



What are the factors that drive high post-16 participation of many minority ethnic groups, and what strategies are effective in encouraging participation?

A systematic map, and a focused review of the international intervention studies

Review conducted by the York Post-16 Review Group

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The results of this systematic review are available in four formats:

SUMMARY

Explains the purpose of the review and the main messages from the research evidence

REPORT

Describes the background and the findings of the review(s) but without full technical details of the methods used

**TECHNICAL
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List of abbreviations

DfES	Department for Education and Skills
EMA	Educational maintenance allowance
FE	Further education
GPA	Grade point average
HE	Higher education
LLKUK	Lifelong Learning UK
NIACE	National Institute of Adult Continuing Education
NQF	National Qualifications Framework
NVQ	National vocational qualification
SDP	Student diversity program
UROP	Undergraduate Research Opportunity Program



Abstract

What do we want to know?

The research question for this review is as follows:

What are the factors that drive high post-16 participation of many ethnic minority groups, and what strategies are effective in encouraging participation?

The overall aim of this review was to attempt to determine the factors that drive high post-16 participation of many minority ethnic groups, through a scoping of the research literature and an in-depth review focusing on interventions.

Who wants to know and why?

Widening participation in formal post-compulsory education and training is a policy agenda common to most developed countries, with political attention in the UK largely focused on young (potential) students aged 16-21. Participation has been increasing. In 1972, only 37% of 16-year-olds were in fulltime education. Today 87% of young people participate in education or training in the year after compulsory schooling, and 76% two years after the end of compulsory schooling (DfES, 2007). Inequalities in participation in all forms of post-compulsory education have endured over the past fifty years in the UK, with significant minorities routinely excluded (for example, Beinhart and Smith, 1998).

What did we find?

A total of 65 studies were identified for inclusion in the systematic map. Of these, 12 studies were UK-based reviews. These reviews reported on previous relevant empirical research in the topic area of post-16 participation of minority ethnic groups. The remaining 53 studies in the systematic map fell into two distinct categories: intervention studies (11 US-based studies) and aspiration studies (42 UK-based studies). The 11 intervention studies evaluated interventions to increase post-16 participation or improve retention of minority ethnic groups, or they evaluated interventions to improve achievement or learner motivation or identity of such groups. (Non-US intervention studies would have been included if they had included a control or comparison group and met strict quality inclusion criteria.) The 42 aspiration studies all investigated the post-16 views and aspirations of groups of diverse minority ethnic participants.

Ten intervention studies were included in the in-depth review. In a post-16 school setting consistent high quality evidence of positive effects was found for a monetary incentives intervention in helping high achieving, ethnically diverse students to maintain their academic good standing. The strategy was found to be particularly effective in a subgroup analysis of Asian students. In a post-16 school setting, consistent medium quality evidence

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of positive effects was found for a school engagement intervention (two studies carried out by the same research team). There were two medium-sized randomised controlled trials undertaken by the same group of researchers, both of which demonstrated positive results for the intervention. However, the study populations were similar in both trials and of limited generalisability to the UK context. In post-16 higher education (HE) settings consistent high quality evidence was found for positive effects of a faculty/student mentoring strategy in improving academic performance and retention.

What are the implications?

The main strength of this systematic review lies in its rigorous design, which allows the results and conclusions of the review to be relied upon by users of the review. A further strength of the review is the broad and inclusive nature of the systematic map. The Review Group included all the UK-based aspirations studies investigating the views of participants of both traditionally high- and low- achieving minority ethnic groups and all international intervention studies, using a control or comparison group design. A limitation of the in-depth review is that there were no UK-based interventions studies fulfilling the inclusion criteria available to be included; this is a limitation of the existing research in the field. The Review Group searched for such research, but found that it has not been undertaken. A final caveat of the review is that the minority ethnic groups predominant in the studies synthesised are of limited relevance to the UK context.

A number of US-based interventions of high quality were encountered, and this is partly to do with the scale and funding of US research. Many of these studies are of limited value for a UK audience because the specific mix of ethnic minorities, their immigration patterns and history, and economic position are so different from the UK context. Ethnic participation studies are one of the areas (unlike perhaps research on curriculum areas and pedagogy) in which UK resources could most usefully be

spent on 'parochial' research in the future. In particular, where interventions tested out in US-based evaluations of rigorous design and execution were found to be effective (for example, in post-16 school settings monetary incentives/sanction interventions and in post-16 HE settings faculty/student mentoring strategies), these could be tested out in the UK, using rigorously designed and executed evaluations.

How did we get these results?

Systematic searches were made for studies that could potentially address the review question, which focused on minority ethnic pupils' or students' views or aspirations about post-16 participation in fulltime education; were UK-based or evaluated interventions designed to increase post-16 participation of minority ethnic pupils or students; and which met clearly defined quality criteria.

All the main educational, sociological and psychological databases (including databases of grey literature) were searched. Studies were included that met the inclusion criteria, these studies were characterised, and the inclusion criteria were then narrowed for the in-depth review question: What strategies are effective in encouraging post-16 participation of minority ethnic groups? The included studies were then data-extracted and quality appraised, and the results were reported and synthesised in terms of strength of evidence; finally, conclusions were drawn and implications were considered for policy, practice and research.

Where to find further information

<http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2299>



CHAPTER ONE

Background

Aims and rationale for the current review

Much of the UK-based research in the field of participation studies is understandably focused on why particular social, familial and economic groups are under-represented. Such negatively focused approaches may uncover barriers to success and the researchers may sometimes be able to identify policy 'levers' which could improve the situation.

An alternative, and more positive, approach is to focus on success, rather than failure, and try to uncover the determinants of success in cases where it has been achieved, using a series of case studies.

Given that certain minority ethnic groups in the UK are known to have higher rates of participation at age 16 as well as 18 than both the majority white cohort and some other minorities, identifying potential determinants may lead to a method of increasing participation for all.

The overall aim of this review was to attempt to determine the factors that drive high post-16 participation of many minority ethnic groups, through a descriptive mapping or scoping of the research literature and two in-depth reviews.

This report outlines the results of the first of these two in-depth reviews: a focused in-depth review of the international interventions

literature, in order to identify interventions, which have successfully increased post-16 participation of minority ethnic groups. This review was designed to look for international research evidence. The Review Group did not necessarily expect to find robust evidence of UK - based interventions, and they did not generally find this.

A second in-depth review is underway which will look at the views, attitudes and aspirations of high achieving minority ethnic groups in the UK. This will be published as a separate report early in 2008.

Definitional and conceptual issues

The term 'minority ethnic group' refers to all groups that are not recorded under the 'White British' ethnic group category. This approach is supported by the Office for National Statistics (ONS) (http://www.statistics.gov.uk/about/ethnic_group_statistics/). The categories largely reflect 20th-century immigration patterns to the UK.

For national reporting, the former DfES adopted two additional categories under the 'White' ethnic group which did not appear in the national Census. These are the 'Gypsy/Roma' and 'Traveller of Irish Heritage' categories which were introduced in order to support the Department's work to raise the attainment of

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Traveller children (<http://www.standards.dfes.gov.uk/ethnicminorities/collecting/763919/811067/>).

Policy and practice background

Widening participation in formal post-compulsory education and training is a policy agenda common to most developed countries, with political attention in the UK largely focused on young (potential) students aged 16-21. Participation has been increasing. In 1972, only 37% of 16 year olds were in fulltime education. Today, 87% of young people participate in education or training in the year after compulsory schooling, and 76% two years after the end of compulsory schooling (full and part-time) (DfES, 2007).

However, inequalities in participation in all forms of post-compulsory education have endured over the past fifty years in the UK, with significant minorities remaining routinely excluded (see, for example, Beinhart and Smith, 1998). Individuals participating in adult education are heavily influenced by 'pre-adult' social factors, such as socioeconomic status, year of birth and type of school attended. Perhaps the foremost development agency concerned with widening post-16 participation in the UK is the National Institute of Adult Continuing Education (NIACE). NIACE run countrywide seminars and programmes of related activities, based on the assumption that wide adult participation is important for a fulfilled life for individuals, a successful and developing economy, and a genuinely participative democracy. However, much of this very plausible activity is neither evidence-based nor rigorously evaluated (for that is not its purpose) and so it provides little for a review such as this. In research terms, NIACE is best known for their regular large-scale Adults Learning Survey. This reinforces other studies in revealing that a very large proportion of the adult population does not participate in any formal episodes of learning at all after reaching school leaving age. Those individuals who do participate in post-compulsory education are heavily patterned by pre-adult social,

geographic and historical factors, such as socioeconomic status, year of birth and type of school attended. These patterns have until recently been most clearly portrayed in the writing, for NIACE, of the now late lamented Naomi Sargent (for example, Sargent and Aldridge, 2002).

However, the situation for patterns of participation in terms of sex and ethnic background is much less clear. Some studies have claimed to find that men are more likely to participate in specific sectors of post-compulsory education than women (Green, 1994). However, women outnumber men in higher education in England, and have been more likely than men to participate in frequent short-term training. Similarly, some studies suggest that the members of the majority white ethnic group in England have been less likely to participate in many sectors of post-compulsory education. In one study, black women employees (not including those from the Indian sub-continent) were the most likely to have received training in the previous four weeks (DfEE, 1995). Other studies, however, suggest the reverse. Like place of residence, sex and ethnicity are clearly related to other important characteristics. For example, males are more likely to be employed fulltime than women (Tremlett et al., 1995), with unpaid work at home not widely accredited (Butler, 1993). Leslie and Drinkwater (1999) suggest that, while British-born ethnic minorities are more likely to participate in post-16 education than white UK students, the figures are lower for Black-Caribbean students, and anyway there is some concern that some minorities may feel that it is preferable to stay on in education largely because they will face discrimination in the workforce.

According to the DfES (2006a), all minority ethnic groups in England and Wales are more likely to be in fulltime education at age 18 than 'white' individuals. They are all also at least as likely to be in higher education (HE). This means that a smaller proportion of ethnic minority individuals in education at age 18 are in HE. This applies to 'Asian' individuals, and also to the two main sub-groups of Indian,

and Pakistani/Bangladeshi. White individuals are correspondingly more likely to be in employment. When broken down, the figures for all other activities (such as part-time jobs) are small. The figures for those not in education, training or employment are roughly the same for all groups (around 12%) except Indian (4%). On the basis of these figures, one may conclude that all ethnic minority groups, but especially Indians, have relatively high levels of participation in immediate post-compulsory education. The figures for those in education aged 17 (DfES, 2005a) are larger for all groups, and for those aged 19 (DfES, 2005b) they are smaller for all groups, but otherwise the conclusion remains valid.

The situation with respect to qualifications is more mixed, although again it must be stressed that some figures are very small. For example, the difference between 40% Black individuals with NQF Level 3 and 37% Pakistani/Bangladeshi is actually only five individuals in a survey with a less than 50% response rate. There are few robust differences in the kinds of qualifications obtained, but there is an indication that Black individuals are more likely to hold an NVQ or equivalent (as opposed to A or AS levels) than other groups. This may partly explain their lower take-up of HE when one considers those in education at age 18. According to the DfES (2006b), Pakistani/Bangladeshi and Black pupils have generally lower levels of attainment than other groups by age 16 at school, while Indian (and Chinese) pupils have higher levels of attainment. However, much of the difference here is attributable to differential deprivation and levels of parental education, and it appears to be the case that most ethnic groups make greater progress at school (in value-added terms) than the White group.

Research background

A previous systematic review (Taylor et al., 2005) reviewed effective strategies to widen adult participation in learning. Of the six studies that provided evidence on outreach, targeting and engagement, only one (rated by the authors of the review as of medium

quality) specifically addressed the issue of participation by ethnic minority groups (Tyers et al., 2003). There were again six studies that provided evidence on participation and retention. Of these, one, rated by the review authors to be of medium quality (Robinson and Hughes, 1999) touched on the enrolment, retention and achievement of indigenous people in Australia. However, this study is not relevant to our present review. Although many of the studies considered by Taylor et al. (2005) are not germane to the present review, they nevertheless identified four limitations of published research in the area:

- a lack of studies that evaluated the impact of interventions by comparison with a baseline or control group
- a lack of testing of recommended practice
- a limitation in the extent to which lessons learned could be transferable to the UK context
- a general weakness in the reporting of methods and evidence

Authors, funders and other users of the review

The York Post-16 Review Group undertook this review mainly as a response from policy colleagues at the former DfES who funded the research. The Group worked in partnership with an Advisory Group to ensure relevance of the review to policymakers interested in both the determining factors that might be affected by policy decisions, and interventions that successfully increase both participation and retention. However, the Group has attempted in this summary to provide information for a wide range of audiences, including practitioners, research funders and educational researchers.



CHAPTER TWO

Methods of the review

User involvement

The Advisory Group comprised representatives from key constituencies of policy users, including a representative from the Lifelong Learning and Skills Directorate at the former DfES and representatives from Strategic Analysis at the former DfES. The focus of the review was identified through discussion with members of the Advisory Group at an initial meeting, and through the development of the protocol; it was then refined in response to comments by them and by colleagues representing the EPPI-Centre.

Identifying and describing studies

Studies were included if they were UK-based and either focused on minority ethnic pupils' (or students') views or aspirations with respect to post-16 participation in fulltime education, or else evaluated interventions designed to increase post-16 participation of minority ethnic groups. Non-UK studies were only included for the latter group, if they evaluated interventions.

The Review Group included surveys, qualitative research, case studies and reviews to investigate pupils' or students' views, but focused on experiments for evaluating interventions. Studies also had to meet strict quality criteria.

The Review Group searched in the main educational and social science databases, including ASSIA, Australian Education Index, British Education Index, EPPI-Centre database of education research, ERIC, International Bibliography of the Social Sciences, PsycINFO, Social Policy & Practice, Social Science Citation Index, Sociological Abstracts. The CERUK and EPPI-Centre websites were also scanned for relevant documents and the following were searched: reference lists of key papers identified through the electronic searches; and reference lists of any located systematic and non-systematic reviews. Experts in the field were also consulted.

Inclusion and exclusion criteria were applied successively to (i) titles and abstracts, and (ii) full reports, using the full set of inclusion criteria (given in the Technical Report). Any studies located through ancestry searches of key papers and reviews were obtained (or sent for through library inter-lending if necessary) and then screened together, using the full papers and the inclusion/exclusion criteria.

Characterising included studies (EPPI-Centre and review-specific coding)

The aspirations studies remaining after application of the criteria were individually coded by three members of the Review Group. The interventions studies were independently

double-coded by pairs of reviewers. The coding categories included bibliographic details, study purpose and method, and for the empirical studies (that is, not reviews or background studies) details about the sample. Five additional coding categories, specific to the context of the review, were added to those of the EPPI-Centre: details of ethnicity and the specific participation, retention, attitudes and achievement issue(s) that the authors of the study were trying to understand or improve

Identifying and describing studies: quality-assurance process

Application of the inclusion and exclusion criteria to the titles and abstracts and full papers was conducted by two reviewers. They worked independently and then compared their decisions, before reaching a consensus. In addition, at the second and third stages, the two members of the Review Group not involved in screening also screened a random 10% sample of the records. Their decisions were compared with the agreed decisions of the reviewers undertaking the screening. In addition, a representative from the EPPI-Centre also screened the same 10% random sample at the second stage and a different 5% sample at the third stage. Her decisions were then compared with the Review Group's agreed decisions. The coding of all the 12 interventions studies was conducted by members of the Review Group, working in pairs independently and then comparing their decisions, before coming to a consensus. Six of the views studies were double-coded by pairs of reviewers. The EPPI-Centre provided external quality assurance by double-coding a sample of studies in this way. The coding of all other studies was completed individually by reviewers.

In-depth review

A subgroup of the studies in the interventions area of the map was selected, firstly by searching for all studies coded 'What works?'. Since the focus was on ethnic groups that are

predominant in the UK, the search was on the review-specific code 'ethnicity', and only included those with minority ethnic populations present in the UK. Any interventions studies which did not meet the intervention quality criterion, but had been included because they were also aspiration studies, were excluded from the in-depth review.

Intervention studies identified as meeting the inclusion criteria were analysed in depth, using the EPPI-Centre's detailed data-extraction software, EPPI-Reviewer. Where available, detailed data were extracted about, for example, the settings, participants, interventions and outcomes, and design features relating to the internal validity of the included studies, (for example, sample size calculations, methods of allocation, methods of analysis, including statistical methods). In addition, detail was added to the review-specific questions about what the interventions were trying to improve in the domains of: participation, retention, engagement and achievement.

Assessing the quality of studies and weight of evidence for the review question

The following three components were identified to help in apportioning different weights to the findings and conclusions of different studies:

- soundness of studies (internal methodological coherence), based upon the study only (weight of evidence A)
- appropriateness of the research design and analysis used for answering the review question (weight of evidence B)
- relevance of the study topic focus (from the sample, measures, scenario, or other indicator of the focus of the study) to the review question (weight of evidence C)

An overall index was then calculated:

- This represented an overall weight taking into account A, B and C above (weight of evidence

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D), and using a pre-established formula for moving from A, B and C, to D.

In-depth review: quality-assurance process

Synthesis of evidence

The data was 'synthesised' to bring together the studies which answered the review questions and which met the quality criteria relating to appropriateness and methodology. The focus was particularly on the specific notions of participation, retention, academic achievement and minority ethnic groups. The synthesis was undertaken by looking for groups of studies which were similar with respect to (a) the educational settings, (b) the interventions and outcomes used, and (c) the design features of the studies. The synthesis was primarily narrative and structured in terms of the strength (i.e. weight) of evidence. It was, as stated above, not possible to undertake a meta-analysis because there was insufficient homogeneity between the interventions and outcomes.

Data-extraction and assessment of the weight of evidence were conducted by pairs of Review Group members, working independently and then comparing their decisions before coming to a consensus. External quality assurance for the process was provided by the EPPI-Centre.



CHAPTER THREE

What research was found?

Studies included from searching and screening

The search of the databases and websites, followed by a broad initial screening led to the identification of 1,678 records. This was reduced to 212 records at the second screening stage, when the precise inclusion criteria were applied. At the third stage of screening, full papers of the 212 records included at the third stage were located from electronic or paper journals or through inter-library lending, or by writing to individual authors, and they were independently double-screened by two reviewers on the basis of the full papers. At this stage, a total of 144 records were excluded, leaving 68 records remaining. These 68 records, reporting 60 studies, were included and entered into the descriptive map. In addition to the studies located from the electronic searches, four studies were identified and included from 'ancestry' searches of previous studies and one was identified through personal communication.

Systematic map

Sixty-five studies were thus identified for inclusion in the systematic map. Of these, 12 were UK-based reviews of previous empirical research on post-16 participation of minority ethnic groups. The remaining 53 studies fell into two distinct categories: intervention studies (11 US-based studies) and aspiration studies (42 UK-based studies). The 11 intervention studies

evaluated interventions to increase post-16 participation, to improve retention of minority ethnic groups, or to improve achievement, learner motivation or identity in such groups. The 42 aspiration studies all investigated the post-16 views and aspirations of groups of diverse minority ethnic participants.

Interventions

The intervention studies attempted to measure the effectiveness of an intervention (or intervention design) to improve participation, retention, learner motivation or attainment in ethnic minority participants. All achieved the quality threshold set, in that they had employed a control or comparison group and included at least 30 participants.

Most of the interventions were trialled with ethnic groups with traditionally lower than average participation in post-16 education, and the control or comparison groups comprised participants of the same ethnic minority group who did not receive the intervention. From a research design point of view, there were six randomised controlled trials, one quasi-experiment using prospective (non-random) allocation, two cohort studies, and one case-control study.

The minority ethnic focus varied, although in 10 out of the 11 studies the interventions were evaluated mainly with African American participants. The topic focus, however,

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excluded retention as an area of interest, and the studies focused mainly on retention and attainment as the primary outcomes.

Aspirations studies

A majority of the aspirations studies were descriptive. Here, the aim was essentially to describe a state of affairs with regard to young people's views about post-16 participation. However, 18 of the views studies also examined relationships and/or statistical analyses with regard to the factors that could be instrumental in determining young people's views about post-16 participation (for example, parental or cultural influences). These studies considered a variety of variables, including familial attitudes and religious beliefs, in order to help understanding of factors influencing young people's post-16 decisions.

The minority ethnic focus was variable and included both traditionally high-achieving, high participating groups and low-achieving, low-participating groups.

A synthesis of the attitudes and aspirations literature will be published in a separate review in early 2008.



CHAPTER FOUR

What were the findings of the studies?

As noted above, 10 intervention studies were identified and included in the in-depth review; of these, eight were identified from the original electronic searches and two through an ancestry search of previous studies. They comprised six randomised controlled trials, one cohort study, one case control study and two non-randomised experiments. All were undertaken in the US. The sample sizes involved were medium to large, ranging from 80 (in the smallest study) to 4,849 (in the largest study). The ethnicity of the populations making up the intervention and control groups was again diverse, with African-American populations making up the majority, followed by Hispanic populations. Six studies were undertaken in school settings, and four were undertaken in university settings.

Of the six studies undertaken in school settings, two evaluated the effectiveness of financial incentives and sanctions on post-16 retention outcomes (Jones et al., 2002; Spencer et al., 2005), two evaluated the effectiveness of a school engagement programme on measures of school engagement (Sinclair et al., 1998; Sinclair et al., 2005), one evaluated a supportive personalised learning environment intervention in high schools (Kemple, 2000), and one study evaluated the impact of a work-based learning experience intervention programme on school performance, college enrolment and college retention (Goldberger, 2000).

Of the four studies undertaken in university

settings, three evaluated faculty/student mentoring interventions (Campbell and Campbell, 1997; Nagda et al., 1998; Thomas, 1997), and one evaluated an academic and social support programme (Padgett and Reid, 2002).

Tables 4.1 and 4.2 give details about each of the studies, including minority ethnic groups studied, study method and sample, interventions and outcomes. Table 4.1 includes the studies set in schools and Table 4.2 the studies set in higher education institutions (HEIs).

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Table 4.1 Characteristics of intervention studies: post-16 school setting

Author(s), date, country	Ethnic minority group(s)	Study method and sample	Intervention	Outcomes	Results
Goldberger (2000) US	African American (53%), Latino (30%), Asian and White	Quasi-experiment. Total participants (age 17 and over): 2,283 (490 ProTech; 1,791 no ProTech) For the post-secondary impact measures total participants: 219 (106 intervention; 117 comparison)	Paid work-based-learning experience intervention ('ProTech' program) provided students with an opportunity to learn a well-defined set of general and occupational-specific skills; integrated academic and vocational instruction and classroom and worksite learning.	Achievement: school performance Participation: college enrolment Retention: college retention	For the four district high schools, ProTech was positively associated with grades and GPA in year 1, but negatively associated with grades and GPA in year 2. At the vocational school, the positive association continued. There was no impact on college enrolment or dropping out from high school. ProTech students showed a greater decline in mathematics test scores than comparison students. Both ProTech and comparison groups showed similarly high levels of enrolment in post-secondary education or training the Autumn after graduating from high school (77% and 73%, p 187). The case was similar for retention. 81% of the ProTech and 86% of the comparison group were either currently enrolled on, or had completed, a degree or certificate at the time of the survey.
Jones et al. (2002), US	White, African American (about one third), Hispanic (about one quarter), Asian	Quasi-experiment 'At risk' students (age 17 and over) Total sample: 2,744 Intervention group: 1,807 students; average age: 17.09 Control group: 937 students; average age: 17.1	School attendance intervention (School Attendance Demonstration Project - SAMP): comprised various features, including financial sanctions for low attendance, social services to assist with attendance	Retention: school attendance rates, school completion rates (age 18)	The experimental group met the 80% attendance rule, whereas the control group did not. There was no significant difference between experimental and control groups: 57.5% of the experimental group graduated and 55.4% of the control group graduated. The Hispanics were less likely to meet the 80% rule than other ethnic subgroups.
Kemple and Snipes (2000), US	African American, White, Hispanic, Asian or American Indian	Randomised controlled trial Total sample: 1,764 (959 in programme group and 805 in control group) Age of participants: 13-17	Supportive personalised environment intervention career Academies provided a supportive environment through a school-within-a-school structure. The curricula combined academic and occupation-related course requirements that aimed to promote learning and satisfy college entrance requirements.	Retention Attainment	The hypothesis on increasing school attendance was supported by the data. Data show that, in any month after baseline, 3% to 9% more experimental group students met the attendance rule than did students in the control group. The hypothesis on increasing graduations was not supported by study data.

Author(s), date, country	Ethnic minority group(s)	Study method and sample	Intervention	Outcomes	Results
Sinclair et al. (1998), US	African American, other (not stated)	Randomised controlled trial Total sample: 94 (intervention: 47; control: 47) Students with learning and behavioural difficulties (ages: 13-16)	School engagement intervention ('check and connect'); provided a mechanism for systematically and regularly monitoring observable student performance (i.e. 'check') and providing individualised interventions in a timely fashion ('connect'). The strategies relied heavily on establishing a trusting relationship between a programme staff (monitor) and student.	Participation: school engagement Retention Aspirations Attainment	Students in the treatment group were significantly more likely to be engaged in school than students in control group. Students who received intervention through 9th grade were significantly more engaged in school. Treatment students were more likely to be enrolled in school at the end of the year than were students in the control group. Treatment students were more likely to persist in school during 9th grade compared with control students. Treatment students were more likely to complete their assignments than were control students. Treatment students earned more credits during the first year of high school than control students. Treatment students were more likely to be on track to graduate in five years than students in the control group. Special education teachers rated treatment students as more academically competent. General education teachers rated treatment students as demonstrating fewer behavioural problems.
Sinclair et al. (2005), US	White, African-American, other (not stated)	Randomised controlled trial Total sample: 144 (intervention: 74; control: 73) Students with learning and behavioural difficulties (age 13-16)	School engagement intervention ('check and connect'); see Sinclair (1998, pp 470-472) for a detailed description. Model originally developed to prevent dropout and to promote student engagement among urban middle school students with disabilities. The check component refers to timely and individualised intervention focused on the student's educational progress, guided by check indicators, and provided by programme staff in partnership with school personnel, family members and community workers.	Participation: school engagement Retention Attainment	Check and connect is an 'efficacious procedure for keeping secondary students with learning and behavioral disabilities engaged at school' (p 17) As both groups received the intervention in 7th and 8th grades, the findings cast doubts on the effectiveness of having the dropout prevention strategy for a limited time. To be effective it needs to be sustained. The findings suggest that intervening in Grade 9 (transition between middle and high school) is important, as high school is the point at which students start earning credits toward graduation. The scores in 9th grade for both treatment and control groups show the students as low to moderately engaged in school. This suggests that the procedure is not sufficient to substantially improve student performance. The use of a dropout prevention procedure alone is not sufficient to improve students' skill levels. It needs to be used in conjunction with a comprehensive programme aimed at increasing school completion for all students.

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Author(s), date, country	Ethnic minority group(s)	Study method and sample	Intervention	Outcomes	Results
Spencer et al. (2005), US	White, African-American, Hispanic, Asian Pacific Islander, other (not stated)	Randomised controlled trial Total sample: 541 (age of participants: 14-18)	Monetary incentives intervention: An existing programme sponsored by a private foundation. Students who meet the academic and financial criteria receive a monthly stipend (amount contingent on grade level) as long as the student continues to meet the Foundation's academic criteria for eligibility: students must have As and Bs in major subjects (only one C in a major subject which must be offset by an A in another subject).	Retention Aspirations Attainment	Treatment assignment emerged as a significant predictor of good academic standing after one year. Students in the Stipend group had a programme retention rate (i.e. good standing) that was 10% higher at the end of the year than the rate for those in the Delayed Stipend group who did not receive monetary incentives. There was some variation in one-year academic good standing, with Asian students having the highest rate, although ethnicity was not a statistically significant independent predictor of outcome.

Table 4.2 Intervention studies: post-16 HE/FE setting

Author(s), date, country	Ethnic minority group(s)	Study method and sample	Intervention	Outcomes	Results
Campbell and Campbell (1997) US	Hispanic, African American, Native American	Cohort study Total sample: 678 (399 intervention students matched with 399 control students) Age: 17 and over	Faculty/student mentor intervention: intervention comprised facilitation of personal contacts between faculty and students.	Retention Academic performance	Consistent differences in GPA, favouring the mentored students. Only one of the two measures of retention revealed effects for mentoring: the dropout rate among mentees was about half of that for students in control group. There was no difference between the two groups on rate of graduation. Subgroup analysis: Ethnicity or ethnicity matching, with no significant differences between mentees' ethnic groups on academic achievement or retention; no differences of ethnicity matching on GPA and retention.
Nagda et al (1998), US	White, African American, Hispanic	Randomised controlled trial Total sample: 1,280 Age of participants: 17 and over	Intellectual faculty/student relationship intervention	Retention: drop-out rates Academic achievement: grade point average (GPA)	The hypothesis that the university mentoring programme would result in more units completed per semester and higher grades (as measured by GPA) was supported. The hypothesis that mentees would have lower dropout rate than their matched controls was also supported. The findings provide good support for the conclusion that the programme being evaluated did indeed cause the reported gains.
Padgett and Reid (2002), US	White, African American, Hispanic, other (Turk, Asian)	Case control study Total sample: 473 Age of participants: 17 and over	Academic and social support intervention	Retention Achievement (GPA)	Graduation rates: Overall graduation rate across the SDP cohorts was 46.2%. Overall graduation rate across the comparison groups was 23.5% ($p = 0.005$ GPA). GPA of SDP students was 2.36 (sd 0.37). GPA of comparison students was 2.28 (sd 0.30, $p = 0.11$). The 39 students who entered the SDP in 1994 and 1995 graduated at twice the rate of comparable students matched on sex, ethnicity, age, transfer status, entering GPA and date of enrolment. There was no statistically significant difference between the two groups, although the average final GPA in the SDP appeared slightly higher than that of the comparison students.

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Author(s), date, country	Ethnic minority group(s)	Study method and sample	Intervention	Outcomes	Results
Thomas, 2006, US	African American	Randomised controlled trial N = 80 African students (intervention: 50; control: 30) Age of participants: 17 and over	Ethnically-based mentoring intervention (The African American Student Mentoring Program), a year-long mentoring programme which used African-American student mentors to support African American college freshmen.' The purpose of this study was to evaluate the influence of an ethnic-based mentoring model and the factors (i.e. racial identity, social support, psychological support, academic support, sense of belonging, leadership development) that influenced African-American student college adjustment, GPA, and retention in an African-American based student mentoring programme at a primarily white institution (PWI).	Participation: college adjustment Achievement: GPA Retention	No differences between the mentored group on college adjustment, GPA or retention. The experimental group did not report significantly higher mean scores on two proximal outcomes (racial identity and academic support) compared with the control group. The mentoring programme had no measurable impact across the time of the experiment on academic performance. The mentoring did lead to an increase in racial identity.

Synthesis of evidence

As explained above, a very rigorous process was followed to reduce the initial research base of 1,678 studies to ten in the in-depth review. The 1,678 studies were located after the initial screening and all met the criterion of broad relevance to the topic, based on scrutiny of their titles and abstracts. A further two stages distilled the 1,678 papers, first to 212 on the basis of careful re-screening, and secondly to 65 on the basis of reading the full versions of the 212 studies. The 65 studies in the systematic map were then further reduced to ten that could be used to address the in-depth review question.

All ten included in the in-depth review were valid in the sense that they met the review's quality criteria, in terms of rigour of design, and sample size (details are given in the technical report). However, the ten varied with respect to the 'weight of evidence', which the reviewers judged should be ascribed to them.

The judgement of the overall weight of evidence for each study (Index D) was made on the basis of three more specific weight of evidence judgements (indices A-C). D took into account decisions made about the study in terms of its internal validity (A), the appropriateness of the study method for the research question (B), and the appropriateness of the sample, the context and generalisability to the UK context (C). In all cases, the index had three primary values: 'high', 'medium' and 'low', and intermediate values (e.g. 'high to medium').

These weight of evidence judgements should be interpreted in the light of the rigorous process described above - that is, all contributed to answering the research question - but greater weight was given to studies of the highest methodological quality and greatest generalisability. Thus, while a high overall value represents an extremely high standard indeed, a medium rating still represents good quality research whose results can contribute to policy recommendations.

Two narrative syntheses (see glossary, Appendix 2) were undertaken: one of studies in post-16 school settings, the other of studies in post-16 higher education (HE) / further education (FE) settings. In both, evidence for the effectiveness of broadly homogeneous categories of interventions/strategies designed to increase post-16 achievement and/or participation and/or retention of minority ethnic groups of relevance to the UK context was examined.

Post-16 school settings

Monetary incentives/sanctions interventions: consistent high quality evidence of positive effects One high quality randomised evaluation of a monetary incentive intervention to improve academic achievement found significant positive effects.

Spencer et al. (2005) evaluated the effectiveness of an intervention to give high-achieving students of diverse 'racial' and 'ethnic' backgrounds from poor families monetary incentives to maintain their academic standing. Students in the intervention group received a monthly stipend (amount contingent on grade level), as long as they continued to meet the academic criteria for eligibility.

Treatment assignment emerged as a significant predictor of good academic standing after one year. Students in the stipend group had a programme retention rate that was 10% higher at the end of the year than the rate for those in the delayed stipend group who did not receive monetary incentives. Although the overall effect was statistically significant, there seemed to be a lower benefit among Grade 11 students (i.e. UK Year 12). However, it is unlikely there would be a negative interaction between grade and effect as the stipend for students in Grade 11 was significantly less effective than for other grades. There was some variation in one-year academic achievement with Asian students having the highest rate, although ethnicity was not a statistically significant independent predictor of outcome. The authors concluded that 'monetary stipends can be effective incentives to promote ongoing academic achievement among high-achieving

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high school students from low-resource, urban backgrounds' (p 215).

Monetary incentives/sanctions interventions: partial evidence of positive effects There was one medium quality quasi-experimental study evaluating a paid work-based learning intervention to improve education and employment outcomes, and one large medium quality quasi-experimental study evaluating a school attendance intervention to improve school attendance rates, both with mixed results.

Goldberger (2000) examined the effectiveness of a school-to-career intervention as a strategy for improving education and employment outcomes for urban youth (Boston's ProTech program) using a quasi-experimental design. The study examined the ProTech results on four cohorts of students across five high schools in the same city, in programmes focused on business services, health care, financial services, and utilities and communications. It also examined the post-school situation of students in three cohorts. Features of the ProTech program included a progression of paid work-based learning experiences, which provided students with an opportunity to learn a well-defined set of general and occupation-specific skills; integration of academic and vocational instruction and classroom and worksite learning, so that students had the opportunity to master academic and technical skills in the context of real-world applications; and a formal connection between high school and post-secondary learning.

Both ProTech and comparison groups showed similarly high levels of enrolment in post-secondary education or training the autumn after graduating from high school (77% and 73%). The results were similar for retention: 81% of the ProTech group and 86% of the comparison group were either currently enrolled or had completed a degree or certificate at the time of the survey. Ethnically, African Americans showed significantly high levels of enrolment in the following autumn and of having a qualification (or being in college) at the time of the survey. Asian students also

did well, with all of them enrolling. All ethnic groups from the ProTech group who were in work earned higher wages than students in the comparison group, but the sample size was too small to test for significance within groups.

Jones et al. (2002) examined the School Attendance Demonstration Project (SADP) aimed at improving the school attendance rates of 16-18 year-olds receiving public assistance using a quasi-experiment design. The intervention was aimed at improving the school attendance rates of 16-18 year-olds receiving public assistance. 16-18 year-old dependent children received a financial incentive conditional on attending school on a fulltime basis. In addition to the financial incentive, participants in the experimental group were subject to a sanction if they did not attend school at least 80% of the time. They were also eligible to receive social services to assist them with school. All students in experimental and control groups were eligible to receive school services, but only the experimental group was eligible to receive social services from the SADP services unit.

School engagement intervention: consistent medium quality evidence of positive effects Two medium quality randomised evaluations (undertaken by the same group of researchers) of a school engagement intervention to improve participation and retention rates and academic achievement, both of which demonstrated positive results.

Sinclair et al. (1998) examined the efficacy of a sustained dropout prevention intervention ('check and connect' procedure) on predominantly African-American students with learning or emotional/behavioural disabilities that incorporated monitoring and school engagement strategies using a randomised experimental design. The check component refers to 'timely and individualised intervention focused on students' educational progress, guided by check indicators, and provided by program staff in partnership with school personnel, family members and community workers'. Students in the treatment group were significantly more likely to be engaged in

school, more likely to be enrolled in school at the end of the year, and more likely to be on track to graduate in five years than students in the control group.

Sinclair et al. (2005) investigated the effectiveness of the same school engagement intervention ('check and connect' procedure) aimed at promoting school completion and reducing dropout among urban high school students with emotional or behavioural difficulties, using a randomised experimental design with slightly larger sample size than the previous study. The authors concluded that 'check and connect' was an 'efficacious procedure for keeping secondary students with learning and behavioural disabilities engaged at school' (p 17).

As both groups received the intervention in 7th and 8th grades, the findings cast doubts on the effectiveness of having the dropout prevention strategy for a limited time, and concluded that, to be effective, it needs to be sustained. The findings suggest that intervening in Grade 9 (transition between middle and high school) is important, as high school is the point at which students start earning credits toward graduation.

Supportive personalised environment intervention: partial evidence of positive effects One high quality large randomised evaluation was found of a supportive personalised environment intervention to improve participation and academic outcomes with mixed results

Kemple and Snipes (2000) used a large-scale multi-site random assignment research design to determine the effect of career academies (supportive personalised environments) on student outcomes. The intervention provided a supportive environment through a school-within-a-school structure. The curricula combined academic and occupation-related course requirements that aimed to promote learning and satisfy college entrance requirements. This showed an effect on participation, but not on achievement.

Post-16 higher education (HE) /further education (FE) settings

Faculty/student mentoring interventions: consistent high quality evidence of positive effects Two large high quality studies (a randomised controlled trial and a cohort study) evaluated the effect of faculty/student mentoring interventions on retention and academic performance, both of which had positive effects for ethnic minority populations.

Nagda et al. (1998) investigated the impact of the 'Undergraduate Research Opportunity Program' (UROP) on student retention, and particularly in minority ethnic groups under-represented in the university: Hispanic and African-American students. The interventions comprised research partnerships between faculty members and undergraduates. involving individual meetings with sponsors and team meetings with other project collaborators, to enable students to co-operate in various aspects of the faculty members' research. Their duties included conducting bibliographic research and literature reviews, formulating research questions and hypotheses, and conducting studies and analyses. Some UROP students co-authored presentations and journal articles. Altogether there were seven components in the intervention: student recruitment, peer advising, peer research interest groups, faculty recruitment, faculty-student matching, research presentations, and academic credit and assessment. Although there was a non-significant difference in attrition rates of UROP participant and control groups: students with a low grade point average (GPA) and high GPA in UROP showed a lower attrition than those in the control group, but the difference was not significant. UROP participation impacted most positively on the retention of low-achieving African-American students. More specifically, the programme appeared to benefit African-American students whose academic performance was below the median for the ethnic group. There were also positive trends for Hispanic and White students who participated in UROP during their sophomore year.

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Campbell and Campbell (1997) evaluated the effects of a 'faculty/student' mentor intervention on academic performance and retention, using a cohort design with a total of 678 students: 339 intervention students matched with 339 control students. Mentored students were matched on a number of demographic and academic variables with students who were not mentored. The mentoring programme evaluated in the study aimed to improve retention at an American university. Its goal was to facilitate personal contacts between faculty and students. The target population, comprising students from ethnic groups under-represented at the university (Hispanic, African American and Native American) was invited to participate and faculty participants were matched with students based on shared academic interests. Mentors and students were encouraged to meet regularly and mentors kept a log documenting the meetings. Other activities were organised to encourage mentors and students to spend time together. During the academic year, six workshops provided training on various subjects and there were social events and small grants to encourage students and mentors to initiate research projects or to attend meetings together. Mentored students were matched on a number of demographic and academic variables with students who were not mentored. Consistent differences in GPA favouring the mentored students were found. The greatest impact occurred in the first semester, but the pattern of differences continued into the second semester and was found to be cumulative. The results showed a higher GPA for mentored students (2.45 v 2.29), more units completed per semester (9.33 v 8.49) and a lower dropout rate (14.5% v 26.3%). A subgroup analysis using ethnicity or ethnicity matching found no significant differences between mentees' ethnic groups on academic achievement or retention, and no differences of ethnicity matching on GPA and retention. The findings provide good support for the conclusion that the programme being evaluated did indeed cause the reported gains for all the ethnic minority groups in the study.

Faculty/student mentoring interventions:

partial evidence of positive effects One medium to low quality case-control study evaluated the effects of an academic and social support intervention on retention and academic achievement, and found results that were not statistically significant.

Padgett and Reid (2002) evaluated the Student Diversity Program (SDP) (a retention programme comprising both academic and social support) on retention rates of Black student athletes and other students at risk of disqualification. The intervention was a multilevel retention programme, including features such as the development of action plans and programmes to address academic, social and cultural needs; maintaining a complex early assessment and reporting system to integrate students into university life, psychological counselling, faculty mentoring, group counselling, peer-mentoring, and multi-cultural training, all aimed at increasing self-efficacy, self-esteem, mastery, commitment, coping skills, and cultural awareness. Participants were provided with role models, mentors and advisors.

Padgett and Reid found that the 39 students who entered the SDP in 1994 and 1995 graduated at twice the rate of comparable students matched on sex, ethnicity, age, transfer status, entering GPA and date of enrolment. The overall graduation rate across the SDP cohorts was 46.2% and the overall graduation rate across the comparison groups was 23.5% ($p=0.005$). However, there was no statistically significant difference between the two groups in terms of GPA, although the average final GPA in the SDP appeared slightly higher than that of the comparison: the GPA of SDP students was 2.36 (sd 0.37) and the GPA of comparison students was 2.28 (sd 0.30, $p=0.11$).

Faculty/student mentoring interventions: inconclusive evidence of positive effects

A medium to low quality, medium-sized randomised study evaluated the effects of a mentoring intervention on academic achievement and retention and found no differences between the mentored group and the control group on college adjustment, GPA, or retention.

Thomas (2000) evaluated an ethnically-based mentoring intervention: the African American Student Mentoring Program, a year-long mentoring programme, which used African-American student mentors to support African-American college freshmen. The mentoring programme had no measurable impact across the time of the experiment on academic performance. However, this intervention was different from the interventions evaluated by Campbell and Campbell (1997) and Nagda et al. (1998), in that student mentors were used, rather than faculty members.

Summary

In a post-16 school setting:

- There was consistent high quality evidence of positive effects for monetary incentives to maintain academic achievement (a monthly amount depending on age, the amount increasing with age) given to high achieving students from poor minority ethnic families, provided they achieved specified levels in specified subjects.
- There was also consistent medium quality evidence of positive effects for a school engagement intervention, which systematically monitored student performance. The basis of this intervention was the relationship between the ethnic minority student and the guidance counsellor.
- There was partial evidence of positive effects for work-based learning experiences where pupils learnt general and occupation-specific skills in the workplace and had academic and

vocational learning in the classroom. The work experiences and the school experiences were formally linked, as were the awards at the end of the experiences, which were recognised by industry. These evaluations showed high levels of participation, but the sample sizes were small.

- There was partial evidence of positive effects for school-within-school structures to provide a supportive environment which was more individualised with special curricula, and which included both academic and vocational courses within the school environment. This showed a positive effect on participation, but not on achievement.

In a post-16 non-school setting:

- Consistent high quality evidence of positive effects was found for mentoring of students at risk of dropping out by staff in the same department. The main way in which the students were mentored was by encouraging them to assist with such activities as aspects of research being undertaken by the staff, training events, regular meeting, social events. There were small grants to facilitate the students and staff working on grant projects together.
- Partial evidence was found for positive effects of an academic and social support intervention on retention and academic achievement. This was a comprehensive programme, involving development of action plans, counselling, mentoring and training. The final grades of the ethnic minority students were higher, but this was not statistically significant.



CHAPTER FIVE

Implications, or 'What does this mean?'

Implications for policy

This review was designed to look for international research evidence, particularly from the US owing to a probable lack of research in the UK employing a rigorous experimental design. A number of US-based interventions of high quality were found, partly because this type of research is well-funded in the United States.

Many of these studies may have limited direct implications for a UK audience, because the specific mix of ethnic minorities, their immigration patterns and history, and economic position are so different from the UK context, as well as the different education context for young people aged 16 to 19. However, there are initiatives in the UK with similarities to those in the US at present or planned for the future. None of these initiatives is specifically aimed at ethnic minorities, but may impact on these groups. These are as follows:

- The educational maintenance allowance (EMA), which provides monetary incentives to encourage participation in post-16 education and training. This is means-tested and it is not related to achievement. The EMA currently has no performance conditions (unlike the interventions included in the in-depth review, where conditions were set and there was evidence of positive effects).
- The Department for Children, Schools and

Families is also piloting a range of financial incentives to encourage participation: the Activity and Learning Agreements. These pilots are testing a range of financial incentives and one-to-one support to re-engage those who are not in education employment or training, or who are in jobs without training.

- There are a number of initiatives around work-based learning: for example, the Young Apprenticeship Programme (with an average of two days per week studying for level 2 vocational qualifications, in a variety of settings), KS4 engagement programme (aimed at underachieving 14-16 year-olds who are likely to be stimulated by different learning environments and including work placements), and from September 2008, young people from the age of 14 will be able to study diplomas, which will include learning through a realistic work environment. In addition, the Increased Flexibility for 14-16 Year Olds Programme (IFP) was introduced in 2002 with the aim of creating enhanced vocational and work-related learning opportunities for 14-16 year olds.
- Mentoring is being considered as a feature of the Lifelong Learning UK (LLUK) Workforce Strategy currently under development, and is thought of as an increasingly important in this sector, as well as for teachers and support staff.

Where current policy and practice coincide with the application of interventions similar to those described in the systematic review above, the authors recommend that these should continue, with the proviso that future UK-based researchers would be advised to confirm the promising findings found in the US-based literature.

Implications for research

A number of US-based interventions of high quality were encountered, and this is partly to do with the scale and funding of US research. Many of these studies are of limited value for a UK audience, because the specific mix of ethnic minorities, their immigration patterns and history, and economic position are so different from the UK context. Ethnic participation studies are one of the areas (unlike perhaps research on curriculum areas and pedagogy) in which UK resources could most usefully be spent on 'parochial' research in the future. In particular, where interventions tested out in US-based evaluations of rigorous design and execution were found to be effective (for example, monetary incentives/sanction interventions in post-16 school settings and faculty/student mentoring strategies in post-16 higher education settings), these could be tested out in the UK, using rigorously designed and executed evaluations.

The fact that some of the most effective interventions are equally effective, where it is possible to assess them, for all or most ethnic groups, brings to the fore the question of whether ethnicity is a useful analytic category. To some extent, a good intervention works for all students at a specific target level (of attainment, or income perhaps). To some extent, the label of ethnicity is thus being used as a proxy for other variables, such as income, prior attainment, English language ability, geography, and perhaps family support.

The intention of this review was to uncover examples of successful interventions that increase the post-16 participation of minority ethnic groups in the UK context. As might be

expected, the majority of these interventions were primarily concerned with the lowest attaining and lowest participating ethnic groups. Very little work has been conducted with an explicit focus on increasing the attainment of highest performing ethnic groups, such as students of Indian and Chinese origin. No work has been uncovered that has identified a plausible reason why Indian and Chinese students appear to perform well in education, and then develop a testable intervention to increase the participation of other ethnic groups. A further lacuna stems from the elapsed time between intervention and subsequent participation. Much work, and the funding that accompanies it, is too short-term to develop and implement a school-level intervention and then wait to see its impact on post-16 participation and retention.

As in many fields of education research, we encountered plausible interventions either not funded or not tested at the level required for likely success and the generation of rigorous evidence of impact (for example, Millat-e-Mustafa, and Begum, 2005; Demie, 2005; or Gundara et al., 2000). These were non-naïve interventions badly tested, or simply untested (and 'illustrated' through case study). We also encountered naïve interventions, ill-thought out or not yet mature, that were unlikely to be successful, however well they were tested. The pattern is part of a more general one, in which UK education researchers seem unwilling to put their ideas for improvement to any kind of formal test, with appropriate controls and comparators. The Department for Children, Schools and Families (DCSF) and Department for Innovation, Universities and Skills (DIUS) could take a lead in dealing with all of these issues - providing the long, thin funding needed for participation studies, and insisting on a definitive test of ideas before implementation.



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APPENDIX

The standard EPPI-Centre systematic review process

What is a systematic review?

A systematic review is a piece of research following standard methods and stages. A review seeks to bring together and 'pool' the findings of primary research to answer a particular review question, taking steps to reduce hidden bias and 'error' at all stages of the review. The review process is designed to ensure that the product is accountable, replicable, updateable and sustainable. The systematic review approach can be used to answer any kind of review question. Clarity is needed about the question, why it is being asked and by whom, and how it will be answered. The review is carried out by a Review Team / Review Group. EPPI-Centre staff provide training, support and quality assurance to the Review Team.

Stages and procedures in a standard EPPI-Centre review

- Formulate review question and develop protocol.
- Define studies to be included with inclusion criteria.
- Search for studies - a systematic search strategy including multiple sources is used.
- Screen studies for inclusion:
 - Inclusion criteria should be specified in the review protocol.
 - All identified studies should be screened against the inclusion criteria.
- The results of screening (number of studies excluded under each criterion) should be reported.
- Describe studies (keywording and/or in depth data extraction):
 - Bibliographic and review management data on individual studies
 - Descriptive information on each study
 - The results or findings of each study
 - Information necessary to assess the quality of the individual studies

At this stage, the review question may be further focused and additional inclusion criteria applied to select studies for an 'in-depth' review.

- Assess study quality (and relevance):
 - A judgement is made by the Review Team about the quality and relevance of studies included in the review.
 - The criteria used to make such judgements should be transparent and systematically applied.
- Synthesise findings:
 - The results of individual studies are brought together to answer the review question(s).
 - A variety of approaches can be used to synthesise the results. The approach used should be appropriate to the review question and studies in the review.

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- The Review Team interpret the findings and draw conclusions and implications from them.

Quality assurance

Quality assurance (QA) can check the execution of the methods of the review, just as in primary research, for example, through:

- Internal QA: individual reviewer competence, moderation, double coding
- External QA: audit/editorial process, moderation, double coding
- Peer referee of protocol, draft report, published report feedback
- Editorial function for report: by review specialist, peer review, non-peer review



APPENDIX

Glossary and definitions

Study designs

***Case control study:** Researchers compare two or more groups of individuals on the basis of their current situation (e.g 16-year-old pupils with high current educational performance compared with those with average educational performance), and look back in time to examine the statistical association with different policies or practices which they have experienced (e.g class size; attendance at single sex or mixed sex schools; non-school activities, etc).

***Cohort study:** Researchers prospectively study a sample (e.g learners), collect data on the different aspects of policies or practices experienced by members of the sample (e.g teaching methods, class sizes), look forward in time to measure their later outcomes (e.g achievement), and relate the experiences to the outcomes achieved. The purpose is to assess the effect of the different experiences on outcomes.

***Quasi-experiment:** This compares two or more groups which receive different interventions, or different intensities / levels of an intervention from each other, and/or with a group which does not receive any intervention at all but does not allocate participants (individuals, groups, classes, schools, LEAs, etc.) or sequences in a fully random manner, but rather using a quasi-random method (e.g allocation by alternate numbers or by date of birth) or other non-random method.

***Randomised controlled trial:** This compares two or more groups which receive different interventions or different intensities/levels of an intervention with each other, and/or with a group which does not receive any intervention at all and allocates participants (individuals, groups, classes, schools, LEAs etc) or sequences to the different groups based on a fully random schedule (e.g a random numbers table is used).

Types of synthesis

***Meta-analysis:** Statistical meta-analysis is a set of statistical procedures designed to combine the numerical results of primary research studies addressing similar research questions.

***Narrative synthesis:** This type of synthesis brings together the results of empirical research that are in a narrative form to provide an accessible combination of results from individual studies in structured narratives or summary tables. Results from different types of empirical research can be synthesised in this way, including experimental evaluative research and survey research.

Strength of evidence

Consistent high quality evidence of positive effects: At least one large study rated 'high' or 'high to medium' weight of evidence for internal validity and appropriateness of research design and with significant positive effects for all outcomes; or at least two small

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studies both rated 'high' or 'high to medium' weight of evidence for internal validity and appropriateness of research design with significant positive effects for all outcomes.

Consistent medium quality evidence of positive effects: At least one large study rated 'medium to high' or 'medium' weight of evidence for internal validity and appropriateness of research design with significant positive effects for all outcomes; or at least two small studies both rated 'medium to high' or 'medium' weight of evidence for internal validity and appropriateness of research design with significant positive effects for all outcomes.

Partial evidence of positive effects: At least one large study, or at least two small studies, rated at least 'medium', with contradictory findings

Inconclusive evidence of positive effect: One or more studies with the weight of evidence for internal validity ranging from 'medium to low' to 'low'.

The results of this systematic review are available in four formats:

SUMMARY

Explains the purpose of the review and the main messages from the research evidence

REPORT

Describes the background and the findings of the review(s) but without full technical details of the methods used

**TECHNICAL
REPORT**

Includes the background, main findings, and full technical details of the review

DATABASES

Access to codings describing each research study included in the review

These can be downloaded or accessed at <http://eppi.ioe.ac.uk/reel/>

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