Homeschooling is becoming more popular every day, with a growth rate of 7 to 15 percent per year. There are about two million children currently learning at home. Homeschooled kids do well on standardized tests, are welcome at colleges and universities, and as adults, have a reputation for being self-directed learners and reliable employees. Almost ten years ago, when I was making the decision to homeschool, I wrote up a list of pros and cons. The pros won me over, but since then, I've discovered there were many more pros and cons that I couldn't possibly have anticipated! To help other parents who are considering homeschooling, here is a new list of pros and cons. This list is based on both my experience and the experiences of dozens of families who've shared with me the ups and downs of their day-to-day homeschooling.

The Pros

Educational Freedom. Most homeschooled students have the choice to study and learn what they want, when they want, for as long as they want. This is not to say that all the basics (and more!) aren't covered. But those basics may be covered at age six for one child, and at age ten for another, depending on ability, maturity, and interest levels. (Unfortunately, a few states do have unnecessarily restrictive legal requirements; in those states, educational freedom may be limited.)

Physical Freedom. After the initial shock of leaving the school system has passed, parents who homeschool say they experience a real sense of freedom. With their lives no longer revolving around school hours, homework, and the school calendar, these families plan off-season vacations, visit parks and museums during the week, and live their lives according to what works for *them*.

Emotional Freedom. Sadly, peer pressure, competition, boredom, and bullies—are all part of a typical school day. This can be a particular problem for girls. According to studies, self-esteem plummets in middle-school girls. However, similar studies of homeschooled girls have shown that self-esteem remains intact and that these girls continue to thrive. (Read *A Sense of Self: Listening to Homeschooled Adolescent Girls* by Susannah Sheffer.) Homeschooled kids can dress and act and think the way they want, without fear of ridicule or a need to "fit in." They live in the real world, where lives aren't dictated by adolescent trends and dangerous experimentation.

Religious Freedom. Many families feel their religious and spiritual beliefs are an important part of who they are. Homeschooling provides the opportunity for parents to incorporate their beliefs into their daily lives.

Closer Family Relationships. Just about every family stressed the important role that homeschooling played in helping them find time to foster loving ties between all family members. Teens seem to benefit enormously from this interaction, and rebellious, destructive behaviour often begins to diminish soon after homeschooling begins.

Stability During Difficult Times. Whether there's a new baby, an illness, a death in the family, or another obstacle or transition, homeschooling helps families cope during challenging periods. Dauri, who homeschools her three boys, described how homeschooling helped her family adjust to a move from Europe back to the US, followed by another move across the country: "It was a great comfort that we homeschooled throughout the moves. It was a stabilizing factor in our otherwise mixed-up lives."

Well-Rested Kids. As more and more studies are illustrating, sleep is vital to the emotional and physical well-being of kids, especially teens and preteens. The effects of early morning classes can be devastating to many children, especially those who are not morning people. After realizing that lack of sleep and hours of busywork often left her boy in a zombie-like stupor, Haya has decided to try homeschooling: "My oldest (age 13), is up at 6:30 in order to catch the bus at 7:15 and start school at 7:30. He comes home at 3:00 and does homework—sometimes until midnight. He's often exhausted. I'm hoping that when we homeschool next year, the dark circles under his eyes will disappear and his real personality will emerge again."

No Busywork. Homeschooled children can accomplish in a few hours what takes a typical classroom a week or more to cover. In a a recent interview, John Taylor Gatto, New York City Teacher of the Year and a 26-year teaching veteran, said that in many classrooms less than one hour out of each school day is spent on "on task" learning. No wonder these kids have so much homework. And that brings us to a major "pro" of homeschooling: No more homework!

The Cons

Time Restraints. There's no way around it: learning outside of a school environment can consume a lot of mom or dad's time. Most folks visualize that time being spent at the kitchen table with textbooks and worksheets, but for most families, that's not the case. My family has never gone that route, choosing hands-on experiences and interesting activities as learning tools, instead. However, planning, driving to, and participating in those activities (or waiting for them to be over) constitute the bulk of my day. And that can be very draining.

As a single homeschooling mom, Mickey wrote to say that single parents who homeschool their kids face even greater time restraints: "We have to be very careful in our timing because I work and homeschool. Luckily, I work close to home and have a lot of time off, but it's still a challenge."

Financial Restraints. For married parents, one partner often foregoes full-time employment out of the home in order to homeschool. This can be a big sacrifice for families who are struggling to balance their budget. Surprisingly, most homeschooling families believe that the brief loss of income is well worth the satisfaction of watching their kids grow and learn in freedom.

Being with Your Kids 24/7. There's no denying it—if you choose to homeschool, you're going to be with your kids most of the time. If you don't enjoy being together, then homeschooling is not for you. While it can sometimes be difficult, most homeschool parents view their daily interactions with their kids—the ups as well as the downs—as opportunities for personal and familial growth.

Limited Team Sports. While community sports activities fill the void for younger kids, teens often find limited opportunities to join sports teams, especially competitive ones. Depending on where you live, homeschoolers may or may not be welcome to participate on teams with their public-schooled peers. Several parents did mention that a few families overcame this problem by creating their own teams.

Living Outside the Norm. Like any activity that challenges mainstream thinking, homeschooling may be seen as an oddity at best, or even as a threat to those who are unable to accept ordinary parents succeeding where trained professionals often fail. My family has developed a bit of a tough exterior over the years, but negative comments and criticisms still filter in occasionally. If you are unable to live "outside of the box," then homeschooling is not for you.

Question: Would you homeschool your own children? Why or why not?

Reading 6a

Question: Singapore education—good or bad?

What the Ministry of Education Says:

Our Education System

The Ministry of Education aims to help our students to discover their own talents, to make the best of these talents and realise their full potential, and to develop a passion for learning that lasts through life.

We have a strong education system. Singapore students aim high and they achieve very good results. This is recognised around the world. We have good schools, with capable school leaders and teacher, and facilities that are amongst the best in the world.

We are building on these strengths as we prepare the next generation of Singaporeans for the future. This is a future that brings tremendous opportunity, especially in Asia, but it will also bring many changes that we cannot foresee today. The task of our schools and tertiary institutions is to give our young the chance to develop the skills, character and values that will enable them to continue to do well and to take Singapore forward in this future.

We have been moving in recent years towards an education system that is more **flexible and diverse**. The aim is to provide students with greater choice to meet their different interests and ways of learning. Being able to choose what and how they learn will encourage them to take greater ownership of their learning. We are also giving our students a more **broad-based education** to ensure their all-round or holistic development, in and out of the classroom.

These approaches in education will allow us to nurture our young with the different skills that they need for the future. We seek to help every child find his own talents, and grow and emerge from school confident of his abilities. We will encourage them to follow their passions, and promote a diversity of talents among them—in academic fields, and in sports and the arts.

We want to nurture young Singaporeans who ask questions and look for answers, and who are willing to think in new ways, solve new problems and create new opportunities for the future. And, equally important, we want to help our young to build up a set of sound values so that they have the strength of character and resilience to deal with life's inevitable setbacks without being unduly discouraged, and so that they have the willingness to work hard to achieve their dreams.

Reading 6b

Question: Singapore education—good or bad? (a non-Singaporean perspective)

Singapore wants creativity not cramming
By Rebecca Lim

BBC News, Singapore

Singapore's schools have become global role models, with consistently high results in international tests. But now they want to move beyond this—towards something that cultivates creativity and what they term as "holistic education".

Minister for Education, Heng Swee Keat, said this is "less about content knowledge" but "more about how to process information". He describes this challenge to innovate as being able to "discern truths from untruths, connect seemingly disparate dots, and create knowledge even as the context changes".

This strategy aims to prepare today's students for the demands of the next 20 years.

It means that schools are under more pressure—and will be given more leeway—to come up with creative ways to teach the syllabus.

Outside the classroom

So instead of the traditional images of high-pressure Asian schools—with rows of heads buried in books—they are trying different approaches to learning.

Armed with iPads and smartphones, pupils get out of the classroom to learn about science Putting this into practice, on a sunny April morning, 80 students from one of Singapore's top schools were trekking outdoors. The nine to 10 year olds from Rosyth School were on a "learning journey" in a park, incorporating science topics and values such as caring for the environment.

"We are conducting a biopsy to find out why a bee, a fish, a bird and a plant mysteriously died," said student Darren Ong. "Is it because of human actions?"

They photographed "evidence" on smartphones and digital cameras, soaking up facts on plant and animal species on their iPads.

"In one activity, I can cover three topics," said science teacher Lin Lixun, clad in a white laboratory coat for his role as chief investigator.

"They can really learn through hands-on experience and putting things into action," said civics and moral education teacher, Joslyn Huang.

'Quality teachers'

This next stage of development follows Singapore's huge improvement at school level—which has been hailed by education leaders in the US and the UK. This put them ahead of every European country apart from Finland. Teachers such as Ms Huang and Mr Lin are seen as key to this success. For Mr Lin, teaching science is "sharing a passion" rather than merely imparting knowledge, he says.

High-quality teachers in Singapore are not an accident—but are the result of "deliberate policy actions", said a report from the OECD. It identifies the synergy among the schools, the ministry and the National Institute of Education (NIE), which trains teachers and conducts research. As many other countries, Singapore had once faced a dearth of good teachers, due in part to the lack of prestige and respect for the profession, said NIE director Lee Sing Kong. This changed after concerted efforts were made from the mid-1990s to raise the image, provide training and better working conditions for teachers, he told a global round table discussion in March.

"But it does take time to really evolve the quality teaching force," he said.

'Survival years'

Singapore, a tiny island with few natural resources, has promoted education as a pillar of economic growth since its independence in 1965. Teachers such as Mr Lin are seen as key to raising standards in Singapore's schools. Those were the "survival driven" years.

The late 1970s saw an "efficiency driven" phase focusing on industry-related skills.

In the late 1990s, as the economy advanced to become knowledge based, the emphasis shifted to thinking skills and creativity. Equal opportunity in education was also used as a way of binding together different immigrant groups, including ethnic Chinese, Malay and Indians.

"In sum, our circumstance force us to take education very seriously because it is critical to our survival and success," said Mr Heng. "Education shapes the future of our nation."

East-west bridge

In higher education, the island nation has attracted universities from the US and Europe looking for a base in Asia. These include the top business schools INSEAD and the University of Chicago Booth School of Business.

The National University of Singapore (NUS)—ranked among the top 50 in the world—has partnerships with Massachusetts Institute of Technology (MIT) and Duke University at graduate and postgraduate levels.

Despite its strong reputation, Singapore education is not without its detractors.

The Yale-NUS collaboration to set up a liberal arts college drew objections from Yale faculty over Singapore's human rights record.

Singapore's school system has also been criticised for being too grades-driven and high-stress—a legacy that may prove a challenge to the ambition for "holistic education".

'Obsession' with testing

It is common for children's schedules to be packed with "enrichment classes" and tuition outside of school.

Night school: International universities have used Singapore as their base in Asia. This month, a parent's letter in a local newspaper sparked debate over tough maths standards pushing more students toward such additional classes.

Sociologist and former Nominated Member of Parliament, Paulin Straughan, speaking at a recent population forum, suggested doing away with the PSLE—a national examination that all students take at the end of primary school.

"If we do that, we free the school from this obsession of testing, and the teachers and educators can focus on teaching and learning, and if we do that, more young couples would be willing to grow larger families," she said.

That was a radical thought for this competitive nation. For now, teachers are aware that fun activities still need to deliver the results.

"We still structure it such that it is aligned to learning objecties and the things they are supposed to know for exams," said Ms Huang.