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Early Work By Student Researchers

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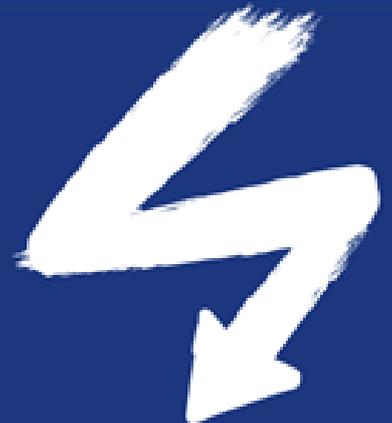
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Editorial

Welcome to issue 8 of SPARK. Issue 8 showcases outstanding pieces written by Education and Early Childhood studies students at LJMU spanning levels 4, 5 & 6. The work has been kept as close as possible to the students' original piece as an example of individual writing styles. We hope you find this edition interesting and we look forward to hearing any comments that you may have. If this issue of SPARK has inspired you to have your work published or if you have any queries please feel free to contact us at SPARK@ljmu.ac.uk.

Laura Clancy, Fahima Saeed, Catherine McNeill, Kirstie Mitchell and Sarah Yearsley (Student editors)

In this issue of SPARK we bring together a selection of pieces about policy, practice and personal experience, with two articles looking specifically at gender. We are looking to publish more collections in the future so please contact us if you have ideas for particular themes or if you would like to suggest a 'special issue' of related work.

We continue to appreciate the input of our student editors and if you are a student wishing to learn more or become involved please contact the editorial team via *SPARK@ljmu.ac.uk*

Diahann Gallard (Coordinating staff editor)

Amity Stevenson

Education Studies and Special and Inclusive Needs student

A personal history of education and an introduction to my experience of home education: an autobiographical account

For this reflective essay, I will be creating an autobiographical account of my own education. To introduce the theme of the essay, I will give a brief overview of the time I was living. I was born in 1987 which would suggest that my school education would have started in primary school in 1991 at four years of age. I would, if following a typical pattern, have started secondary school in 1998 and finished secondary education in 2003. However, my theme is to discuss the impact of neoliberalism in education that consequently caused a different pattern for my education and the choice made by my working class parents to home educate me. The questions raised within this essay are to see how, at key points of my developing childhood, changes in political policy and government directly affected my education and the choices of my parents to remove me from the 'traditional' education system. This essay will describe the rise of neoliberalism, its ideologies and the impact it had on education up to 2003. The key points that will be identified when discussing this impact is the school becoming a marketplace, the 1988 Education Reform Act, and the national curriculum and assessment.

Education in Britain has changed dramatically over the last 150 years, as has many social, welfare and equality issues. Historically the 1870 Education Act outlined basic education for the 'masses' with a focus of the importance of compulsory education for working class children (Limond, 1999; Bartlett and Burton, 2012). Although the 1870 Act did not provide a thorough and fair education (Limond, 1999) it began the foundations of education as we know it today

(Limond, 1999; Bartlett and Burton, 2012). This social democracy ideology of equality of opportunity and access to schooling ran through as a continuing trend in education to the 1944 Butler Act and also the comprehensive school movement of the 1950's and 1960's (Bartlett and Burton, 2012).

Following the flaws in the education systems, society began to have an interest in education policies within the 1970's and the popular discourse focused around a need for wider access to and a universal system of education (Bartlett and Burton, 2012) with a view of better education being linked to economic gain (Goodson 1990). Outlook began to focus on a perceived lack of morals and traditional values in young people and this was pinned on the supposed flaws in the progressive education techniques caused by the social democracy ideals of labour and the welfare state (Chitty, 1989; Garratt and Forrester, 2012). Following the production of the 'the black papers', the William Tyndale case and James Callaghan's Ruskin speech in 1976, influenced by 'the yellow book' (Chitty, 1989) it was apparent that public opinion had shifted and there was a general belief of there being a problem with education (Limond, 1999; Kassem and Garret, 2009).

The Conservatives were elected into government in 1979 under the lead of Margaret Thatcher. An economic 'resources constrained' (Bell, 1999) dip that was brought about during the world oil crisis of 1973 saw public opinion changing away from the 'cradle to the grave' welfare polices of labour and towards that of holding back on public spending. Thatcher's solution was to bring her 'new right' ideologies into fruition (Garratt and Forrester, 2012). 'New right' consists of a combination of 'neoliberalism' and 'neo-conservatism' ideals, these saw a high focus on the economy of the country and may have appealed to people who believed our UK economy was in crisis (Garratt and Forrester, 2012). The two forces within 'new right'

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principles were joint in their opposition of social democracy. Thatcher favoured collaborations with popular economists in order to find solutions to the 'failing' economy of the time (Bell, 1999).

The neoliberal ideology focused on an individualised sense of belonging that showed you alone are responsible for your own success (Olssen and Peters, 2005). It sought to build a laissez-faire market for everything believing it to be the best way to solve economic difficulties. It included privatization from outside organizations and giving individuals and organizations the freedom from state government to accumulate wealth and trade freely (Hall, 2011; Olssen and Peters, 2005). Conservative discourse was to promote freedom, with little state involvement and directly attacked the Keynesian welfare state as one who interferes with the economy and rights of individuals to grow economically and gain social mobility (Hall, 2011).

'Neo-conservatism' was committed to retaining traditional moral values and respect for authority. It supports the neoliberal views of individual freedom but with a regard and high opinion for those making the rules. It supports the view that you may be a part of a nation but the 'nation' as a whole expects you to behave in a certain way (Garratt and Forrester, 2012). Conservative discourse promoted that by maintaining traditional morals and values it would lead to a more stable, cohesive society (Bartlett and Burton, 2012).

The 'new right' ideologies also had an influence specifically on education, with neoliberalism and neo-conservatism contrasting in their beliefs of marketization and freedom versus tradition and control, however with a shared enthusiasm for change (Bartlett and Burton, 2012). Whitty (1989) discusses a focus of education with a purpose to blend economic, moral and academic factors directly answering the issues raised by the public at this time. Kassem and Garratt (2009) identify that there were some sympathies amongst the

'new right' for the education policy brought about in the time of social democracy with 'child-centred learning and some areas of progressive education enduring popularity into conservative policy' (Garratt and Forrester, 2012). Bartlett and Burton (2012) discussed a government mistrust of education professionals and a 'new-right' move to remove control from Local Education Authorities (LEA) and teachers so that the state could then implement significant change. The justification for change suggested by the government was that increasing marketization and privatization would incur fewer costs to the state and thus improve the economy (Kassem and Garrett, 2009)

Early changes in education policy saw the conservatives removing LEA power and the abolishing of the current 'curriculum' (Kassem and Garrett, 2009). They built upon valuing vocational education, combined previous qualifications to create the General Certificate of Secondary Education (GCSE) and also implemented assisted places to prestigious schools for the most intelligent working class children (Bartlett and Burton, 2012). Whitty (1989) identified criticisms of the early actions of the 'new right' and suggests that they were inconsistent with their own ideologies and by removing control from the LEA's and returning it to central government power, was not entirely freedom from government control.

My parents were leaving school and joining the workforce in 1976-77 and the changes in political perspective and some of the criticisms of Thatcher's early decisions such as the pay disputes of teachers in 1986-87 (Bartlett and Burton, 2012) led to them mistrusting government policy on education alongside negative personal experiences led to them making decisions about my education when I was born in 1987.

The key education act introduced by the conservatives was the 1988 Education Reform Act (ERA). The purpose of the ERA was to secure

'new right' ideologies and implement a substantial change in the education system. The ERA brought about a new consumerist attitude towards education where a quasi-market was created allowing parental choice of schooling (Bartlett and Burton, 2012; Kassem and Garratt, 2009) and an open enrolment system that allowed parents to choose a school, possibly further from home, that suited their needs (Whitty, 1989). With LEA's having little power over the finance of schools, they therefore had little power of what went on within them and schools with higher numbers on their roll were allocated more funding. Schools therefore had to market themselves to attract pupils and gain more numbers, in order to receive funding and be valued as an efficient school (Kassem and Garratt, 2009; Bartlett and Burton, 2012). More responsibility and accountability was placed on the head teachers' and the majority of the budget was allocated to the school directly rather than being centrally located within an LEA, known as a local management of schools (Kassem and Garratt, 2009). This caused competition between schools and focus was for parents as consumers to shop for the best school for their child (Bartlett and Burton, 2012). A major factor that led to my parents choosing not to send me to a primary school was that, without LEA finance control, there were differences in the perceived quality of schools in my local area and the popular schools receiving more funding were located much further afield. This was not an option for my parents as neither were working or had their own transport to afford to take me the long distance. They decided that sending me to a school when I was due to start in 1991 with a poor reputation was not a route that they were happy with.

The ERA also brought about different options of schooling more targeted at secondary level pupils that emphasised the idea of parental choice. This included grant maintained schools and City Technology Colleges (CTC) (Whitty, 1989; Bartlett and Burton, 2012). A criticism of the ideologies of parental choice is identified by

Gillard (2011) and suggests that although parents may have believed they had the freedom of choice, schools that were popular with applicants, and had more applicants than school places were able to select pupils based on aptitude and ability thus not upholding the narrative of freedom of options. There were also few CTC's created because of lack of industry interest and few schools opted to become grant maintained (Bartlett and Burton, 2012).

The ERA also brought about another key ongoing aspect of modern education and arguably another solution for economic regrowth the National Curriculum (Goodson, 1990). Previous education acts had made little attempt to ensure an adequate range of educational subjects were being taught and teachers had a high level of decision making in the curriculum choices of their classes. The previous labour government had made little impact on the curriculum with their focus on equality of a 'good' education for all, however this is not to suggest there was no curriculum prior to 1988. The conservatives were adamant that control should be removed from the teachers, who were perceived as part of the 'problem' with education and placed within central government who would identify a schema of subjects that all pupils should learn (Bartlett and Burton, 2012). This was another ambiguity in the neo-liberal ideologies as their ideals of market freedom and consumerism choice should consequently suggest a curriculum that would have freedom within and freedom of choice thus these actions reflect more of the neo-conservative value of tradition (Kassem and Garratt, 2009).

The traditional subject choice was very much influenced by the neo-conservative ideologies of 'new right' (Bartlett and Burton, 2012). It also took elements of neoliberalism by including subjects such as technology that work help to build skills in new technology advancements in order to promote the individuals knowledge and help them enter the workforce (Goodson,1990). The national

curriculum outlined a highly structured series of core and foundation subjects. It built upon traditional topics and aimed to provide a solution to perceived failures in the morality of young people by instilling a national identity (Goodson, 1990) and preparing pupils for adult life in the workforce (Bartlett and Burton, 2012).

The subjects had fixed key stages each with their own attainment levels, that set to produce children that are 'trained' to the same level and allow scrutiny of the adequacy of individuals schools, this also brought about the later publishing of league tables of schools (Kassem and Garratt, 2009; Bartlett and Burton, 2012). The 'levels of attainment' were assessed with Standard Assessment Tasks (SATs) for early key stages and GCSE's which were proposed to measure pupil ability but were often used to identify and ostracise schools who were not meeting 'standards'. These schools would then ultimately seem unappealing to parents, would lack recruitment and jobs and funding could be put at risk (Kassem and Garratt, 2009). The teachers within 'successful' schools that achieved good results were eligible for extra 'performance related pay' that was dependant on the school performing well in these assessments and league tables (Beckman, Cooper and Hill, 2009) further promoting the importance to teachers and schools to be appealing for prospective pupils.

Private schools, often only available to the middle and upper class, were not obliged to follow the national curriculum and this was noted as being a significant criticism of it, as it was not viewed as adequate by the independent sector (Kassem and Garratt, 2009). My parents viewed the national curriculum as a separation of social class and deemed it unfair that a 'better' independent school education would not be available to me in a state school. They were unhappy with the policy of structure without autonomy in subjects and believed that a child should learn subjects with a full approach rather than to pass attainment levels. They also believed that the curriculum was not as

child-centred as it was marketed to be. They could not afford private primary education, and their geography made them a distance from some current schools they may have been interested in that supported my mother's interests in progressive education theorists such as A.S. Neill, John Holt, Maria Montessori and Rudolph Steiner. My mother had also heard about an organization known as 'Education Otherwise' which outlined to her that home education may be a legal alternative to state schooling.

On creation of league tables in 1991 the public interest grew as parents were more able to view and perceive choice between schools, although they initially only published GCSE results (Bartlett and Burton, 2012). This pushed competition between schools and increased pressure on teachers to ensure that pupils were achieving (Kassem and Garratt, 2009). The removal of responsibility for curriculum and the sudden changes in public perception created a feeling of mistrust of teachers as professionals (Bell, 1999). In 1993 the Office for Standards in Education (OFSTED) was founded and aimed to publish further information in the form of inspections of schools that would lead to further quality assurance for consumers (Bell, 1999; Kassem and Garratt, 2009; Bartlett and Burton, 2012) it also created massive pressure for schools to 'jump through another hoop' for marketization (Bell, 1999).

An aspect of the education policy discourse that had made an impact on my parents was the perceived importance of leaving schooling with relevant qualifications and skills to enter higher education or the workforce. My mother was adamant that the skills she imparted to me at home must meet some standards, and she herself studied the national curriculum to ensure that she was not 'missing out' key areas. This was not only a contradiction of her own philosophies of freedom but also shows she too listened to educational propaganda. She did in fact 'shop around' for schools after league tables were

published and in 1993 I attended half a term of a local Church of England primary as she had decided to return to full time work. This however did not last as her fear, developed from her own experiences of schooling, and caused her to fear for my safety from bullying with both parents also concerned about the impending pressure placed on very young children to achieve good SATs results. The Primary Assessment Curriculum and Experience (PACE) project (McNess et al. 2001) supported this view creating a study asking teacher's about the necessity of SAT's and the consequences on pupils, although this was published after my parents choices it outlined fears that may be considered relevant. Thus I was returned to home-schooling.

The changing government from Conservative 'New right' to Tony Blair's 'New labour' in 1997 sparked an interesting development in my education as my parents became keen that, as I was nearing secondary education age, they may see positive changes with UK education and could consider school. Blair himself outlined that he had an interest in education and deemed it important to address problems in education (Kassem and Garratt, 2009) His ideologies on education and the public sector came to be known as the 'Third way' and outlined a significant move away from the social democracy era or 'old labour' (Bartlett and Burton, 2012). It came to fall instead with two shared ideologies: one being a similarity to socialism with the other similar to the 'new right' ideologies of the conservatives (Brehony, 2005; Kassem and Garratt, 2009; Bartlett and Burton, 2012; Garratt and Forrester, 2012). This failed to make the changes that my parents and others had hoped for. Blair considered the link between economic success and education and suggested that standards in schools needed to be improved (Garratt and Forrester, 2012) and therefore did not reverse any policies surrounding league tables, assessment and attainment levels and OFSTED. He still, however, pushed the importance of attaining skills and qualifications

to increase productivity within the workforce (Brehony, 2005). Brehony (2005) identified that some schools and teachers went to great lengths to avoid the pressures placed on pupils and teachers to uphold new labours high expectations and promote their schools marketization. This shows that neoliberalism has remained a trend in education that has endured to another political party that would have previously held their ideologies in a different way.

As I got older my parents became concerned that I would lack skills and qualifications to be able to get a job in the future and the necessity of gaining GCSE's, A Levels and a university degree became their focus. I was unable to sit GCSE's at home and my mother was unsure whether to send me to school or to wait until I finished school at 16 and enrol me in a further education college. An alternative came in the form of an independent school which offered me a place part-time to brush up on the subjects that I had short-comings in. I attended this school for the period between September 2000 and April 2001. After this short period I was enrolled the following September at a local community college and immediately placed in 5 GCSE subject classes that were deemed by my mother and the tutors as core subjects, none of which I had a choice in. This was a clear contradiction of values on my mother's part and I was pushed to obtain subjects I had little knowledge in or desire to learn.

To conclude, my secondary education ended in 2003 when I turned 16 and I did choose to stay and complete further education in the form of A levels and eventually decided to pursue higher education. Whether my parents approach to schooling has made an impact in my choices is arguable as I did not have any choice in my GCSE's and A levels however did choose to take a 9 year gap working before trying university. For myself, the impact of neo-liberalism has had a significant effect on my educational experiences and although most people growing up in the same era would have experienced more of

the impact within schools, mine was profound in the way my parents chose to remove me completely away from it. The key points raised within this essay were to look at the school becoming a marketplace which was identified as a continuing trend through Conservative and Labour governments and continues under the coalition government today. The 1988 ERA changed education dramatically and both these points ultimately influenced my parent's choices. The final point I chose to discuss was the national curriculum and assessments and how this impacted education in the way it supported marketization of schools and also defined the importance of certain subjects in education. This impacted myself in the way that my parents understood the importance of gaining skills and knowledge to gain future employment, and although chose not to send me to school, tried to incorporate as much of this into my education as they could.

References

Bartlett, S. and Burton, D. (2012) *Introduction to Education Studies.* 3rd ed. London: Sage Publications.

Beckmann, A., Cooper, C. and Hill, D. (2009) Neoliberalization and managerialization of 'education' in England and Wales – a case for reconstructing education. *Journal for Critical Education Policy Studies*, 7(2), pp.311-345.

Bell, L. (1999) Back to the future. *Journal of Educational Administration*, 37(3), pp.200-229.

Brehony, K.J. (2005) Primary schooling under New Labour: The irresolvable contradiction of excellence and enjoyment. *Oxford Review of Education,* 31(1), pp.29-46.

Chitty, C. (1989) *Towards a New Education System: The Victory of the New Right?* London: Falmer Press ltd.

Garratt, D. and Forrester, G. (2012) *Education Policy Unravelled*. London: Continuum.

Gillard, D (2011) *Education in England: a brief history* [online] Available at: http://www.educationengland.org.uk/history/chapter08.html Accessed 26/03/15.

[Accessed: 1 June 2015]

Goodson, I. (1990) 'Nations at risk' and 'national curriculum': ideology and identity. *Journal of Education Policy,* 5(5), pp.219-232.

Hall, S. (2011) The Neo-liberal revolution. *Cultural Studies,* 25(6), pp. 705-728.

Jones, K. (2003) *Education in Britain 1944 to the Present*. London: Polity Press.

Kassem, D and Garret, D. (2009) *Exploring Key issues in Education*. London: Continuum.

Limond, D. (1999) Historical patterns in the development of education in England, Wales and Scotland. In Matheson, D. and Grosvenor, I. (eds.) *An Introduction to the Study of Education*. London: David Fulton pp.29-35.

McNess, E., Triggs, P., Broadfoot, P., Osborn, M. and Pollard, A. (2001) The changing nature of assessment in English primary classrooms: Findings from the PACE project 1989–1997. *Education 3-13: International Journal of Primary, Elementary and Early Years Education,* 29(3), pp 9-16.

Olssen, M. and Peters, M. (2005) Neoliberalism, higher education and the knowledge economy: from the free market to knowledge capitalism. *Journal of Education Policy,* 1(3), pp.313-345.

Whitty, G. (1989) The new right and the national curriculum: State control or market forces? *Journal of Education Policy,* 4(4), pp.329-341.

Shannon Moloney

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How has policy influenced early years provision in England?

Each of the home countries policies and provisions affecting early childhood life and experiences has variances and similarities. However, one which seems fairly consistent between England, Wales, Scotland and the North of Ireland is the provision of Sure Start. This paper shall focus on how policies affect Sure Start in England and how it benefits and influences the community around it. It shall discuss who Sure Start benefits and the services it provides, as well as its high level outcomes and those that the Sure Start Children's Centres cannot reach and why.

Policies such as the Early Years Foundation Stage (the EYFS), Every Child Matters (2003) and the National Childcare Strategy (1998) have had a great influence upon how Sure Start centres are run and what they must do in order to provide the best care, education and play to those it is aimed at. The introduction of Sure Start Local Programmes (SSLPs) towards the end of the 1990s was the main means of active intervention to improve outcomes for children and their families (Clarke, 2013 p.71). It was aimed at the most disadvantaged 20% of the population but has since expanded to include everyone, whether it meant to or not. Clarke (2013) states that each Sure Start Local Programme is there to provide for local needs and circumstances, and so were all different. However, each had a common set of services, objectives and aims to achieve, for example, encouraging parents off benefits and into work by providing childcare services.

Sure Start is a provision which provides Children's Centres to enable families to give their child the best chance in life. It was an area-based initiative originally aimed at families with children under four in low income, disadvantaged areas in order to try to and close the gap between the rich and the poor and allow the poor more and better resources and knowledge to help their children succeed in education, and thus give them a chance of a better standard of living (Baldock et al., 2012). It was there to provide a wide range of services to families such as health services, including health visitors and breastfeeding support, childcare and early learning for children, or if not directly providing this it was there to help parents find places for their child to gain an early years education and the social skills which would be needed to go into the school environment. It also provides access to specialist services like speech therapy and legal advice as well as classes for parents for basics such as how to look after their child to future activities (such as how to search for the best school for their child). Its main aim was to benefit families and children from the most disadvantaged areas of Britain; however, it soon became important to many more groups of people. For example, parents of children who were less able than the mainstream population, vulnerable families, particularly women, for example those who were wanting to escape abusive partners or who were single mothers living alone. It also began to help child minders provide care for the children under them, for example giving child minders ideas or helping them to become mindful of the child's intellectual needs. As previously stated it helped families who were in need of help or advice, and also helped young people who were in need of training in order for them to progress in life and get jobs to improve their standard of living.

Sure Start focused on six high level outcomes which were; being healthy, living in stability and safety, to enjoy learning and doing well, experience well-being relating to the economic state and the environment, living in a society which respects their rights and

allowance to contribute positively to the local society (Early Years, n.d.). However, it did not necessarily do what its original aims were. The Sure Start programme for preschool children only improved performance of already more privileged children' (Baldock, 2012, p.63). This could have been due to many reasons, one being that some hard to reach families will not have actually known about Sure Start, where the centres were, what times and days etc. and so would have not been able to use the facilities being offered by Sure Start. This could have been due to the social skills some younger and new parents could lack, i.e. if they are alone due to leaving their parent's homes or having left relationships suddenly. Lots of disadvantaged families suffer from severe material deprivation and so may not have been able to access advertisements or websites to gain information, or even if they could, a lack of education may mean they were not able to read or understand the advertisements. Rural communities are also hard to access and poorer families living out of town may not be able to afford to get into town to access the Sure Start centres, be this because of a lack of care, or they lack the means to pay for the bus or a taxi fare.

Sure Start has been influenced and impacted upon by many policies since its start in 1999, and the opening of its Children's Centres in 2004. The most influential policies are Every Child Matters, and the ever updating Early Years Foundation Stage (EYFS), both of which will be discussed. Every Child Matters was a policy which was launched after the death of Victoria Climbiè and in response to Lord Laming's report of the death in 2003 (Baldock et al., 2012). The government decided to act decisively and create a multi-agency, multi-professional and multi-departmental policy that were seen in two Green Papers: Every Child Matters (DfES, 2003) and Every Child Matters (DfES, 2004), these together brought about the Children's Act 2004 (Palaiologou, 2013). Every Child Matters focused on five outcomes for children. These were for children to be healthy,

to enjoy gaining achievements and learning, to stay safe, to make positive contributions to society and to have economic and environmental well-being. These are very much the same as the six high level outcomes Sure Start aims to achieve and we can see here the impact this policy has had on the provision of Sure Start. Key developments of the proposed Every Child Matters were to extend speech therapy services, fund extra-curricular activities away from school, and to tackle homelessness (Baldock, Fitzgerald and Kay, 2009). This has had a clear influence on Sure Start and what it set out to achieve. For example, Sure Start supports children, and parents of children, who have speech issues or other disabilities. It provides a place for advice and help with issues and somewhere the child can go to get therapy to try and help them progress onto mainstream school. It also supports those who may have housing issues, for example, if they have left an abusive relationship with their children and are currently living in shelters. Sure Start can provide advice and help with issues regarding the legal framework, trying to help them off the streets or out of shelters and into safe housing. The second policy affecting Sure Start and early years provisions within England is The Early Years Foundation Stage (EYFS). The EYFS is the stage of education for children from birth to the end of the Reception year. The EYFS was introduced by the government to bring together and replace the existing documents Every Child Matters and Curriculum Guidance for the Foundation Stage and the Full Day Care National Standards for Under 8s Day Care and Child Minding (Palaiologou, 2013 p.27). It was first introduced in 2008 but has since been revised and a more recent version of it was brought out in 2012. The principles of the Early Years Foundation Stage are A Unique Child, Positive Relationships, Enabling Environments and Learning and Development. Sure Start can be seen to be carrying out these principles having been influenced by them. Sure Start is there to help parents care for the child and to provide the child with an environment in which they are able to learn. The Enabling

Environment principle focuses on supporting every child and the wider context, i.e. continuity and multi-agency working. Sure Start is there to provide multi-agency working to help support the child and their family. The original aims of Sure Start were to provide childcare and help to the most disadvantaged children and families. The Unique Child recognises that each child has potential, regardless of gender, social class or ethnicity, this is very important for children who do not get the chance in life that those from more wealthier backgrounds may get. Parents may also have fatalistic attitudes and so the belief that their child has potential and is capable of progressing and doing well in education may do that family a wealth of good. Sure Start also links in with Health and Well-Being theme within the Unique Child of the Early Years Foundation Stage as two of the six high level outcomes are the child being healthy and the economic and environmental well-being of the child. It is seen here that the Early Years Foundation Stage has had great influence on how Sure Start Centres have been run and how they deliver the best possible service to the child and their family.

Another policy affecting how Sure Start ran is the National Childcare Strategy, which is seen as the leading overall approach to care and education in the UK, and aimed to increase the amount of childcare places available. This third policy, introduced in 1998, aimed to increase the amount of good-quality, affordable childcare for children aged 0-14. This childcare was to be provided through Sure Start and the Children's Centres. This policy brought about a change that meant that the government would ensure that enough childcare places were available for all children aged four, if they wanted one (Yeo and Lovell, 2002). This was then expanded and in a speech by Sarah Teather, the Minister of State for Children and Families (2008-2012), on the 16th November 2010 she stated that all children aged 2 years will be able to have fifteen hours of free childcare per week, to be introduced in 2013. This is proving that it is living up to its own set

standards by providing affordable child care. It aims to provide good-quality childcare for disadvantaged families by providing resources for the child whilst they are in the care of Sure Start practitioners. It also provides good-quality care in the form of advice and support. The aims of Sure Start are to help families and provide advice , thus helping parents to provide good quality care once they have left Sure Start and in the future by pointing them in the direction of stimulating activities for children and helping them provide the best care they can at home.

To conclude, it is clear that we can see that different policies affect and influence how Sure Start is run, who it is there to benefit and what its aims are. Policies such as every Child Matters, the Early Years Foundation Stage and the National Childcare Strategy are the main influences on Sure Start. There is evidence of those children who had been in Early Childhood Care and Education (ECEC) having benefited from the system. Taylor and Woods (2005) states that there is evidence that children who attended Early Childhood and Education had higher scores on a variety of achievement tests, like maths, literacy and logical problem solving (Papps and Dyson, 2004). Long term societal benefits have also been identified, such as higher levels of employment, fewer arrests and social exclusions and more settled behaviours. These identifications have shown that Sure Start has carried out most of its aims and services to a high quality standard and that the policies implemented have been successful in influencing Sure Start and affecting how it runs.

References

Baldock, J., Mitton, L., Manning, N. and Vickerstaff, S. (2012) *Social Policy.* 4th ed. Oxford: Oxford University Press.

Baldock, P. Fitzgerald, D and Kay, J (2009) *Understanding Early Years Policy.* 2nd ed. London: SAGE Publications Ltd

Clarke, M, R. (2013) *Childhood in Society for the Early Years.* 2nd ed. London: Learning Matters

Department for Education (2012) *Statuary Framework of the Early Years Foundation Stage: Setting the Standards for Learning, Development and Care for Children from Birth to Five.* Runcorn: DfE

Department for Education and Skills (2003) <u>Every Child Matters</u>. Nottingham: DfES Publications.

Department for Education and Skills (2004) *Every Child Matters: Change for Children.* Nottingham: DfES Publications

Early Years (n.d.) *Sure Start Principles and Outcome Area* [online] Available: http://www.early-years.org/surestart/principles.php
 [Accessed: 6 December 2013].

Palaiologou, I. (2013) *The Early Years Foundation Stage, Theory and Practice.* 2nd ed. London: SAGE Publications Ltd.

Papps, I. and Dyson, A. (2004) *The Costs and Benefits of Earlier Identification and Effective Intervention* (Research Report RR505). Nottingham: Department for Education and Skills

Taylor, J. and Woods, M. (2005) (eds.) *Early Childhood Studies.* London: Hodder Arnold.

Yeo, A. and Lovell, T. (2002) *Sociology and Social Policy for the Early*]. 2nd ed, London: Hodder Education

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How much of a 'rescue package' are academies proving to be for underachieving schools?

This review questions the success brought by the first three academies which were introduced by the UK government. The review aims to provide information based on the levels of pupil attainment up to date in the chosen academies and also how levels of socioeconomic segregation may or may not affect this. In 2010, the amount of school academies in comparison to state schools in the UK was a mere 2.3%; this figure has risen dramatically to 18.3% - meaning the amount of primary schools converting to academies has doubled in recent years. Academies, often situated in the more deprived regions of the UK, are also associated with "poor performance". David Cameron described them as a "rescue package" for failing schools (Guardian, 2012). In recent times, there have been approximately 500 schools across the UK converted from state schools to academies. In July 2010, the government introduced a new legislation named The Academies Act 2010, which made it possible for all schools, both primary and specialist, to become academies at any given time. The government continued to promote this notion by publishing the policy, "Increasing the number of academies and free schools to create a better and more diverse school system" (Gov.uk, 2013). The main purpose of the policy is to create a more autonomous and diverse school system that offers parents a choice and concentrates on improving standards. Therefore with a deluge of academies across the UK, this review will discuss whether the government is achieving its goals in making schools more diverse systems, if there has been a reduction in low results deriving from deprived areas, and finally if academies are an

improvement on the standard of education compared to maintained state schools.

The policy "Increasing the number of academies and free schools to create a better and more diverse school system" (Gov.uk, 2013) was introduced to inform the public of the latest results attained by academy schools, following on from the "Academies report 2010, 2011, and 2012". Whilst concentrating on the location and type of academies, together with evidence on how academy staff are able to use their freedom and flexibilities in order to raise standards in their schools, each of these reports provided an analysis of academies' educational performance for the respective year. Although the Department of Education was at the forefront of the policy, the section worked closely with New Schools Network, The Baker Dearing Educational Trust and Studio Schools Trust in order to obtain sponsors, provide additional support/resources, and transmit educational framework to the Department of Education.

The rapid introduction of academies in the UK has caused great debate between educational experts and politicians alike. A published article written by Steven Gorard (2005) entitled "Academies as the "future of schooling": is this an evidence – based policy", took a large amount of data, focusing on three academies in deprived areas of Middlesbrough, Bexley and Haringey. Gorard examined the government's concept of academies, basing his article around the main objectives of academies and questioning if they deliver better educational outcomes without changing the nature of the student intake; from the evidence collected, the answer appears to be "no". There seems to be a relative decline in pupils obtaining free school meals (which is positive), although this is not due to the innovative approach to management, governance, teaching and the curriculum by academies, but rather the result of a change in student intake across different periods of times. From the results, there was

no evidence that the new methods implemented by academies improved grades. Gorard advised that it may too "hasty" to condemn the academy program on the whole, due to a lack of positive data collected. Gorard instead suggested in time the academy program may reach the targets set by the government. However, the government continues to praise academies based on small amounts of evidence when in fact; the initial success of the academies may be due to other elements such as school intake, not necessarily the academy program as a whole.

Similarly the subsequent article, "the link between Academies in England, pupil outcomes and local patterns of socio-economic segregation between schools" revolves around the study of the first three academies and whether they are as successful (or unsuccessful) as schools they have been merged with. More up-to-date figures have been included in the second article as it was published in 2014; its predecessor was published in 2007. This allows a vigorous monitoring of the academies performance. In addition, the article provides a stronger emphasis on the SES (Socio-economic Segregation) of pupils who attend academies, enquiring how effective academies are at tackling segregation and how pupil attainment in academies is affected by this.

According to Palardy (2013) the increase of social segregation of disadvantaged pupils from converted schools may harm pupil attainment in particular academies, whilst other studies state that the clustering of pupils from equivalent disadvantaged backgrounds will strengthen the social reproduction on a greater scale (Massey and Fischer, 2006). To summarise the article in regards to segregation, two out of the three schools had success at maintaining numbers and reducing the percentage of disadvantaged pupils over a distinct timeframe. However, the article included an academy located in one of the most affluent areas of the UK, which had previously been in

the private sector. Therefore this is no longer a suitable approach to assess the academy program, as it defeats the point of the study. Another key aspect of the article discussed the money distributed since 2002 to fund academies. The study considered how funding could have been used internally to accommodate disadvantaged children through education or to refurbish already deprived schools, in order to raise standards, rather than converting into academies.

Both articles presented a large amount of quantitative data - a significant quantity of reliable evidence was based around facts and figures obtained from government sources throughout the studies. The two articles were extremely similar as both used the same academies and each article provided evidence which questioned the nature of policy; the evidence presented argued that academies show no sign of a higher level of pupil attainment when compared to maintained schools.

Academies were created with the main purpose of increasing levels of pupil attainment whilst reducing the socio-economic segregation between schools. The first three academies Gorard studied were Bexley Academy, Grieg City Academy and Unity City Academy. All three academies were developed by the government, as they were considered, "failing maintained schools" in a "disadvantaged area" of the UK. However based on the evidence collected, only one of the three schools was an "ideal candidate" for the academy program. Although the other schools had high levels of disadvantaged children, they were not the most deprived schools in the area, which does question the validity of the study. Furthermore, both articles examine why those particular schools were altered at all. According to (Gorard, 2005;2014) prior to the transformation of the schools into academies, Bexley and Grieg City academy were overachieving in regards to the national benchmarks near to the time of conversion. Bexley academy had a benchmark of "24% of pupils attaining 5+ A*-

C GCSE's in 1998" whilst Grieg City had "30% of pupils achieving 5+ A*-C grades in 200". Page 372". Therefore the question remains, was it really necessary for the government to fund millions of pounds into converting the schools into academies, when the money could perhaps have been used more effectively elsewhere, such as improving school facilities, technology and so on.

Article 2 does provide a greater amount of detail in regards to the level of segregation within academies and how this affects pupil attainment overall. According to (Gorard, 2014) this is dependent on the economy at the time. The levels of segregation in the schools assessed increased and decreased in line with how well the economy was doing. When the economy was doing well, segregation in academies tended to be higher, for the main reason that fewer families live in poverty; whilst in periods when the economy was struggling, there was more "equality of poverty" as the levels of pupils on FSM rise (Taylor and Fitz, 2003). This is caused by an influx of pupils on FSM across a variety of schools within the area, so segregation levels were evened out. In greater detail, this suggests although academies play a pivotal role in the levels of segregation within schools, they are not reason as to why the levels of segregation rise and fall over time.

Conversely, a significant finding from article one demonstrated that segregation plays a pivotal role in the percentage of pupil attainment within academies. The general calculation is the higher the number of disadvantaged pupils within the school, the lower the number of pupils achieving 5+ A*-C grades at GCSE. However based on the evidence provided in the second article this is not entirely true, again this questions the success of academies. According to the statistics in article one, Table 6 - GCSE results overtime in Unity City Academy, the levels of pupils who achieved no recognised qualifications rose dramatically from 4% in 2001 to 13% in 2003. With

lower levels of disadvantaged children, it would be expected that the level of pupil achievement rises, yet more children attending Unity City were failing. Again, the success of academies is challenged and this questions why the government would want to create more. In some respects all three academies were achieving as they recorded a general decline in disadvantaged children from 1997-2003 according to Tables 1, 2 and 3 "Patterns of disadvantage overtime". This may be a bi - product of the academy program; schools formerly perceived as "failing" may have become more attractive to parents, or as previously stated, it may depend on the economy at the time.

Both articles have many strengths and each established very strong cases against the policy - the use of such reliable data collected from trustworthy sources does prove that academies are not achieving their goals. This challenges the motives of the policy, especially as the government praises academies for reducing segregation when this is not altogether true. Nonetheless the articles have weaknesses; the main flaw is the type of data collected. Since Gorard gathered large amounts of quantitative date, the articles fail to elaborate in great detail; instead the articles have generalized the academy programme as poor based upon the evidence gathered. Other than pupil attainment figures recorded by each academy, the articles fail to represent the academies as a whole.

Academy establishments generally have "free reign", the head teachers may focus on other important factors such as staff and pupil morale/relationships rather than performance figures. As Gorard relied on quantitative data; it would be difficult to match the figures attained to the opinions of the teachers in the school, this therefore is too abstract. The evidence collected does not explain why the academies may be underachieving, rather stating to what degree they are underperforming; this provides a relatively small overview on academy achievement. Should Gorard, Fitz and Taylor (2003) have

been more pragmatic, they may have included more triangulation (mixing two or more methods of data collection) which would have provided a higher level of results (Tashakkori and Teddlie, 1998, page 41-42) and as a result, Gorard may have been able to challenge the policy in greater depth.

To conclude it is clear that academies are still in a transition period, in terms of pupil attainment. Academies have not emulated the high grades of the first two years and based on the facts presented, it is uncertain why the government believes academies are absolutely the right decision. To create more academies into the UK educational system is going to cost millions and as discussed in the two articles, academies are not surpassing the grades attained by maintained schools. This suggests that academies are not the "rescue package" they were portrayed to be. The academies contributed to a reduction of segregation across all three schools from 1989 to 2012, however due to other factors (such as economy), there are inconsistencies in the reduction; but it should be noted that segregation generally declined.

Through periods where the economy struggled, an "equality of poverty" is created meaning segregation among schools is spread out evenly. Therefore schools take their fair share of disadvantaged children; this is an example of how academies are perceived as "more attractive" to parents. Although academies have shown a degree of success, it is not definitive enough for the government to back the academy program so profusely. Many argue the funding should be used in "tweaking" issues surrounding maintained schools, rather than discontinuing them. Should this review include an additional methods of data collection, such as qualitative data, a greater case could be made to the policy makers to renounce academies.

References

The Guardian (2012) 400 primary schools to become academies, says prime minister. *The Guardian* [online], 12th November 2012 Available: http://www.theguardian.com/education/2012/nov/12/400-primary-schools-academies
[Accessed: 14 Nov. 2014]

Palardy, G. (2013) High School Socioeconomic Segregation and Student Attainment. *American Educational Research Journal,* 50 (4), pp.714-754

Massey, D. and Fischer, M. (2006) The Effect of Childhood Segregation on Minority Academic Performance at Selective Colleges. *Ethnic and Racial studies,* 29 (1), pp.1-26

Gorard, S (2005) Academies as the future of schooling, is this an evidence based policy? *Journal of Education Policy* 20 (3), pp.372-374

Gorard, S. (2014) The link between Academies in England, pupil outcomes and local patterns of socio-economic segregation between schools. *Research Papers in Education,* 29(3), pp.268-284.

Gorard, S., Fitz, J. and Taylor, C. (2003) *Schools, markets and choice policies.* London: RoutledgeFalmer.

Tashakkori, A. and Teddlie, C. (2008) *Foundations of mixed methods research.* London: SAGE.

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Does the gender gap in mathematics still exist? An evaluation of the factors which are thought to hinder a female's performance in mathematics

Abstract

This study will give an insight into why girls are failing to continue their mathematic education past GCSE level. By using the Programme for International Student Assessment (PISA) test results, this study shows that the gender gap problem is particularly large in the United Kingdom in comparison to other countries. There are countries that have a similar gender gap but this study shows that it is possible for girls to surpass boys' scores for example, in Iceland where girls are constantly gaining higher scores (OECD, 2000; 2003; 2006; 2010; 2011; 2014). Many factors are influencing girls' perceptions and attainment of mathematics, for example, childhood toys, which research shows to play a large part in mathematic attainment (Adams 1979). How a girl's parent perceives the subject has also shown to have an impact (Goodman and Gregg 2010). The interaction that takes place within a mathematic classroom between teacher and pupil certainly has an impact on how well a girl succeeds in mathematics Dee (2007). Also, the type of school a girl attends, single sex or co-educational, proves to have an effect (Riordan, 1985).These factors can have an impact on a girl's educational attainment i.e. mathematic GCSE grade, further and higher education achievements. Publications both recent and from decades past are used within this study. The reason

for this is that they can be compared to evaluate changes in girls' mathematic attainment. The overall conclusion of this study is that the gender gap in the United Kingdom has ceased to exist at GCSE level, however the numbers of girls at further and higher education level wishing to study mathematics are low (Department of Education and Skills, 2007). The study concludes that this is not due to gender but society. The focus has been on girls for too long whereas it should be on society as it is society that is creating the stereotype that 'girls find mathematics difficult'.

Introduction

Adolescence is a critical time for the retention and loss of students of mathematics (National Council of Teachers of Mathematics, 1997; National Research Council, 2001). This is more obvious in underrepresented populations. The purpose of this project is to examine the gender gap in mathematics internationally and seeks to conclude if the problem occurs only in the United Kingdom or in other countries also. To do this, the study uses results from the Programme for International Student Assessment (PISA) tests to compare the gender gap between countries. On the other hand, it will also take note of the problems that arise from using such a large-scale test. Acknowledging that there is a gender gap within mathematics in the United Kingdom, this study will look at campaigns and policy initiatives that attempt to raise the level of girls' mathematic attainment. From examining the gender gap internationally, this study will focus on the Nordic countries, where they too have a gender gap, but is an unusual situation. Dissimilar to the United Kingdom and many other countries, girls are outperforming boys. This study will look at the possible reasons as to why this is happening.

Girls may have been influenced by many factors as to why they lack motivation and confidence in their mathematics skills. These factors may potentially stem from childhood, such as toys that they play with. For the purpose of this study, Barbie is looked at closely as a childhood toy which can influence young girls. The Barbie doll has become a 'rite of passage' for many young girls across the world. According to Stone (2010), in America, girls between the ages of three and six own an average of twelve Barbie dolls.

Factors can stem from childhood, parents and their perception of mathematics can also be an influencing factor. How a parent addresses mathematics homework and how important they see it in comparison to other subjects can have an effect on a child's perception of the subject. The relationship between mathematics teachers and students may also have an impact on a girls' grades and so this project studies the teacher-student interaction within a mathematic classroom. From discussing the impact in a mathematic classroom, this project examines the level of mathematic attainment the girls in single-sex schooling achieve, in order to note if single-sex schooling makes a noticeable difference. By looking at the influences on girls' mathematics attainment, this study will examine the effect these factors have. The impact could be life long as it may possibly affect their grades within school, i.e. GCSEs and further education, their higher education choices and also their career aspirations and opportunities.

Methodology

This study is a literature review using resources from LJMU libraries, Google and Google Scholar. When using the online LJMU library services, users can access the Electronic Library and also the library catalogue. To retrieve articles and journals that were relevant to this survey, key words were entered into the Electronic Library such as:

- Gender differences
- Gender in education
- Gender in mathematics
- Gender gap
- Single-sex schooling
- Women in STEM

The Electronic Library was used to find relevant books and journals within the library that were linked to this study. It also showed numerous reports and articles that a researcher could get information from as well as reviews. There was the option to refine the results to only show academic journals. The results could also be altered by what year they were published, in order to maintain a relevant, recent and well organised database. The key words were entered into both Google and Google Scholar, where a vast amount of articles and journals were found that related to the study. It was too time consuming and virtually impossible to read every article and journal that appeared on the LJMU Electronic Library, Google and Google Scholar. Therefore on Google, the search tools tab was used to reduce the results and make them more suitable by altering the results to only show articles/journals/books that were published in the UK or in other countries across the world. There was also the option to refine the results into a certain time period and this was used to find more recent publications. Google also showed numerous newspaper articles that related to this study. If a newspaper was useful there was a search for the citation within the article to ascertain where the article acquired its information.

To sift through the results on Google Scholar, the allocated timeline was used to only show results from a certain time period, for example from 2010 onwards. To help find the best articles, journals and books, this study examined work that was cited many times. To a researcher, the higher the number of citations means the more

reliable the work was (as many others have used it). With these final results, the reading of the introductions and conclusions gave insight into which articles, journals or books were best for this study.

Limitations

Due to the broad complexity of this study not all of the concerns and factors that affect girls' mathematics attainment could be discussed. The amount of homework a student does is not discussed within the study. Findings from the Next Steps Longitudinal Study of Young People (Department for Education and Skills, 2004) state that pupils who did their homework regularly have higher attainment. However, their research does not tell us whether doing homework contributes to attainment or is a proxy for motivation. Nevertheless, it is important to note that girls tend to do more homework (Honigsfeld and Dunn, 2003). The Families and Children Survey (FACS) in 2006 stated that of over 7000 11 to 16 year olds, 78% of parents reported that their daughters did all or almost all their homework compared to 61% of sons.

It is important to note that the list of factors mentioned in this study is not exhaustive and many more may exist. Examples which may affect the gender gap but are not included in the study are; which tier girls are entered into mathematics (lower, intermediate or higher) and changes in the examination system and social class.

International Comparison & Policy Initiatives

PISA

The gender gap measures the difference between the mean performance of boys and girls in mathematics. The Programme for International Student Assessment (PISA) is a worldwide research

exercise by the Organisation for Economic Co-operation and Development (OECD) in member and non-member nations of 15-year-old school pupils' scholastic performance in mathematics, science, and reading. The tests run in a three year cycle, taking turns each time to focus on one particular subject but still giving information on how well each country is doing in relation to the others. PISA 2000 focused mainly on reading but they also provided useful information on the gender gap within mathematics globally. In 2000, in only 3 countries girls out-performed boys in mathematics (OECD, 2000). These countries were the Russian Federation, New Zealand and Iceland. Although the girls in these countries did better, it was not by much. The gender gap percentage point differences were 2, 3 and 5 points respectively. In the United Kingdom, boys did better and scored 8 percent higher than girls, although again a relatively small number (OECD, 2000).

The main focus of PISA 2003 was mathematics (OECD, 2003). The results showed that Iceland was the only country where girls performed better than boys. Meaning that boys remained ahead of girls' mathematic scores in every other country, including New Zealand and the Russian Federation where girls had previously held higher scores. Four areas of mathematics (shape and space, change and relationships, quantity and uncertainty) were covered in the test but boys only performed better across all four areas in 10 countries. Despite this, boys had a greater range of performance in every partaking country except for Indonesia (OECD, 2003).

The results of PISA (2006) showed that 36 out of the 57 participating countries had a significant difference in gender performance (OECD, 2006). 35 of these countries favoured boys whereas Qatar favoured girls. The OECD average of gender difference points that year was 11, but the difference in the United Kingdom was 17, an increase of 11 percent from 2000 (OECD, 2006). Only 3 countries that year had a higher point difference, with 23 being the highest. This means that

in 2006, the United Kingdom had one of the highest gender points difference, implying that the problem is more severe in this country than in many others. Similarly PISA (2009) shows that 39 out of the 64 countries entered for the test showed a significant difference between the genders (OECD, 2009). Boys performed better in 34 of these countries. Meaning that over half of the countries entered had boys achieving higher than the girls. The OECD average points for that year in gender difference was 12. The United Kingdom's point difference was 21, an increase from 2006 and almost three times the difference from 2000 (OECD, 2011).

PISA 2012 provides the most inclusive pictures of mathematics skills within countries that has ever been available. The tests looked at what students know in different areas of mathematics and also what they can do with what they know (OECD, 2014). The results showed that the greatest hurdle for girls is reaching the top; in most countries girls are under-represented amongst the top achievers. The results also showed that some countries were successful in narrowing the gender gap, including the United Kingdom whose percentage difference was 12 compared to 21 in 2009 (OECD, 2014). This suggests that since the Coalition Government came into power in 2010, girls' mathematics attainment is improving.

At the same time, the evidence showed that in many countries and economies more boys than girls are amid the lowest-performing pupils (OECD, 2014). This proposes that because boys have a wider range of scores, girls are more consistent. In the United Kingdom, perhaps girls have not improved but boys have attained lower scores than before. Since PISA began in 2000, there has been a clear gender gap in the United Kingdom as it remains amongst the countries with the highest gender gap point difference. However, the point difference was reduced between 2009 and 2012, so it remains

to be seen what the next PISA test in 2015 will reveal in relation to the gender gap within this country.

Problems with PISA

As PISA is such a large-scale test, it was always likely that people felt opposed to the test and unhappy with its results. There are very few things you can summarise as data and give a number, yet Pisa claims to be able to capture a country's entire education system in just three of them (TES, 2014). The unsettling reality of PISA, according to researchers, is that it is impractical. England fell through the PISA rankings in mathematics from 2000-2006 (OECD, 2006). However, Dr John Jerrim stated that these rankings were contradicted by their scores in the trends in the International Mathematics and Science study, which shows England's scores rise between 1999 and 2007. Jerrim (2011) also suggested that depending on what time of the year pupils in England took the PISA tests could alter the end result. Controversially, the OECD argues that Dr John Jerrim only looked at the tests within the UK and that he did not consider PISA's main aim which is to provide snapshot comparison of different countries. It would be fair to assume that all students who participate in PISA tests are asked exactly the same questions, but this is not always the case. In 2006 half of the students were not at all tested on mathematics. Science was the only subject were all students were tested on as science was the main focus that year. Despite this, full rankings were produced for both subjects (TES, 2014). Most people don't know that half of the students taking part in Pisa (2006) do not respond to any reading item at all. Despite that, Pisa assigns reading scores to these children. (Kreiner, 2011). Regardless of all the criticism, Programme for International Student Assessment (PISA) remains the world's most trusted and recognised education measure.

Campaigns and Initiatives in the United Kingdom

For the first time ever, schools across England participated in a STEM Clubs Week launched by the Science, Technology, Engineering and Mathematics Network (STEMNET), a government programme. From 2-6th February 2015 the clubs ran activities to show the, creativity, problem-solving and employability skills that STEM subjects offer. STEMNET (2015) state that 61% of pupils who participated in the STEM Club week sought a job that involved STEM, compared to only 37% of pupils generally. These clubs only ran in 3,000 schools suggesting that this is not an opportunity for every student. For mathematics in particular, the Club talked to students about six people who have a career with mathematics for example Roma Agrawal who is an Associate Structural Engineer. The six people that were discussed were all female; this would have given female students empowerment and shown them that STEM careers are not only for males. However, girls who are not exposed to this type of initiative may not have the opportunity to visualise STEM subjects as interesting and enjoyable.

'Your Life' is a 3-year long government campaign which launched in 2014 that aims to ensure the UK has the mathematics and science skills it needs to compete and succeed on a global scale. The campaign attempts to inspire young people to study mathematics and science at A-Level to demonstrate that these subjects are a gateway into exciting and wide-ranging careers. They want to raise the number of students studying mathematics and physics as A-Level by 50% (Your Life, 2014). Although the campaign is for everyone, female students are the main target. National Numeracy, founded in 2008, is a charity which aims to challenge the negative perceptions of mathematics in the UK. They put their research into practice by helping their partners improve attitudes and highlight the importance of numeracy through campaigning.

The Campaign for Science & Engineering (CaSE) is the leading independent promoter for science and engineering in the UK. They do not receive any government funding as they are supported by individual and organisational members such as Airbus (sciencecampaign.org.uk). CaSE works to ensure that science and engineering are high on the political agenda and that the UK has: world leading research and education; skilled scientists and engineers; and successful innovative businesses. They believe improving diversity in STEM is vital to accomplishing these goals (CaSE, 2015). These initiatives and many more collectively have the same aim. The UK's future economic success relies on a highly skilled STEM workforce (CBI, 2014). Girls are therefore seen as untapped potential by the government and businesses because the country is potentially loosing vital employees in these career sectors when girls fail to choose a STEM subject at A-Level or at university.

From the above information from PISA 2000-2012, it is clear to see that Iceland in particular has an unusual situation. Girls in this country are out-performing boys in mathematics and often have a substantial point difference. PISA results show that for most countries boys are either generally better at mathematics than girls or there is no significant gender difference. Therefore it is important to explore this further.

A proposed theory for this is the 'Jokkmokk Effect', a reference to an isolated town situated in Swedish Lapland (Ministerrad and Roe, 2006 p.202). This theory is of the opinion that girls from rural areas are thought to see little hope for their future if they do not concentrate on their academic success. Whereas boys from rural areas have principles which restrict them from concentrating on their schooling. Niels Egelund (2007) notes that boys are more concerned about local hunting, fishing and forestry prospects. The gender gap is

especially high in remote areas and the 'Jokkmokk Effect' stands as a reasonable explanation. Girls will want to leave the small towns for large cities and work hard on their studies to raise their potential. It is thought that girls put more effort into their mathematics as they know it will leave them in good standing to obtain a good job in the metropolitan high-tech societies, whereas boys are happy with staying in the smaller towns and having a traditional job e.g. fisherman (Egelund, 2007). However, Brandell (2008 cited in Srirman and English, 2010 p.473) pointed out that "girls in mathematical sciences are still not succeeding in their careers at university" and that the traditional practices in which boys chose to uptake are dominant in the working culture and they are the jobs which are most appreciated. This could be another reason as to why boys do not feel the need to work at their academic studies as they feel that they will not succeed.

In contrast to the 'Jokkmokk Effect', a study by Magnusdottir (2005, cited in Sriraman, 2008 p.240) concluded that there is a perception in Iceland that girls have to work hard to get the grades as it will not come naturally to them, whereas boys will obtain high grades without trying. There is an expectation for girls to work hard. This is reflected within the PISA results; girls are working hard and earning their results, boys on the other hand are perhaps not working as hard and are therefore not producing the same grades. Other than the 'Jokkmokk Effect' the reasoning behind why girls are doing better in mathematics than boys is argued to be because of the Icelandic education system. The importance of mathematics is clear in this country. Examinations and other types of assessments are carried out individually by teachers with mathematics as the exception (OECD, 2006). Mathematics exams are marked and organised by the Educational Testing Institute with students taking exams in grades 4 and 7(OECD, 2006).

Within schools, there is no selection or streaming by abilities. Every student moves up a grade each year and those who may be struggling receive extra support from a different teacher. This is something which may not happen in the United Kingdom as there is a shortage of mathematics teachers as it is, so it is highly unlikely that there will be spare teachers to help less able students (Smith, 2004). Johannesson (2004 cited in Srirman and English, 2009 p.469) contemplates that the disappearance of male teachers is a factor for girls surpassing boys in mathematics scores. He states, 'There can be various ways to tackle the problem, but we need both men and women.' (Sriraman and English, 2009: p.469).

There may be many reasons as to why girls in Iceland have higher mathematics scores than their male peers. Perhaps this may be because of an individual's personality and not their gender. Boys may wish to stay in smaller towns to work in traditional occupations, but this is a personal choice. It is also a personal choice for girls who wish to leave such towns for bigger cities. It can be therefore argued that it is the societies that these students belong to which influence their mathematic achievements and not their gender.

Factors, Attitudes and Perceptions

Childhood Toys

Tobias (1978) believed boys achieve more mathematical success because as children they play with toys such as tractors, lorries and trucks; all of which are mechanical. Kacerguis and Adams (1979) stated that girls, at least two decades before they make vocational decisions, are slightly aware of the limited options available to them. He also notes that toys may be viewed interfering with future roles. Their research showed that the type of toys children played with could influence them and give them certain perceptions about what

job they would like or what job suited them. These researchers are clearly in agreement in thinking toys can affect a child's mathematical success. However, noting the date of the research many things have changed and it should be noted that not all girls play with girl toys such as dolls and they do play with 'boys' toys' as well such as tractors and lorries.

For this study, the Barbie doll will be focused on as Stone (2010) reported that the doll is the number most famous internationally. Also, for the purpose of the study, only Barbie's history with mathematics will be examined. Although very popular, Barbie has created much controversy with parents, feminists and many others since being created in 1959. In 1994 after a feminist outcry shops were forced to take a Barbie doll that said, 'Maths is tough' off the shelf (Davis, 1994 p.5). This meant that young girls where hearing the phrase and digesting the information perhaps subconsciously. From a young age girls are then of the perception, 'Maths is tough'. With toys reinforcing this mentality in young girls, what other results could we sociologically expect? However, only 1.5% of the talking Barbie said the phrase (Mattel, 1992). This means that Davis cannot be quoted as a reliable source as only a small number of girls would have heard the phrase.

Since the first talking Barbie was released, the doll has come a long way from thinking 'Maths is tough' as her 126th career in 2010 was one of a computer engineer. The idea behind the doll was positive meaning that little girls now are seeing mathematics and related careers in a positive light. However, the positive outlook on Computer Engineer Barbie changed in 2013 when the book Barbie: I Can Be a Computer Engineer was released. The book was aimed at young girls who may have had an interest in STEM careers which sounds positive, but it is the actual text that is deemed as offensive and sexist.

The story consists of Barbie who has an idea of a computer game which teaches girls about puppies but it is her friends Steven and Brian who actually do the work and programming of the game. In the book Barbie is quoted "I'm only creating the ideas…"I'll need Steven's and Brian's help to turn it into a real game!" (p.5). In only three years (2010-2013) Computer Engineer Barbie went from a positive role model to young girls to one that depended on men to do the science behind a computer game. Barbie tries to help build the software needed for the game to work, but it results in her giving the laptop a virus, which Steven and Brian need to fix. Telling pre-teen girls that they can't be computer engineers without the help of male friends is dangerous.

Parents As Role Models

Research has explored the impact of parents' and teachers' expectancies and attributions on children's math attitudes and achievement. How a child's parent views mathematics can determine the child's perception of the subject. Goodman and Gregg (2010) reported that parental expectations have a role to play in their child's attainment. They also propose that parental expectations are linked to parental involvement. They are stating that the higher a parent's expectation for their child, the more they will be involved with their school life and homework to get them to where they want them to be. Pisa (2012) also agreed with this declaring that students whose parents have high expectations for them tend to have more perseverance, greater motivation to learn mathematics, and more confidence in their own ability than students whose parents hold less ambitious expectations for them. However, this is not always the case. A parent can have high expectations for their child but they may be unable to help them. It is unfair to class all parents together

in this context. With that said, parents are becoming more involved with their child's school life.

A survey carried out by the Department for Children, Schools and Families in 2007 found that 51% of parents felt very involved compared to 29% in 2001 and 38% in 2004. 92% of parents in the 2007 study felt 'fairly' involved. This suggests that the need to be more involved with a child's school life is increasing and that more parents are seeing it as essential obligation.

Studies propose that children as young as 3 are susceptible to gender stereotypes in mathematics (Ambady et al., 2001) and this is more prevalent in girls (Ramirez et al., 2011). Since 3 year olds are too young for school, the research suggests that the children learn these gender stereotypes from their parents. Parents of young boys expect their sons to develop their mathematical skills quicker than those parents of young girls (Knabe and Miller, 1991). Parents of older children believe that their daughters must work harder to gain good mathematics grades and the parents of older boys place higher emphasis on the importance of mathematics. This will affect girls in a different manner than boys. If boys believe that mathematics is very important and girls do not, boys will try harder to gain high mathematics exam results. It is evident that these parental attitudes and perceptions are predictive of their children's mathematical attainment and ability (Tiedemann, 2000).

Raymond and Benbow (1986) state that mothers are more likely to be involved with their child's work if they are more verbally talented and that fathers are more likely to be involved if their child is more mathematically talented. This research supports the judgement that mathematics is generally a male subject. Their research has been used many times and more recently by Bjorklund (2011) suggesting that their research is still relevant and correct. Research suggests

that fathers are more likely to be involved with specific subjects such as mathematics and physical education (Goldman, 2005).

It was reported that only one-in-twenty British adults could correctly answer 10 mathematics questions suitable for children under the age of 11 in a test carried out by Pearson, who created PISA (Paton, 2013). This shows that if a parent fails to answer mathematics questions suitable for primary school children, they will find it difficult to help them with secondary school mathematics. Some children may need extra support with their mathematics and without the help of their parents, they may perhaps struggle. 2,000 parents took part in the study. Whilst one-in-twenty seems a drastically low number, the number of parents in the study is not substantial. The ratio would be perhaps less radical if more parents took part in the study.

Teacher-Student Interaction

Research by Sadker and colleagues (1991) outlined how important teacher-student interaction is. They described studies showing that teachers interact more with boys who succeed academically rather than girls who also succeed academically (Sadker et al.,1991 page 298). Overall, their research showed that teachers tended to interact more with boys than girls. "The preponderance of study findings at all educational levels indicates that males are both given, and through their behaviours attract, a higher number of teacher interactions" (Sadker, et al.,1991: p.298). Their research found that teachers gave more detailed comments to students who were boys rather than girls in teacher-student feedback. This suggests that by boys getting more detailed comments, girls may feel that they aren't as worthy as the boys and that the teacher feels less inclined and devoted to them compared to the boys and this can lead to the girls feeling negatively towards mathematics. Knowing that the teacher gives more detailed responses to the boys may knock girls' confidence leading to lack of

motivation. Sadker and colleagues state that, "Females have been reported as entering learning situations with lower expectations of success and with a lack of self-confidence in their ability to accomplish a task" (Sadker, et al., 1991, p. 302).

Dee (2007) finds that both boys and girls are adversely affected when taught by a female maths teacher. A study conducted by Beilock (2010) suggested that female teachers who are anxious of their maths skills pass on their insecurities to their female students, but not the male students. According to the study female students adapt the same anxious mentality of the subject in a similar way to their teacher. The less mathematical confidence a female teacher has, the less her female students will have. On the other hand, Carrell, Page, and West (2010) found that girls, particularly those at the top of the distribution, perform better in mathematics and science when taught by a female professor, with no corresponding effect for boys. This research suggests that teachers treat boys and girls differently. They tend to spend more time teaching boys math then girls (Leinhard, Sewald and Engel, 1979; Sadker and Sadker, 1994) and they are more likely to give boys more responsibility within the classroom with such things like projects (Khale and Lakes, 1983, Wilkinson and Marrett, 1985). Within the classroom teachers will accept more shouting out from boys than girls. Girls are often reprimanded for calling out answers when they are not asked although boys are eight times more likely to shout out answers than girls with the teacher answering them and reinforcing their behaviour (Sadker and Sadker, 1994).

Criticism may help a student think about their work and enables them to try harder. In the classroom boys receive more criticism than girls (Eccles and Blumenfeld, 1985). However criticism can have one to two impacts. Boys who receive criticism may work harder to get a higher grade or get their work to a better standard as they may

believe that their teacher has high expectations for them or it may lower their confidence if their work is continually criticised. Girls who don't receive criticism may believe that their work is at a good standard that their teacher is happy with and this can give them more confidence when they see others' work being critiqued. To conclude, girls who rarely receive criticism from their mathematics teacher may start believing that their teacher is not giving them enough support and that they are always concerned with how well someone else (likely to be a boy) is doing. This can have a negative effect and the standard of the girls work may fall.

Single-Sex Schooling

Evidence, although mixed, suggests that girls who attend single-sex schools in Britain and the USA do better in and maintain more interest and motivation in mathematics (Tidball and Kistiakowsky 1976; Delamon, 1980; Lee and Bryk, 1986; Hamilton, 1987). Riordan (1985) found a significant advantage to single-sex education for girls but not for boys. Girls who attend single-sex schools are also more likely than girls who attend co-educational schools to take on maths in higher education and further education e.g. university. They are also more likely to enter non-traditional careers which are mathematics or science related (Eccles, 1986). GCSE and A-level examination scores in mathematics are higher for girls in single-sex schools compared to girls in a mixed gender secondary school. Likewise Bryk et al. (1993) found positive effects for girls' academic achievement as well as for social and personal development outcomes in girls' schools. This evidence however is that of over 20 years and more recent research has opposing views to single-sex schooling suggesting changes have been made in the way education is conducted.

Beaman et al. (2006) states that in these studies, little attention has

been given to non-academic outcomes. A concern of co-educational schools is that boys dominate the classroom and gain more attention from teachers; single-sex schools eliminate this problem. Billger (2009) argues that much of the effect of single-sex schooling among private schools adds to students already likely to succeed and concludes that overall her results "do not provide a ringing endorsement of single-sex education." However, other leading academics said the research was more conflicting. Alan Smithers, director of education at Buckingham University, stated that the variable relating to exam success are pupil characteristics, social background and the quality of the teacher. He mentioned that gender has little impact in the classroom (Curtis, 2009). Sax (2005) states that boys generally learn algebra better when they use numbers to help them learn, while girls learn algebra better when problems are presented as a word-based problem. In this case, single-sex schools where the teaching is more tailored to these differences would be better for girls and boys. Yet, Halpern et al. (2007) claim that there is no evidence to suggest that differences in brain functions cause boys and girls to learn differently and they maintain that this is not a valid reason for single-sex schooling.

The Good Schools Guide (cited in Curtis, 2009) stated that between 2005 and 2007, 71,286 girls from single-sex schools sat GCSEs and on average exceeded expectations from their predicted grades using their end of primary SATS results. In comparison, 129,388 girls from mixed-sex schools did worse than expected. However, this may not amount to anything significant as there are more girls in mixed-sex schools than in single-sex schools. Halpern et al. (2011) argue that there is currently no well-designed research proving that single-sex schooling improves a student's academic achievement. They quote Smithers and Robinson (2006) who declared that, "the paradox of single-sex and co-education is that the beliefs are so strong and the evidence so weak."

Policy makers and scholars have aggressively disputed over what school setting is better; single-sex schools or mixed-sex. However, as time has progressed research has shown that there is little to no evidence proving single-sex schooling is better for girls than co-educational schooling. More recent research finds fault in older studies, proving them unreliable, showing that times are changing (Halpern et al., 2011; Behrman et al., 2013; Jackson, 2013). These studies have concentrated on the academic outcomes of the pupils and have found the effects to be unclear. Recent evidence suggests that there is no considerable difference in attainment between single and co-educational schools. However that is in general, in relation to mathematics, the evidence points to girls doing better in mathematics in single-sex schools. This means that if they are enjoying mathematics and doing well they may wish to continue their mathematic education to higher education, or perhaps further. It is possible that girls in a single-sex school will see mathematics as a potential career option for the future as they will not recognise the subject as masculine.

The Impact on Girls' Attainment

GCSEs

STEM Subjects	2005			2009		
	Girls (thousands)	Boys (thousands)	Girls (%)	Girls (thousands)	Boys (thousands)	Girls (%)
Design & Technology	184.6	212.1	46.5	136.4	169.4	44.6
ICT	44.7	58.7	43.2	32.9	40.6	44.7
Mathematics	374.9	366.5	50.6	379.7	375.1	50.3
Mathematics (additional)	1.5	1.7	46.8	8.9	9.9	47.2
Science	45.1	44.3	50.4	248.8	244.7	50.4
Biology	24.8	31.8	43.8	47.5	53.4	47.1
Chemistry	22.5	31.0	42.0	41.7	50.6	45.2
Physics	21.4	31.2	40.7	40.3	50.9	44.2
Statistics	24.3	27.2	47.2	37.4	40.6	48.0
Other Sciences	5.2	4.6	53.0	4.9	5.5	47.0
Other Technology	0.1	1.0	10.3	0.1	1.2	9.1

(UK Resource Centre Statistics Guide, 2010)

This table shows that there has been an increase in girls entering a mathematics GCSE exam since 2005. However, there has also been an increase in the number of boys taking the exam, so much so that despite more girls being entered for the exam the percentage of girls being entered overall has decreased. Between 2005 and 2009 there was a rapid increase in the uptake of additional mathematics as the table shows. Almost 6 times more girls were entered for the exam in 2009 than in 2005. This showed that over the final years, girls are becoming increasingly interested in mathematics as they have chosen to do additional mathematics, a subject which is not compulsory. According to the guide, in 2009, girls were almost as likely as boys to enter for exams in STEM GCSEs. In 2009, nearly 1.2 million exam entries in STEM subjects were made by girls and just over 1.2 million by boys, with girls accounting for 48.8 per cent of all STEM subject entries.

The graph below from the Department of Education and Skills (2007 p.20) shows the difference in boys' and girls' mathematical achievement from 1952-2006.

Figure 3-11 Maths O-level/GCSE Time Series: Attainment by Gender (1951–2006)
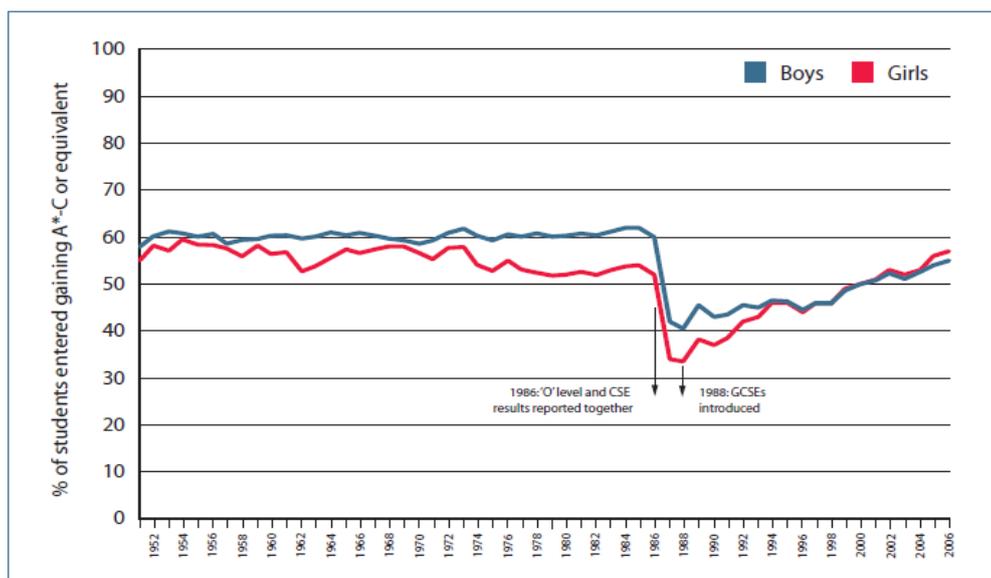
Source: Department for Education's Statistics of Education. See 'Notes on Time Series Charts and Tables' for further information

From the graph it is clear to see that from 1952-1994 boys have always achieved higher grades than their female peers. From 1994 the gap decreased and became very narrow, non-existent at times. Since 2002, the graph shows that girls have started to do better than the boys, however the gap remains quite narrow. Although it seems that the girls have started to do better, there is still concern for girls' attainment within the subject. The above graph suggests girls started to overtake boys in their mathematics scores, but the information provided only reaches 2006; the year when coursework was scrapped from GCSE mathematics. When this happened, girls' mathematics scores fell behind boys' scores once again in the years that followed. To show the drop in girls' mathematic attainment the following table has been constructed using mathematics GCSE results from students all over the United Kingdom. The statistics are provided by the Joint Council for Education (2015).

Year	% of A*-C Boys	% of A*-C Girls	% of A* Boys	% of A* Girls
2007	54.7	55.9	4.0	4.0
2008	55.8	56.8	4.4	4.8
2009	57.6	56.8	4.8	4.5
2010	58.6	58.3	5.1	4.9
2011	58.9	58.6	5.3	5.2
2012	58.8	57.9	5.7	5.3
2013	55.1	51.9	4.6	3.9
2014	63.1	63.0	5.8	4.9

From the table it is clear to see that girls out-performed boys in 2007 and 2008. Then from 2009, boys began to do better and have done

so since. The size of the gender gap fluctuates each year, with the largest gap being in 2012 with a difference of 0.9% between the genders. This, however, is not a substantial difference. The boys may be ahead, but girls are not far behind. With just 0.1% separating the genders in 2014, it would be wrong to say with certainty that boys will be ahead again in 2015.

Further & Higher Education

Watt (2012) states that male adolescents are more likely than female adolescents to aspire to math-related careers. The main issue is that fewer girls are continuing their mathematics education beyond GCSEs. Researchers have studied the issue of gender in mathematics for decades. The National Council for Teachers of Mathematics released many articles and publications to try to address this issue. For example, in July 2010, they released a journal called Research Commentary: Toward Clarifying the Meanings of Gender in Mathematics Education Research (NCTM, 2010). As students' progress through secondary school they are given more freedom of which subjects to study and due to this a lot of students chose to drop mathematics (Meece, 2006). The following table from Department of Education and Skills (2007 p.20), shows the most popular A-Levels by gender from 1956-2006. It is clear from this that boys have always been in favour of studying mathematics at Further Education Level with maths only being in the girls top 5 choices twice.

Figure 4-2 Ten Most Popular A-Levels by Gender (in Rank Order) Over the Last 60 Years

Rank	1956		1966		1976		1985		1996		2006	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	Physics	English Literature	Physics	English Literature	Physics	English	Pure & Applied Maths	English	Maths	English	Maths	English
2	Maths	French	Chemistry	French	Pure & Applied Maths	History	Physics	Biology	General Studies	Social Studies	General Studies	Psychology
3	Chemistry	History	Pure & Applied Maths	History	Economics	French	Chemistry	General Studies	English	General Studies	English	General Studies
4	English Literature	Geography	English Literature	Geography	Chemistry	Biology	Economics	Pure & Applied Maths	Social Studies	Biological Studies	History	Biological Sciences
5	History	Chemistry	History	Art	English	Geography	General Studies	History	Physics	Maths	Biological Sciences	Art and Design
6	French	Physics	Geography	Chemistry	Geography	Art	Geography	Chemistry	Geography	History	Physics	History
7	Geography	Latin	Economics	Physics	General Studies	General Studies	English	Art	Chemistry	Art & Design	Business Studies	Maths
8	Applied Maths & Mechanics	Maths	Pure Maths	Biology	History	Chemistry	Biology	French	Biological Sciences	Geography	Chemistry	Sociology
9	Latin	Zoology	French	German	Biology	Sociology	History	Economics	History	French	Geography	Chemistry
10	Biology	Art	Applied Maths	Religious Knowledge	Pure Maths	Economics	Art	Geography	Business Studies	Chemistry	Physical Education	Media/Film/Television Studies

Note: Shaded areas indicate subjects which are only in top 10 for one of the genders for one particular year.
*1985 rather than 1986 chosen as full subject data is not available for 1986
Source: Department for Education's Statistics of Education. See 'Notes on Time series Charts and Tables' for further information

In the UK, 38% of students studying mathematics in higher education in 2008/9 were female (Higher Education Statistics Agency 2011). In the academic year 2010/11, 43% women received mathematics degrees, either undergraduate or postgraduate, an increase of 5% from 2008. Also in 2011, only 35% of mathematical postgraduate degrees were obtained by women (UK Statistics. 2012). The number of women gaining degrees in mathematics rose by 27% between 2008 and 2011. However, the increase for males was greater than females (HESA, 2012). It is important to focus on the rising numbers of women mathematics undergraduates, master and doctorate students. As numbers are increasing, although slowly, should be an indicator that girls are now more open to mathematics than in the past as they are willing to study this subject to the highest of levels. Perhaps initiatives are now working in the United Kingdom but more needs to be done to increase the numbers at a faster rate.

Herzig (2004) found that girls in university leave mathematics courses due to a lack of role models and support. She states the girls in mathematics courses feel isolated and that when they reach the stage of undertaking a research project they are not supported by their professors and they feel as if their professor is not assured of their ability to do well. Of course, this won't always be the case; some girls will be supported by their professors throughout university.

Some girls may leave mathematics courses if they find them too difficult regardless of how much support they receive.

Rodd and Bartholomew (2006) suggest that women participate differently in university classrooms than men. Through observations, they noted that around one third of women remain 'invisible' in the class and that they are less likely to participate or be noticed as a result of trying to preserve a feminine identity within a masculine discipline. To support this statement, they recalled classroom incidents including: 'the woman's answer that was not heard by the man who was giving the lecture; [and] a man who was described by other students as the 'best student in the year' though in fact the best result was achieved by a woman who remained silent when hearing the conversation' (p. 37).

Such observations can be supported by larger-scale studies. Soloman et al. (2011) found that men have a more positive relationship with their tutors than women. However, these observations may not reflect systematic gender differences in a lecture. Indeed, Rodd and Bartholomew (2006) notes that not all of the men in their study contributed to discussions in class just as not all of the women failed to take part. This could suggest that gender is not a factor, but perhaps personality.

Inglis, Palipana, Trenholm and Ward (2011) found that male undergraduates are more likely to go online to get information from lectures than females. However, there is a considerable flaw in their study. The majority of women in their study were studying mathematics, whereas the majority of men were studying engineering. Perhaps the difference is due to what course an individual is studying, rather than their gender. The evidence of proposes that gender may be a predictor of study behaviours in

undergraduate mathematics, but the extent of this is not clear and it needs to be clarified.

STEM UK

Studies propose that extensive gender dissimilarities in career-related self-determinants exist. Talented boys often have the investigative nature of scientists in their career aspiration choices whilst talented girls are more comfortable with the idealism and imagination that is associated with writers and artists (McGinn, 1982; Shamai, 1996). Boys also like careers that involve realistic themes such as working with objects, working outdoors and having a need for structure while girls want to work on a social level; having an interest in people and the helping professions (Mullis et al., 1998).

Over the last two decades girls have made huge progress academically in mathematics, but this is not always reflected in their career aspirations or future careers. According to Women in Science and Engineering (WISE) (2010), only 5.3% of all working women within the UK are working in STEM related careers. This is a drastically low number when compared to 31.3% of all working men have an occupation in a STEM field. The report stated that 100,000 women who have a degree in a STEM subject are unemployed or economically inactive. This means that the United Kingdom is losing out on vital STEM employees with untapped potential. In Scotland, 27% of women in STEM are working in the field they were qualified in compared to 52% of men (UKRC, 2009). Evidence from the Department for Business, Innovation and Skills (2011) shows that the most likely reason STEM graduates chose employment in other sectors is because other fields are 'seen to be of more interest'. This is worrying for the United Kingdom as some women are being discouraged from pursuing STEM careers and the fact that there is

such a gap between the amount of women and men working within the STEM sector.

On the 14th January 2015 a meeting was held by the UK All Party Parliamentary Group on Sex Equality to discuss vocational education for young women in the UK, with STEM education being a main issue. It was reported at the meeting that 10% of the UK's workforce is in construction but only 10% of the construction workforce are women, with only 2% of construction applications coming from women. In the conclusion of the report it was stated that schools need more funding to get students, in particularly girls into STEM related careers. Office of National Statistics (2010) reported that the employment rate of women STEM graduates is 80.2% whereas male STEM graduates have an employment rate of 85.3%. Male graduates who entered STEM occupations are more likely to enter at higher levels than female graduates. They are also more likely to take up management positions (UKRC 2010). Within the United Kingdom, women represent only 7.6% of all people who have a controlling interest or own a company in the STEM sector. Within non-STEM industries, women represent 41.2% of people who have a controlling interest or own a company.

In 2013, David Cameron stated that, "if we are going to succeed as a country then we need to train more scientists and more engineers" (Campaign for Science and Engineering, 2014 p.2). It is estimated that the United Kingdom loses approximately 40,000 new STEM skilled workers (Social Market Foundation, 2013). The number of graduates needs to double if the United Kingdom is to meet demands. This challenge will not be possible without improving the diversity in STEM (Engineering UK 2013). In 2007 The Sainsbury Review stated that better careers advice is needed in schools to raise the awareness of STEM careers. Since 2012, schools in England have had the responsibility of providing impartial careers

advice to pupils in year 8 and 13. At the same time, careers education is no longer compulsory and has been removed from the curriculum. These could be vital changes in the careers landscape. Young people need to make informed choices about their future careers. Ofsted have recently reported that approximately three quarters of the school they visited were not fulfilling their duty to provide impartial careers advice (Ofsted, 2013). The government should rethink its policy on careers. The current system leaves STEM subjects vulnerable as girls already think they are not for them. Careers education should be a requirement in both primary and secondary schools.

In relation to mathematics, shocking figures were released by the Women in Mathematics Committee of London Mathematical Society in 2013 stating that 94% of British mathematics professors are male. Girls make up 40% of A-Level mathematics students and 42% of students studying mathematics at an undergraduate level. After degree level, the figures begin to fall further with 19% studying mathematics at doctorate level, 29% becoming researchers and 6% gaining a professorship. The 2010 International Review of Mathematical Sciences effectively shamed the United Kingdom's record of women in mathematics at university level. "Compared to other countries, the overall proportion of women is strikingly small," noted the report, warning that the low numbers of women will be damaging to the country's future research excellence.

Conclusion

Mathematics is undoubtedly an important life skill, and the stereotype that girls are 'not good at maths' can limit girls' opportunities. The society we live in isn't neutral, not only is society gendered but it is reflexive; what we know effects what we do. If we know education is gendered we then can take action to alter that. It is almost impossible

to see as it so deeply embedded into our everyday life. Before we can begin to pull apart this issue we must detect the unconscious prejudices that take place in our society, homes, classrooms and workplaces. A society where individuals are empowered and free from stereotypes and expectations is better not only for girls but also for boys. Young girls are receiving 'messages' about who they should be and the options available to them. These 'messages' are crucial. 'Girls' toys' that value physical appearance over intelligence is an example of how women are diminished within our society. Such stereotypes leave girls less likely to say 'yes' to mathematics and STEM subjects and careers. Stereotypes and bias undermine real choice; girls do not have to change or adapt to mathematics.

Gender is only one aspect of the mathematics stereotype and so by focusing on diminishing the stereotype will have positive implications. Initiatives that seek to 'encourage' girls into mathematics and STEM are misplaced. They propose that girls should change but the responsibility should lay with those who have influence in our society and education system. Girls are treated differently in the classroom and they are given considerably different careers advice which is far from actively inclusive. This separation is without a doubt a fundamental roadblock. The needs and realities of girls must be embedded into all STEM subjects throughout their school life.

The gender issue in mathematics is about not competence, but confidence. With most of the evidence pointing to why boys succeed more in mathematics, girls' confidence is low. Knowing that researchers have come to the conclusion that there are factors which hinder a girl's mathematical achievement will only lessen their confidence. This feeds a vicious cycle and makes it difficult for any girl interested in studying mathematics. Knowing that girls have lower levels of confidence in their mathematics abilities, schools, teachers and parents should find or produce more effective ways of enhancing

girls' beliefs in their skills, both at school and at home. In the short term, changing the mind-sets of girls may be by making mathematics more likeable, excluding the gender stereotypes in schoolbooks, endorsing female role models and using different learning styles and resources that appeal to girls. The solution is to make mathematics inclusive, by showing that it can be creative, imaginative and that it can offer a wealth of opportunities to those that study it.

As shown in the study, there are some countries where girls are doing better in mathematics than their male peers. The PISA results show that it is possible for girls to perform as well as boys, if not better. This is a clear signal to policy makers that gender is not connected to mathematic ability and that more should be done to raise girls' level of confidence and attainment in mathematics. Furthermore, the fact that the size of the gender gap differs considerably across countries proposes that strengths and weaknesses in mathematics are not characteristic but are developed and often socially reinforced. This proves that boys and girls are not 'wired' differently. It shows that it is the environment and society that students belong to that affects them most. The focus should not be on the factors that influence a girl's mathematical ability and competence but on the reasons as to why society is enabling this issue and how society can change. In the long term, reducing the gender gap in mathematics will entail a group effort of parents, teachers and society as a whole to combat the stereotype notions of what boys and girls can do well, what they enjoy doing and what they believe they can/cannot accomplish. Perhaps once the focus is shifted onto society rather and off girls, more girls will have the confidence to come forward and study mathematics.

References

Ambady, N., Shih, M., Kim, A., and Pittinsky, T. L. (2001) Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychological Science,* 12, pp.385-390.

Beaman, R., Wheldall, K, and Kemp,C. (2006) Differential teacher attention to boys and girls in the classroom. *Educational Review, 58* (3), pp.339-366.

Beede, D.N., Julian, T.A., Langdon, D, McKittrick, G, Khan, B. and Doms, M.E. (2011) Women in STEM: A Gender Gap to Innovation. [online] Issue Brief No. 04-11.
Available:http://dx.doi.org/10.2139/ssrn.1964782
[Accessed: 8 March 2015]

Behrman, J., Choi, J. and Park, H. (2013) Causal effects of single-sex schools on college attendance: random assignment in Korean high schools. *Demography,* 50 (2), pp.447-469.

Billger, S. (2009) On Reconstructing School Segregation: The Efficacy and Equity of Single-Sex Schooling. *Economics of Education Review*, 28, pp.393-402.

Bryk, A., V. Lee., and Holland, P. (1993) *Catholic Schools and the Common Good.* Cambridge, MA: Harvard University Press.

Campaign for Science and Engineering (2004) *Improving Diversity in STEM.* [online]
Available:
http://sciencecampaign.org.uk/CaSEDiversityinSTEMreport2014.pdf
[Accessed: 24 March 2015]

Campaign for Science and Engineering (n.d.) *CaSE Membership.* [online]
Available: http://sciencecampaign.org.uk/?page_id=3196
[Accessed: 25 March 2015]

CBI. (2014) *The Voice of Business. Engineering Our Future. Stepping up the Urgency on STEM* [online]
Available:http://www.cbi.org.uk/media/2612000/engineering_our_future.pdf
[Accessed: 25 March 2015]

Carrell et al., (2010) Sex and science: How professor gender perpetuates the gender gap. *The Quarterly Journal of Economics,* 125(3*),* pp.1101-1144

Dee, T. S. (2007) Teachers and the gender gaps in student achievement. *Journal of Human Resources,* 42(3), pp.528

Curtis, P. (2009) Girls Do Better Without Boys At School, Study Finds. *The Guardian* [online], 18th March 2009
Available at:
http://www.theguardian.com/education/2009/mar/18/secondary-schools-girls-gcse-results
[Accessed: 28 February 2015]

Delamon, S. (1980) *Sex roles and the school.* London: Methuen

Department for Business, Innovation and Skills (2011) *STEMgraduates in non-STEMjobs.* (BIS Research Paper No 30) [online]
Available: http://www.bis.gov.uk/assets/biscore/further-education-skills/docs/s/11-771-stem-graduates-in-non-stem-jobs.pdf
[Accessed: 24 March 2015]

Department for Children, Schools and Families (2006) *Achievement of 15-year-olds in England: PISA 2006 National Report* (*nfer)* [online]
Available: http://www.nfer.ac.uk/publications/NPC02/NPC02.pdf
[Accessed 23 March 2015]

Department for Children, Schools and Families in (2007) *Parental Involvement in Children's Education* [online]
Available: http://dera.ioe.ac.uk/8605/1/DCSF-RR034.pdf
[Accessed 20 March 2015]

Department for Education and Skills (2004) Next Steps, Longitudinal Study of Young People (LSYPE). Nottingham: DfES

Department for Education and Skills (2007) *Gender and Education: the evidence on pupils in England* [online]
Available:http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/00389-2007BKT-EN.pdf
{Accessed 10 March 2015:

Eccles, J. (1986) Classroom practices and motivation to study maths. *Symposium paper, SERA*, San Francisco April

Eccles, J. and Blumenfeld, P. (1985) *Classroom experiences and student gender: Are there differences and do they matter?* Orlando, FL: Academic Press.

Eccles, J. (2009) Who am I and what am I going to do with my life? Personal and collective identities as motivators of action. *Educational Psychologist,* 44, pp.78–89.

Egelund, N. (2003) PISA Copenhagen 2004. In: Mejding, J. and Roe, A. (eds.) *Northern Lights on PISA 2003: a reflection from the Nordic Countries* [online] p.229-250
Available at:
http://rafhladan.is/bitstream/handle/10802/7971/FULLTEXT01.pdf?sequence=1
[Accessed: 24 Marsh 2015]

Engineering UK (2013) *The State of Engineering* [online]
Available:
http://www.theengineer.co.uk/Journals/2013/08/02/q/s/w/Engineering-UK-2013-Interactive.pdf
[Accessed: 24 March 2015]

Gallagher, A.M. (2005) Gender Differences in Mathematics: and integrative approach. Cambridge: Cambrodge University Press

Goldman, R (2005) *Fathers' Involvement in their Children's Education.* London: National Family and Parenting Institute.

Goodman, A. and Gregg, P. (2010) *Poorer children's educational attainment: how important are attitudes and behaviour?* York: Joseph Rowntree Foundation

Gupta, S., Harris, D. E., Carrier, N. M., and Caron, P. (2006) Predictors of student success in entry-level undergraduate mathematics courses. *College Student Journal,* 40(1), pp.97-108.

Halpern, D. F., Benbow, C.P., Geary, D.C., Gur, R.C., Hyde, J.S. and Gemsbacher, M.A. (2007) The science of sex differences in science and mathematics *Psychological Science in the Public Interest,* 8 (1), pp.1–51

Halpern, D. F., Eliot, L., Bigler, R.S., Fabes, R.A., Hanish, L.D., Hyde, J., Liben, L.S. and Martin, C.L. (2011) The pseudoscience of single-sex schooling. *Science,* 333, pp.1706–1707.

Hamilton, M. (1987) Advances level performance in the sciences in single-sex and co-educational Jamaican schools. In Daniels, J. and Kahle, J. (eds) *Contributions to the fourth GASAT* Conference, 1 Washington D.C: National Science Foundation

Herzig, A. H. (2004). Becoming mathematicians: Women and students of color choosing and leaving doctoral mathematics. *Review of Educational Research,* 74(2), pp.171 -214

HESA. (2012) *Higher Education Student Enrolments And Qualifications Obtained At Higher Education Institutions In The*

United Kingdom For The Academic Year 2010/11. [online]
Cheltenham: HESA
Available:http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=2355&Itemid=161
[Accessed 25 March 2015}

Honigsfeld, A. and Dunn, R. (2003). High school male and female learning-style similarities and differences in diverse nations. *Journal of Educational Research,* 96, pp.195–206.

Inglis, M., Palipana, A., Trenholm, S., and Ward, J. (2011). Individual differences in students' use of optional learning resources. *Journal of Computer Assisted Learning,* 27, pp.490-502.

Jerrim, J. (2011) *England's \plummeting" PISA test scores between 2000 and 2009: Is the performance of our secondary school pupils really in relative decline?* [online]
Available:https://www.ioe.ac.uk/Study_Departments/J_Jerrim_qsswp1109.pdf
[Accessed:23 March 2015]

Joint Council for Education (2015) *Examination Results: GCSEs* [online]
Available: http://www.jcq.org.uk/examination-results/gcses
[Acessed:24 March 2015]

Kacerguis, M. and Adams, G. (1979) Implications of sex typed child rearing practices, Toys and mass media materials in restricting occupational choices of women. *The FamilyCoordinator,* 28(3), pp.369-375.

Kahle, J. and Lakes, M. (1983). The myth of equality in science classrooms. *Journal of Research in Science Teaching*, 20, pp.131-140.

Kreiner, S. (2011) *Is the foundation under PISA solid? A critical look at the scaling model underlying international comparisons of student attainment.* (Research Report 1/11) [online]. Department of Biostatistics: University of Copenhagen.
Available:https://ifsv.sund.ku.dk/biostat/biostat_annualreport/images/c/ca/ResearchReport-2011-1.pdf
[Acessed: 23 March 2015].

Lee, V and Bryk, A (1986). The effects of single-sex secondary schools on student achievement and attitudes. *Journal of Educational Psychology,* 78, pp.381-395

Leinhard, G., Seewald, A.M. and Engle, M. (1979) Learning what's taught: Sex differences in instruction. *Journal of Educational Psychology,* 71 (4), pp.432-439.

McGinn, P. (1982). Verbally gifted youth: Selection and descriptions. In Keating, D. (ed). *Intellectual Talent: Research and Development.* Baltimore: John Hopkins University, p.101-150.

Meece, J. L. (2006). Introduction: Trends in women's employment in the early 21st century. *Educational Research and Evaluation,* 12, pp.297–303

Ministerrad, N. and Roe, A. (2006) *Northern Lights on PISA 2003: A Reflection from the Nordic Countries.* Copenhagen: Norden

Mullis, R., Mullis, A. and Gerwels, D. (1998) Stability of vocational interests among high school students. *Adolescence,* 33 (131), pp.699-707.

National Council of Teachers of Mathematics Commission on Standards for School Mahematics (1989) *Curriculum and evaluation standards for school mathematics.* Reston, VA: NCTM

National Research Council (1989 *Everybody counts: A report to the naion on the future of mathematics education.* Washington DC: National Academy Press

National Council for Teachers of Mathematics (2008) *Research Commentary: Toward Clarifying the Meanings of Gender in Mathematics Education Research* [online]
Available:http://www.nctm.org/publications/article.aspx?id=27738
[Accessed:19 January 2015]

OECD. (2000) *Knowledge and Skills for Life: First Results from the OECD Programme For International Student Assessment (PISA) 2000* [online]
Available:http://www.oecd.org/education/school/programmeforinternationalstudentassessmentpisa/33691596.pdf
[Accessed:23 March 2015]

OECD. (2003) *First Results from PISA 2003* [online]
Available:http://www.oecd.org/edu/school/programmeforinternationalstudentassessmentpisa/34002454.pdf
[Accessed:23 March 2015]

OECD. (2006) *Economic Suvery: Iceland.* Iceland: OECD Publishing.
OECD (2010) *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science (Volume 1)* [online]

Available: http://dx.doi.org/10.1787/9789264091450-en
[Accessed: 23 March 2015]

OECD (2011), "How do girls compare to boys in mathematics skills?" in OECD, *PISA 2009 at a Glance*, [online]
Available:http://dx.doi.org/10.1787/9789264095250-8-en
[Accessed: 23 March 25, 2015]

OECD (2014) *PISA 2012 in Focus: What 15-year-olds Know and What They Can Do With What They Know* [online]
Available:http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf
[Accessed:23 March 2015]

Office of National Statistics (2010). *Annual Population Survey*: April 2009 –March 2010.

Ofsted (2013) *Careers guidance in schools not working well enough* [online]
Available: https://www.gov.uk/government/news/careers-guidance-in-schools-not-working-well-enough
[Accessed: 26 March 26, 2015]

Paton, G. (2013) Parents 'struggling with primary school maths homework'*. The Telegraph* [online], 24th January 2013
Available:http://www.telegraph.co.uk/education/primaryeducation/9820408/Can-you-pass-the-primary-school-maths-test.html
[Accessed: 3rd March 2015]

Ramirez, G., Gunderson, E. A., Levine, S. C., and Beilock, S. L. (2011) *Spatial anxiety relates to spatial skills as a function of workingmemory in children*. Manuscript in preparation

Riordan, C. (1985) Public and Catholic Schooling: The Effects of Gender Context Policy. *American Journal of Education,* 93*,* pp. 518-540.

Rodd, M. and Bartholomew, H. (2006) Invisible and special: Young women's experiences as undergraduate mathematics students. *Gender and Education,* 18, pp.35-50.

Sadker, M. and Sadker, D. (1994). *Failing at fairness: how America's schools cheatgirls.* New York: C. Scribner.

Sadker, M., Sadker, D. and Klein, S. (1991) The issue of gender in elementary and secondary Education. *Review of Research in Education,* 17(1), 269-334.

Sax, L (2005) *Why gender matters.* New York: NY: Doubleday.

Schliecher (2006). In: OECD (2006) *Economic Survey: Iceland.* OECD Publishing.

Science, Technology, Engineering and Mathematics Network (STEMNET) (2015). *3000 schools celebrate STEM CLUBS Week* (2-6 Feb) [online]
Available: http://www.stemnet.org.uk/3000-schools-celebrate-stem-clubs-week-2-6-feb/
[Accessed: 11 March 2015]

Sainsbury Review (2007) *A Race To The Top* [online]
Available:http://www.rsc.org/images/sainsbury_review051007_tcm18-103118.pdf
[Accessed 23 March 2015]

Shamai, S. (1996). Elementary school students' attitudes toward science and their course of studies in high school. *Adolescence,* 31 (123), pp.677-689

Smithers, A. and Robinson, P. (2006). *The paradox of single-sex and co-educational schooling.* Buckingham. UK Carmichael Press

Social Market Foundation (2013) *The STEM Human Capital Crunch* [online]
Available: http://www.smf.co.uk/wp-content/uploads/2013/03/Publication-In-The-Balance-The-STEM-human-capital-crunch.pdf
[Accessed: 24 March 2015]

Solomon, Y., Lawson, D., and Croft, T. (2011). Dealing with 'fragile identities': resistance and refiguring in women mathematics students. *Gender and Education*, 23, pp.565-583.

Sriraman, B. (2008) *International Perspectives on Social Justice in Mathematics Education.* [online]
Available: https://books.google.co.uk/books?id=iduSRIDud-IC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
[Accessed:23 March 2015]

Sriraman, B. and English, L. (2009) *Advances in Mathematics Education. Theories of Mathematics Education: Seeking New Frontiers.* London: Springer Science & Business Media

Stone, T. (2010) *The Good, the Bad and the Barbie.* New York, NY: Viking/Penguin Group.

TES Connect (2014) *Is PISA Fundamentally Flawed?*[online]

Available: https://www.tes.co.uk/article.aspx?storycode=6344672
[Accessed: 23 March 2015]

Tidball, M & Kistiakowsky, V (1976) Baccalaureate origins of
American scientists and scholars, pp.646-652

Tobias, S. (1978) *Overcoming math anxiety*. New York: Norton.

The UKRC (2009) *SET Occupations in Scotland*, 2009.[online]
Available: http://www.theukrc.org/resources/other-ukrc-resourcesb
[Accessed: 24 March 2015]

UKRC (2010) *Women and men in science, engineering and
technology: the UK statistics guide 2010* [online]
Available:http://www.wisecampaign.org.uk/files/useruploads/files/final
_sept_15th_15.42_ukrc_statistics_guide_2010.pdf
[Accessed: 13 March 2015]

UK Statistics (2012) *Women in Science, Technology, Engineering
and Mathematics: from Classroom to Boardroom*. [online]
Available:http://www.wisecampaign.org.uk/files/useruploads/files/wis
e_stats_document_final.pdf
[Accessed: 25 March 2015}

Watt, H. M. G., Shapka, J. D., Morris, Z. A., Durik, A. M., Keating, D.
P., and Eccles, J. S. (2012) Gendered Motivational Processes
Affecting High School Mathematics Participation,
Educational Aspirations, and Career Plans: A Comparison of
Samples from Australia, Canada, and the United States.
Developmental Psychology. Advance online publication.

Wilkinson, L. and Marrett, C. (1985). *Gender influences in classroom
interaction.* Orlando, FL: Academic Press

Your Life Campaign (2014) *Your Life Campaign Report* [online]
Available: http://yourlife.org.uk/wp-
content/uploads/2014/10/YOURLIFE_REPORT-
LRES_FINAL.compressed.pdf
[Accessed: 26 March 2015]

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The role primary schools play in promoting a gender equitable learning environment

This paper will offer an analytical review of a child's understanding of gender, their gender identity, parental influences and the affects gender stereotyping in the media has on children of primary school age. The focus of the paper will then move to the role a school plays in promoting a gender equitable learning environment which has a direct impact on learning and attainment. The gender socialisation that occurs within schools reinforces to boys and girls that they are unequal. Although currently girls are outperforming boys, they are still being socialised within school in ways that aren't gender equitable (Kommer, 2006). The role teachers play in ensuring a gender equitable learning environment will be analysed, focusing on teacher's expectations, teacher's interactions with students and the lack of male teachers in early year's settings. Conclusions will draw upon an alternative view of the impact of single sex schooling, the effect and impact of extra-curricular activities and the role schools play in promoting equality. The limitations of schools in exacting change due to the effects of a hidden curriculum, and a lack of teacher training will be analysed, along with the effects of class and ethnicity on educational attainment.

Byrnes (1978 cited in Arnot, 2002 p.118) defined gender as "The collection of attitudes which society stitches together to clothe boys and girls". At an early age, we begin to define a child as a boy or girl. As a society we not only insist on defining children as a boy or a girl we also insist on children identifying themselves and others as a boy or girl. Thompson's study (1975 cited in Blades, Cowie and Smith, 2003 pg. 216) stated that over three quarters of 2 year olds were

conscious of their gender, which increased to over 90% by the time they reached 3 years old. At this stage their gender identity will have been reached. By the time a children reaches 48 months, gender stability has been achieved. This is the point that children have a realisation that their sex will continue to remain the same.

The family environment is the first influential arena a child enters. A parent's treatment towards sons and daughters contributes to the shaping of a child's gender. This treatment was studied by Kane (2009) who interviewed parents about preferences for their children. Interviewees responded with very traditional images of boys and girls, how they would act and what they would go on to enjoy. This could have a negative impact on children creating a self-fulfilling prophecy as parents only provide the opportunities they felt that children should have. Siblings also play a vital part in shaping a child's gender. McHale (2003) found that children with same sex older siblings were more gender typed, especially boys. There are also external forces which influences a parent's behaviour towards gender including the medical profession, religious beliefs, their own sexuality, their own upbringing and the society and environment in which they reside.

Once a child reaches school age, media influences have become much stronger and children have become more socialised into gender roles that affect their mind set, behaviours and interests. Many academics are troubled by the fact that mass media can deliver a stereotyped image of males and females that could encourage bias. A large number of television shows depict a traditional image of sex roles. A high proportion of media publications over represents men and shows them in parts that are more lively and optimistic while women are portrayed as submissive and in traditional care positions (Kane, 2013). The potential impact these depictions can have are immense. Al Shehab (2008 cited in Kane,

2013 pg. 94) commented "Children may think that in real life males are heroes and females are dependant, submissive and passive". However, Nick Lee (2001) proposed that the creation of television was a constructive outcome, and was influential in allowing children to be seen as active social agents. David Kommer (2006) suggested that teaching media literacy in schools within an early years setting and beyond would help break some of the gender stereotypes portrayed within the media.

The school environment and teachers have a vital role to play in the critical early years of a child's life. Gorard (2002 as cited in Chen, 2007 pg.5) suggests that when a child starts school their understanding of gender roles becomes fixed. This understanding is reinforced through interactions within school. At this key stage children begin to identify certain activities and capabilities as masculine and feminine. This awareness could prevent children from engaging in activities that are not characteristic of their gender. A child's gender identity can be shaped whilst they progress through our education system. Walker and Milton (2006 cited in Chen, 2007 pg. 4) commented "Teachers play key roles as sexuality educators of primary school age children in the U.K.".

It has been suggested by Klein (1989) that gender bias is embedded within schools in lessons, textbooks and teacher interactions with students. This gender bias forms part of the hidden curriculum. Hartley and Sutton (2010 cited in Kane, 2013 pg.72) studied the perceptions of children of adult expectations for the classroom performance of boys and girls. They concluded that higher teacher expectations of girls reflect gender stereotypes that heavily influence school outcomes. They become self-fulfilling prophecies that result in girls displaying more cooperative behaviour and achieving higher results. Girls rise to teacher expectations whilst boys can become

disengaged due to low teacher expectations resulting in them making less effort and attaining lower results.

A pupil's gender plays a significant role in an educator's selection of constructive and negative responses within the learning environment, this could subconsciously reminds pupils of the difference between each gender. Ke Chen (2007) carried out a study to discover if imbalances occur in a primary classroom environment. This research found that teachers didn't treat boys and girls differently, although, girls generally received more positive responses, which could be seen as reinforcing gender stereotypes. The study demonstrated that whilst boys are receiving less praise and receiving more critiques it could be pushing them into a state of rebellion. Whilst praise and encouragement is boosting girl's performance and confidence, it could be having the reverse effect on boys thereby reversing the traditional gender attainment gap in education which saw males outperforming females. One suggestion put forward by Gilbert (2001) was for teachers to adopt a more gender equitable method of engaging with children. Gilbert suggested teachers write children's names on lolly sticks and select at random a child's name to call upon or open discussions with. This method could go some way to eradicating the gender bias Chen (2007) discusses in his study as the random selection would mean more boys would be chosen than in normal circumstances, to respond to the teacher and therefore increasing their chances of a positive response. Teachers must ensure their learner is responded to appropriately and strategies adopted to allow learners to orally express themselves in order to gain a positive teacher response.

Single sex schooling has been offered as an alternative to mixed sex schooling to enhance a child's learning and allow children to excel academically within a learning environment more conducive to their sex. But does it reinforce gendered divisions? Jackson (2002) would

say yes. The study Jackson undertook found that positive outcomes could only be seen in girls in a single sex learning environment. Boy's experiences did not challenge the macho male beliefs and Jackson argued that they actually aggravated them. Lamb (2009) highlighted the effect and impact extra-curricular activities had on young people. Those who participated were far more likely to challenge sexual references than those who did not take part. The creation of a strong curriculum which had extra-curricular activities embedded within it could enhance a school's ability to promote gender equality.

It has been suggested that to take a step closer to ensuring our children are receiving positive gender messages whilst in primary school more male teachers need to be recruited to early years settings. This would ensure young boys had positive male role models who can lead and inspire them. The Teacher Training Agency announced plans in 2002 to actively recruit male primary teachers in order for young children to have access to more male role models (TTA 2000 as cited in Jones, 2007 pg. 1). This is still a plan that is debated widely as the number of male primary teachers is still very low compared with the number of female primary teachers. The TTA reported in 2012 that there had been a 50% increase in the number of male trainee primary teachers over a four year period. However, their statistics also showed that there was 3743 male teachers registered, compared with 15,750 female teachers. 18% of all registered teachers were male. Relatively low numbers even taking into consideration the strides the agency has made to boost numbers. Jones (2007) undertook a study interviewing female teachers and asked them to explain their perception of male primary teachers. Some suggested it is a woman's job, and felt society took a negative view of males working in the environment, and the role was not manly enough for a male. Some even went as far as to say that there was concerns around paedophilia. Martino

and Beryl (2003 as cited in Jones, 2007 pg. 5) used this reason as an explanation for the lack of male primary teachers. Men do not want to enter a profession where they could have accusations of paedophilia aimed at them.

In conclusion, the strong overarching view of this paper would suggest that schools play a significant part in shaping a child's gender identity and this has been demonstrated by the ways in which teachers' attitudes and expectations of children can encourage gender bias. Schools have the ability to support students and foster an environment of tolerance and respect. They also have the ability to challenge gender inequalities and promote equality through a strong, bias free curriculum, high teaching standards coupled with gender equality training for all staff involved with young children. This could be bolstered by rigorous policy intervention from government. However, it is important to recognise that although gender has a significant impact on equality of educational opportunity and attainment, Haralambos (2008) suggested class and ethnicity has a much bigger effect. Despite government efforts, educational attainment within class differences remains relatively unchanged.

References

Arnot, M. (2002) *Reproducing Gender: Critical Essays on Educational Theory and Feminist Politics*. London: RoutledgeFalmer.

Blades, M., Cowie, H. and Smith, P. (2003) *Understanding Children's Development.* Oxford: Blackwell.

Chen, L. (2007) *A study of primary classroom interactions: is there still gender imbalance in the primary classroom?* [online] Available at: http://research.ncl.ac.uk/ARECLS/volume_4/CHEN.pdf [Accessed: 19 March 2015].

Gilbert, L. and Gilbert, M (2002) Challenges in Implementing Strategies for Gender Aware Teaching. *Mathematics Teaching in the Middle School, 9*(7), pp.522 – 527.

Haralambos, M. and Holborn, M. (2008) *Sociology: themes and perspectives.* 7th edn. London: HarperCollins.

Jackson, C. (2002) Can Single-sex Classes in Co-educational Schools Enhance the Learning Experiences of Girls and/or Boys? An Exploration of Pupils' Perceptions, *British Educational Research Journal, 28*(1), pp.37–48.

Jones, D. (2007) Millennium man: constructing identities of male teachers in early year's contexts. *Educational Review, 59*(2), pp.179–194.

Klein, H. (1989) *Handbook for achieving sex equity through education.* Baltimore : Johns Hopkins University Press.

Kane, E. W. (2009) "I wanted a soul mate": Gendered Anticipation and Frameworks of Accountability in Parents' Preferences for Sons and Daughters. *Symbolic Interaction, 32*(4), pp.372–389.

Kane, E. W. (2013) *Rethinking Gender and Sexuality in Childhood.* London: Continuum International Publishing Group Ltd.

Kommer, D. (2006) Boys and Girls Together: A Case for Creating Gender-Friendly Middle School Classrooms. *Journal of Educational Strategies, 79*(6), pp.247–251.

Lamb, L. M., Bigler, R. S., Liben, L. S. and Green, V. A. (2009) Teaching Children to Confront Peers' Sexist Remarks: Implications for Theories of Gender Development and Educational Practice. *Sex Roles, 61*(5-6), pp.361–382.

Lee, N. and May, T. (2001) *Childhood and Society: Growing Up in an Age of Uncertainty.* Cambridge: Open University Press.

McHale, S. M., Crouter, A. C. and Whiteman, S. D. (2003) 'The Family Contexts of Gender Development in Childhood and Adolescence'. *Social Development, 12*(1), pp.125–148.

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An autobiographical account of my time in education

During my time in education there were several changes that affected not just myself but also my peers in my year group at school. Some of the changes that were implemented have major influences on other legislation that was also implemented. For example the examinations especially the Standardised Assessment Tasks, this was until they were abolished in 2009. Poulson (1998) gives an example of this by showing that the national curriculum SATS were influenced very heavily by the national curriculum. This statement also explains the constant focus and importance of the national curriculum throughout all stages of my compulsory education. I started my education in Wales at St. Mary's which was a church of Wales school. On moving to Wigan in 1999 I continued my studies at St. James' Church of England school. After primary school I furthered my education by moving to Cansfield High School Specialist Language College in Ashton-in-Makerfield. However some of the radical changes in schools that were introduced were not related to examinations but rather the health of pupils; for example the introduction of healthy school meals.
Meals in schools.

School meals have played a role within all my education, especially at an early age in primary school. This is because I received free meals before moving to packed lunches. Free school meals was an initiative first introduced way back in 1879, where Mr. Herbert Birley in Manchester began to provide 'free school meals' for destitute and children with poor nutrition (Gillard, 2003; Evans and Harper, 2009; and Hughes, 2009). A similar scheme was also set up in Bradford by

school board members Fred Jowett and Margaret McMillan (Gillard, 2003).Gillard (2003) explains that McMillan lobbied for government legislation to encourage all education authorities to provide school meals". LJMU Education Studies (2011) explains that Disraeli and his Conservative party would argue with McMillan, due to them working with education authorities to provide school meals.

However it was not until 1906 that school meals were introduced by the Liberal party who were content on reform. In 1906 there was the newly formed Independent Labour Party, where in Bradford the first Independent Labour MP was elected. The MP who was elected was Fred Jowett; the same Fred Jowett who implemented the scheme in Bradford. The main reason this legislation was introduced is that they were concerned with the number of children not properly fed and as an investigation showed in Bradford there were 2,574 cases of underfed children (Brockway, 1946) and also the general health of army recruits in particular (Ensemble Project and LJMU Education Studies, 2011; Provision of Meals Act, 1906). Even though the legislation was passed in 1906, Jowett with the help of Margaret McMillan was able to in 1904 make Bradford the first local authority to serve free school meals (Gillard; 2003; Haworth and Hayter, 2007; Vernon, 2007 and Duthel, 2011). Gillard (2003) does show however the 1906 act only allowed the possibility for local authorities to provide school meals but it did not require them to do so.

The 1906 Act was the foundation that other important legislations built on with regards to the food provision for school children. The next major legislation in terms of school meal provision was the 1921 Free School Meals Act. The 1921 Act played a major part in education as according to Education England (2011) as not only did it introduce free school meals it also increased the school leaving age to 14. However the 1921 Act caused massive controversy since the Liberal and Conservative coalition under David Lloyd George

(Ensemble Project and LJMU Education Studies, 2011) tried to introduce new circumstances that the students had to meet in order to be eligible for free school meals; these new rules were however reversed due to the miner's strike of 1921 (Gillard, 2003).

Free school meals have been a very heated and controversial topic ever since. As Vernon (2007) shows there was a debate in 1944 three years after schools were obliged to provide a school meals service. The topic of debate was about which pupils get their meals for free and which pay for half their meal; only 12% of the school children who were eating school meals did not have to pay (Vernon, 2007). New Labour under Tony Blair realised that the children in poverty needed a helping hand. In 2001 there was only 3,393 pupils recognised to be eligible for free school meals in grammar schools and a massive 506,283 more pupils in other maintained secondary schools (Jones, 2001). However with New Labour tackling the children in poverty issue (Bevir, 2005) and attempts to reverse the increase in child poverty (Gregg and Wadsworth, 2011), they increased the number of pupils who were eligible for free school meals to 727,630 students in primary schools and 478,920 in secondary schools in 2003 (Willis, 2003). In 2003 I was in primary school and as the table in Willis (2003: online) I was one of the 4,510 students in Wigan to receive free school meals.

It is clear throughout history the political party who has focussed on school provisions the most is Labour; especially New Labour under Tony Blair. When New Labour won the 1997 election I was only in pre-school however they implemented changes that would affect my schooling mostly for the better. However one of the initiatives that I did not approve of when it was implemented was the 'healthy food' scheme pioneered by Jamie Oliver. However, as Boseley (2012) shows Jamie Oliver's food contains more saturated fat than ready meals. As he was campaigning for healthier food but producing less

healthy food on his television shows this could be seen as being hypocritical. The healthy schools initiative was introduced by the New Labour because they believe the schools play a big part in health and wellbeing of children and young people (DfE, 2013).

This new initiative was opposed massively by parents and could explain why I and many other students across the UK moved to packed lunches. However the healthy food initiative could have been one of several reasons for increased numbers of packed lunches: whether it was the increase of school meal prices (The Guardian, 2011a), the deterioration of food standards (BBC, 2011a) due to the new Coalition government of Conservative and Liberal Democrats cancelling the survey on nutrition standards (Walker, 2013) which could explain for the horse meat findings in school meals (Daily Telegraph, 2013). From the experiences of people from St. James primary school, I believe however that the main motive for increased packed lunches is the bullying that could come from having free school meals as The Guardian (2012) illustrates. I still have packed lunches to this day as I am able to eat the food that I prefer, however I do miss having sausage chips and gravy or turkey twizzlers for dinner.

The National Curriculum

"Curriculum is a term used to describe, in outline all that pupils are taught in a period of their education" (Parkinson, 2002: 33). The national curriculum has been the most important part of my education whilst being intangible unlike school meals or exams. This is because that at every stage of my education the national curriculum has controlled and influenced my learning. Even when I have had the freedom to choose which subject I wanted to learn I did not get a freedom of choice with regard to what I got to learn within the particular subject. The national curriculum was first introduced by

Margaret Thatcher and her right wing Conservative party, the national curriculum was a major part of the 1988 Education Act. When the 1988 Education act was released Gillard (1995) shows the government states that 'At the heart of the educational process is the national curriculum.' The government stating this is a play on words in the Plowden (1967:7) and again in Gordon and Lawton (2003) 'At the heart of the educational process lies the child'.

The bold statement by the government only reiterates what Barker (1987: 48) thought of the new curriculum in terms of helping the pupils "A traditional outlook belonging to an earlier period when board schools were expected to civilise the working classes." This show that Barker thought the national curriculum focusses on the needs of businesses and the industry rather than the needs of the children (Gillard, 1995). The concept of national curriculum could however stem back from the Ruskin speech by James Callaghan in 1976; this is because this speech sparked government interest in the school curriculum.

Ever since the national curriculum was implemented in 1988 it has caused uproar due to the constant reviewing, renewing and also the fact of who decides what the pupils learn in their education. The National Curriculum Reform (2009) shows that the national curriculum has been reviewed and updated constantly since it had the first review in 1993, after 1993 it was reviewed in 1995, 1996 and 1997 due to the change in government (New Labour came into power). The New Labour party reviewed the national curriculum in 1999 and introduced a loose framework for early years' provision in 2000 before fully implementing it in 2002 (House of Commons, 2009). In 2005 according to the House of Commons report (2009) the government turned their attention to the secondary education national curriculum; it took however until 2008 to implement these changes. When the Coalition took power in 2010 they had made

plans to change the curriculum, however as BBC (2011b) shows that they have delayed their planned changes until 2014.

With these proposed changes to the national curriculum and the massive increase in academies under the Coalition government the future of the national curriculum looks bleak. As Shepherd (2011) shows there were 629 academies in 2011 which is a massive jump from the first 3 opened in 2002 by Tony Blair and the New Labour Party. The DfE (2013) states that academies are "publicly funded independent schools that provides a first class education." This could explain why there has been such a rapid increase under the Coalition government; specifically the Conservative Party and their right wing beliefs of privatisation. The national curriculum is not however compulsory for academies to partake in which could see the end of the national curriculum in controversial circumstances; this could be a good thing as alluded to by Beare (2001) To hold slavishly to the curriculum which worked in the past is a dangerous tactic for the future.

Controversy has always surrounded the national curriculum as it is the government that decide the national curriculum and not the teachers who have to work with the curriculum on a daily basis. As Brooks, Abbott and Bills (eds)(2007: online) show one side to the argument; "It could be argued that teachers should decide the content of the national curriculum". O'Hear and White (1991) highlight the other side of the argument "… not the teachers, should decide the overall shape of school curricula." Other controversial issues that are surrounding the national curriculum are the constant changes as previously mentioned and shown by Mansell (2011). Martin (1998) highlights the controversy that the perception of a subject could be drastically changed due to changes within the subjects curricular. The national curriculum was again the source of

controversy as BBC (2011) shows with proposed changes to the national curriculum being delayed until 2014.

The curriculum has played a major part of my education, more specifically at my high school Cansfield; due to learning 16 subjects in Key Stage 3 and 12 subjects in Key Stage 4. Cansfield (2011) clearly shows an insight to how they have interpreted the national curriculum; schools often interpret the national curriculum differently because "The National Curriculum is the statutory part of the whole curriculum and it is divided up into nine subject curricular" (DfEE and QCA, 1999). Even though Cansfield (2011) provides information on the subject curricular it does not go into any great detail; especially on the Modern Foreign Language section which was strange since Cansfield is a 'Specialist Language College'. However it does encourage parents or siblings the option to be able to help with studies; whilst I was at Cansfield I felt that this connection between the school, parents and the curriculum was very important.

Examinations

'These are the most important exams that you will take' is a constant expression I heard at every stage of my education. Whilst I was in education I had examinations at the end of key stage 2, end of key stage 3 and at various times during key stage 4; aged 7, 11, 14 and 15-16 respectively. Standard Attainment Tests (SATs) were introduced in 1989 and were as The Guardian (2004) claims that this introduction was "Dubbed the most controversial of education reforms". This is a bold claim because of how controversial the national curriculum has been. The SATs however were only first used nationwide in 1991 and were branded "unfair and unworkable by many primary school teachers" (The Guardian, 2004). The government has not really tackled the problem in SATs because The

Guardian (2004) shows that the attainment in schools SATs was lower than they targeted in 2002 and 2004.

They set a target of 80% pass rate of Key Stage 2 SATs at Level 4 or above; in my Key Stage 2 SATs I managed to achieve level 5's in English, Maths and Science. The New Labour had to create a third SAT exam for all 14 year olds in 1997; when I sat my Key Stage 3 SATs I achieved level 7's across the main three subjects: English, Maths and Science. I sat those exams in the summer of 2009, which turned out to be the last time the Key Stage 3 SATs were compulsory as the New Labour announced the demise of the Key Stage 3 SATs as explained by BBC (2008). This decision by the New Labour party was met with some approval from educators and parents (Banbury Guardian, 2008); however the NASUWT threatened to strike if SATs were scrapped (Morning Star, 2009).

GCSE's have been reviewed almost as much as the national curriculum. General Certificate of Secondary Education were introduced in 1988 when they replaced O-Levels (Gordon and Lawton, 2003); the same year that the national curriculum was introduced. Six years later the government invented and introduced the A* at GCSE level grade to distinguish between the top candidates (The Daily Telegraph, 2011a). This could be seen as a good idea however as The Daily Telegraph (2008) argues if the exams are not made harder more people would be able to achieve those A*'s; the example The Daily Telegraph (2008) uses is "Wycombe Abbey… saw more than 98% of papers graded A or A* and 86% of those graded A*." When I got my GCSE's results from Cansfield out of the 11 exams I sat I only achieved: one A*; three A's; four B's; two C's and a D. Rogers and Hallam (2010) also shows that my academic achievements could be based on my gender because my gender apparently influences how I prepare for the exams.

I achieved those grades because I chose subjects that I believed I would excel in; however as Van De Werfhorst, Sullivan and Cheung (2003) show that I might have picked my optional subjects subconsciously based on my social class; since I believe I am in the working class category. Freedom of choice or lack of stems back to the marketisation of education which Rikowski (2007: online) states "Marketisation of the schools system in England set in train by the 1988 Education Reform Act". This then again relates to Margaret Thatcher Conservative party and the introduction of the national curriculum. However, Ball (2006) argues that in order to comprehend the idea of school marketisation we need to "unpack the concept of 'market' in relation to schools in terms of its constituent parts and aspects. Marketisation has been expanded on by the New Labour Party and the Coalition government via the introduction of academies as previously discussed; academies thrive for competition of the best pupils from outstanding schools. Croll (2004) shows that because I am from a working class background I was disadvantaged compared to my middle class peers.

Conclusion

It is clear that my education at every stage has been effected by the government whether it was legislation that was implemented before I was born such as the educational acts and reforms in 1988 by the Conservative party. Alternatively the focus on education by the New Labour party has also been very influential on my education. This is possibly due to Labour being the political party that were in power throughout my whole compulsory education. I believe that the New Labour party contrary to reports such as The Daily Telegraph (2011b) and the Guardian (2005) actually improved education for the better. Even though I was told exams were the most important part of my education I believe that the national curriculum was more

important because this influenced the exams that I sat and what I know today is based mostly due to the national curriculum.

References

Ball, S. (2006) *Education Policy and Social Class: The Selected Works of Stephen J. Ball.* London: Routledge.

Banbury Guardian. (2008) *Headteacher welcomes end of SATs.* [online] 15 October 2008
Available:
http://www.banburyguardian.co.uk/news/local/headteacher-welcomes-end-of-sats-1-595802
[Accessed:9 March 2013]

Barker, B. (1987) Production and progress. In Chitty, C. (ed.) (1987) *Redefining the comprehensive experience*. London: Bedford Way Papers/Kogan, pp.38-49.

Beare, H. (2001) *Creating the Future school.* London: RoutledgeFalmer

Bevir, M. (2005) *New Labour: A Critique.* Oxon: Routledge

Boseley, S. (2012) *TV chefs' recipes may be less healthy than ready meals, study finds.* [online] 17th December 2012,
Available: http://www.guardian.co.uk/lifeandstyle/2012/dec/17/tv-chef-recipes-ready-meals
[Accessed: 15 March 2015]

British Broadcasting Corporation (2008) *Tests scrapped for 14-year-olds.* [online] 14th October 2008
Available at: http://news.bbc.co.uk/1/hi/education/7669254.stm
[Accessed: 10 March 2013]

British Broadcasting Corporation (2011a) *Jamie Oliver says healthy school food standards 'eroded'.* [online] 25th November 2011
Available at: http://www.bbc.co.uk/news/education-15888966
[Accessed: 5 March 2013]

British Broadcasting Corporation (2011b) *Curriculum changes pushed back to 2014.* [online] 19th December 2011,
Available at: http://www.bbc.co.uk/news/education-16248847
[Accessed: 12 March 2013]

Brockway, F. (1946) *Socialism over sixty years: the life of Jowett of Bradford (1864-1944).* Great Britain: Allen and Unwin.

Brooks, V., Abbott, I. and Bills, L. (eds)(2007) *Preparing to Teach in Secondary Schools.* Poland: OZ Graf. S.A.

Cansfield, Wigan. (2011) *Curriculum: Key Stage 3.* [online]
Available: http://www.cansfield.wigan.sch.uk/Key-Stage-3
[Accessed: 20 March 2013]

Collins, N. (2011) *How the national curriculum has evolved. Daily Telegraph* [online], 20 January 2011
Available:
http://www.telegraph.co.uk/education/educationnews/8270189/How-the-national-curriculum-has-evolved.html
[Accessed: 19 March 2013]

Croll, P. (2004) Class strategies and the education market: The middle classes and social advantage. *British Journal of Educational Studies,* 52(4), pp.433-436.

Curtis, P. (2005) Blair stands by education reform. *The Guardian* [online], 27th September 2005
Available:http://www.guardian.co.uk/education/2005/sep/27/schools.uk3?INTCMP=SRCH
[Accessed: 9 March 2013]

Department for Education (2013) *Healthy Schools* [online]
Available at:
:http://www.education.gov.uk/schools/pupilsupport/pastoralcare/a0075278/healthy-schools
[Accessed :12th March 2013]

DfEE and QCA (1999) *The National Curriculum: Handbook for Secondary Teachers in England.* London: H.M.S.O.

Duthel, H. (2011) *Rupert Murdoch: The Politico Media Complex Mogul.* CreateSpace Independent Publishing Platform.

Education Act 1921 [online]
Available: http://www.educationengland.org.uk/documents/acts/1921-education-act.html
[Accessed:10th March 2013]

Ensemble Project and LJMU Education Studies (2011) *'Education Studies Database and Timeline'.* [online]
Available: http://www.ensemble.ac.uk/projects/educationstudies/ [
[Accessed: 15 March 2013]

Evans, C. E. L. and Harper, C.E. (2009) A history and review of school meal standards in the UK. *Journal of Human Nutrition and Dietetics,* 22(2), pp.89-99.

Gillard, D. (1995) *Children's needs and interests and the National Curriculum* [online]
Available : http://www.educationengland.org.uk/articles/15needs.html
[Accessed:11 March 2013]

Gillard, D. (2003) *Food for Thought: child nutrition, the school dinner and the food industry* [online]
Available at: http://www.educationengland.org.uk/articles/22food.html
[Accessed 16 March 2013]

Gordon, P. and Lawton, D. (2003) *Dictionary of British Education.* Great Britain: Woburn Press.

Gove, M. (2011) National curriculum review: children failed by Labour's education reforms, says Gove*. Daily Telegraph* [online], 20th January 2011
Available:
http://www.telegraph.co.uk/education/educationnews/8269906/National-curriculum-review-children-failed-by-Labours-education-reforms-says-Gove.html
[Accessed : 21st March 2013]

Gregg, P. and Wadsworth, J. (eds) (2011) *The Labour Market in Winter: The State of Working Britain.* Oxford: Oxford University Press.

Haworth, A. and Hayter, D. (2006) *Men Who Made Labour.* Oxon: Routledge.

Hughes, P. (2010) *Breaking Barriers to Learning in Primary Schools: An integrated approach to children's services.* Oxon: Routledge.

Jones, H. (2001) Free School Meals. *Education Journal,* 59, pp.27-29.

Mansell, C. (2011) England's school curriculum review sparks debate. *The Guardian* [online], 3rd October 2011
Available: http://www.guardian.co.uk/education/2011/oct/03/england-curriculum-review-debate-controversy
[Accessed :11 March 2013]

Martin, G.A. (1998) Whose Image is it Anyway?: Some Considerations of the Curricular Importance of Subject Image in Secondary School Design and Technology Education. *International Journal of Technology & Design Education,* 8(1), pp.37-49.

Morning Star (2009) *NASUWT threaten strike action if controversial SATs are scrapped.* [online] 16th April 2009

Available:
http://www.morningstaronline.co.uk/index.php/news/layout/set/print/content/view/full/74299
[Accessed: 16 March 2013]

National Curriculum Reform 2009. Volume 1 [online] London:
H.M.S.O. 2009
Available: http://www.educationengland.org.uk/documents/pdfs/2009-CSFC-national-curriculum.pdf
[Accessed: 19 March 2013]

O'Hear, P. and White, J. (1991) *National Curriculum for All: Laying the Foundations for Success.* London: IPPR.

Parkinson, J. (2002) *Reflective Teaching of Science11-18.* London:
Continuum.

Paton, G. (2008) GCSEs fail to stretch brightest pupils, says
headmistress of top school. *Daily Telegraph* [online], 29th August
2008
Available at: http://www.telegraph.co.uk/news/2644911/GCSEs-fail-to-stretch-brightest-pupils-says-headmistress-of-top-school.html
[Accessed:18 March 2013]

Plowden (1967) *Children and their Primary Schools.* Report of the
Central Advisory Council for Education England. London: H.M.S.O.

Poulson, L. (1998) *The English Curriculum in Schools.* Great Britain:
Biddles Ltd.

Provision of Meals Act 1906: Chapter 57 [online] London: H.M.S.O
Available: http://www.legislation.gov.uk/ukpga/1906/57/enacted
[Accessed : 17 March]

Rikowski, G. (2007) *Marketisation of the School System in England.*
[online] 25th November 2007
Available:
https://books.google.co.uk/books?id=bAXGBQAAQBAJ&pg=PT158&dq=Marketisation+of+the+School+System+in+England.&hl=en&sa=X&ved=0CCcQ6AEwAWoVChMIigi15OSNyQIVx9gaCh37tAVa#v=onepage&q=Marketisation%20of%20the%20School%20System%20in%20England.&f=false
[Accessed:12 March 2013]

Rock, L. (2012) Thousands of pupils shamed out of free school
meals*. The Guardian* [online]*,* 23rd September 2012
Available: http://www.guardian.co.uk/education/2012/sep/23/free-school-meals-stigma

[Accessed :18 March 2013]

Rogers, L. and Hallam, S. (2010) Gender differences in perceptions of studying for the GCSE. *International Journal of Inclusive Education,* 14(8), pp.795-811.

Shepherd, J. (2011) Three times as many academy schools*. The Guardian* [online],7th April 2011
Available:
http://www.guardian.co.uk/education/2011/apr/07/academy-schools-treble
[Accessed: 6 March 2013]

The Guardian (2004) The Sats story. *The Guardian* [online], 24th August 2004
Available:
http://www.guardian.co.uk/education/2004/aug/24/schools.sats
[Accessed: 21 March 2013]

The Guardian (2011) School meal prices set to rise across two-thirds of schools in the new term*. The Guardian* [online], 29th August 2011
Available: http://www.guardian.co.uk/education/2011/aug/29/school-meals-price-rises
[Accessed: 17 March 2013]

Van De Werfhorst, H. G., Sullivan, A. and Cheung, S.Y. (2003) Social Class, Ability and Choice of Subject in Secondary and Tertiary Education in Britain. *British Educational Research Journal, 29*(1), pp.41-62.

Vernon, J. (2007) *Hunger: A Modern History.* United States of America: Harvard College

Walker, P. (2013) Government cancel survey on nutritional content of school meals. *The Guardian* [online], 5th February 2013
Available:
http://www.guardian.co.uk/education/2013/feb/05/government-cancels-survey-school-meals
[Accessed: 20 March 2013]

Willis, Mr. (2004) Free School Meals. *Education Journal, 77*, pp.34-36.

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