How does my experience of children's learning in the classroom fit in with the wider concepts of 'intelligence', multiple intelligences and learning styles?

Questions to consider:

- *A brief overview introduction to the concept of 'intelligence'.*
- *What are Gardner's Multiple Intelligences?*
- *How has the Education system been developed and implemented?*
- *Where are the inconsistencies with the system?*
- *What are my personal observations and classroom examples?*
- *How can I navigate my way through the theories to the heart of learning?*

I was drawn to the idea of researching the theory of Multiple Intelligences by the arrival of a new member to our faculty. Having always tried to make learning 'active' in my lessons, I was challenged by her more rigorous approach to creating lessons targeted on individual learning styles, specifically VAK. This led me to want to test out these ideas and in the process, consider how (and if) they related to Howard Gardner's theory of Multiple Intelligences. Challenged by the struggle of teaching History at secondary school (essentially literacy-based) through more kinaesthetic activities, I wanted to find ways in which I could honour my subject and yet integrate more current theories into my lessons. The process has been, without doubt, one of the most challenging journeys I have ever encountered; decimating any prior concepts I had assumed and accepted throughout my experiences of education, both as a pupil and as a practitioner. Frustratingly, the result is that my research has left me with more questions than when I began. However, I see this essay as the first in a series of research inquiries that will lead me closer to the answer that I first set out to discover.

The debate over intelligence has only formally existed for a similar amount of time as our current education system (about 140 years) so, in the scheme of things, it is a relatively new topic of interest. First discussed by Galton in 1865, the concept of intelligence has been researched by psychologists such as Spearman, Jenson and Burt who uphold the traditional view that intelligence is innate and calculable. Other psychologists, particularly in the sixties and seventies, have argued that 'intelligence' is linked to a change in behaviour. But more recently, Gardner has introduced his theory of multiple intelligences, which are unquantifiable through factor analysis. He argues that intelligence is more than simply quantifiable data; that intellectual capacity without the ability to develop productivity should not define 'intelligence'. In his definition therefore, 'Intelligence is a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture' (Gardner,1999:34)

Problems arise when these two are used concurrently within an education system, which seems to be contradictory. Factor analysis remains one of the most important tools in 21st century intelligence research. Data from CAT and SAT tests in KS1,2 and 3 are all used to predict forthcoming results; to analyse the potential academic success of an individual. If schools are using this data to predict their pupils' potentials (and measure/judge teaching abilities upon them as well in light of results achieved) with the possibility that the data is not relevant if the pupil is unable to utilise their intellect productively, then there is a major flaw to the system. If what Gardner says is true, and the DCSF continues to promote his theories in our education system, then schools are *seemingly* promoting two completely contradictory intelligence theories. This confusion over how we best judge pupils has resulted in mixed messages, which are damaging to pupils, teachers and the success criteria of the education system.

Howard Gardner's theory of Multiple Intelligences first came to light in 1983, with the publication of his book, 'Frames of Mind'. His argument centres on the assertion that everyone has their own combination of intelligences, which moves away from the claims made by educationalists in the psychometric and behaviourist eras. Initially seven, the number of Intelligences identified currently stands at nine:

- Visual/Spatial
- Musical
- Verbal/Linguistic

- Logical/Mathematical
- Interpersonal
- Intrapersonal
- Bodily/Kinaesthetic
- Naturalist
- Existentialist

He argues that 'there exists a multitude of intelligences, quite independent of each other; that each intelligence has its own strengths and constraints; that the mind is far from unencumbered at birth; and that it is unexpectedly difficult to teach things that go against early 'naive' theories that challenge the natural lines of force within an intelligence and its matching domains. (Gardner, 1993: xxiii)

To paraphrase: if one tries to teach a pupil, whose natural intelligence is to pick things up through music, rhythm, musical empathy; to learn in a numerical way, by analysing graphs and statistics is alien to their natural ability and, consequently, learning is impeded.

It all sounds so seductive, especially when you can theoretically list several pupils that you have taught recently who are articulate and bright but cannot write or express themselves as clearly as you would expect. Have we been forcing them out of their intelligence into something that doesn't quite fit? Would we have seen an amazing burst of creativity and learning if we had only planned for the child that prefers to connect with the realities of the WW1 trenches through casualty numbers; artillery statistics; the chemical equations of the chorine gas or explosives used; rather than the tragic poetry of Wilfred Owen?

'Our 'profiles of intelligence' differ from one another. The fact poses intriguing challenges and opportunities for our educational system. We can either ignore these differences and pretend that we are all the same… or we can fashion an educational system that tries to exploit these differences, individualising instruction and assessment as much as possible' (Gardner, 2006:67)

Sir Francis Galton created the concept of statistical correlation. He was the first to use statistics to the study of human differences and inheritance of intelligence, and introduced the use of questionnaires and surveys for collecting data on humans, which he needed for genealogical and biographical works and for his anthropometric studies.

Living in an era obsessed with sorting and categorisation (Galton was the half-cousin of Charles Darwin), it is hardly surprising that he chose to measure and analyse the intellectual capacities of society. The socio-political climate was fraught with debates over who had the right to vote (until 1867, only a handful of men were enfranchised); was everyone born equal (Enlightenment theory); did everyone deserve to be equal (Communist theory); should the masses have economic freedom; could the masses be convinced of the benefits of paternalism and Disraeli's 'One Nation Conservatism'? Galton himself was fascinated by Darwin's publication *'The Origin of the Species'* and spent much of his life devoted to researching the equivalent human variations. Was everyone born equal or could they display differences that could be 'genetically modified' to produce *better* human beings?

Compulsory education was brought about in 1870 with Forster's Education Act, firstly for primary education and then later for secondary schools. The creation of government controlled education was birthed in a time of great scientific discoveries, the challenges to laissez-faire government and debates over the equality of all. In theory, the introduction of free education to the masses, seems to be a monumental step towards developing a society based on equality, industrialism and economic liberties. And yet, according to Simon this reform was a paradox: that by the end of the 19th century, the system did not reflect the needs of the economy but 'the creation of a set of more or less closed sub-systems' (Simon, 1994:29). In fact, his research stems further to include the arguments from Best and Perkin that these education institutions had the primary function of *reinforcing* class divisions, whereby a classical education was primarily for the ruling classes (borne out by the fact that many leading industrialists sent their offspring to public schools) (ibid,

1994:29). This would concur also with Lord Derby's declaration to Disraeli that his Reform Act in 1867 was a 'leap in the dark'; the result of a rash popularity contest with Gladstone that suddenly enfranchised 1.5 million working-class men. Was Forster's Education Act put in place not to educate but to *subdue* the masses? In which case, does Galton's concept of intelligence showing statistical correlations simply reflect the socio-political beliefs at the time? Is 'g' really the way in which we should be measuring intelligence and success *in the 21st century*?

Not only that, but the use of questionnaires and surveys to assess the 'intelligence' of a human is potentially highly flawed and can have hugely damaging consequences. One only needs to consider the research carried out by Yerkes on US soldiers in WW1, where questions created within a cultural context, highlighted that immigrants from Southern Europe were less 'intelligent' than their Northern counterparts. The results were heralded by eugenicists to tighten immigration restrictions that impeded Jews from Southern Europe escaping the Holocaust and gave credence to Hitler's Aryan policies. The results were later found to be representative of acculturation into the USA, rather than a measure of natural aptitude and thus millions of lives were needlessly sacrificed in Nazi concentration camps as a consequence. Have we asked ourselves whether our tests are truly able to measure intelligence? Should Galton's obsession with sorting have been the foetus from which everything else developed?

In 1994, Richard Herrnstein and Charles Murray published a book entitled 'The Bell Curve'. In it, they suggested that Galton was right to measure intelligence and defended his assertions that intelligence is inherited, forming a 'bell curve'. Herrnstein and Murray state that intelligence not only exists; but is accurately measurable; is 40-80% inherited and should be used to guide future decisions across America. In essence, their book promotes eugenics as the answer. Their research has been critiqued and criticised, especially by Gardner (1999) and Gould (2006), but the essence of measuring aptitude remains a powerful tool for assessing the 'potential' of people to succeed academically in the British education system today. And although Gardner's theory *seems* to promote a more 'equalitarian' approach to intelligence, when rejecting the eugenicist arguments, even Gardner himself shows recognition of intelligence being genetically-based, particularly intelligences such as mathematical, musical and spatial intelligences. If we look to Gardner's earlier quotation, we can see his reference to this belief: '…it is unexpectedly difficult to teach things that go against early 'naive' theories that challenge the natural lines of force within an intelligence'. (Gardner, 1993:xxiii)

I also find it hard to dispute as my practical experience of the classroom leads me to agree that some children display more advanced cognitive abilities to absorb and utilise information than others, regardless of the style in which it is taught. If we were to argue that *all* children could be educated to achieve highly in all subject areas, if their multiple intelligences were better utilised, we would still find discrepancies in the achievements – and perhaps these discrepancies would still be quantifiable/predictable. Gardner makes clear assertions that 'success' in learning comes from both inherited intelligences and nurture, according to how 'smart' an environment is; but can these factors be included to justify the data that is produced and used systematically to rate the success of the system, the teacher and the pupil?

There is however a very significant 'grey' area between Gardner's concept of 'intelligence' and the way in which these multiple skills and abilities are transposed into the day-to-day educator's classroom. When Gardner first launched his theory, educators received it warmly, recognising that it gave credence to the realities of the classroom – that children *do* think differently. This however has led to multiple theories about how best to utilise and implement his ideas. The current theory that is perhaps most readily and easily incorporated into lessons is VAK: visual, auditory and kinaesthetic learning styles. However, I really struggled to accept that *nine* intelligences could effectively and genuinely be filtered into *three* styles and moreover, that 'intelligences' and 'styles' were even remotely the same thing! Gardner, it seems, would agree, maintaining that a 'style' can be applied universally to an indefinite range of content; however, 'intelligence' is a capacity in a specific content (Gardner, 1999:84)

Learning styles are not necessarily incompatible with Gardner's theory as he suggests that an intelligence (for example, Verbal/Linguistic) could be developed through varied learning styles, according to the preference of the pupil, which would depend on their personality type (for example, public speaking, poetry,

screenplays, crossword puzzles etc), but these examples would seem more compatible with Kolb's learning styles rather than VAK, which is more readily identifiable in the British classroom today.

I am interested by Kolb's analysis and its development by Honey and Mumford, that people have four strands within a profile: Activist, Pragmatist, Reflector and Theorist. They seem to bare resemblance to personality testing such as Myers-Briggs and Thomas International, used by businesses to assess capabilities needed for certain roles. Is this type of analysis needed or valuable to the education system? Would we be better to accept that some people are more adept at some roles than others; should we be using the data available to make life choices for people earlier in their careers to help people access their 'potential', rather than allow them to experience dissatisfaction with the situation that they find themselves in. At what point should 'freedom of choice' be restricted for the sake of 'success'?

My reflection of these types of testing is limited to my own personal experience: according to Myers-Briggs I am an 'ENTJ' – I like to make decisions; am concerned with 'truth' and 'justice'; am analytical and objective but can be critical, detached and impersonal. Briefly, my skills lie in focussing on a task, keeping myself and others on track and sorting out confusion and ambiguity. According to Honey and Mumford, I have 'diagnosed' myself as strongly Pragmatist/Activist and not particularly Theorist. These personalities demonstrate qualities such as, being flexible, optimistic, realistic, practical and business-like, but not objective. Using the VAK test provided by the Creative-Partnerships[i] website, I find myself to be equally an auditory-visual learner. Their definition of this personality type is not directed towards personal skills, but ways in which learners like to have their information presented to them.

Much of these results will have been affected by mood; time of day; type, accuracy and quantity of questions asked; and some are clearly contradictory – I am both critical and optimistic; objective and not; for example. Moreover, we should also consider whether these results are fixed over time, or subject to change depending on the environment in which one finds himself. The disparity of these test results would suggest that it is important *not* to place too much weight on any one result or approach, without recognition that accuracy and limitations in the analysis could lead to false conclusions and ultimately, potentially damaging consequences. However, the tests have produced interesting similarities too, which would suggest that they should not be completely ignored. This is important for pupils and teachers alike. The pupil that criticises a particular activity because it is deemed not to fit within their 'learning style' is limiting their experience of education and their potential to develop lesser or more relevant subject skills; the teacher that continually teaches to a specific learning style is limiting the variety and creativity that is needed for a positive learning environment.

In fact, in a recent study conducted by Krätzig & Arbuthnott (2006:241) on VAK learning styles, only 29 out of 65 participants in the study (44.6%) were classified as having the same learning style after taking two separate and different tests for VAK preferences. They found that not only are people likely to misinterpret their own learning preferences, but that presenting information and activities in a specific sensory mode may be a 'wasted effort' as people are likely 'multimodal and multi-situational learners, changing learning strategies depending on the context of the to-be-learned material' (ibid:245). They continue that, to help 'individuals learn effective memory strategies across all stimulus modalities and contexts, rather than only assessing learning type, may prove to be better for both the student and the education system' (ibid:245).

This research, should it prove to be reliable and consistent with future results from similar experiments, is important for the educator's natural intuition. Personally, and I also reflect the opinions of some of my department, being forced to teach through learning styles limits rather than frees and is potentially detrimental to results, when examinations in History are entirely based on literacy. Too many lessons spent facilitating the 'kinaesthetic learner' in any group of pupils, streamed or mixed, would have a negative impact, if assessments continue to be logical/linguistic. In the same way, learning hockey from diagrams and essays does not lead to the development of all the necessary skills needed for a successful game of hockey. However, a variety of multimodal, multi-situational learning strategies will serve to develop the learner's skills at a higher level.

[i] a government-funded branch of the Arts Council England

So what of Gardner's Multiple Intelligence theory and its confusion with 'Learning Styles'? How should this affect my classroom and my lesson planning? What are my personal observations of the two?

Conclusion:

I have experienced a mixture of success and failure with the limited research I have carried out. Gardner's assertions that doing random kinaesthetic activity does not necessarily activate or exercise the Kinaesthetic Intelligence is important for understanding the methods that should be used to develop or utilise an intelligence. He argues that it is better to use the structural features of a classical sonata form to illuminate concepts like biological evolution or historical cycles when educating someone with a strongly Musical Intelligence, rather than getting them to sing a song to remember something for an exam. (Gardner, 1999:90) I have worked with this idea and used it to develop exam skills with some gifted sports people in my year 10 GCSE class. Instead of recognising their obvious kinaesthetic abilities in sports such as tennis and swimming, I got them to analyse exactly what they did, step by step, to win a match or race. The results were then transposed into the necessary elements of writing a successful exam answer.

Several of my pupils experienced a deeper appreciation of the success criteria of an answer, based on their previous understanding of success in a physical sense. I would whole-heartedly agree with Gardner that in this case, bouncing on a trampette for example, to engage their kinaesthetic preferences would not have had such a deep impact. I also wonder whether this will have a psychological impact on nerves in an exam. Where pupils feel empowered by their skills in a sporting activity just before a race or match, but nervous about an impending exam, I am intrigued as to whether these feelings of self-esteem will transfer themselves to a completely different context, having been linked to each other previously in the classroom. The process of comparing physical skills to linguistic success criteria clearly worked (in the short-term) with several members of the class, but others who showed less intelligence in a Kinaesthetic area, were not as comfortable with the ideas. This is understandable. Where I could develop this lesson perhaps, is to get pupils to think about an area in which they are already strong and develop their exam skills through this Intelligence. This does however, place expectation on the pupil to have a healthy perspective of their abilities and relatively high self-esteem in at least one area. This is not always the case, although is perhaps more likely in a subject such as History, which is not compulsory and requires relatively high levels of 'prior performance' to access successfully.

On the other hand, the power of memory was compellingly demonstrated in at least two lessons with several different year 9 classes, using Learning Styles. A lesson focussing on life in 1920s America started purposefully with no aims or outcomes in order to prevent preconceptions being introduced into the lesson. Pupils were asked to write (or draw) a list of words, images, thoughts that sprang into their minds as they listened to the piece of music. They were told that they should simply listen to the music and note what it reminded them of, or made them feel. The results were extremely interesting. The piece of music played, 'The Black Bottom Stomp' – an original recording from the era – brought powerful images of the 1920s from many individuals, without them 'knowing' anything about the era in the first place. We were to cover examples of 1920s life, such as slapstick comedy, gangsters, bobbed haircuts, the Charleston dance; and pupils showed a clear association between the sound and the historical era, accurately predicting the information we would cover, without necessarily being able to link these thoughts consciously to the 1920s beforehand. I wonder if I had presented the aims and objectives of the lesson without providing an auditory hook, whether pupils would have been able to give me such an accurate snapshot of the period? I would argue not, given the genuine surprise and self-congratulatory reactions when we continued to explore the 1920s in the written form. This would suggest to me that most, if not all, display some level of (sub)conscious auditory learning; and that using music as a hook into a lesson is a successful activity, even if it might seem 'random', in the same way bouncing on a trampette might be.

The second lesson focussed on politics: understanding the difference between left- and right-wing politics; democracies and dictatorships, with particular reference to the political ideologies and realities present in 1930s Germany, Italy and Russia. Whilst the content was relatively difficult for the lower-ability students to comprehend, in comparison to the higher-ability pupils, when kinaesthetic learning was introduced to the lower-ability pupils and they were expected to run to the left or right side of a tennis court, depending on whether a statement reflected left- or right-wing political ideology, their recall of the political spectrum several days later was still accurate. This was also perhaps 'random' kinaesthetic activity and yet it

produced favourable results. In fact, these two separate lessons arguably produced *more* favourable results amongst a greater number of pupils than the year 10 lesson on exam success, using pupils' natural Intelligence in a particular sport.

I have always been drawn to Active Learning within the classroom: over my relatively short teaching career, I have used lots of different activities to explore this core belief, for example: using play-dough to model events or concepts, hot-seating, dramatic re-enactments and even the construction of a 'human castle'. I think that pupils are excited by variety and thrive on creativity, whether it be through the specific task they are given to do, or the chance to explore something independently. Ruddock & McIntyre (2007) have carried out significant research into 'meaningful learning' through harnessing the pupil voice. Their results are not surprising but are illuminating. Essentially, learning should avoid tedium; be meaningful; co-operative yet autonomous. My own definition for successful learning is simply that for learning to take place, the pupils should have the freedom to be creative in a positive environment. This definition would coincide nicely with Ruddock & McIntyre's findings.

I do accept however that 'meaningful learning' does not necessarily prove that pupils are being 'appropriately stretched' according to their ability. Clearly, if 'g' exists and we recognise that intelligence is innate and calculable, schools have a responsibility to challenge their pupils in their particular strengths and accept that we have not yet found a successful method of securing this. This is all too apparent from the extract taken from the 1904 Elementary Code, which states that: 'It will be an important though subsidiary object of the School to discover individual children who show promise of exceptional capacity, and to develop their special gifts … so that they be able to derive maximum of benefit from the education there offered them'. A statement such as this, more than a century old, sounds as relevant and contemporary to our current education system as it perhaps did in 1904. Are we any closer to achieving this ideal?

On the other hand, to ignore research such as Carol Dweck's assertion that natural ability should not necessarily be assessed temporarily, would be foolhardy (2006). There are many examples in her research that show children superseding expectations based on their early performance. She continues throughout that people who hold rigid perspectives of intelligence are likely to overlook individuals who may actually outperform their peers, simply with some additional time or training. She argues that many so-called geniuses, such as Albert Einstein, were unexceptional as children, but were driven by motivation and a love of their subject.

I have also found circumstantial evidence within my classroom that concurs with her findings that motivation is an important factor when it comes to successful learning. Having very consciously spoken out against target minimum levels with one year 8, second set class (class A) and underlined the importance of target minimum levels with another year 8, second set class, (class B) I have seen a remarkable difference in levels of motivation between the two. Arguably this is dependent on many other factors, such as personalities, gender-mix, timings of lessons, but superficially I have observed a greater degree of effort and excitement about the same activity with class A that I regularly motivate to achieve higher, than class B. In fact, I was quite startled at one point, when one pupil told me she loved me, after I stated that I did not care about TMLs but that everyone had the potential to get a 'Level 7'. The sense of drive and excitement was almost tangible in the classroom. As a result, the quality of work produced was far higher than the other class. Again, my research is limited and open to criticism, but I feel inclined to support Dweck's motivational theory as a method of stretching pupils to 'derive the maximum benefit from the education' offered to them (Elementary Code 1904).

Galton, writing in 1865, was the earliest anthropometrist to formally discuss 'intelligence'. Dweck would argue that even using apparently such positive terminology as, *'achieving one's potential'* is in effect supporting the view that intelligence is limited and not linked to effort, motivation and fascination. Are limits to our educational perspective, hinged upon Galton's Victorian mindset, hindering the possibilities of intelligence, learning and 'success' in 2007?

As I stated at the beginning, this essay has left me with more questions than when I started. I do not know whether we should be using Multiple Intelligences, Learning Styles or even 'quantifiable intelligence', but I

feel more equipped to begin systematic classroom-based research. To quote the QCA in their latest National Curriculum for KS3, 'Education influences and reflects the values of society, and the kind of society we want to be' (QCA:2008) Unfortunately, it appears that the impact of the current education system is serving to confuse and categorise pupils, based on a warped understanding of what intelligence is. Is it right that our current system reflects Victorian values or should we be redefining education in the twenty-first century? It is so difficult to say. One thing is for sure: unless we are able to prove, beyond any doubt, the existence of measurable intelligence; 'g' should *not* be the success criteria of schools as it labels pupils and does not allow for freedom within the curriculum to explore other (equally valid/more contemporary) intelligence theories.

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