

## **What do we know about cost effectiveness of services for children and families?**

Anna Vignoles, November 2009

How do we know what works in education to improve children's outcomes in a cost effective way? Primarily we can only determine this by looking backwards to previously introduced policies that have been robustly evaluated. Unfortunately however, many education policies have been introduced without a robust evaluation design. Going forward we need to ensure that all initiatives and policies are properly evaluated and we need to understand not just what the impact of a policy is but also how it works, i.e. we need to understand process. We also need to map costs to impact in order to be able to undertake full cost benefit analyses of specific programmes. As yet we are not in a position to have a shopping list of cost effective interventions though we do have some robust evidence on some rigorously evaluated interventions which are discussed below.

So how do we improve pupil outcomes? To answer this we need to understand how skills, both cognitive and non-cognitive, are produced. Cognitive skills are produced largely in childhood and during schooling and there is some evidence that it is less easy to develop cognitive skills later in life. Furthermore, socio-economic gaps in both cognitive and non-cognitive skills emerge early (Carneiro and Heckman, 2004; Feinstein, 2003). There is certainly a strong intergenerational component to education (Ermisch and Francesconi (2001); Chevalier *et al.* (2007); Plug (2004); Sacerdote (2002)). Family and social environment are crucially important in determining pupil outcomes, whereas neighbourhood is less so (Teddlie and Reynolds, 2000; Vignoles et al. CEE unpublished report 2009). Only around 10-20% of the variation in education achievement between different pupils can be explained by schools. Even less variation in other outcomes, such as well being, is between schools. So two key points: firstly skill development is easier early in life and secondly, improvements in pupil achievement and well-being will be challenging if we rely only on schools alone to deliver them. Families matter more.

Knowing that early interventions are more effective does not mean that it is impossible to design effective interventions for adulthood. Although not the focus of this talk, we need to understand the implications of not developing young people's cognitive and non cognitive skills in childhood. Currently there is only weak evidence that adult policy interventions have been successful. For example, trying to improve literacy and numeracy in adulthood has proved difficult to do (Torgeson et al 2004). When the state intervenes to encourage adults to up skill (or at least get qualifications) often it has little impact on their wages e.g. NVQ2 (Dearden, Reed and Van Reenen 2006; Blundell, Dearden and Meghir, 1996; Feinstein, Galindo-Rueda and Vignoles). So why are adult interventions not successful? Often the answer is poor quality provision e.g. poorly qualified teachers, particularly in basic skills area (NAO, 2008). Provision is also target driven e.g. Level 2 entitlement, so the focus is on qualifications not content. Most fundamentally, Heckman has suggested that cognitive skills are less malleable later in life.

So if we are going to focus on the young, how can we improve achievement and non-cognitive skills? A number of solutions have been attempted: additional resources, market incentives and specific policy interventions. There has been a 40% increase in education expenditure in primary schools (since 97) and this has had positive impact on education achievement (Machin et al. 2007). So how can these additional resources help? We don't know exactly but we do know that

reductions in the pupil teacher ratio are not likely to be as successful as improving teacher quality (Meghir 2002; Card and Krueger, 1992; Rivkin, Hanushek and Kain, 2005; Slater et al. 2009). To illustrate, evidence from the Tennessee STAR program which was a random class size reduction experiment suggests that a 50% increase in total per pupil expenditure spent on class size reductions might yield an increase in test scores of 0.13 standard deviations. In the UK, an increase in expenditure of around one third of per pupil expenditure (£1000) led to a 0.05 standard deviation increase in test scores. In comparison, shifting teacher quality to the high end of the quality distribution raises student achievement by at least 0.11 standard deviations although determining the cost of this is problematic. So how can we improve teacher quality? There is no evidence that teacher qualifications are associated with higher quality. We do know however, that teacher pay is key to improving teacher quality as it helps attract high calibre candidates.

Another policy that has been attempted in the UK is the introduction of competition between schools. The evidence base suggests limited effects of choice and competition on pupil achievement (Bradley, Johnes and Millington, 2001; Gibbons, Machin and Silva, 2008). There is also a potential trade off between efficiency and equity: advantaged parents may make more effective choices leading to school segregation (Le Grand, 2001, 2003). Indeed in the US competition does appear to have arguably increased inequality (e.g. Hoxby, 2000, 2003a, 2003b) Here in the UK the market is muted and so does not have same impact. There is no evidence of increasing segregation in UK schools (Allen and Vignoles, 2008; Gorard et al. 2003).

So what other specific policies have been attempted? **Sure Start** is an early years policy intervention to help children in poor families akin to HeadStart in the UK. This programme has shown a positive impact on early achievement and has reduced the socio-economic gap (Effective Provision of Pre-School Education (EPPE) Project:Final Report A Longitudinal Study Funded by the DfES 1997-2004). The **Literacy and Numeracy Hours** programmes improved mean achievement and reduced the socio-economic gap (Machin and McNally's 2008). The **Excellence in Cities programme** had a positive impact on mathematics achievement at age 14 in the most disadvantaged schools. The impact of EiC was greatest for medium and higher ability children. Effects on English and Science were not found and no effect from the programme was found on GCSE scores generally. (Machin et al. 2007 and the National Foundation for Education Research report 2007). The **Education Maintenance Allowance** involves paying young people to remain in education. Payments are means tested and this scheme has been found to have a positive impact on participation of the order of a 2-4.5% pt improvement with average rate of 64.7%. No effect on achievement was found for females and a very small effect for males (Dearden, Emmerson, Frayne and Meghir, 2009).

We can also look internationally for robust evidence on what works. There is a body of evidence from Random Control Trials conducted in the US and else where. Experiments that have worked include paying kids to stay on in school (Israel) (similar to EMA above) and reading recovery schemes work but the specifics of the latter scheme matters (30 mins a day of one to one reading recovery for a period of 12-20wks has been found to be effective). Accelerated middle school curricula have also been helping transitions in secondary school and we have adopted the notion of taking GCSEs early here too. Additional IT did not raise test scores (Israel) and introducing

teacher tests was not associated with any increase in teacher quality (<http://www.nber.org/reporter/summer03/angrist.html/> What Works Clearing House).

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