**False Science Activities Teachers’ Notes.**

**Background**

Eugenicist campaigners for ‘Mental Deficiency Legislation’ which included many scientists, medical doctors and psychologists at the end of C19th and first half of C20th believed that people with learning disabilities were a threat to the population for several reasons:

* They were seen as ineducable-with the introduction of compulsory state education (from around the 1870s) and the requirement from capitalism for a literate and numerate workforce.
* They apparently lacked ‘common sense’, which limited their usefulness in maintaining Empire and competitive complex societies.
* Intelligence was thought to be contained on one gene, such as hair and eye colour and so those carrying the weak gene of mental deficiency would, if allowed to procreate, weaken the gene pool and so limit the success of the country.
* Mental capacity was believed to be fixed and could not be enhanced very much by education and so could only be eradicated by the setting up of separate sex segregated colonies /hospitals; sterilisation; or as eventually under the Nazis in Germany - extermination.
* Once ‘mental deficiency’ was identified by a number of culturally biased and subjectively applied tests from a burgeoning science, other categories were added such as the morally defective.
* Vagrants, long term unemployed, those living in poverty, the sexually promiscuous, criminals and petty thieves, prostitutes and immigrants were all gathered up and classified under mental deficiency legislation.

These were the social and moral prejudices and beliefs which largely reflected the morality and social position of the elite in society, but were not scientifically proven. But many scientists feeling sure such differences existed and were provable set about proving these assertions. So rather than setting out to prove what they thought was wrong by rigorous methods, they did the opposite. They made a number of fundamental errors because they wanted so much to prove what they thought was right.

**False Science**

The Eugenicists and Scientists and Medical Doctors made a number of serious scientific errors:

1. **Single trait.** That people with learning disability had a trait/gene of ‘feeble mindedness’ that could be identified with **intelligence testing** and by their appearance. These were not simple identifiable ‘traits’ such as eye colour, height and blood group, which are easy to define and measure. Eugenicists, however, were most interested in mental capacity and behavioural traits – such as epilepsy, intelligence, depression, feeblemindedness, alcoholism, and criminality. These were not easy to identify as a genetic characteristic. Even today with our far greater understanding of genetics and the chemical messengers in the cell that make up DNA, scientists are still unable to find particular traits or genes for these human conditions.
2. **Reductionist simplifications.** They had the tendency to treat complex traits – especially behaviours – as if they were a single entity, stemming from a single cause. For example, eugenicists treated intelligence as if it were a general innate quality of the brain that could be represented by a single factor. In reality, their ideas were very vague on the subject. Later experts recognized that there may be many "intelligences" – including mechanical, quantitative, visual/spatial, verbal, and abstract and these develop in a complex ongoing interaction of the individual, their genetic potential, and the environment.
3. **Poor survey and statistical methods**. Seldom was a eugenic researcher able to personally interview family members going back more than two or three generations, in order to determine who showed the trait under study. At the time, few doctors and hospitals kept systematic medical records, so ‘pedigree information’ was often obtained by second-hand reporting or even hearsay. Interestingly, Goddard was of the strong opinion that a trained person could identify mentally deficient people on sight. This dubious method was used to select those who had the bad gene in genealogical studies and to select subjects for testing.

i) Family tree data was assembled to show the impact of so called ‘good’ and ‘bad’ traits on the social outcomes and behaviour of different individuals, whether they were alcoholics, unemployed of hard working and abstemious. These were reworked later to demonstrate a number of errors and that there was no such simple link between trait and behaviour.

ii) Eugenicists also falsified evidence to prove their arguments. Statistical work on the passing on of mental deficiency from parent to child was falsified for the Royal Commission on the Feeble Minded 1904. Photos were doctored by adding lines around the eyes and mouth to demonstrate deficiency by Goddard in his highly influential Kallikas study.

iii) Yerkes managed to convince the War Department in USA in 1917 that all recruits to the army (1.75 million) should receive psychological testing. When he got ambiguous data from this macro study he overlooked all the problems to infer that the majority of recruits were mentally deficient. Re-working of this flawed data was used to show that Black recruits had a lower average score than white recruits. This set the seal on 100 years of Black history and Civil Rights discourse.

iv) Harry Laughlin of the Eugenics Record Office in the USA was so keen to prove to the Senate that immigrants from Southern and Eastern Europe had a higher level of crime and mental impairment that he falsified statistics to get legislation through that forced them all to go through eugenicist testing on entry at Ellis Island, leading to many being sent back to Europe.

v) Cyril Burt, an educational psychologist working for the London County Council in 1930s, misinterpreted his factorial analysis of twin studies and falsified results of tests to prove his theories that children with learning difficulty should be educated in separate special schools or sent to institutions as they were in-educable. Burt’s insistence on fixed intelligence also led to the outcome of two UK Government Committees in 1930’s as to the future of state education. Burt provided most of the empirical evidence to the 1931 Hadow Report on Primary Education and the 1938 Spens Committee on Secondary Education. This led to the 1944 Act tripartite system of Grammar, Secondary Modern and Technical secondary schools with entry based on an intelligence test (the 11 plus). Burt was exposed as a fraud by Leo Kamin in the 1970s - that a major figure in the IQ world was found to be fudging results and making up participants is of course quite telling. In the 1950’s the assumption was increasingly challenged as children deemed not capable of academic education having failed their 11 plus exam gained large numbers of GCE Qualifications. Eventually a comprehensive system was established in UK and now many students with learning disabilities are achieving exam success with reasonable adjustments.

1. **False quantification** is the assumption that if you can produce a numerical value (such as a score on an intelligence test) then it must be a valid measure. For example, eugenicists argued that IQ tests were accurate and culture-free measures of native intelligence – even though they contained questions that were obviously dependent on cultural background and experience. Tests were given under a wide variety of conditions, often by poorly trained administrators and sometimes even in pantomime when the subjects spoke no English. According to one set of IQ tests given to immigrants by Henry H. Goddard, 83% of Jews, 80% of Hungarians, 79% of Italians, 87% of Russians were classified as "feebleminded." Although most of these results were later retracted, Goddard’s test had dire consequences for immigrants who were returned home and for individuals who were consigned to mental institutions, and sometimes sterilized. 60,000 American citizens were compulsorily sterilized and 37 US states had this on the statute book, as did Canada, Germany, France, Belgium, Norway, Sweden and many others.
2. **That intelligence was innate and could not be much improved by education and training.**
3. **Ignoring social and environmental influences**. Eugenicists sought genetic explanations of complex human traits to the virtual exclusion of other explanations. However, family pedigrees are as much documents of social inheritance as they are of biological inheritance. In addition to genes, family members share customs, life styles, and health practices (including diet) that can greatly affect the development of physical, intellectual and emotional traits. For example, Charles Davenport explained lineages of naval officers in terms of an inherited gene for thalassophilia, or "love of the sea." He neglected the obvious explanation that seafaring fathers had a strong influence on their sons' career choices. At the same time, laboratory geneticists were beginning to recognize that most physical and physiological traits are the product of interactions between genes and the environment. For example, fruit flies of the same genotype showed different phenotypes when raised at slightly different temperatures. Environmental input was recognized as being even more influential on the development of behavioural, personality and mental traits.

**Intelligence Testing**

It was believed that children had ‘innate’ intelligence or not if they were mentally deficient. This could be measured even if they had not been in school. It was believed that this intelligence was contained on one gene. Therefore a test could be used to identify those children with the bad gene of mental deficiency. Those putting forward this theory did not think it was influenced much by the environment the child grew up in. It was also believed that that there was some development with age in mental ability but that after 14 it did not continued to develop.

Tests were originally developed in France by psychologist Binet to identify those children that needed to get extra help in small classes as they had special educational needs. Under the pressure of Eugenics and the need to identify the ‘feeble minded or moron’ in society in USA and separate them from the rest of the population.

Goddard developed tests to identify children who were not developing their mental abilities as others did. While those tested whose IQ or Intelligence Quotient was well below the average were then identified under the Mental Deficiency Act. These tests were further refined by Terman who applied them to all army recruits to the US Army in 1917 and then to immigrants entering the USA through New York from Europe. These results were not questioned in the first place which showed high levels of mental deficiency amongst 1.5 million army recruits or that over 75% of immigrants from Eastern Europe had mental deficiency.

Later Cyril Burt, another psychologist, in the UK refined these tests to apply to children who were slower than others at their work. The tests (including visual ones) had very specific questions that children from poor or rural backgrounds might not know the answers to.

**Activities**

Mapping Physical differences in the class. Leads on to discussion on Eugenics based on information above. You must choose how much information to share with the class depending on their level and key stage.

**A is the visual test used to test army recruits who did not read-from poor backgrounds.** Get students to complete as a class against a stop watch of 30 seconds for each of the 6 tests. Then discuss what the problem would be to give this test to army recruits who had mainly worked on the land and had little schooling.

**B. Visual test given to immigrants at Ellis Island** who mainly came from Southern and Eastern Europe. Although they had interpreters, they would have been tired, frightened, bewildered and unlikely to understand what they were meant to be doing. Get students to complete the 20 questions about what is missing. When they have completed with 15 seconds per picture, get them, in pairs, to reflect in the next column what might be some of the problems and biases in these picture activities.

**C This is the Standard List of Serial Tests that determined Mental Deficiency in the UK.**

In pairs complete the test as per instructions. One will be the investigator the other the subject. They can take sufficient time to complete starting two years below chronological age or if over 14 at 12 year test. Then they can use the formula to work out their IQ. Only if the criteria in each question are met is it a pass. Each question counts as 20% of the score if successfully completed for each age test. If cannot do the questions at two years below go back to the age level they can complete and keep going up the ages until cannot complete 100%. So the last Mental Age level the score 100% on is their mental age. You will need to resource the \* items for this activity and set up sufficient kits for 1 per 2. ***Please make it clear to students from the outset that they are definitely not being ‘tested’ in this activity…it is a role play activity designed to show how problematic and biased these tests were.***

**Criticisms of Intelligence Testing**

**Culturally Unfair.** The IQ tests, as they have been devised, constructed and used in the UK and the United States, have been primarily designed for use among white, middle-class children. The tests are both unfair and invalid when used on children from different cultural backgrounds. Researchers became aware of the problem that tests were in fact culturally derived and represented the ideas, attitudes and the linguistic concepts of the people who made them and for whom they were intended. Attempts to create IQ tests that are culturally neutral have proved unsuccessful, and there has not been any way found to develop a test that does not penalise some cultural groups while rewarding others.

**Testing conditions and interpretation of test results influence the IQ measure and other psychometric outcomes**.

It has been shown that the outcome of any IQ test or psychometric procedure can depend on familiarity with the test materials with the testing procedure and with the examiner*.*

*‘No one would believe until I demonstrated it with controls that the IQ scores of pupils from an open air school could be lifted 10 points or so by thawing them out on the hot water pipes for half an hour before testing.’ (Head of Special School-quoted in Galloway and Goodwin, 1979)*

Emotional tension and anxiety have also been indicated as factors affecting test scores*.* If being tested makes you highly anxious you will may do worse and score lower.

**What is actually being measured**? IQ tests are psychometric tests which only capture a few aspects of many different ‘intelligences’ or ‘systems of abilities’ omitting, for example, creative and practical intelligence social, emotional and moral intelligence, and lateral and radiant thinking. Also, wisdom is not considered. IQ tests are ‘static’ (that is, ‘What has the child learned?’) rather than ‘dynamic’ (that is, ‘What does the child achieve when given guided feedback?) Basically IQ tests do not measure intelligence but are rather tests of a child’s attainments in certain class oriented and arbitrarily selected skills.

**Misuse of IQ assessment** : A central criticism of intelligence tests is that psychologists and educators use these tests to distribute the limited resources of our society. These test results are used to provide so called rewards such as special classes for gifted students, admission to college, and employment or the opposite with special education placement. Those who do not qualify for these resources, based on intelligence test scores may feel angry and as if the tests are denying them opportunities for success. Many negative predispositions have been initiated, aspirations lowered and self fulfilling prophecies created.

**Single score too limited**. Many intelligence tests produce a single intelligence score. This single score is inadequate in explaining the multidimensional aspects of human intelligences. Another problem with a single score is the fact that individuals with similar intelligence test scores can vary greatly in their expression of these talents. Two people can have identical scores on intelligence tests. Although both people have the same test score, one person may have obtained the score because of strong verbal skills while the other may have obtained the score because of strong skills in perceiving and organizing various tasks.

**Sub tests scores and reporting are still misleading**. Numbers, standardised scores and percentiles all suggest a pseudo scientific reality and fixed reality that some find attractive when faced with complex decision making, while others are left confused and mystified. Whose interests are served by such scores?

**Testing only a sample of behaviours**. Intelligence tests only measure a sample of behaviours or situations in which so called intelligent behaviour is revealed. Most intelligence tests do not measure a person's everyday functioning, social knowledge, mechanical skills, and/or creativity. The format of intelligence tests, do not capture the complexity and immediacy of real-life situations. Intelligence tests have been criticized for their limited ability to predict non-test or non-academic intellectual abilities.

**Problems using IQ testing with disabled children and adults**. Linda S. Siegel (1992), professor in the Department of Educational Psychology and Special Education at the University of British Columbia in Vancouver, Canada proposes that we abandon the IQ test in the analysis of the disabled child.

According to most definitions — although they are not conclusive — intelligence is made up of the skills of logical reasoning, problem solving, critical thinking, and adaptation. This seems reasonable, until one examines the content of IQ tests. Intelligence, as tested in all IQ tests, includes virtually no skills that can be identified in terms of such a definition of intelligence. (Colin Newton 2015)

**Useful References**

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## [Colin Newton](https://www.linkedin.com/in/colin-newton-01477715) (2015) ‘Problems with IQ and psychometric assessments’

### Director/co founder/inclusive psychologist at inclusive solutions

<https://www.linkedin.com/pulse/problems-iq-psychometric-assessments-colin-newton>

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