Deep Learning at ICHK

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The current state of education and how we reached this point

It is widely acknowledged that the education system is not fit for the 21st Century. Back in 2006 before the proliferation of the iPhone, Facebook, and Twitter, Sir Ken Robinson asked whether schools actually kill creativity, often thought of as vital for the future of humanity. His widely acclaimed Ted Talk is still the most viewed Ted Talk in history at close to 60 million and counting. In it he lays out some fundamental flaws with modern education and it still has many teachers around the world nodding in agreement upon hearing them.

"Our education system... came into being to meet the needs of industrialism... the most useful subjects for work are at the top. So you were probably steered benignly away from things at school when you were a kid, things you liked, on the grounds you would never get a job doing that... the consequence is that many highly talented, brilliant, creative people think they're not, because the thing they were good at at school wasn't valued, or was actually stigmatized. And I think we can't afford to go on that way." The world has changed much since this talk but mainstream education has largely remained the same.

An education system which at best is considered irrelevant, and at worst harmful by many of those whom it's supposed to be actually benefiting, cannot be fit for purpose.

John Abbott, president of the 21st Century Learning Initiative, puts it by raising this fundamental question:

"By misunderstanding teenagers' instinctive need to do things for themselves, isn't society in danger of creating a system of schooling that so goes against the natural grain of the adolescent brain that formal education ends up trivialising the very young people it claims to be supporting?"

Abbott goes on to argue that this "is an unintended, but inevitable, consequence of an outdated design brief (from the shape of schools, the nature of the curriculum, the structure of assessment, and the way teachers teach). [1]

How did this happen? Why is that we have arrived at this current state in education where children's innate curiosity and ability to learn has often been sacrificed at the altar of standardised tests?

In their book, "Over Schooled but Undereducated", Abott and MacTaggart trace the evolution of the modern education system from the birth of the Industrial Revolution. Whereas before, education was largely a family affair with children learning through apprenticeship, "industrialisation changed every aspect of this equation" [2]. The majority of the working population were condemned to working long hours in tedious work and had neither the time nor the energy to look after their children. The responsibility for education was taken on by the churches and so its foundation was "as charity, and a way of keeping children off the streets so that parents could work ever-longer hours." [3]

The combination of the British Empire and the Industrial Revolution have coincided to impact mainstream educational policy throughout the world. The roots of many of the problems facing it is found in the changing nature of work, the growth of factories and cities and the decline of communities.

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[1] John Abbott and Heather MacTaggart, Overschooled but Undereducated - How the Crisis in Education is Jeopardising our Students, Bloomsbury 2013 p. xix
[2] John Abbott and Heather MacTaggart, Overschooled but Undereducated p.90
[3] John Abbott and Heather MacTaggart, Overschooled but Undereducated p.95

As a class based society, it is unsurprising that Victorian England evolved a two tier system with the wealthy middle class educated separately from the poor working class. Today, we have some of the most well known schools around the world: Upper Canada College (1829), Sydney Grammar School (1854), Auckland Grammar School (1869) and St Within's in Johannesburg (1870), which were created by the wealthy for their children. During this time, school boards were established to provide education for children whose parents could not afford to educate their own children through taxation. [4]

Despite the success of the school boards and particularly the excellent education that was provided in science and technology, the public schools of the wealthy became the "yardstick by which all aspects of secondary education were later to be judged [and it] still casts deep shadows across twenty-first century educational thought". The public schools of Winchester and Eton were wedded to a classical curriculum, firm in the belief that it was this knowledge that had shaped the leaders of the colonial world rather than their confidence or social status.

Combined with regimes of increased formalised testing, which have come about due to the perceived accountability of political institutions, we arrive at a situation where students are being drilled and assessed in areas of knowledge which are not necessarily relevant to students' lives. Nevertheless, schools and teachers become better and better at drilling students in ways which satisfy the examiners and exam boards. It does not matter whether students are being inspired or are truly learning. Grade inflation leads the general population to believe that standards are falling and with the increasing pressure for school performance to improve, schools push students for higher grades and to take ever more examined subjects. As we have entered this arms race, education systems all over the world are guilty for "forgetting that for children to grow up properly, there was much more to education than sitting in classrooms". [5]

Yong Zhao, director of the Institute for Global Education and professor in the Department of Educational Measurement, Policy and Leadership at the University of Oregon, explains how US mainstream education has gone from a fairly local affair to one where the federal government is mandating accountability through standardised testing. From Kennedy using the Cold War to push the education agenda, through to Bush's landmark policy No Child Left Behind, he traces the development of a system which has led to a narrow focus on Maths, Science, English with education reduced to a score which is simplistic and misleading, but immensely popular. [6]

China has a long history of associating education with exams. The keju (科舉), the chinese civil service examinations system, which was later exported to Japan and Korea, was established early in the 7th Century and remained in place until the start of the 20th Century. Technically, these exams were open to everyone and were seen as a vehicle for social mobility which has led to a deep respect for education that has permeated chinese society albeit a type of education that is heavily reliant upon exam accreditation. Although the Keju no longer exists, it's spirit lives on in the "gaokao" (高考), the National College Entrance Exam which determines the course of individual lives as powerfully as the keju has done in previous centuries. Its cultural legacy lives on with the chinese understanding of success as synonymous with success in examinations. [7]

As a result of the historical and cultural context in which mass education has arisen, many teachers and students simply take for granted that being educated and schooling is about taking a series of tests and the grades at the end of it all. ICHK questions this assumption and seeks to offer a different type of education.

4   John Abbott and Heather MacTaggart, Overschooled but Undereducatedp.115
5   John Abbott and Heather MacTaggart, Overschooled but Undereducated p.175
6   Yong Zhao, Catching up or Leading the Way - American Education in the Age of Globalisation, ASCD 2009, Chapters 1-2
7   Yong Zhao, Catching up or Leading the Way - American Education in the Age of Globalisation, p.79

Why assessment is not the answer

There is a growing body of evidence which suggests that assessment and the modern emphasis on grades is detrimental to learning. For example, a study by the Institute of Education showed that pupils perform better, "show greater motivation, are better behaved and are more likely to be independent and strategic thinkers when teachers are not obsessed by grades" [8]

Carol Dweck, the main proponent behind the Growth Mindset phenomen, has a huge body of research which supports this notion. Alfie Kohn is a long standing and well informed critic who has written a whole series of books and articles which demonstrate the negative effects of grades on teaching and learning. The movement is growing with both teachers and parents denouncing the effectiveness of the testing regime. Bruce Dixon, who together with Will Richardson hosts the Modern Learners Podcast, neatly summarises some of the other experts in this field in his ebook "7 Assessment Strategies for Schools of Modern Learning" [9]:

"The use of high-stakes tests to measure student achievement—is enormously harmful... There is absolutely no need for new research on high-stakes testing! Sufficient evidence to declare that high-stakes testing does not work already exists. We think that any fair-minded person, were they impaneled in a jury, could see that high-stakes testing does not work. Based on our findings, we are compelled to ask for a moratorium on programs of high-stakes testing." ~ Sharon L. Nichols and David C. Berliner, Collateral Damage: How High-Stakes Testing Corrupts America's Schools

Anya Kamenetz in her book, "The Test: Why Our Schools Are Obsessed With Standardized Testing — But You Don't Have to Be", gives 10 arguments for opposing standardised tests such as "1. We're testing the wrong things. 2. Tests waste time and money. 3. They are making students hate school and turning parents into preppers."

Deborah Meier "Beyond Testing" - suggests that tests have effect narrowing curriculum and potential for student growth in areas not tested, give students the idea there is only one right answer, provide "scientific" justification for race and class inequalities, and take away key decisions from school communities, students and teachers.

Daniel Koretz, Professor of Education at Harvard Graduate School of Education summarizes it well in The Testing Charade: Pretending to Make Schools Better, "Despite those good intentions, test-based accountability has failed. It was predestined to fail because it was based in good measure on a number of unrealistic assumptions. And it's not only hindsight that allows me to say this. Warning flags about some of these assumptions were hoisted decades ago."

The paper is certainly a more than useful critique on the subject of assessment which opens with a thought provoking question by Dennis Littky: "What if we assessed students' learning by measuring whether it made them want to learn more?" It seems to be a reasonable expectation that schools should produce students who are eager to continue learning and yet due to the high stakes testing mechanism it often appears that the opposite is in fact true.

Yong Zhao is a strident voice who warns of the temptation to follow education systems which appear to be leading the Programme for

[8] https://www.theguardian.com/education/2010/aug/13/exam-test-results-teaching-style
[9] https://s3-us-west-2.amazonaws.com/modernlearners/Seven+Strategies+to+WIn+the+War+on+Learning+Whitepaper+32018+final.pdf?ck_subscriber_id=519956343

International Student Assessment (PISA) rankings. Born in China, he also participated in the chinese system as both a student and teacher and is eminently qualified to comment on the strengths and weaknesses of China's education system, which regularly appears at the top of the rankings with Shanghai and Hong Kong.

"What those admirers ignore is the fact that such an education system, while being an effective machine to instil what the government wants students to learn, is incapable of supporting individual strengths, cultivating a diversity of talents, and fostering the capacity and confidently to create... China has produced the world's best test scores at the cost of diverse, creative, and innovative talents" [10]

Most educators, businesses and employers would agree when Zhao says, "as traditional routine jobs are offshored and automated, we need more and more globally competent, creative, innovative, entrepreneurial citizens- job creators... we need an education that enhances individual strengths, follows children's passions, and fosters their social-emotional development." [11]

Zhao explains how a system focussed on preparing students for standardised tests "hinders the development of creative and entrepreneurial talents in a number of ways.

First, [it] fails to expose students to content and skills in other areas. As a result, students talented in other areas never have the opportunity to discover those talents. Students with broader interests are discouraged, not rewarded. The system results in a population with similar skills in a narrow spectrum of talents.

Second, examinations such as the PISA assess cognitive skills. But creativity and entrepreneurship have a lot more to do with noncognitive skills. Confidence, resilience, grit, mind-set, personality

traits, social skills and motivation have been found to be at least as important as cognitive skills in the workplace.

Third, examinations reward the ability to find the correct answers and give those answers in expected ways... Chinese students are extremely good at well defined problems...But in less defined situations, without routines and formulas to fall back on, they have great difficulty.

In other words, they are good at solving existing problems in predictable ways, but not at coming up with radical new solutions or inventing new problems to solve.

Fourth, [it] replaces students' intrinsic motivation with extrinsic, utilitarian motivation. Instead of caring about what they can learn, they care about what they can get by demonstrating to the authority that they have learned what the authority wants them to learn. Getting the credential is more important than actually learning which explains why cheating on exams is rampant.... it is possible to impose basic skills and knowledge on students without their being the least bit interested in or passionate about the subject... But, no one can force those students to be creative or seek greatness if they have neither the interest nor the passion to do so." [12]

Some of the problems highlighted above are also recounted by an OECD report on Hong Kong and Shanghai: "Examinations have long been a focus of attention in China in any attempt to reform education. Teaching and learning, in secondary schools in particular, are predominantly determined by the examination syllabi, and school activities at that level are very much oriented towards exam preparation. Subjects such as music and art, and in some cases even physical education, are removed from the timetable because they are not covered in the public examinations. Schools work their

[10] Yong Zhao, "Who's afraid of the Big Bad Dragon?" Jossey-Bass 2014, p.9
[11] Yong Zhao, "Who's afraid of the Big Bad Dragon?" p.10
[12] Yong Zhao, "Who's afraid of the Big Bad Dragon?" p.133-134

students for long hours every day, and the work weeks extend into the weekends, mainly for additional exam preparation classes... Examination pressure remains a major concern to educators, parents and policy makers. Some provinces forbid the holding of formal classes over the weekends. There is a general belief that emphasis on examinations jeopardises the genuine development of young people and is detrimental to the entire national population, but few effective solutions have emerged to reduce or minimise examination pressures." [13]

Ironically, as education leaders around the world are looking towards China seeking to emulate their "success", what "China wants is what America is eager to throw away - an education that respects and encourages creativity; a system in which the government does not rank or judge the success of a school, a teacher, or a child based on only test scores in a few subjects determined by the government," claims Yong Zhao [14]

Given this criticism of assessment, one should be careful to distinguish assessment from feedback. No one is suggesting that there is no place for formative assessment which will give feedback to students so that they can develop and improve. The problems lie with a summative assessment in which a student's output, work, or in some cases their life, is reduced to a grade or number. The hallmark of a modern education is one which is focussed on learning and a balanced, holistic development which recognises that learning is a lifelong apprenticeship.

When educating young people, it is always worth bearing in mind a quotation often attributed to Albert Einstein, "Not everything that counts can be counted, and not everything that can be counted counts."

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[13] https://www.oecd.org/countries/hongkongchina/46581016.pdf
[14] Yong Zhao, Catching up or Leading the Way - American Education in the Age of Globalisation, p vi

The call for a different creative school experience

Over the years there have been a variety of voices who have been making an effort to rally others against the tide of mass education.

Sir Richard Livingstone who amongst his other achievements was a Vice Chancellor of Oxford University writes in 1941, "Our problem is that we all ignore a vital educational principle, namely that the study of subjects of which you have some first-hand knowledge is far easier, far more meaningful, than studying the theory of a subject of which we have no practical experience…. If a school sends out children with the desire for knowledge and some idea of how to acquire and use it, it will have done its work. Too many leave school with the appetite killed and the mind loaded with undigested lumps of information. If a school is unable to teach its pupils to work things out for themselves, they will be unable to teach them anything else of value." [15]

Jerome Bruner was a psychologist and educator who made a profound contribution to the theory of education with a career that spanned over 6 decades. In his book, "The Culture of Education" he writes:

(What we need) "is not simply a renewal of the skills that make a country a better competitor in the world markets, but a renewal and reconsideration of what I have called "school culture". I have tried to characterize the new idea as creating communities of learners. Indeed, on the basis of what we have learned in recent years about human learning - that is is best when it is participatory, proactive, communal, collaborative, and given over to constructing meanings rather than receiving them - we even do better at teaching science, math, and languages in such schools than in more traditional ones." [16]

This is more than a hint at what we might call a co-creative curriculum with teachers and students learning together whilst delivering on an inquiry based model of learning. In this model, students are full agents in their own learning and teachers are acting as facilitators rather than instructors with a preconceived notion of what it is the students must learn. Bruner places an emphasis on schools not as part of the economic machinery but with a greater understanding that we need to truly consider what kind of society we want to be.

"We need a surer sense of what to teach to whom and how to go about teaching it in such a way that it will make those taught more effective, less alienated, and better human beings…

What we need is a school reform movement with a better sense of where we are going, with deeper convictions about what kind of people we want to be. Then we can mount the kind of community effort that can truly address the future of our educational process - an effort in which all of the resources of intellect and compassion that we can muster, whatever the price, are placed at the disposal of the schools……

All the standards in the world will not achieve the goal of making our..multicultural threatened society come alive again, not, alive just as a competitor in the world's markets, but as a nation worth living in and living for." [17]

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[15] Richard Livingstone, The Future in Education, Cambridge University, 1941 Press p.3
[16] Bruner, Jeromoe, The Culture of Education, Harvard University Press, 1996 p. 84
[17] Bruner, Jeromoe, The Culture of Education, Harvard University Press, 1996 p. 118

Years later and still to this present day we have thinkers and educators who question the current assessment driven model and pose alternative possibilities. Alfie Kohn is a well known advocate for a system which is not based upon exams and grades but he is keen to emphasise that this does not mean a lower standard of education.

"The goal isn't to make work more playful. The goal isn't even to make school fun. The goal is to create a learning experience that arouses and sustains children's curiosity, enriching capacities and responding to their questions in ways that are deeply engaging. Even if such a classroom doesn't manage to get every student hooked on every activity, at least we have a better shot at a high-quality education when we think in these terms-that is, when we are attentive to how excellence follows from interest. The educators and parents who understand these things are likely to work to create (or support) schools that are profoundly non-traditional-and astonishingly effective." [18]

It may be stating the obvious but essentially education needs to be engaging. A system based upon an extrinsic reward, however, is not truly engaging. An education system which motivates students with the promise of a grade before it has any value brings with it a variety of practical problems that is fairly well substantiated in Carol Dweck's research. However, aside from the pragmatic educational problems that arise from extrinsic rewards, it could also be considered an ethical issue.

"It takes some of us a long time to realise that we can be diminished by rewards. They can too easily become ends in themselves, distracting us from the intrinsic value of worthwhile activity. Rewards can actually limit the satisfaction we obtain from a job well done or from the performance of a virtuous act, by putting the focus on Me - on the actor rather than the action. The worst effect of the reward mentality is that we may eventually lose interest in doing things for which there is no reward-based incentive,

no recognition, and thus further reinforce our sense of entitlement." [19]

Moreover, as we learn more about brain development, and human development more generally, we are realising that children need much more than an exam driven curriculum and rote learning within the four walls of a room. In order to develop their full capacities as human beings, they need a wide range of experiences that have them interacting socially as well as being intellectually stimulated. Jennifer Greenwood in "Becoming Human", gives the context when she quotes a study by P.E. Griffiths, "Organisms inherit environments along with their genes....the adult is the product, not of its genes, but of the interaction of its genes in this structured developmental context". She goes on to argue that, "This is particularly true in relation to mental capacities. Ample evidence accumulated over the last forty years demonstrates that both human and nonhuman primates will fail to develop normal adult mental capacities and certain normal adult behaviours if denied the social interaction to which they are preadapted... it is a necessary condition of emotional ontogenesis that social animals are exposed to the social lives their emotions evolved and developed to regulate." [20]

Our assessment based education system, by and large, requires a student to work independently, often in silence and with relatively little interaction amongst peers. Not only do schools require students to do this in class but increasingly schools are demanding more from students with the amount of time taken up with homework as well.

This further reduces the time available for students to have the exposure that they need to develop the emotional capacity for which human beings are evolved. Unfortunately, the assessment driven industrial model of education is not just failing to deliver the promise of an educated, skilled workforce. It is in danger of producing people who are not fully developed at all.

[18] Alfie Kohn, The Schools our Children Deserve: Moving Beyond Traditional Classrooms and "Tougher Standards", Houghton Mifflin Harcourt, 1999 p. 146
[19] Mackay Hugh, The Good Life , Macmillan, 2013 p.23
[20] Greenwood Jennifer, Becoming Human - The Ontogenesis, Metaphysics and Expression of Human Emotionality 2015 p.83

Innovating at ICHK with Deep Learning

"One of the real challenges is to innovate fundamentally in education. Innovation is hard, because it means doing something that people don't find very easy, for the most part. It means challenging what we take for granted, things that we think are obvious. The great problem for reform or transformation is the tyranny of common sense. Things that people think, "It can't be done differently, that's how it's done." " Ken Robinson Ted 2010

At ICHK, we are challenging the established norms of education, particularly mainstream Hong Kong education. Deep Learning at ICHK reimagines what can be taught in schools and by whom it can be taught, allows for a much more flexible structure to a traditional timetable, and indeed where the learning takes place. These reforms are long overdue. For decades experienced educators have been calling for a more meaningful and practical experience in schools which engages students.

Deep Learning, for many of the reasons outlined above, has a key imperative to ensure that the learning experiences are as deeply engaging as possible. Our teachers and other providers do not have to follow any external exam specifications but draw upon their own diverse experiences and use the wide range of resources available to them to create a series of compelling learning opportunities that will draw in our students. "Educator Jenifer Fox's book Your Child's Strengths: Discover Them, Develop Them, Use Them provides an excellent answer to the question of what knowledge is of most worth. It is what the children are interested in and good at. It is their strengths. It is not a government mandate or what is being tested." [21]

In this age, with the inclusion of many more workers from different countries and rapid changes in technology, it also is increasingly difficult to predict what new businesses will emerge and what will become obsolete. Thus what becomes highly valuable are unique talents, knowledge, and skills, the ability to adapt to changes, and creativity, all of which call for a school culture that respects and cultivates expertise in a diversity of talents and skills and a curriculum that enables individuals to pursue their strengths. Thus, an important aspect of Deep Learning is the sense of agency and the opportunity for students to choose their course of study and play to their individual strengths.

Everybody has different kinds of abilities in various types of intelligences. While there are some people who are intelligent in a number of intelligences, we do not assume that a high level of intelligence in one area equates to high level in other areas. As Robinson is keen to point out, "a gifted mathematician need not be a gifted painter; a gifted poet may have no gift in dance. The essential point is that academic intelligence is often assumed to be of a higher order than all others. Other abilities are assumed to be less important or impressive in themselves. Consequently they are neither sought nor valued to the same extent. The result is that many individuals do not know what they can do, nor who they really are. When we talk of realising our potential, we should aim to do so in both senses of the word. We need to understand its range and variety. We also need to turn it into reality." [22]

[21] Yong Zhao, Catching up or Leading the Way p.156
[22] Robinson Ken, Out of Our Minds, Capstone Publishing, 2001 p.109

A modern education has to be more than the usual lip service to helping students fully realise their potential in this sense. For many cultural and historical reasons which were touched on earlier, schools have focussed on a narrow understanding of intelligence and prized this type of intelligence above all others. There must be a structure in place which allows for students to develop more than their academic intelligence and fully realise all aspects of their humanity.

Thus the challenge for education and one which ICHK seeks to address through Deep Learning is to conform to these three principles:

• Balance across the curriculum
• Balance within the teaching of disciplines; and
• Balance between education and the wider world. [23]

We also need to expand the definition of success. This "means that we need to elevate the status of other subjects, abilities, skills, and talents to the same level as math and reading...[it] also means changing how we measure success. Many of the valuable skills, knowledge, abilities, attitudes, and perspectives one needs and schools cultivate do not have widely accepted standardized tests. Some of them may never be easily measured through standardized tests. Thus we need to adopt a broad range of indicators to assess student learning, including student products, teacher observations, classroom performances, and some psychological measures of student motivation, creativity, and perspectives that have not typically been part of mainstream educational assessment." [24]

OECD has produced a review on the nature of learning and it draws seven transversal conclusions from the research which aims to inspire the practice of 21st Century education.

1. The learning environment recognises the learners as its core participants, encourages their active engagement and develops in them an understanding of their own activity as learners.

2. The learning environment is founded on the social nature of learning and actively encourages well-organised co-operative learning.

3. The learning professionals within the learning environment are highly attuned to the learners' motivations and the key role of emotions in achievement.

4. The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge.

5. The learning environment devises programmes that demand hard work and challenge from all without excessive overload.

6. The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning.

7. The learning environment strongly promotes "horizontal connectedness" across areas of knowledge and subjects as well as to the community and the wider world.

[23] Robinson Ken, Out of Our Minds, Capstone Publishing, 2001 p.196
[24] Yong Zhao, Catching up or Leading the Way p.184

Deep Learning units give teachers the freedom to be creative in designing modules which engage students and allows students to choose subjects and topics which are not always available to them in a traditional format, and which may not conform to specific departments and exams. Units are designed to be delivered across multiple whole days, instead of being parcelled up into periods and taught intermittently over weeks and months. It allows for a deeper study into a topic in greater detail, an interdisciplinary approach combining subjects such as Maths, History, PE and Art, for example, into an overarching theme that realistically recognises the interconnectedness of human knowledge.

As much as possible, ICHK is keen to leverage small group sizes to ensure a high quality learning experience. Already, ICHK class sizes are small compared with most schools at 20 as a maximum. Deep Learning groups can often be as small as 4 - 8, with most of the groups between 9 - 15. As Kohn rightly points out, "There is enough evidence of such positive effects (of small school size) - and of the devastating effects of large size on substantial numbers of youngsters that it can seem morally questionable not to act on it." [25]

The student learning experience is extended to life beyond the confines of the classroom and school, to go on field trips and site visits across the whole of Hong Kong, making the learning all the more pertinent. We are able to engage with relevant organisations and groups, meet with experts, or undertake other activities to deepen understanding which may be possible only outside of the conventional timetable. Instead of taking students off timetable to take part in these important educational events, Deep Learning is embedded into ICHK school life.

Deep Learning allows for activities which are difficult to be undertaken within the confines of a school or a normal school day. The units will cover a broad range of subject areas which may be an

extension of subjects that already exist in the core curriculum or an extension of the curriculum into entirely new subject areas. This is a crucial point as the curriculum up to now has been very narrow, defined by governments and organisations keen to standardise education for the masses. Students are free to make their own choices, grouped by shared interests and across year groups. The main features of this curriculum is an experiential and collaborative approach to education which fully supports ICHK's vision of education as an "Epistemic Apprenticeship".

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[25] Kohn, Alfie, The Schools our Children Deserve, Houghton Miller Harcourt, 1999 p.157

Deep Learning as part of an Epistemic Apprenticeship

Before industrialisation education was mostly a matter of children learning skills and knowledge through apprenticeship. Nowadays students, Professor Guy Claxton argues, as well as being taught specific subject knowledge such as Maths and Languages are "being taught how to engage with knowledge, what and how to question, and what their legitimate role is in the knowledge making, consuming and contesting business…[it] constitute[s] a protracted and expensive apprenticeship in what and how to think and learn. Education is an epistemic apprenticeship – 'epistemic' in that it is to do, centrally, with the activities of thinking, learning and knowing. It inevitably involves the cultivation of an epistemic mentality, we might say: a set of ways of approaching complexity, uncertainty and difficulty. And it also helps to shape the development of a set of beliefs and attitudes about one's own rights and capabilities as a thinker, learner and knower – an epistemic identity." [26]

More and more schools are interested in the idea of education as character training, a way of transmitting the necessary values and attitudes that not only benefit the children themselves, but ultimately benefit society as a whole. In his book, "How Children Succeed", Paul Tough introduces a wide range of researchers, educators and institutions that place a greater emphasis on non-cognitive skills, such as resilience and impulse control, rather than the traditional measures of cognitive ability and intelligence.

For example, the KIPP schools, a network of 200 schools in the US explicitly "focuses on seven highly predictive character strengths that are correlated to leading engaged, happy and successful lives": Zest, Grit, Optimism, Gratitude, Self Control, Social Intelligence, Curiosity.

Education is the deliberate attempt to cultivate certain values in our children to help them flourish within our society and Claxton places these into three broad categories:

• Basic qualities of self-regulation
• Ethical qualities such as kindness, honesty, tolerance and so on
• Epistemic qualities

It is the epistemic qualities that "relate specifically to people's predominant responses when they encounter difficulty, complexity and uncertainty. Habits of mind that are frequently cited under this heading are resilience or perseverance, creativity and imagination, communication, team-working and leadership, flexibility and resourcefulness, and reflection or 'metacognition'." These are the kind of qualities that ICHK is focussing on as part of its epistemic apprenticeship to develop happy, confident, intelligent warriors. These three values, firmly rooted in the pedagogy that underlies ICHK, the 5 plus 1 are:

• Growth Mindset
• Courage in the Learning Zone
• Supporting Peers

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[26] Claxton Guy, School as an Epistemic Apprenticeship: The Case of Building Learning Power, British Publishing Society 2013

Growth Mindset

No matter how good we are, we can all learn and get better. This is often by making mistakes and learning from them. Developing resilience and perseverance are essential to a growth mindset.

Courage in the Learning Zone

Also referred to as the zone of proximal development (ZPD), it lies just beyond the comfort zone. To truly make progress in learning can be uncomfortable and it will require students to take risks and be brave when making mistakes or facing the unknown.

Supporting Peers

Arguably one of the most important skills to develop in our students. Humanity has survived through cooperation and teamwork. Being able to support, encourage and motivate one another is a vital component to being human.

Deep Learning is yet another piece of the ICHK jigsaw that goes towards developing these values. On top of the engaging content within each unit, which students have actively chosen, therein lie planned and unplanned opportunities to promote these attitudes. There is significant alignment with Claxton's assertion that an appropriate approach to the epistemic apprenticeship "is one that draws on Lave and Wenger's idea of a community of practice, in which an interwoven set of attitudes and skills are passed on from 'old-timers' to 'newcomers' over time, through a whole host of methods and media. These may include modelling, casual feedback and correction, and the telling of pointed jokes and stories, as well as direct instruction and the design of explicit learning activities.

Thus, the evening awards ceremony on our Deep Learning: Snow Sports, where students nominate each other for awards in "Growth Mindset", the "Community Award" and "Shredding the Gnar", are vitally important aspects of the apprenticeship. Teachers learning with students making mistakes, falling over and generally being out of their comfort zone is as instructive, if not more so, as simply being told that getting into the ZPD is the right thing to do. A casual conversation in a cafe over lunch break whilst on Deep Learning can become a useful lesson in how valuable it is to engage with one another and talk rather than play on their smartphones. This particular example led to one older student putting their phone away and a mentoring conversation eventually ensued where the SRC member gave some advice to a younger student on how to make a successful application and so ended up being a very practical example of the student supporting peers.

Deep Learning units are marketed with "majors" and "minors" in various disciplines. For example, "Cantonesa Opera" majors in performing arts, chinese mythology and has a minor in chinese language. The "Zombie Apocalypse" majors in first aid, shelter building and minors in epidemiology. Although we do not specifically add growth mindset, courage in the learning zone and supporting peers as specific learning objectives or outcomes in any of these units, the reality is that these are the majors of all our Deep Learning units. In fact, they are values at the heart of not only Deep Learning but all learning at ICHK and form the core of the epistemic apprenticeship on offer. There are a wide range of traits that are important to human development but as a school, we have chosen to focus on these three areas. This is why each term, the only awards we give at ICHK, require all subjects to award students for demonstrating a growth mindset, courage and support for others. It is how we are educating our students in the art of being human.

How to change?
Creating the culture for change

"What we need is a paradigm shift in thinking about education, both what we should teach and how we should deliver it. What does the new paradigm look like, and how can schools and educators work to realize it?" [27]

The following is based on a presentation by our Director of Technology and Assessment, Ross Parker. Ross has been presenting across the region at a variety of conferences on school culture and change.

"In order to fully understand the question of how we've changed school, it would be useful to have some understanding of what we mean by human technology. You can read the Human Technology primer here.

At ICHK we understand that culture is a set of shared technologies and so we can change the culture by changing these technologies. This is the journey that ICHK has been on for the last five years.

At ICHK we refer to this set of technologies as the "5 +1", which is essentially our pedagogical model. This is comprised of the thinking of five different thought leaders, scientists, theorists that have been brought together to encapsulate our school culture for change.

My belief and my experience of ICHK is that if we can learn as teachers to change our practice in order to make use of the teachings of these ideas, we can become entirely different teachers. We can build a culture from the bottom up that represents an entirely different kind of school.

In my personal experience over five years of working with 5+1, I've become a completely different teacher. In fact, I've become a rather different person. I've changed my expectations of how people might respond to the things that I do. I am much less annoyed when people don't do things that I want because I'm able to think ironically more than philosophically, and I'm able to think in terms of transactional analysis of how things that I do, often subconsciously, change a person and influence their transaction which then influenced me back. I've got a lot left to learn, however, the journey is underway. As a school I think we've become much better at dealing with the unknown, not having to have all of the answers all of the time. We have become better at trusting in this longer process whereby we don't have to do everything today, but we'll be able to see the results down the line.

Thinking about your own school I would ask you to think about the technologies that you would discard. What are the things that you want to get rid of? A lot of these deeply embedded, entrenched behaviors that we learned by being students ourselves are very difficult to get rid of.

One example from our ICHK, is that our uniform is now very relaxed. There's a choice between a sort of more formal dress uniform and a PE kit and the rule is that students only need to wear one piece of uniform and that is a shirt with a school logo. Outside of that they can find their own way. That means we're not investing a whole heap of energy enforcing a uniform, but we also get some of the benefits of students being able to identify as being part of the school. We can also think critically about

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[27] Yong Zhao, Catching up or Leading the Way p.18

the idea of uniform and uniformity. Actually we don't want all of our kids to be the same. We want them to be able to express themselves within the school. In a similar vein, we've gotten rid of a lot of talk about behaviour and discipline. There are no detentions. Kids are less afraid of being in trouble because we've dropped these technologies.

On the flip side of that you might ask yourself, which technologies you would want to promote? Which things do you want to develop and introduce? The problem I see in a lot of schools is that they come across a single thing and introduce it. This might be mindfulness or coaching or growth mindset. That idea, although it's great, withers in the face of a hostile culture. So what you might consider is producing your own version of 5 + 1, your own model of your culture, before slowly introducing and reinforcing it over and over, constantly tending to it as if it was a fragile plant.

With 5 + 1 and a culture in place you can then start to look at other technologies that reinforce that culture and make it stronger, and keep asking yourself, should we add this new innovation will add to the culture or will it detract from it? For us, beyond 5 +1, it looks like innovations such as:

• Human Technologies
• Free Learning
• New ICT policy
• Enrichment and flow
• Deep Learning
• Mastery Transcript
• Big History
• No grades in Y7-9
• Outdoor education
• Direction - Alignment - Commitment
• Cynefin & Complexity
• Lighthouse Brand
• Epistemic Apprenticeship
• Mastery Transcript

Rather than the culture of mass testing, what we have is a culture of students collaborating in their learning, where learning looks very different. Of course, the ICHK journey is not finished. We still have a long way to go in terms of breaking down some of those typical pervasive school technologies. We still have a very rigid timetable, for example, which constrains a lot of things that we would like to do. A lot of our thinking remains industrial in nature. In conclusion, my contention is that if you can get your school culture right, change can become meaningful and long term rather than just something that goes in fits and starts and backward steps." (Ross Parker 2019)

Stephanie Rogen, founder of Greenwich Leadership Partners, is a consultant for educational change. Whilst much of her emphasis is on a strong shared vision as central to change in the school, she also underscores the importance of the learning environment not just for students but for the whole community. Rogen writes:

"Not surprisingly, given the rapid changes in the workplace, what Gen X and Millenial parents want for their children is changing, too. Most look for a healthy, diverse school environment, question the effects of standardised testing, and many are opting out of traditional models altogether. They want their children to be emotionally intelligent, culturally literate, creative, and engaged - and expect challenge that goes well beyond rote memorization, worksheets, and lectures. They are primed to see the value in moving away from traditional, teacher centered pedagogy and testing as the central form of assessment.

In the face of changing core student outcomes and parental expectations, I believe continuous learning is critical to successful strategic design. My approach to strategic design requires that the school environment becomes a learning environment for everyone - adults and students. Schools that thrive see every member of the community as a learner and foster the best conditions for learning everywhere. In fact, the fastest route to great outcomes is between engaged adults and engaged students who are learning together."[28]

ICHK has a well established culture of learning throughout the whole community. Learning is at the heart of everything we do: students, teachers, administrators, leaders, individually and collectively learning together. Embedding the "5+1" has been a big part of inculcating this culture.

[28] Rogen Stephanie, Creating Schools that Thrive: A Blueprint for Strategy, Greenwich Leadership Partners 2018 p.22-23

The Head of School's view on Deep Learning

An interview with Toby Newton, the Head of School, on 30 October, 2019.

First of all, you have often made reference to your previous experience as a police officer in other interviews. How do you think this affects you as a teacher and as a head of school?

It's more the other way around. It's not so much that when I talk about education, I reference being in the police, it's more that people come wanting to speak to me because I was a police officer who is now a teacher. People seem to find that career change interesting. They don't see the connection and they want to find out more about it.

I got into teaching because, when I was in the police, I had this strong impression that many of the issues that I was dealing with - not all, but many - arose when a child hadn't enjoyed an especially positive education or, more widely, enjoyed a good childhood. And that became dispiriting. To make a difference, it seemed to me that I would need to get involved much further upstream - as someone who myself helped provide education in more useful and compelling ways.

I found that many of the skills and insights that I was drawing on when I was in the police were directly useful to me as a teacher. People tend to be at their least constructive when they are anxious and uncertain and feeling overwhelmed; people tend to be their best when they feel secure, and when there's a level of predictability in their environment. Very often what the police do, when they're working productively, is to come to a situation which, for whatever reason, has got out of control and introduce an element of stability.

That was the insight that I took into teaching: psychologically, humans tend to be at their best when they are free of external sources of anxiety or impingement. From the outset, I chose to work in schools where the students were challenged by circumstances and where this insight could help make a difference. As a teacher, the critical thing was to bring stability and safety to the environment in which these children were trying to learn. There's a big crossover and I still feel the same as the Head of a school.

Now, in saying this, we must bear in mind that what is getting 'out of hand' is different for different people. For some high achieving students, counterintuitively, what's getting out of hand is their own success, which they can come to view as an unsustainable burden. That's the psychological aspect of school and is what makes humans - and schools - interesting!

From this, I would suggest that the most important feature of a school environment is its being a safe environment. Not, mind you, a "fail safe" environment, that's a counterproductive ambition, because as human beings, if we're going to live and learn at all, we will make errors and get things wrong. But a safe-fail environment - a space where risks can be taken, mistakes made, but the consequences are within limits and children feel secure in making them.

The problem with many schools is that the public narrative is "give it a go, be a risk taker". But when students do give it a go and, for whatever reason, get it wrong, they feel their self esteem takes a knock and they are devalued within the school's system. So, they reason to themselves, better to stay within your comfort zone and 'achieve' rather than push beyond your limits and be 'exposed'. That speaks to Carol Dweck's work: most students would prefer to get 100% on an easy test than 50% on a challenging one. Think that through: it's the antithesis of learning.

**This leads us to the next question.
What is your view of mainstream education, as it is right now?**

I have to be careful because I know there are many well intentioned people who work in mainstream education. But, for all that, it is desperately in need of a radical overhaul.

To use an analogy, when you grow a crystal, you begin with a seed crystal. The shape of that seed crystal then goes on to dictate everything that happens subsequently as the crystal grows. The seed's initial dimensions set the course of what follows. It's the same with many cultural institutions: go back to the seed crystal of their inception: what were the initial assumptions at the heart of how this enterprise took off?

When you look back at the history of mass public schooling, a great many of the assumptions were wrong in the first place, and the ones that weren't wrong then are outmoded now. Very few of those initial first assumptions stand the test of time. But, as is so often the case, precedent has just continued to exert its influence. The sins of the fathers...

For the record can you just talk a bit more about those assumptions?

Charting the development of school from its 'industrial' roots is by now a well-told story. What's not so generally well understood is quite how deep the roots go. There is a sense now that, to its detriment, schooling got bundled in with the logic of factories - mass production, standardization - and of the military - discipline, uniformity, drill - sometime around the start of the Industrial Revolution. That's true - but the long cultural preparation that led to the industrial revolution itself and to the mindset that supported it, is underappreciated. It didn't spring from nowhere. It was long in preparation and you can't overestimate the importance of that legacy of thought, which championed rationality and instrumentality at the cost of pretty much all else. It has led to our celebrating a very narrow band of human potential, and school, sad to say, is its centre of gravity.

But there's no excuse for not moving beyond this now - we know far more about, for example, the ways in which emotions play a pivotal part in life and, therefore, in education. We recognise the importance of EQ as much as IQ, of the value of sympathetic human understanding. In short, we know we need to educate humans as humans and not as calculating machines or walking textbooks. On reflection, it's apparent that school has not been reframed accordingly.

Using Guy Claxton's phrase, school is an epistemic apprenticeship. Like it or not every school, whether intentionally or not, offers an apprenticeship in ways of knowing, living, learning, being - that can't be avoided. If the epistemic apprenticeship you offer teaches that life can be broken up into discrete domains called subjects, which you learn in a little box called a classroom, and that every hour a bell rings and you go and learn something else in another box about another subject, well, that's not a good apprenticeship.

Ted Dintersmith, the producer of the film Most Likely To Succeed, tells an interesting story. Dintersmith is a successful entrepreneur. When he heard that his children's school was introducing new lessons intended to teach the students how to be "21st century citizens", he went along to have a look. He was shocked by how poor the programme was, and decided to keep a closer eye on what his children were learning at school. Each day he would review what his kids had learned and record it in a chart he was creating - one column for useful stuff, one column for pointless stuff. Well, not only did the list in the second column grow much faster than the first, which was almost empty, but he had to start a third column. A separate column for the stuff that they were learning which was not just a waste of time, but actually likely to get in the way of their future success. Stuff was teaching them poor work and thinking habits, reliance on faulty models, unhelpful orientations to ideas and people.

In what ways, then, do you think that ICHK is different from this?

We have made a concerted effort to achieve two mutually reinforcing aims - one connected with pastoral care and the other with curriculum. The pastoral initiative is the 5+1 Model and the curriculum innovation is Human Technologies. Taken together they encourage students to experience school in more positive ways and introduce them to a lens on life that forms the basis of a useful way of engaging with ideas, action and people.

5+1 brings together the collective insights of five thinkers in education and beyond. The power of the model for teachers is that these insights speak to each other in ways that inform our practice across the school. This has very practical consequences for students as they develop as learners. There isn't space here to dive in too deeply, so suffice to say that 5+1 has had an effect on encouraging a growth mindset in our students, in empowering them with the courage to learn, including when this means making mistakes and being vulnerable to criticism, and has, more than anything, reframed the language that the community uses in talking about what success and progress look like and how they can best be achieved.

Human Technologies is the centerpiece of what we have achieved at ICHK. Human Technologies lets you into a secret: this ultimate performance that you imagine to be your deepest 'self' is actually a series of techniques, scripts, formulas, recipes, routines and strategies that you've learned from your culture and that you deploy to make sense and be effective in the world. This is a potentially fascinating and empowering insight when you're 11 years old. The truth is that, at that age, you have had very little say in assembling these scripts and routines. They've been presented to you as if they were "natural", the only way of doing things. You've swallowed them whole, as it were. What Human Technologies points out is, they're not 'natural', they're cultural. Other people do things differently, and so might you.

When you come to give it some thought, some of the technologies you use, you may want to question. Others you may want to make more of. There may be areas of your life where you're crying out for technology to achieve something that you're not yet pulling off. That technology probably does exist. It's just a question of us helping you find it.

And, following on from this theme, the way the curriculum is organised at school is itself a technology. And it's here that Deep Learning comes in.

Perfect - so how would you describe Deep Learning?

The Deep Learning logo is the place to start. It shows an iceberg, with someone in diving gear going under the water beside it. Much of the time, schools deal with the tips of icebergs: preselected, prescribed, surface phenomena that we claim to be important. Even if we've identified them correctly, which is not always the case, students tend still only to get a superficial impression. Deep Learning encourages students to get beneath the surface, where the work is challenging and a little forbidding and arduous, requiring stamina and guts, but all the more rewarding for that. An experience that stays with you when you surface. I think that's a nice metaphor, this idea of a deep sea dive beside a vast, imposing, slightly awesome foreign object. Because if you've got the excitement and the enthusiasm - you will overcome that initial anxiety or intimidation and get to grips with the experience.

You may have answered this slightly already but where does Deep Learning fit into your idea of education as a whole?

It dovetails very nicely with the notion of an epistemic apprenticeship. Deep Learning provides opportunities for protracted engagement, for genuine insight and understanding. These, in turn, can be significant stepping stones on the journey to mastery.

So, I remember first hearing about Deep Learning when we talked about it in a chat about IB. I was wondering where did the idea for Deep Learning actually originate from?

It stems from commitment to the idea that school learning should do justice to the richness and complexity of our lives and the options open to enjoying them. There's an awful lot more to life than book learning and high stakes exams. Schools would do well to demonstrate that to young people, to fill them with a sense of potential and promise.
A real problem is that schools have become too deeply embedded in a billion dollar para-educational industry. It's an industry dedicated to developing a focus on a very narrow range of human attributes. It's designed to marshall vast resources in the service of academic achievement, at the expense of other aspects of other human qualities. Deep Learning is the antidote to this - it is experiential, practical, action-oriented, immersive. Everything that class-based learning often fails to be.

To what extent has Deep Learning, as it has been established so far, coincide with your vision for Deep Learning?

There's a very good coincidence. I'm very happy with it, I think we've done some amazing things. The pictures and stories coming out of Deep Learning day are simply brilliant. It has been an organic process, which is often how the best things happen.

If you try to force the pace, you break people and you break programmes. If you press gang teachers into doing challenging things that they're not yet confident about, the resistance is inevitable. Emotions are always a critical piece: arriving at a point where all those who bear responsibility feel they are operating within their comfort zone, with a sense that the safety nets are there, the basics have been squared off: "we have our contingency plan. HQ is there if we need it. The seventh cavalry can always be called out." That, I think, has been fantastically well done.

Where unit selection is concerned, the winnowing process ends up with some really great things happening: with students happily involved and with teachers sharing their interests and passions. It's that capacity of Deep Learning to spur teachers into more imaginative thought that is really what we wanted. It's there already, has been from the start; and the longer Deep Learning runs the better we'll get at that.

Do you have any favourite units?

I do. Which, needless to say, betrays my personal preference, as that's what the programme will always be about. People following their passions. I think the fact that our students do glass blowing is amazing. I remember watching a glass blower as a child. It's an amazing craft - an extraordinary combination of skills and aesthetics. Any school curriculum that finds a place for glass-blowing is OK by me!

Are there any other units that you would like to see developed which are not there yet?

The more that Deep Learning engages with critical and neglected areas of human technologies, the better. The school system spends so much time on cognitive technologies - language, mathematics, the scientific method, memorization. I would like to see more units that connect with and draw on the three Ss from the Human Technologies Venn diagram: the somatic, social and spiritual. Our offer already has good coverage but there is always potential for more.

In what ways do you think ICHK will have changed in five years from now?

I hope that the Mastery Transcript Consortium (MTC) manages to deliver on its promise and that we are a pioneering part of that. I envisage we will still be doing the IB. I think that there's unlikely to be such a seismic shift in the landscape that these externally accredited alpha-numeric qualifications cease to have their value. I think parents will still be wanting that. But I definitely hope that within five years we will at least be supplementing the IB with our own transcript. We know that we will be ready even before that, so it's really a matter of whether the universities have enough vision to get involved.

How would you promote the idea of Deep Learning to the schools who don't have such a programme at the moment? What advice would you have for those schools if they decided they did want to implement it?

Our model works, but there are others. Anything is better than nothing. The easy way is what other schools call Flexible Friday or some schools call the 10th day, whereby you design a timetable in which everything 'traditional' is compressed into nine days. In that case, it's worthwhile having a two week timetable. That makes a difference because it's difficult to steal one day out of five. It's much easier to do one day out of 10.

In whatever guise, Deep Learning or its equivalent becomes a Trojan horse. You're introducing the notion that school could accommodate a different agenda, that it might be organized differently, leading to a different set of experiences. When you get your teachers thinking that way two things happen: one, those who have already been thinking this way say, "Oh thank goodness!" And you discover you've got a whole lot more people than you imagined. And those that haven't are given the chance to engage with a new idea and a new sense of purpose. For many, it reminds them of why they entered the profession in the first place.

My only health warning would be around scale. There is something about a school getting much bigger than 500 students which can make innovation in this area tricky - it's a simple matter of logistics and the practical opportunities available within any given area. How many students can your environment comfortably absorb? How sustainable is that? But provided, one way or another, you can match the environment's carrying capacity with the size of your cohort, then Deep Learning or a similar programme is a vital supplement to traditional lessons.

Okay, that brings me to the end of my questions for now. Thank you!

Governors and Parents views on Deep Learning

A sample selection of governors and parents were interviewed to represent the parents' views on Deep Learning. Unsurprisingly, those whose children were directly involved in the programme had a better idea of what the programme was about. ICHK still has had a number of students who have not directly been involved in Deep Learning having started the programme in 2017-18 with years 7 to 9. Even so, parents were fairly clear on the general aims of Deep Learning.

"involves collapsing the timetable to allow students to investigate different study areas in more depth. Students are invited to select from a number of different units, all of which encourage independence and promote skills like teamwork, communication and leadership"

"an innovative program that helps our students experience new things that can't be done in a typical classroom setting"

" a program of courses that hopes to engage with students in a non-traditional way outside of the structured classroom, and more into the real world. It would often key off a faculty member's keen personal interest, and would provide a chance for students to actuate their learning by physically doing something".

Parents clearly valued Deep Learning as part of the overall experience for their children and could see a variety of benefits related to their learning and personal development.

"I believe that Deep Learning is a very strong addition to the curriculum and is of great value to students. I believe it is important to offer students choice and flexibility, and opportunities to develop skills and attitudes which are not addressed by exams – but which will be so vital after leaving school."

"There are many benefits, including the chance to learn outside of the classroom, with students of different ages. I believe that giving students choice and asking them to select the units which interest them leads to greater engagement and is highly motivating. The biggest value is in the skills they develop, which will be invaluable in preparing them for life outside school."

"The fact that students feel in control of their own learning has a huge value. DL allows students to make their own choices on what area they study but also they are ultimately responsible for what they and their fellow students take from this learning experience and situations. They are therefore learning lifelong skills and identifying personal strengths that they can use ongoing in all areas of their life for the future."

"The benefits as I see them are a strong sense of growing independence. Cross subject studying, realising that different subjects actually co-exist and have multi purposes. Student personal responsibility for their own learning journey and decision making skills are enhanced. Mixed age students can only benefit the community bond proven to lower bullying and strengthen tolerance and school enjoyment. Outside classroom learning is usually more memorable long term. Basic lifelong skills become a natural mindset. IB skills are introduced early meaning self discipline, time management, patience and open mindedness are key."

"At the time of writing and reflecting on DL, Hong Kong is in a difficult social, political and economic situation that has affected the students freedom to move around what was previously an ultra safe city. Thus changing the beginning orientation phase which is essential to their growing confidence in their own abilities as decision makers and leadership skills."

" ... as the school grows, it will be important to maintain the quality of the units to cater for the number of students involved"

"Deep Learning is extremely valuable for developing well-rounded students. Especially in an expensive, bustling, and crowded city like Hong Kong. Many students live in small apartments and don't have an opportunity to see an opera, play polo, or just experience the great outdoors. Also, most parents are very busy with work and don't have the time, money, or energy to offer their own children the opportunities that the Deep Learning program delivers."

"Add more language based units, to give more opportunities for depth in language study"

"Extreme variability in results, and hard to measure and monitor"

"when too many students want to choose the same subject area and that leads to disappointment if oversubscribed. Variety of options needs to always evolve to cover all students' choices."

When asked about the drawbacks of the Deep Learning programme, it resulted in some useful feedback on what those particular parents valued and a few reminders of pitfalls to watch out for as the programme grows. There were some references to the independent travel which is a feature of the programme and the instability in Hong Kong at this particular time which has led to some disruption to the way in which we have run this programme in previous years. Only one parent made a comparison to a more traditional and academic model of education based on performance and results, but this could be a view that is under represented in this particular sample.

"... should be attainable and affordable to all students. It should not be an opportunity for an outside vendor to make a quick buck at the expense of the school, students, or their parents. The program should be researched and have a proven record of success, satisfaction, and safety."

Overall, the perception of Deep Learning is a very positive one and there is a recognition of its value to the student's personal growth and experiencing a type of education which is quite different to one which parents themselves experienced.

"Deep Learning has sparked a real interest in baking for my daughter. After completing a breadmaking unit, she now regularly bakes bread independently, enjoying the process and we as a family, enjoy the results."

"Seeing the satisfaction the students gain in learning new skills and knowing my children are learning life skills…which my own formal strict education totally lacked."

"My two boys have spoken 99% positively of their DL experiences…. One of my sons completed the climbing program and enjoyed it tremendously. He said at times it was challenging, but the satisfaction he felt after finally completing the task was exhilarating and rewarding."

Teachers' views on Deep Learning

As one might expect, teachers have a good understanding of Deep Learning and what is about. Descriptions of Deep Learning included:

"immersive engagement, self-exploration, developing mastery, and gaining insight"

"... opportunity to extend their learning experiences beyond a classroom"

and

"to engage students in project-based learning beyond the traditional subject offerings".

It's clear that teachers find Deep Learning to be a valuable addition to the curriculum for many reasons. It helps to "expose students to different ways of working and thinking. It is important because it provides an avenue for students to explore new interests".
It provides "more real world engagement, more enjoyment, more holistic thinking" and "often requires students to apply knowledge, solve problems, cooperate as team players, create solutions and trouble-shoot. Another teacher explains that Deep Learning helps the students to "develop their communication skills, be more creative, think "outside the box", immerse themselves in real life experiences in ways that cannot be achieved in a classroom". Together this all adds up to "some of the best experiential teaching and learning moments of the school year".
These moments are varied and range from a "mini show piece featuring aspects of Cantonese opera" to "completing the first large scale bamboo-build and seeing a team of students standing proudly on top of the structure they designed and built themselves".

"One of those best moments always comes from a parent when they mentioned their child prepared some food at home for them and they found it amazing (for example, the tiramisù). But probably, the brightest moment was seeing the students riding the unicycles in the "Circus Arts" unit. I have seen some of these students regularly, but they never had this expression of self-confidence, satisfaction and joy".

These moments occur "literally every time we run the programme: just monitoring the stream of photographs/videos and seeing the expressions and body language of the students as they undergo their Deep Learning experiences. The students' evident engagement, their joy of learning, their absorption, their determination, their enthusiasm... all of these seem to me the absolute hallmarks of quality learning and what one would hope a school can provide regularly and reliably given the time commitment we demand of children.

Nevertheless, running such a programme does not come without its drawbacks and challenges. All the teachers mentioned something along the lines of it requiring a massive investment of energy from the staff in terms of design, preparation and delivery and having to balance that with delivery of the curriculum to exam classes. "Maintaining that [energy] across two to four days can be very demanding. What gets them through is their own enthusiasm and belief in the quality of what they are doing."

Interestingly, when asked what they would change about Deep Learning the responses are similar in that they would still have more of it, despite the challenges they mentioned. One teacher, for example, "would like to see DL in concentrated blocks of three or four days, in order to keep the momentum up" and another responds, "I would have more of it and I look forward to units developing that build on others already available". The experiment that was conducted with 2 day and 4 day blocks, which could be conducted as independent 2 day or 4 day blocks or combined together into a total of 6 day long experiences, was not entirely successful. Teachers preferred it when "the blocks were more clear cut, and there was less complexity".

When asked to give words which described a Deep Learning teacher, passionate and energetic came up a number of times. Other adjectives used were adaptable, process-oriented, creative, supportive, engaged, and open. Romantic and Philosophic in the Kieran Egan sense of the words were also used.

In the light of all of this, one main drawback given by none other than the Head of School, is that "it can leave the rest of the curriculum seeming a little thin and superficial. This is why it's important that the remainder of the school experience is reflected on, by teaching staff, in the light of Deep Learning. Where possible, the principles of experience-design in DL can be included in other learning experiences."

Students' views

Since its inception in 2017-18, it is clear that Deep Learning is popular with students. The surveys and feedback show that, on the whole, the programme is engaging and students feel like they are learning. Certainly, students feel that they are doing something quite different when they are on Deep Learning as opposed to being in a classroom. It creates a sense that learning can be fun and as part of an epistemic apprenticeship, it emphasises the point that learning can take place in a variety of contexts.
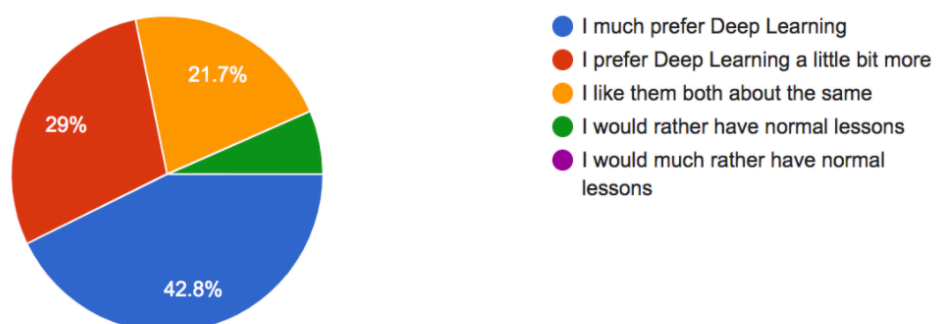
How much did one enjoy the unit?

138 responses
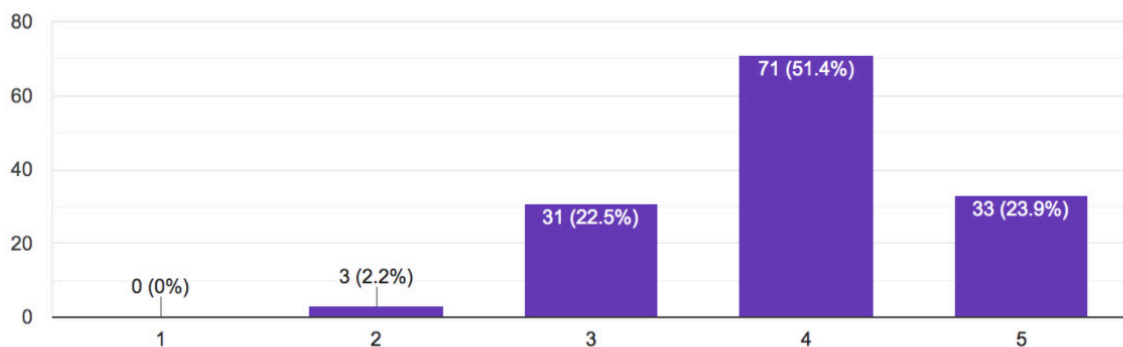
Feedback was collected from across participating year groups with over 60% of the students responding to the survey. As the graph below illustrates, almost 75% of the respondents responded with a score of at least 4 out of 5 on the question of how much they enjoyed the unit.

Similarly, 71.8% suggested a strong preference for this type of learning experience when compared with their usual timetable learning opportunities. How much of that is due to the "novelty factor" as Deep Learning occurs relatively infrequently compared to the traditional timetable, would need further investigation. The comments suggested that the overwhelming majority of students thought that their units were "fun" and "interesting".

How does Deep Learning unit compare to the usual timetable?

138 responses

- I much prefer Deep Learning
- I prefer Deep Learning a little bit more
- I like them both about the same
- I would rather have normal lessons
- I would much rather have normal lessons

It is clearly apparent that student choice plays an important factor in their enjoyment of Deep Learning and that they are able to spend a significant amount of time engaged in their learning.

"I like that we can choose our own Deep Learning unit."

"I like Deep Learning because I get to pick a subject I like and learn more about it."

"I like the creativity and freedom of my Deep Learning, it's very intriguing because when you choose a unit it's up to the student which makes it their choice."

"I enjoyed the fact that we were able to explore Hong Kong and further understand topics we chose to study and actually enjoy."

"I liked that we could choose what we like and do it for a whole day."

Another important factor is being able to experience other environments and people outside of their normal school routine, whether they are students from another year group or experts from another organisation entirely.

"The thing I like about Deep Learning is that I can go to places that I have never been before, also I can work with people in different classes."

"I liked that you get to experience situations in the real world and learn from them. Especially the chances of when you get to hear other people's stories and be inspired from them"

"… you can learn a lot more about this world than just sitting in a classroom learning".

The practical nature of many of the units was something that appealed to students. Making, building, and constructing a variety of different projects made the learning very "hands-on". The fact that the projects often had a practical use or used skills which they could use again, by cooking for family, for example, was also valued.

"I enjoyed all my Deep Learning units, particularly craftwork by recycling and set construction. This is because I got to use my art skills to make something important or impactful to the community, for example the craftwork I made was something I used and the sets I made played an important part in the school production, and the bamboo construction we made was a public space all students could use."

"The good thing is that I learnt lots of things that I will use".

How much did one learn in Deep Learning?

138 responses
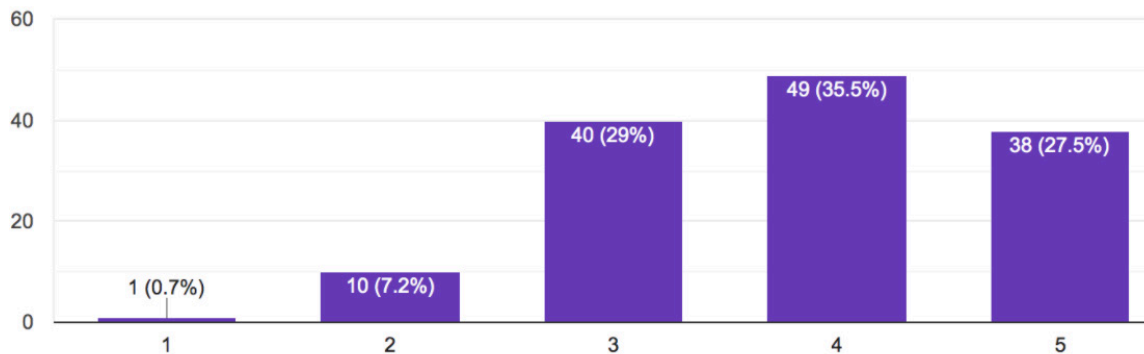
As the above graph illustrates, the students' evaluation of their own learning was high with over a quarter giving their learning the highest possible score. Some students credit the atmosphere of Deep Learning which is qualitatively different to the usual classroom experience. Generally, it allows for a more collaborative experience and, interestingly, this is recognised by students when reflecting on what they have learnt. They understand that they have been able to develop their non-cognitive skills as well as understanding a particular topic better.

"I enjoyed Deep Learning because it was a welcome break from exam studying. Overall, the more fun and relaxing atmosphere and the activities that we could enjoy made it easy for me to learn new things and concepts."

"I enjoyed working with other people and learning more about culture and food as well as learning how to cook."

"I like that I can improve my communication skills with little kids. I also got to improve my hiking skills in Wild Science."

"I liked my Deep Learning unit because it helped me to develop my skills. For example: Confidence, Bravery, and also Skills of finishing my unit."

"I think I learn a lot of things in my unit. I think is can help me more in English communicate with my classmate and is can make me feel more confident.' [sic]

Although we see that the vast majority of feedback is positive, there were two comments that were more negative. The nature of Deep Learning is that it takes more time than a timetabled subject which usually only lasts for an hour or so. if you are not enjoying the experience, it might feel like a very long time indeed.

"I don't like Deep Learning because that takes a lot of time"

For another student, the cost was an issue and perhaps some underlying problem with the very nature of Deep Learning:

"I kind of really need something solid and unchanging because theres already so many stupid things that are going on IN the timetable. just, at least give us one that's free. if you go to school for most, make it free. I find it very unfair for people who really don't want some excursions to have to cost something. you don't know people's lives. but whatever, I can deal."

It's a reasonable point to make and the school should ensure that there are a range of options which are affordable. At ICHK, we also offer financial assistance through scholarships which are accessible to all students. This helps to promote the idea that students should choose units based upon their interest first and foremost. Up to now, we have helped students develop their interests by attending units on astronomy to watersports, from cooking to outdoor pursuits in Guilin, and even polo in Tianjin.

Health, Safety and Risk Assessment

ICHK has deliberately taken steps to develop a sense of independence in its students and enable greater access to the available resources in Hong Kong by integrating the use of public transport into the programme. Students will routinely meet at a variety of destinations around Hong Kong and be dismissed directly from these sites in order to travel home independently.

The benefits are clear, driving down travel costs, enabling small groups of students to access activities that would otherwise not be cost effective, encouraging student independence and a much more efficient use of the school day. Both students and parents greatly value the benefits of being able to travel independently. Although it does add an extra layer of risk management, we believe the benefits outweigh the costs and the effort is worth the extra dimension it brings to the Deep Learning programme.

In year 7, As part of the Deep Learning programme, students will undergo a 4 day training course in travelling independently. This involves navigating the public transport system using buses, trains and boats. Students will learn to use both online maps, paper maps and transport apps to navigate around Hong Kong. On the final two days of the programme, students will be required to travel to a predetermined location and return home on their own without a supervising adult. Risk is mitigated by ensuring each student has a phone and establishing whatsapp groups for teachers, parents and students to remain in contact throughout the journey until the students have reached their destinations. As part of our risk management protocol, we continue to use these whatsapp groups for any Deep Learning unit which requires independent travel.

This process instills confidence throughout the community and is of immense value to the Deep Learning programme overall.

As with any school activity and trips in schools generally, risk management is an essential aspect of the planning process. The ICHK Trip policy provides some further insight into our philosophy on trips and risk management at ICHK.

The Deep Learning Coordinator

Listed below are some bullet points extracted from a job description for a Deep Learning Coordinator. Amongst these qualities, there is naturally some crossover with a position in many other international schools, Coordinator of "CAS Week", "Experience Week" or "Learning Without Walls". Although the nature of the Deep Learning programme is qualitatively different to what we have offered in previous years as part of a CAS week offer, the experience of integrating the elements of creativity, action and service into a deeper, more sustained experience of learning is certainly beneficial. Essential, however, is for the coordinator to believe in the value of interdisciplinary learning and modifying the mainstream offer that is currently available at most schools.

Nonetheless, It's critical that there is a whole school strategy and vision that is keen to promote experiential, interdisciplinary, and deep, learning and that the Deep Learning Coordinator is aligned with this school vision; clearly, it cannot just be their own vision or that of a few pioneers, as it requires a whole school effort. Thus evidence of success at a senior or middle leadership level in developing whole school strategy and vision is an important criteria.

For this reason, the ability to motivate staff is an essential quality for the Coordinator. As described above in the teachers' views section, the investment of time and energy required by the staff to build a quality programme is a huge effort and it requires all teachers to pitch in and contribute. Inevitably, there will be a few teachers who are inherently interested and other teachers who will require persuasion that Deep Learning is something that they can deliver on. The ability to craft together a programme building upon the abilities and interests of all the available staff will be significant.

- A proud learner who promotes learning with respect to all members of the community
- Reflective practitioner able to recognize their own strengths and areas for development (and those of others)
- Motivated by working as part of a team and with young people
- Ability to lead and act on own initiative
- Ability to pursue multiple projects and to prioritize within them
- Ability to motivate students and staff
- Strong communication skills
- Willingness to demonstrate commitment to the ethos of the school.
- Sense of humour and emotional resilience in the face of complex and multiple tasks
- Knowledge of risk management procedures for school trips and activities
- Experience of integrating the elements of creativity, action and service into a deeper, more sustained experience of learning
- Experience as a tutor in an international school and as Head of Department or lead teacher
- Experience and understanding of school planning, monitoring, review and evaluation process
- Experience of school self evaluation and lesson observation strategies
- Evidence of success at a senior or middle leadership level in developing whole school strategy and vision

Examples of Deep Learning Units

Below are links to the most recent brochures which detail the options available to students throughout the year.

- Deep Learning Brochure 1
- Deep Learning Brochure 2
- Deep Learning Brochure 3