

“Can the Learning Species fit into Schools?”

by John Abbott

So, What do you think? Can the Learning Species fit into schools?

The obvious answer to such a question – the answer given by educational policy makers from London to New Zealand, from Mongolia to Patagonia – is, of course, a resounding “yes”. If we humans are the planet’s pre-eminent learning species surely none but the most obdurate of young people should readily accept the benign conditions of the classroom? They should welcome the way in which the curriculum designers have delivered to them, on a plate, all they need to get good grades.

On the assumption that “schools can do it all”, billions of pounds have been invested in England by the government on school effectiveness programmes; officials have virtually rewritten all the manuals of teacher training, and statisticians have devised the world’s most thorough evaluation and assessment systems. Capital spending on schools will have increased from six hundred and seventy million pounds in 1997, to five billion pounds this year. A sense of euphoria fills the educational air – it’s bonanza time, say the politicians, for education is apparently the number one item on their agenda.

Obvious answers are not, however, necessarily the right answers.

Maybe schools in England need more than additional money or institutional solutions to persuade a sceptical nation that “real learning gets to the heart of what it means to be human. Through learning we become able to do something we were never able to do before. Through learning we extend our capacity to create, to be part of the generative process of life.” That sounds really exciting, but to the sceptic, as to the realist, that is not what large number of pupils believe that they experience in schools.

Peter Senge, who wrote the above in his book on the learning organisation in 1990, commented, “There is in each of us a deep hunger for this type of learning.” Senge was simply reiterating what St. Augustine had said more than a thousand years before: “I learnt most not from those who taught me, but from those who talked with me.” Teachers are not the only people youngsters learn from. And Confucius, another thousand years before that, had spoken as if he were a cognitive scientist, “Tell me and I forget, show me and I remember, let me do and I understand.”

Almost daily our newspapers report on research findings from around the world, each of which adds a fascinating further missing piece to the extraordinary processes that make up the human brain; a gene is discovered for baldness, the month in which a girl is conceived will significantly affect the age she goes into the menopause fifty or more years later, and culture we discover is the ultimate determinant of whether a genetic disease will or will not be activated.

Let us always remember this; the human brain is our ultimate survival mechanism. Out of the myriad pieces of information that it receives every moment the brain is constantly evaluating new ideas in terms of what good, or what harm, such ideas could do to us. Over countless

generations our brains have evolved to be wary of ideas planted in our minds by others, as opposed to concepts we have worked out for ourselves. To understand the brain is to understand what humans are all about.

However, school is only one part of a young person's learning experience. As Lord Chesterfield in his famous book of letters to his son two hundred years ago said, "The knowledge of the world is only to be gained in the world, not in a closet. Books alone will never teach it to you; but they will help suggest many things to your observation which might otherwise escape you."

In our over-institutionalised world, a world driven by an economic imperative not to waste a single moment in unnecessary speculation or personal enquiry, there is a growing temptation to assume that "wrap-around schooling" can efficiently provide youngsters with all the experiences they need. In such a world teachers are encouraged to take themselves too seriously, and politicians think they can legislate in areas which earlier generations assumed were the personal affairs of the home. Learning is increasingly coming to be seen as a logical, sequential, planned activity. But it isn't, is it? Learning often takes us unawares – an insight triggered by some chance happenstance enables us to make sense of what earlier had seemed incomprehensible.

As we think of the tensions felt daily in so many classrooms by teachers and pupils alike it's not too hard for us to appreciate the statement from evolutionary psychology made eight years ago, "You can take man out of the Stone Age, but you can't take the Stone Age out of man."

The 'classrooms' of stone age times were messy, unpredictable, challenging places where youngsters needed a multiplicity of skills and attitudes if they were to survive. Sitting still and being instructed is not what the brains of today's pupils have evolved to expect. Children need more freedom, more experience of reality than even the best teachers in a classroom can provide. "Classes are boring, 'cos we don't have to think about what we're doing", said some Canadian seventeen-year-olds last autumn, "We're just told to copy stuff down off the board or from what the teacher tells us. It makes us lazy... in fact, sorry to say this, but it's you teachers who *make* us lazy."

"I've been convinced for some time", writes Keir Bloomer of the Scottish Qualifications Agency, "that the dysfunctionality of the secondary school and the inappropriateness of many of its goals are major causes of youth alienation and all of the social problems which that brings. Modern western society seems to be uniquely incapable of turning the energy and enthusiasm of adolescents to constructive purpose". It takes a man of the stature of Bill Gates to state this unequivocally; "High schools are obsolete... by that I mean that, even when they are working exactly as designed (they) cannot teach our kids what they need to know today", he told a conference of State Governors in America in February 2005.

It seems that the brains of the youngest members of the Learning Species can too easily be trivialised, not inspired, by the classroom – and that is as obvious in Toronto as it is in York, in Melbourne as it is in London or Manchester.

So, what do we know about our species that might help us understand human learning better? We do know that we separated from the Great Apes some seven million years ago. We share

nearly ninety-nine percent of our genes with the chimpanzees, so we obviously have a very long common ancestry. Consider for a moment the bright, darting eyes of a six-week-old baby, following every movement that you make. “What’s going on inside there?”. And well you should, for some seventy or so years later those darting eyes, symptomatic of a lively curiosity, may well become a twenty-first century Einstein. Now compare that with the lack of contrast between a baby chimpanzee and a grand old great grandfather of a chimpanzee. Something amazing goes on inside the human brain that is not happening to our nearest cousin.

Science tells us that all mammals apart from ourselves give birth to their young when their brains are some ninety-five percent structurally complete. But not humans. From the time, several hundred thousand years ago, when we first started to use our brains really well, and then began to talk, our brains started to grow larger. That put pressure on our skulls, and as they started to get bigger they could no longer get down the woman’s birth canal. Over time an evolutionary compromise emerged. Humans give birth to their young when their brains are only forty percent fully formed. It is not until the child is three years old that it catches up with other mammals.

Consequently at birth humans are terrifyingly vulnerable. But evolution is nothing if not imaginative and, in the case of our brains, compensatory. Pushed out into the world long before their time human babies have to learn from the environment much more than do other animals, whose behaviour is marvellously conditioned by instincts developed within the mother’s womb. Within that amazing forty percent brain we humans are born with lies, the neurological equivalent of a shelf full of D.I.Y. Guides built up over aeons of time by the trial and error experience of our ancestors. As with all such guides it’s up to the individual as to whether they are used or not... and if not used they simply wither away. Consider how natural it is for a child of three or four to learn its native language, but how hard you found learning French, or Spanish, at the age of fourteen or fifteen.

To us humans nurture is as significant as nature – the two are intrinsically interconnected. That is why we humans are born incredibly curious – we can’t stop asking questions, and our answers significantly shape the details of the brain that we actually create in our early years. The more exciting and interactive the environment, the better brain we build, and can then use. Herein is the essence of what we know shapes education in the early primary years.

Until very recently, in fact right through to the present day for most people, it was thought the child’s brain had stabilized into an adult form by the age of twelve, shortly thereafter to be racked by the sexual hormones which (as well as producing interesting bulges and outcrops of hair) can cause chaos to a growing person’s emotions. In the latter part of the twentieth century schools were encouraged to take on an ever more custodial role simply to stop adolescents literally, and metaphorically, harming themselves. Adolescents, it was theorised, needed more of what had apparently been good for younger children. They needed to be taught more. The more they kicked against this – as very many of us did years ago, and even more still do today – society either blamed the adolescents for being unreasonable, or the teachers for not being “good enough”.

Two apparently distinct areas of research in the last few years cast adolescence in a very different light. Now that functional MRI scans are more freely available some research

programmes have been developed to study, on a sequential long-term basis, the adolescent brain. The early results have amazed the researchers. Starting at about the age of twelve there is a sudden proliferation of synapses in the prefrontal cortex, followed by extensive systematic pruning of existing synapses going on for as much as the next ten years. Adolescence may not terminate until the age of twenty-two or twenty-three. These changes rival early childhood as a critical period of development. With some of the earlier connections made in the first years of life being suddenly fractured there appears to be a biologically controlled, apparently involuntary, forcing apart of the child/parent relationship, particularly by an excessive appetite for adventure, a predilection for risks and a desire for novelty and thrills, that often lead to outrageous and reckless behaviour. “The teenage brain, far from being ready-made, undergoes a period of surprisingly complex crucial development”, wrote Barbara Strauch in 2003, suggesting that the adolescent brain is “crazy by design”. Adolescents seem biologically compelled to become weird.

It may sound totally counter intuitive but in being “crazy by design” it is possible to see that adolescence is actually a critical evolutionary adaptation which is essential to our species’ survival; an internal mechanism that prevents children from becoming mere clones of their parents. Adolescence appears to be a deep-seated biological adaptation that makes it essential for the young to go off, either to war, to hunt, to explore, to colonise, or to make love – in other words to prove themselves, so as to start a life of their own. As such it is adolescence that drives human development. It is adolescence which forces individuals in every generation to think beyond their own self-imposed limitations, and to exceed their parents’ aspirations.

Keep all that in your mind, and now ponder something very different. In his 2002 book, “The Journey of Man”, Spencer Wells uses the findings of numerous genetics studies to plot out how our ancestors came to move out of east central Africa some sixty thousand years ago and, subsequently, to colonise the whole world. “Today”, states Wells, “we are in many ways the same Palaeolithic species that left Africa only two thousand generations ago (for there were no modern humans living outside Africa before that time)”. To cover such distances in such a short time – our ancestors reached India fifty thousand years ago, crossed the Bering Straits fifteen thousand years ago and reach Tierra del Fuego ten thousand years ago – each new generation of hunter/gatherers would have had to move on two or three miles beyond their parents’ territory. Generation after generation the young had to move away from the security of their parents’ encampment and campfire, have the nerve to go beyond the next mountain, or cross the next river. This was no task for the faint hearted. Only those who could do this lived to pass on their genes to the next generation.

Sixty thousand years, a mere two thousand generations, would be quite long enough for the changes in the adolescent brain to become a permanent “adaptation” – a preferred way of doing things which, as with language acquisition in the first years of life, becomes part of the “grain of the brain”. One recent writer on human behaviour, Barry Bogin, of the University of Michigan, speculates that adolescence is the most recent of all the adaptations which scientists have so far come to understand. That would fit with the evidence from genetics and the human diaspora. Personally I would add another, though I know of no research programme that has so far explored this. Is it possible that such a recent adaptation is, as of now, only partially complete? Is it possible that not every member of the next generation has this adaptation fully developed?

After all, some youngsters seem to have a moderately tranquil adolescence, but it's normally those who do "go their own way" (what a telling phrase!) that become the successful adults years later. To learn to be a risk taker when young, it appears, gives you a greater sense of personal control when you are older.

From the earliest of times the progression from dependent child to autonomous adult has been an issue of critical importance in all societies. Those neurological changes in the young brain as it transforms itself means that adolescents have evolved to be apprentice-like learners, not pupils sitting at desks and waiting instruction. Youngsters who are empowered as adolescents to take charge of their own futures will make better citizens for the future than did so many of their parents and their grandparents who have suffered from being overschooled but undereducated in their own generations.

Look again at those adolescents in your classrooms. Do they really need ever more elaborate glass, steel and concrete "schools for the future" which look, and function, ever more like shopping malls? Rather, don't they need the space to explore and the challenge to work things out for themselves; to take risks – to "prove themselves" while they still have the predisposition to be risk takers?

Consider again that hundred-year old disaster in English educational thought, namely that the education of secondary pupils is more important than those in their primary years. That is how we still fund education – it's where we put our money. It's why classes of the youngest pupils are larger than those for seventeen and eighteen-year-olds.

It's time to stop thinking of primary and secondary education as being separate entities, and to start being sceptical of accepting Key Stages as anything other than administrative constructs. Lump all their monies together and, if you've started to understand the message of this paper, work on the rough and ready formulae that in future class size should never be more than twice chronological age; classes of ten at the age of five, twelve at the age of six, twenty at the age of ten.

Do this, not to make the task of the teacher easier, but to develop a pedagogy that genuinely empowers youngsters from the youngest ages to take responsibility for their own learning. Treat them like young apprentices. And what was the secret of apprenticeship? It was to give the youngsters such a good start that progressively they needed less support from the master. "Jack is as good as his master" was the ultimate statement of success. Once Jack had made his "masterpiece", a project entirely of his own construction that was as good as any professional could create, he had learnt to combined in himself the roles of both teacher and learner.

That is the process which is deeply seated within the human psyche. That's why the learning species find it so insufferably demeaning as it gets older to be sitting in classrooms for too much of the time.

And what of the rest of my rule of thumb... does this mean classes of thirty-six at the age of eighteen? Of course not. Successful apprentice learners should expect to spend three-quarters of

their time at that age working on their own, or in teams. Probably that would mean group tutorials of eight or nine students for about a quarter of the time, in their last year of schooling.

Here is the revolution that we need, a revolution that has been waiting to happen for nearly fifty years. It is a revolution that has faltered badly in recent years, despite the billions of pounds invested in so-called innovations. Right now we seem to have got to the worst of all possible worlds... we have produced an overschooled but undereducated society.

Let me give you one more necessary, but unpalatable, observation. Young people spend three quarters of their waking hours outside school – thank goodness! However, those ‘out-of-school’ experiences have become ever more constrained and unexciting because the adult world has become so preoccupied with its own well-being that it no longer wishes to give up quality time to act as mentor to the young.

The need for intelligent, thoughtful, informed and caring mentors able to inspire and enthuse young people within the greater community is every bit as great as is the need for teachers of the highest quality in the schools. It’s not one or the other – it’s both. Most of us, including politicians, just don’t understand that. “What we need most to improve the quality of our learning is more contact with adults other than parents and teachers”, said a group of seventeen-year-olds in England some years ago. “We know what our parents think, because we’ve heard it every day for years. We’re slightly suspicious of what teachers say because they’re actually paid to say that. What we want to know is what do other adults think... and we don’t meet very many of those”.

Once we fully understand the biological nature of the learning species we will significantly change the practice of schooling, and an adult population will come to recognise that the education of the young is just too important to be left to the teachers (however good they may be) to do on their own. The Learning Species will never fit comfortably in schools as we know them, and we should not leave schools to function in their present way any longer. The youngest members of the Learning Species deserve better from us for, knowing what we now know, we no longer have the moral authority to carry on doing things the way we did. All of us have to change.