

Addressing the North and South achievement gap

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Stephen Gorard

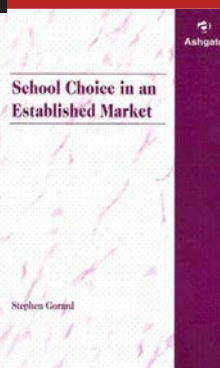
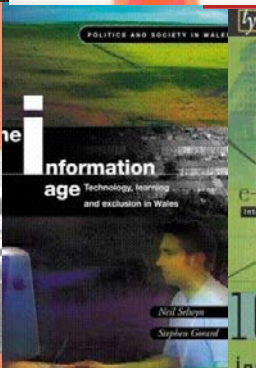
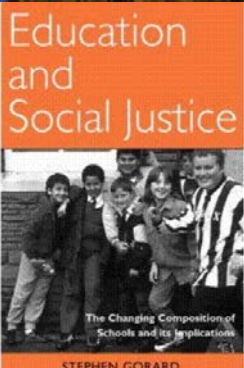
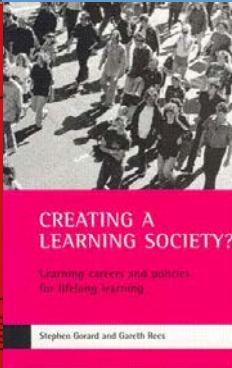
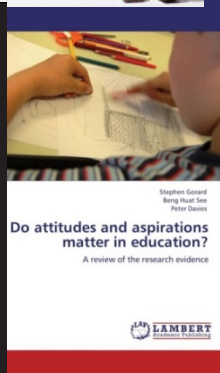
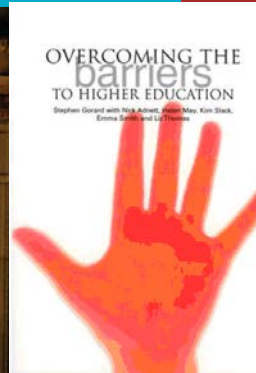
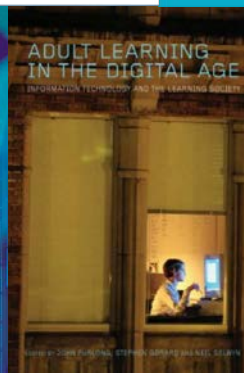
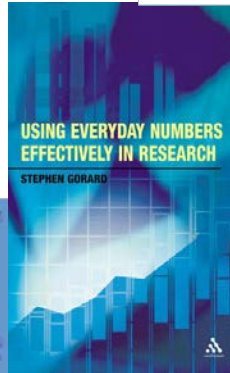
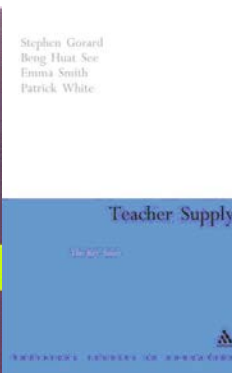
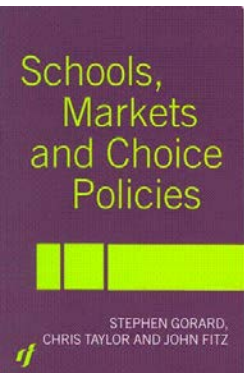
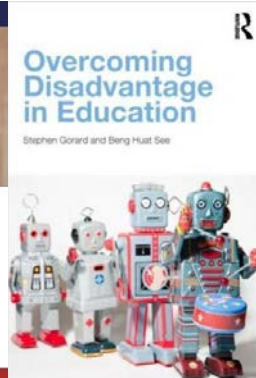
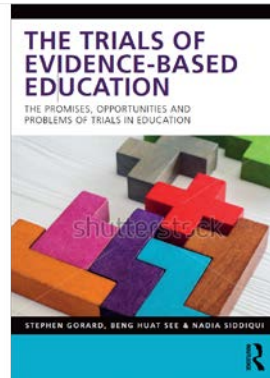
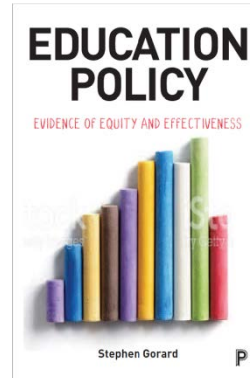
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Mean scores of pupils in each FSM category, KS4 cohort, England 2015
 N=560,735 pupils with full data

	Not FSM-eligible	FSM-eligible
KS1 average points (early primary)	16	13
KS2 total points (end of primary)	41	35
KS4 capped points (age 16)	319	243

Percentage of pupils continuing with post-16 education, by FSM, KS5 cohort, England 2008

	Not FSM-eligible	FSM-eligible
Continued post-16	56	31
Achieved EE+ at KS5 (sixth form)	48	25
Achieved CCC+ at KS5	33	13
Achieved ABB+ at KS5	25	8
Entered HE	36	20
Enter Russell Group	20	9
2:1 or first	17	5

Percentage of pupils in England attaining each qualification threshold, by FSM status, 2007

	Not FSM eligible	FSM eligible	Missing FSM code (maintained)
Percentage of national total	76%	13%	4%
Percentage attaining 5+ GCSE or equivalents A*-C – Level 2	63	36	14
Percentage attaining Level 2 with GCSE English and Maths	49	21	7

Source: National Pupil Database 2007

Percentage of FSM groups with specified characteristics, England, KS4, 2013

FSM group	Any Special Educational Need	Speaking English as an additional language	Percentage gaining Level 2 with English and maths
Never FSM-eligible	15	10	70
Previously FSM-eligible	26	17	49
FSM-eligible now	32	20	42

Percentage of each FSM group in Middlesbrough, and Kensington and Chelsea, 2013

FSM group	Middlesbrough	Kensington and Chelsea
Never FSM-eligible	53	53
Previously FSM-eligible	14	28
FSM-eligible now	33	19

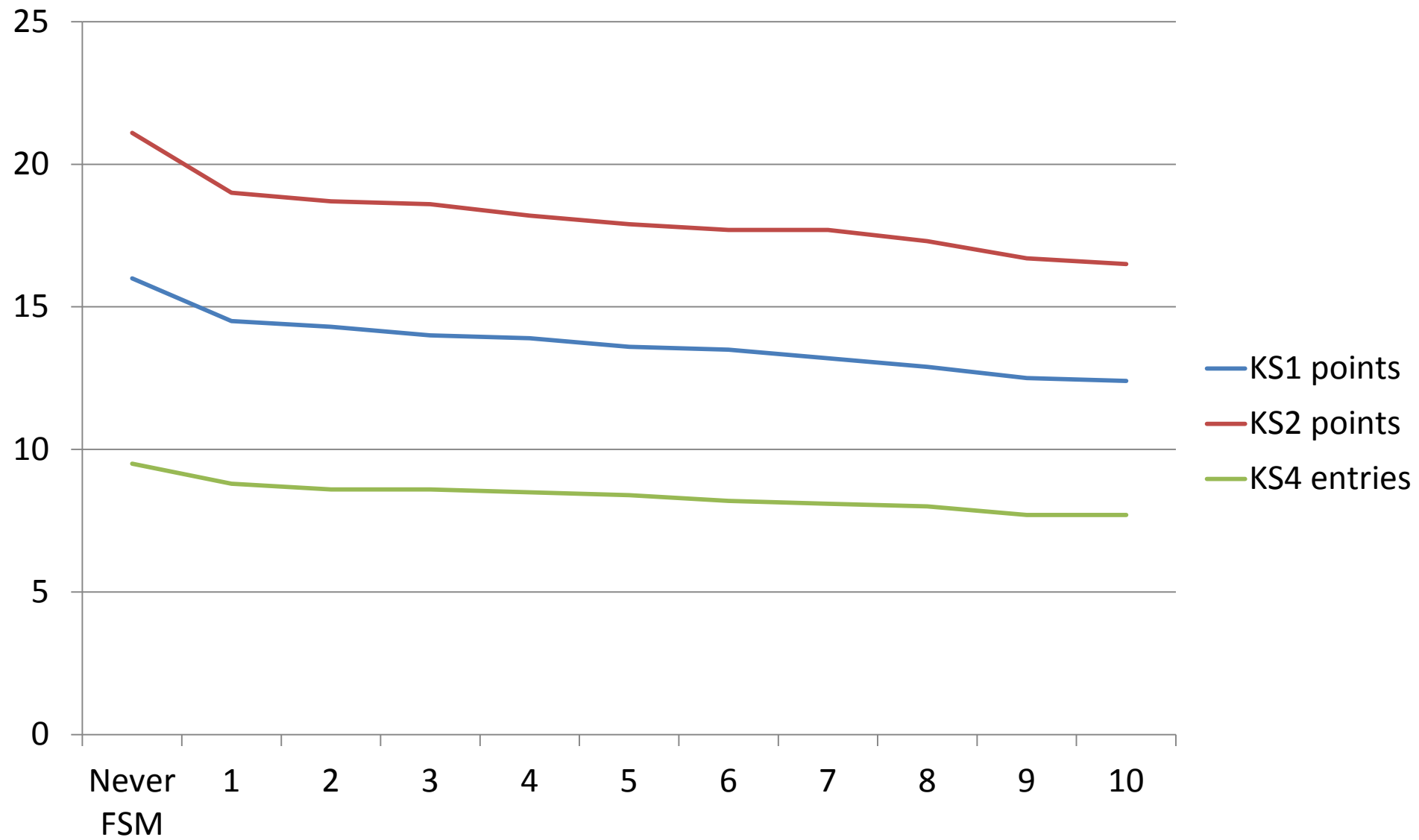
Source: Gorard, S. (2016) A cautionary note on measuring the pupil premium attainment gap in England, *British Journal of Education, Society and Behavioural Sciences*, 14, 2

Home LAs of FSM-eligible pupils – mean number of years eligible, 2015 cohort

Local Authority	Years FSM by KS2	Years FSM by KS4
Wokingham	0.3	0.5
Buckinghamshire	0.3	0.6
West Sussex	0.4	0.7
Middlesbrough	1.9	3.1
Manchester	2.1	3.4

Source: Gorard, S. (2016) *Challenging Perceptions of a North South Regional Divide in School Performance in England*, BERA Annual Conference, Leeds, September 2016

Attainment by number of years-FSM, England, 2015 KS4 cohort



NPD explanatory variables for modelling KS4 outcomes

Attainment

KS1 points score – attainment at age 7

KS2 points score – attainment at age 11

KS3 levels – attainment at age 14

Pupil characteristics

Birth month and year – used to compute age in year

Sex of pupil – still recorded as a binary in 2015

FSM-eligibility – a flag variable showing whether a pupil is from a home officially classified as having an income below the poverty line

Ethnic origin or group

English as an additional or second language

Special needs with or without a statement

School and home

School type attended

Local authority area of school and home

IDACI score – a measure of average deprivation for the area where the pupil lives or goes to school

Whether the pupil moved to the current school in the last two years

NPD derived explanatory variables for modelling KS4 outcomes

Missing data

Flag variables for each year a pupil has any characteristic not known

Attainment

Mean KS1, 2 3 and 4 scores for each school

Pupil characteristics

The month of birth in the school year – relative age within year group

The number of years in total a pupil was eligible for FSM, or identified as EAL or SEN, up to KS2, 3 and 4

Flag variables representing each category of ethnic group (Major), SEN or not, and SEN statement or not, for each year

Flag variables representing whether a pupil was FSM-eligible for every year of their schooling

School and home

The number of pupils, and the number of pupils in each background category, in each school

The between school FSM-segregation residual, for each school

The between school segregation residual of pupils always identified as FSM-eligible, for each school

Flag variables representing school type, such as Academy Converter or not

Economic region of England

Whether a pupil attended school in the same local authority as residence

Whether a pupil attended school in an area with grammar schools

R value for each stage in the model, predicting KS4 capped points

Year	R	Increase in R	Variables
1 (primary school start)	0.546	-	2005 background, missing values
	0.576	0.030	2005 school mean background
2 (KS1 end)	0.578	0.002	2006 background, missing values
	0.579	0.001	2006 school mean background
2 (KS1 attainment)	0.684	0.106	KS1 scores for pupil
	0.685	0.001	KS1 scores school, interaction
3 (KS2 start)	0.692	0.007	2007 background, missing values
	0.693	0.001	2007 school mean background
4	0.701	0.008	2008 background, missing values
	0.701	-	2008 school mean background
5	0.708	0.007	2009 background, missing values
	0.709	0.001	2009 school mean background
6 (KS2 end)	0.717	0.008	2010 background, missing values
	0.718	0.001	2010 school mean background
6 (KS2 attainment)	0.820	0.102	KS2 scores for pupil
	0.821	0.001	KS2 scores school, interaction
7 (secondary school start)	0.826	0.005	2011 background, missing values
	0.827	0.001	2011 school mean background
8	0.829	0.002	2012 background, missing values
	0.829	-	2012 school mean background
9 (KS3 end)	0.833	0.004	2013 background, missing values
	0.834	0.001	2013 school mean background
9 (KS3 attainment)	0.883	0.049	KS3 scores for pupil
	0.885	0.002	KS3 scores school, interaction
10 (KS4 start)	0.888	0.003	2014 background, missing values
	0.888	-	2014 school mean background
11 (KS4 end)	0.899	0.029	2015 background, missing values, summary values
	0.900	0.001	2015 school mean background, summary values
11 (KS4 type of school)	0.900	0.000	Region and type of school
11 (KS4 school attainment)	0.918	0.018	School mean attainment

Regression coefficients for Year 1 background variables

Variable	Unstandardised coefficient	Standardised coefficient
Individual predictors		
Sex of pupil	15.707	0.008
Age in year	-0.279	-0.001
FSM eligible	-57.340	-0.217
FSM missing	-12.380	-0.035
SEN statement	-209.588	-0.282
SEN no statement	-83.208	-0.321
SEN missing	-26.923	-0.073
English not first language	23.596	0.075
Language missing	9.230	0.026
Ethnic group Black	12.263	0.024
Ethnic group Pakistani/Bangladeshi	5.057	0.014
Ethnic group Chinese	46.735	0.025
Ethnic group other	13.376	0.027
Ethnic group missing	-0.070	-
Pupil travelled to another authority	-	-
School and area predictors		
IDACI score	-74.335	-0.132
Number of pupils in school	-0.025	-0.005
FSM level in school	-	-
FSM segregation residual for school	-63068.078	-0.052
SEN with statement level in school	-119.365	-0.087
SEN with no statement level in school	5.938	0.008

Regression coefficients for KS3 end summary






Variable	Unstandardised coefficient	Standardised coefficient
Years eligible for FSM by end of KS3	-	-
School mean years eligible for FSM by end of KS3	-6.652	-0.064

Variable	Unstandardised coefficient	Standardised coefficient
KS3 total score	11.731	0.423
School mean KS3 total score	-2.533	-0.054

Regression coefficients for KS4 Region and school type, composition included

Variable	Unstandardised coefficient	Standardised coefficient
School in NE England or not	1.691	0.003
School in area with grammar schools	0.215	0.001
Community or not	-1.044	-0.004
Comprehensive or not	-0.813	-0.002
Grammar or not	-9.826	-0.020
Academy converter or not	-0.020	-
Free school, Studio or UTC	4.082	0.003
VA or not	0.106	-
VC or not	0.824	0.001
Special school or not	18.826	0.026
Mean KS4 points per school	0.783	0.431

A 'sieve' to assist in the estimation of trustworthiness of research findings

Design	Scale	Dropout	Data	Threats	Rating
Strong design for research question	Large number of cases (per comparison group)	Minimal attrition, no evidence of impact on findings	Standardised, pre-specified, independent	No evidence of diffusion, demand, or other threat	4 
Good design for research question	Medium number of cases (per group)	Some attrition (or initial imbalance)	Pre-specified, not standardised or not independent	Little evidence of diffusion, demand or other threat	3 
Weak design for research question	Small number of cases (per group)	Moderate attrition (or initial imbalance)	Not pre-specified but valid in context	Evidence of diffusion, demand or other threat	2 
Very weak design for research question	Very small number of cases (per group)	High attrition (or initial imbalance)	Issues of validity or appropriateness	Strong indication of diffusion, demand or other threat	1 
No consideration of design	A trivial scale of study, or N unclear	Attrition not reported	Poor reliability, too many outcomes, weak measures	No consideration of threats to validity	0 

Source: Gorard, S., See, BH and Siddiqui, N. (2017) *The trials of evidence-based education*, London: Routledge

Quality and impact : studies of feedback

	Effective	Ineffective/unknown
Higher quality	1	1
Medium quality	1	2
Lower quality	11	3

Reference	Intervention	Smallest cell	Attrition	ES	NNTD-attrition	Quality
Lang et al. 2014	Formative Assessment	15 schools, 2,000+ pupils	1 school, unknown pupils	0.20	500+	🔒🔒🔒
Phelan et al. 2011	Feedback (Year 7)	2,045 pupils		0.03	0	🔒🔒🔒

Quality and impact summary: Accelerated Reader

	Effective	Ineffective
Higher quality	2	0
Medium quality	0	0
Lower quality	12	6

Reference	Intervention	Smallest cell	Attrition	ES	NNTD-attrition	Quality
Ross et al. 2004	AR	286	-	0.25	-	🔒🔒🔒
Siddiqui et al. 2015	AR	357	2%	0.24	78	🔒🔒🔒🔒

Quality and impact: studies of reasoning

	Effective	Ineffective/unknown
Higher quality	3	0
Medium quality	0	1
Lower quality	10	2

Reference	Intervention	Smallest cell	Attrition	ES	NNTD-attrition	Quality
Gorard et al. 2015	P4C	757	10%	0.12	15+	🔒🔒🔒
Worth et al. 2015	Maths and reasoning	517 pupils	13%	0.2	36	🔒🔒🔒
Hanley et al. 2015	Higher order thinking in science	1,513 pupils	16%	0.22	60	🔒🔒🔒

Comparison of 20 trial outcomes, by trustworthiness and strength of outcome

	Effect size	Effect size FSM-only	Quality of evidence	NNTD- attrition	Cost per pupil (rounded)
Switch-on	+0.24	+0.36	🔒🔒🔒🔒	69	£100
Accelerated Reader	+0.24	+0.38	🔒🔒🔒🔒	31	£20
P4C reading	+0.12	+0.29	🔒🔒🔒🔒	53	£30
Youth United – Self-confidence	+0.10	+0.04	🔒🔒🔒🔒	137	£500
P4C maths	+0.10	+0.20	🔒🔒🔒🔒	38	£30
Children’s University – Social responsibility	+0.08	+0.10	🔒🔒🔒🔒	0	£300
Youth United – Teamwork	+0.07	-0.04	🔒🔒🔒🔒	39	£500
Children’s University – Teamwork	+0.04	+0.17	🔒🔒🔒🔒	0	£300
P4C writing	+0.03	+0.17	🔒🔒🔒🔒	0	£30
Fresh Start	+0.24	+0.24	🔒🔒🔒	41	£100
P4C CAT	+0.07	-0.02	🔒🔒🔒	0	£30
Literacy software	-0.29	-	🔒🔒🔒	0	£20
Summer school 2013 English	+0.17	+0.17	🔒🔒	0	£2,000
P4C – Co-operation	+0.15	+0.11	🔒🔒	0	£20
P4C – Communication	+0.10	+0.23	🔒🔒	0	£20
Feedback maths	+0.05	+0.41	🔒🔒	0	£22
Feedback writing	-0.05	+0.12	🔒🔒	0	£22
Feedback reading	-0.04	+0.17	🔒🔒	0	£22
Core Knowledge	-0.03	+0.06	🔒🔒	0	£50
Summer school 2013 maths	0	0	🔒🔒	0	£2,000
Response to Intervention	+0.20	+0.48	🔒	0	£100

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