



REVIEW

June 2002

EPPI-Centre

**A systematic review of
classroom strategies for
reducing stereotypical
gender constructions
among girls and boys in
mixed–sex UK primary
schools**

Review conducted by the Gender and Education Review Group



**Evidence for Policy and Practice
Information and Co-ordinating Centre**

AUTHORS

The main authors of this report are Dr Becky Francis (Institute for Policy Studies in Education [IPSE], University of North London), Dr Christine Skelton (University of Newcastle) and Dr Louise Archer (Institute for Policy Studies in Education, University of North London). They drew extensively on the work and comments of their colleagues in the Review Group as a whole.

Review Group Structure

This Review Group was co-ordinated by Dr Becky Francis (IPSE, University of North London) and Dr Christine Skelton (University of Newcastle). The group has now disbanded, but is probably to be reformed under a different co-ordinator.

The other review group members were as follows:

Dr Louise Archer, IPSE, University of North London
Ms Jane McGregor, The Open University
Ms Anne Madden, Equal Opportunities Commission
Mr Roger Mason, Culverhay School
Dr Carrie Paechter, The Open University
Dr Anne Phoenix, The Open University
Ms Joan Senior, Association of Maintained Girls' Schools
Professor Gaby Weiner, University of Umea

Work has also been aided by research assistant Charine John.

Contact details

Dr Becky Francis
Institute for Policy Studies (IPSE)
University of North London
166-220 Holloway Road, London N7 8DB
020 7607 2789
B.Francis@unl.ac.uk

Dr Christine Skelton
Department of Education
University of Newcastle
St Thomas Street
Newcastle Upon Tyne NE1 7RU
0191 2227593
Christine.Skelton@ncl.ac.uk

ACKNOWLEDGEMENTS

The project described in this report has been produced using EPPI-Centre Guidelines, as has this report. The study was conducted with funding from the DfES (via the EPPI-Centre) and with considerable additional funding from the universities of North London and Newcastle. We wish to thank Charine John and Lindsay Melling for conducting much of the gruelling, hands-on tasks involved in this review. We also thank review group associate members Jane McGregor, Carrie Paechter, Joan Senior and Gaby Weiner, and Diana Elbourne and Sandy Oliver of the EPPI-Centre, for helping out with the final in-depth reviewing task. Our EPPI-link person, Sandy Oliver, has provided invaluable help and advice throughout the review. We wish to thank her and other EPPI members for their practical help with the review, and for their work on the formatting of this publication.

Submission date: 29/03/2002

This report should be cited as Francis B, Skelton C, Archer L (2002). A systematic review of classroom strategies for reducing stereotypical gender constructions among girls and boys in mixed–sex UK primary schools (EPPI-Centre Review, version 1.1*). In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education.

* This review has been updated since it was published originally. This update involves a change in citation details only and has not changed the substantive findings of the review.

© Copyright

Authors of the systematic reviews on the EPPI-Centre Website (<http://eppi.ioe.ac.uk/>) hold the copyright for the text of their reviews. The EPPI-Centre owns the copyright for all material on the Website it has developed, including the contents of the databases, manuals, and keywording and data extraction systems. The Centre and authors give permission for users of the site to display and print the contents of the site for their own non-commercial use, providing that the materials are not modified, copyright and other proprietary notices contained in the materials are retained, and the source of the material is cited clearly following the citation details provided. Otherwise users are not permitted to duplicate, reproduce, re-publish, distribute, or store material from this Website without express written permission.

TABLE OF CONTENTS

SUMMARY.....	1
1. BACKGROUND.....	4
2. AIMS OF THE REVIEW AND REVIEW QUESTIONS	
2.1 Aims of review.....	6
2.2 Review questions.....	6
3. IDENTIFYING AND DESCRIBING STUDIES: METHODS	
3.1 Consultation with user groups.....	7
3.2 Identifying relevant studies.....	7
3.3 Criteria for including studies.....	7
3.4 Identification of studies.....	8
3.5 Logging reports.....	8
3.6 Criteria for excluding studies.....	9
4. IDENTIFYING AND DESCRIBING STUDIES: RESULTS.....	10
5. IN-DEPTH REVIEW: METHODS	
5.1 Review questions.....	11
5.2 Methods for extracting data and quality assessment of studies.....	11
5.3 Methods for synthesising the findings of included studies.....	12
6. IN-DEPTH REVIEW: RESULTS	
6.1 Introduction.....	13
6.2 Methodological quality of included studies.....	19
6.3 What did studies find?.....	20
7. DISCUSSION	
7.1 Introduction to the Review Group's findings.....	25
7.2 Statement of principal findings.....	27
7.3 Strengths and weaknesses of the review.....	28
7.4 Unanswered questions.....	30
8. CONCLUSIONS AND RECOMMENDATIONS	
8.1 Conclusion.....	31
8.2 Recommendations.....	32
9. REFERENCES	
9.1 Included studies.....	34
9.2 Excluded studies.....	34
9.3 Other studies.....	39
APPENDIX A Search strategy.....	41
APPENDIX B Keywording criteria.....	43
APPENDIX C Study design of included reports.....	47
APPENDIX D Details of methods of included studies.....	49

SUMMARY

Background

Equal opportunities strategies relating to gender have largely fallen off the educational agenda in recent years, unless they relate specifically to improving boys' achievement. Despite the recent educational success of girls and women's increased representation in the workplace, gender continues to influence our behaviour, choices and life outcomes. Gender roles in the family remain largely unchanged and the most powerful jobs continue to be overwhelmingly dominated by men. Within education, a 'hidden curriculum' helps to perpetuate gender difference. It remains imperative, therefore, that effective equal opportunities strategies for improving and equalising girls' and boys' educational experiences and opportunities be identified and pursued.

Our focus is on the reduction of gender-stereotypical constructions among pupils. Such constructions impact on learning experience and outcome, often with detrimental effects. It is for this reason that appropriate intervention in the primary school classroom is seen as an aid to equality of opportunity.

Aims of review and review questions

The aims of the Gender and Education Review Group are as follows:

- To identify studies of equal opportunity interventions relating to gender in the primary education sector (compulsory schooling for 5-11 year olds)
- To conduct in-depth analysis of a more tightly-defined set of studies to address the question of the impact of an implementation of particular equal opportunities strategies relating to girls in UK primary school classrooms
- To make recommendations for practice, policy and future research

This topic will be of interest to schools; both for individual teachers who are concerned with ensuring that all pupils have access to educational opportunities, and also at a whole school level, because equal opportunities are examined during inspections by the Office for Standards in Education (OFSTED). Similarly, parents, pupils and policy-makers have interests in ensuring that pupils are provided with equal educational opportunities, irrespective of such characteristics as gender, ethnicity, religion and social class.

The review questions are as follows:

- What strategies delivered by teachers or researchers in the classroom (in publications between 1990-2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?
- What are the practicalities involved in implementing strategies for reducing stereotypical gender constructions among UK primary school children?

Methods

The Gender and Education Review Group brought together academics, two headteachers and a key representative of the Equal Opportunities Commission to guide this systematic review. Many of the Group members were also parents of school children.

We systematically sought studies relevant to the two review questions from a wide range of bibliographic databases and from researchers with an interest in this area. We set clear criteria for excluding studies outside our interests so that we could identify UK studies of equal-opportunities strategies implemented in the classrooms of mixed-sex primary schools. From this list, we focused in depth on studies of the impact or implementation of interventions aiming to influence the representation of gender stereotyping. We examined these studies for descriptions of the interventions, the children and schools where they were implemented, and the methods, quality and findings of the study.

Results

We found 72 reports of studies addressing equal opportunities in UK primary school classrooms. They were mainly published in the 1980s. Only nine of these studies evaluated strategies to reduce stereotypical presentations of gender and reported outcomes.

The studies included in our final review are of varying depth, ranging from carefully prepared and detailed research with rich illustrations and extensive analysis, to simple descriptions of the implementation of classroom-based strategies. Most of those included in our final review were small classroom studies set within the school curriculum, sometimes by teacher researchers as part of their professional practice.

The interventions attempted to change pupils' views, behaviour and/or experience, and the research aimed to provide fellow practitioners and academics with an account of these processes. The interventions were often described in far more detail than the methods employed to investigate them.

In terms of findings, within school single-sex settings seem to be effective in reducing stereotypical gender constructions when the aim is to:

- increase the self-confidence of girls and/or encourage their experimentation with non-gender-traditional activities; or
- provide a setting for boys to tackle aspects of traditional forms of masculine attitudes and behaviours.

Mixed groups may be more effective in:

- encouraging cross-gender friendships
- reducing stereotypical curriculum preferences, particularly with younger children

- tackling stereotypical attitudes and behaviours (through discussion and awareness of the perspectives of the opposite sex).

Findings highlight the importance of a committed and long-term approach on the part of intervention providers and the benefit of gaining support from the institution as a whole, including powerful figures such as the headteacher and other teachers. Adequate resourcing appears essential for the success of the interventions. Some researchers also pointed to the necessity of consideration of factors other than gender, such as social class, ethnicity and school location which may have greater impact on educational achievement than gender.

Conclusion

Little attention is currently paid to equal opportunities and gender. Small classroom studies suggest strategies for reducing stereotyping, factors favouring these strategies and difficulties to be overcome. As gaps in reporting some study methods may reflect limitations in how the research was conducted, the findings must be considered tentative. This review has suggested that strategies to reduce stereotypical presentations of gender in the primary school can have beneficial results, and outlines the nature of these. It has also highlighted a need for further research in the area, and for researchers to consider their reporting of research methods when addressing research gaps in this important area.

1. BACKGROUND

The Gender and Education Review Group was formed to conduct systematic reviews of different issues relating to gender and compulsory education. ***Equal opportunities concerning gender in primary education*** was agreed by review group members as the broad subject of the initial systematic review. The term 'equal opportunities' can be interpreted in a variety of ways. We use it here as an expression of the concern that all pupils have the same chances to take up and receive the educational entitlements provided by schools.

It was felt that the chosen subject area provides an opportunity to look at work around equal opportunities by exploring research programmes and interventions, as well as teaching practice and strategies which might be evaluated and reviewed successfully. We chose to restrict our study to the primary sector in order to ensure feasibility; equal opportunities concerning gender in secondary education might be the subject of a future review. By 'primary education' we mean the compulsory schooling of 5-11 year-old pupils.

Researchers – such as Kenway (1997), Arnot *et al.* (1999) and Myers (2000) – have shown that equal-opportunities strategies relating to gender have largely fallen off the educational agenda in recent years, unless they relate specifically to improving boys' achievement. Extensive social and economic changes, as well as the impact of 'second wave' feminism in the second half of the twentieth century, have led to shifts in gender roles in Western society, most easily evidenced in the ever-increasing numbers of women now engaging in paid work. Such changes, coupled with concerns at boys' 'underachievement' at GCSE level, have led to anxieties about men's future roles, and even to suggestions that equal opportunities promoting girls' achievement and opportunity have 'gone too far' (see Epstein *et al.*, 1998; Gill and Starr, 2000, for a discussion). Indeed, the extent of boys' apparent underachievement has been hotly debated, with some researchers demonstrating that it has been exaggerated by statistical distortions (e.g. Gorard *et al.*, 1999), and others observing how social class and ethnicity continue to have a far greater impact on educational achievement than does gender (Griffin, 1998; Epstein *et al.*, 1998; Gillborn and Gipps, 1996).

Despite the recent educational success of girls and women's increased representation in the workplace, gender continues to influence our behaviour, choices and life outcomes (Rees, 1999; Francis, 2000). Gender roles in the family remain largely unchanged and the most powerful jobs continue to be overwhelmingly dominated by men. Within education, male and female pupils continue to construct their gender identities differently (e.g. Davies, 1989; Francis, 1998, 2000; Skelton, 1997, 2001; Warrington and Younger, 2000; Warrington *et al.* 2000), with consequences for their learning and school experiences. Research continues to demonstrate that a 'hidden curriculum' helps to perpetuate, rather than to deconstruct, gender difference. For discussion of some of these findings, see Arnot *et al.* (1999) or the various contributions in Francis and Skelton (2001). Further, these gender constructions impact on the subject choices made by students as soon as an element of educational choice is introduced (Francis, 2000b); and such choices hold implications for their future career paths and quality of life (Rees, 1999). It remains imperative, therefore, that effective equal

opportunities strategies for improving and equalising girls' and boys' educational experiences and opportunities be identified and pursued.

The extent of the impact or effectiveness of various equal opportunities strategies is an area which does not appear to have been reviewed very recently. Madeleine Arnot and some of her colleagues at Cambridge (1998) have documented current innovative practice in schooling around gender issues. Gaby Weiner has been involved with her colleagues Madeleine Arnot and Miriam David in reviews of educational reforms and of education and achievement (Arnot *et al.*, 1996; Arnot *et al.*, 1999), and this work has incorporated some commentary on equal opportunities programmes and their impact. There has, however, been no comprehensive systematic review of the apparent *effectiveness* of equal opportunities strategies and interventions concerning gender, and particularly not focusing specifically on primary schooling.

Our focus is on the reduction of gender-stereotyping among pupils, in terms of stereotypical constructions of gender identity. Gender is constructed as relational (e.g. Davies, 1989; Francis, 1998), and in working to delineate their gender identities, children take up particular forms of (gender stereotypical) behaviour. Davies (1989, 1993) has termed this process 'gender category maintenance'. Although these processes are not fixed and children draw on different modes of expression at different times depending on the social environment, there is an overall tendency for children to take up 'gender-appropriate' activities and modes of expression. At school, this often includes subject preference and modes of learning, as well as interactive classroom behaviour. Such gender stereotypical behaviour then impacts on learning experience and outcome, with often detrimental effects (see Arnot *et al.*, 1999; Rees, 1999). It is for this reason that a reduction in gender-stereotypical constructions in the primary classroom is seen as an aid to equality of opportunity.

This review was conceived as a resource for teachers, parents, pupils and policy-makers who wish to pursue the subject of equal opportunities in the primary school or to implement equal opportunities strategies in the classroom.

2. AIMS OF THE REVIEW AND REVIEW QUESTIONS

2.1 Aims of review

The aims of the review were as follows:

- To identify studies of equal opportunity interventions relating to gender in the primary education sector (compulsory schooling for 5-11 year olds)
- To conduct in-depth analysis of a more tightly-defined set of studies to address the question of the impact of an implementation of particular equal opportunities strategies relating to girls in UK primary school classrooms
- To make recommendations for practice, policy and future research

2.2 Review questions

The aims in section 2.1 addressed the specific in-depth review question about impact which was narrowed after initial searching, to

- ***What strategies delivered by teachers or researchers in the classroom (in publications between 1990-2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?***

with the complementary question about implementation

- ***What are the practicalities involved in implementing strategies for reducing stereotypical gender constructions among UK primary school children?***

3. IDENTIFYING AND DESCRIBING STUDIES: METHODS

3.1 Consultation with user groups

In deciding the subject of the review, consultation was undertaken with group members via email discussions. The group included two schoolteachers (the headteacher of a comprehensive, and the former headteacher of a girls' secondary school) and a key representative of the Equal Opportunities Commission. A number of group members were also parents of children in the compulsory education sector and many of the academics in the group were teachers and users of research (in HE), and in some cases were former compulsory sector teachers (and hence had experience that was applicable). The dissemination of this report to diverse parties (academic, teaching and parent groups) will be prioritised.

On the academic side, it was ensured that the range of subject and sector expertise offered by group members was as comprehensive to the field as possible. Gaby Weiner brings an international dimension to the group and an expertise in European education policy. As editors of the international journal *Gender and Education*, Becky Francis and Christine Skelton bring a wide-ranging knowledge of the English-speaking international research field.

3.2 Identifying relevant studies

This section details the methods used to identify studies of equal opportunity interventions relating to gender in the primary education sector; and to identify and describe the studies for our in-depth review addressing the question:

'What strategies delivered by teachers or researchers in the classroom (in publications between 1990-2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?'

3.3 Criteria for including studies

Our initial criteria for inclusion in the review were as follows:

- *Population*: primary school pupils, boys, girls (and teachers and parents, where linked to classroom interventions)
- *Language*: English was chosen as it is the majority language through which education is delivered in UK schools. The Review Group does not possess the resources required to translate articles, etc. written in another language; international papers collected were therefore restricted to those written in English.
- *Curriculum areas*: all subject areas except general literacy work (to avoid overlap with the English Education Review Group)

- *Educational outcome*: promotion of/development of equal opportunities in terms of life chances, access, quality of life, achievement, social changes; for example, increased skills in girls or boys, more equitable access to resources (such as teacher time), more equitable representation in the classroom and the curriculum, better understanding of gender issues
- *Setting*: co-educational primary schooling
- *Research context*: studies concerning equality of opportunity according to gender.
- *Strategies tested*: interventions and experiments, including applied strategies designed to bring about change in terms of improving equal opportunities, and not those which would be considered as 'blue skies' research; that is, theoretical hypotheses which have not been applied to actual classroom situations.
- *Source of intervention*: government, non-departmental public bodies, trade unions, Local Education Authorities (LEAs), individual schools/teachers, universities, individual researchers, Equal Opportunities Commission (EOC), European Union (EU), Education Action Zones (EAZs), OfSTED.

3.4 Identification of studies

The detailed search strategy is described in Appendix A. Briefly, a range of bibliographic databases were searched with the following search terms (both individually and appropriate combinations of these): 'primary education', 'elementary education', 'gender', 'equality'; and linked words: 'sex differences/stereotypes', 'sex bias', 'sex roles', 'intervention'. Keywords, their combinations (e.g. 'gender and primary', 'gender and elementary', 'gender and equality'; 'sex differences and primary', 'sex differences and elementary' and so on for each term), and the resulting number of references, have been recorded for each database. Free-text searching has largely been adopted: thesaurus terms (e.g. 'equal opportunities') have been used where possible, but have been found to be a limited resource as they are not always consistent across databases. Records have been kept of all resources included in the search. All databases and other sources identified in the protocol were searched. It was recognised that no search can be comprehensive and that this search was somewhat targeted due to finite resourcing.

Studies clearly unrelated to the review were excluded at the stage of scanning titles and abstracts 'on-screen'. To limit the risk of relevant studies being accidentally excluded by researchers during this process, a subject expert conducted this stage of the review, and a strategy of inclusion was adopted where there was any element of doubt. The criteria for the on-screen exclusion were as follows: studies clearly outside primary/compulsory education; studies not related to gender in any way (e.g. to ethnicity rather than gender); studies not concerned with equal opportunities; and literacy strategies.

3.5 Logging reports

All references that were produced during the literature search process have been entered on to EndNote software. The initial search database was screened for duplications, ensuring that records with the greatest amount of detail were

retained. Abstracts, titles and reports/books were filed with their location recorded on EndNote, and a 'Gender and Education Review Literature Searching Log' was drawn up, so that an accurate record of all searching sources and location of all records could be detailed. It also notes which of the researchers working on the project has identified which records and searched which databases within specific time-periods. In logging in items, where possible the EndNote database describes the type and whereabouts of the report, and, if excluded, the stage at which the exclusion took place (e.g. as a title, abstract or full report).

Where possible, abstracts were then pursued and the full reports of the research obtained, ready to be studied and classified. These reports (or the fullest account of the research that was obtainable) were then categorised according to details specifically pertinent to the Gender and Education systematic review question: single/mixed sex classes, teacher expectations, teaching styles, professional training, class sizes, playground practices, resources, participation, self esteem, codes/practices, parents, school organisation, role models, links, counselling, single sex/mixed groups and awareness raising. In addition, a subsection of the studies were also categorised according to a standardised keywording system developed by the EPPI-Centre (EPPI-Centre, 2001). This categorises reports in terms of the type of study (e.g. outcome evaluation, process evaluation, descriptive study); the country where the study was carried out; the focus of the study (e.g. gender, curriculum); the population and educational setting; and, for reports describing or evaluating interventions, the type of intervention and its provider.

For our full keywording lists, see Appendix B. Over 10% of the studies were keyworded by two people, to check inter-coder agreement. All the studies included in the in-depth review have been dual keyworded.

3.6 Criteria for excluding studies

The following exclusion criteria were applied to the studies gathered in order to ensure that only those fully relevant to the general review question were included:

- Code 1: Non-UK since the difference in cultures, classroom environments and curriculum/assessment structures in different countries was likely to produce too many variables for meaningful analysis
- Code 2: Not an intervention strategy (e.g. a literature review)
- Code 3: Wrong age-group (not primary)
- Code 4: Intervention for research rather than equal opportunities purposes (e.g. the researcher implements a short-term intervention for interest, rather than in an endeavour to improve equal opportunities).
- Code 5: Single sex primary school
- Code 6: Intervention not based in school classrooms
- Code 7: Not concerned with *gender* equal opportunities
- Code 8: Literacy strategies
- Code 9: Intervention only (that is, where the intervention only is described with no discussion of the methodology and so on, hence no research report)
- Code 10: Other (state)

4. IDENTIFYING AND DESCRIBING STUDIES: RESULTS

After initial searching and screening, 497 references were identified as roughly within the scope of the review. Of these, 425 were excluded based on the exclusion codes listed in section 3.6 above. Seventy-two studies remained. Of these, 30 were published in the 1980s, with a further 23 in the 1990s and 10 in 2000 alone. No date was available for the remaining nine. Citations for all identified studies are listed in chapter 9.

5. IN-DEPTH REVIEW: METHODS

5.1 Review questions

Our in-depth review questions were as follows:

- What strategies delivered by teachers or researchers in the classroom (in publications between 1990-2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?
- What are the practicalities involved in implementing strategies for reducing stereotypical gender constructions among UK primary school children?

In creating the specific review question, we sought to devise one that would include outcome and process evaluations; we wanted to include the former because they address 'what works', and the latter because they explain how and why, thus answering our general review questions. And we were interested in classroom-based strategies because they are likely to be of greatest relevance and interest to teachers.

Studies which were not directly applicable to 'stereotypical gender constructions' were excluded during this final review stage. Two people looked at the formerly included studies independently to decide which studies fell in or out of the subject area of the in-depth review. Differences were discussed in order to reach agreement.

5.2 Methods for extracting data and quality assessment of studies

Studies addressing the focused review question were reviewed in-depth with a standardised data extraction framework, *Review Guidelines* (EPPI-Centre, 2001) (included studies are listed in Appendix C). These guidelines enabled reviewers to extract data on the content and design of the studies, and, for intervention studies, on the development and content of the intervention evaluated, the design and results of process and outcome evaluations, and data on the methodological quality of the outcome evaluation. Data were entered onto a specialised computer database (EPIC). As quality assurance, each was reviewed independently by at least two different people, always including a subject expert, and someone with basic training in EPPI-Centre data extraction methods. Four studies were reviewed by a third person (either Diana Elbourne or Sandy Oliver) from the EPPI-Centre and one of these studies was reviewed by five different people. Multiple reviewing revealed oversights, misunderstanding and differences in interpretation that are considered in our discussion (Chapter 7).

5.3 Methods for synthesising the findings of included studies

Factors for analysis were driven by the review question and were agreed between Becky Francis and Christine Skelton. Hence the studies were assessed according to their ability to answer aspects of the review question. Where possible, the study attributes were drawn from the agreed final versions of the data extraction documents and set out in Appendix D. The full data extraction records can be accessed on the EPPI-Centre website. The authors' conclusions from the different studies, with the reviewers' conclusions if these differ, and the overall results are shown in Tables 2 and 3 in chapter 6. The analysis, conducted by Becky Francis and Christine Skelton, was also checked by the Review Group members when reading a draft of this report. Reflections on the applicability of the EPPI-Centre data extraction guidelines are recorded in our discussion (Chapter 7).

6. IN-DEPTH REVIEW: RESULTS

6.1 Introduction

From the 72 studies identified earlier, we excluded 63 which did not meet the criteria of 'studies which seek to reduce stereotypical gender construction and report outcomes' for the in-depth review, leaving nine studies that could potentially provide some answers to the specific questions for this in-depth phase.

The nine reports included in our in-depth review were all descriptions and/or evaluations of classroom strategies which aimed to further equality of opportunity by reducing primary schoolchildren's stereotypical constructions of gender (Table 1). The majority of these involved planned interventions, which were described and/or evaluated. Seven of the reports were refereed journal articles and, of these, five were published in the journal *Gender and Education*. Of the others, one was a book chapter and one a PhD thesis. Four of the different reports were authored by Diane Reay; the rest were written by separate individuals.

Table 1: Characteristics of included studies

Study	Population	Strategies for equal opportunities	Specific purpose of strategy	Study design
Cunnison (1990)	5-11 year old children in a school in an inner city deprived area.	Staff meetings and INSET days were held to raise awareness of gender stereotyping. Various teacher-led projects for children, challenged gender stereotyping, especially by using 'imaging' and non-gender-traditional role models.	To arouse among staff awareness of equal opportunities as an educational issue. To persuade them to consider ways in which they might be failing to deliver equal opportunities. To devise projects to improve their practice in these respects.	Process evaluation/ needs assessment
Jacklin and Lacey (1997)	Year 1 children (5-6 years old)	Groups within the classroom were mixed by ability and sex. Academically weaker children could be helped by academically stronger children, which included across-gender collaboration. Children were never organised as girls or boys. They lined up to go out to play as 'helicopters' and 'aeroplanes' in mixed sex lines, to circumvent teachers saying 'Now we are waiting for the boys/ girls' line'.	To produce a more mixed, more egalitarian social milieu.	Intervention description/ applied intervention
Reay (1990) – boys	9-10 year old boys in inner city. Mixed – black, white and Asian (over 50% non-white)	Every Thursday morning was 'gender group' morning, which was for developing co-operative strategies; discussion	To help the boys develop co-operative strategies To reduce bullying	Outcome evaluation: post-test only

Table 1: Characteristics of included studies (cont'd)

Study	Population	Strategies for equal opportunities	Specific purpose of strategy	Study design
Reay (1990) – girls	Year 4 girls (8-9 year olds). School in a largely working class inner city multi-lingual area with a mobile population with many migrants from other parts of the British Isles and overseas.	with boys about sexist stereotypes and bullying; and work on Black history and British government.	<p>To make the boys more co-operative in school.</p> <p>To promote co-operation in the group.</p> <p>To encourage reflection and to foster democracy.</p> <p>To give boys access to a wider range of behaviours than gender stereotypes allow.</p> <p>To improve the level of achievement in Year 4 girls.</p> <p>To broaden curriculum experience in non-stereotypical areas for both boys and girls.</p> <p>To address these areas of concern around gender equality: that girls receive less teacher attention than boys; that boys dominate both playground and classroom space; that girls contribute less often and less confidently in class; and that girls lack confidence in approaching sex stereotyped activities.</p>	Outcome evaluation/ process evaluation

Table 1: Characteristics of included studies (cont'd)

Study	Population	Strategies for equal opportunities	Specific purpose of strategy	Study design
Reay (1991)	Year 3 junior school inner city children, mainly working class with mixed ethnicity (7-8 year olds).	Children were allocated to mixed sex and single sex groupings.	To affect the group dynamic, girls' participation, attainment and confidence.	Outcome and process evaluation
Reay (1993)	6-7 year old children, predominantly white and middle-class in suburbs.	Work focused on book materials and gendered reading preferences.	To raise boys' awareness of other children's needs. To increase on-task behaviour. To support the boys in working collaboratively.	Intervention description
Westland (1993)	Nearly all 10-11 year old children in schools in a range of socio-economic settings.	Activities included discussion, art work and story-writing relating to traditional and 'upside-down' fairy-tales.	To test whether Cinderella-style fairy tales promoted by Anglo-American society harmfully reinforce restrictive images of girlhood and womanhood.	Action research/descriptive study
Wing (1997)	10-11 year old children – no other details reported.	Children were read <i>Bill's New Frock</i> by Anne Fine. The content of the book was discussed with them.	To help children avoid taking a text at face value.	Intervention description/ process evaluation

Table 1: Characteristics of included studies (cont'd)

Study	Population	Strategies for equal opportunities	Specific purpose of strategy	Study design
Woodward (1997)	7-8 year old children. Close knit social class 3 stable population.	Issues of gender were raised by children undertaking a variety of tasks, including the following: the writing of 300 words on household tasks performed by themselves and members of their families; a book review and class discussion of gendered aspects of the story; and single-sex computer club using non-sexist resources.	To make the children more aware of gender problems. To improve their self confidence, self esteem, social skills and academic achievements. To change or modify children's gender attitudes, if stereotyped.	Intervention description/ action research

The fact that we were only able to include nine studies under our final review question shows that little work is being done in this area in the UK (the researchers are aware that classroom-based strategy work of this kind is, for example, being undertaken in Australia). Moreover, the majority of the included studies were published in the early 1990s: six were reports from 1993 or earlier; none were conducted after 1997. This, therefore, suggests a growing gap in the field.

It is important to remember that the included studies were 'of their time' theoretically. Over the last decade, the impact of post-structuralism and post-modernism has problematised homogenous terms such as 'girl' and consideration of issues such as the 'intersection' of different identity factors besides gender has become more common. (Indeed, even the concept of 'intersections' itself is being problematised, see Cealey Harrison and Hood-Williams, 1998.) Some of the studies included in our review (e.g. Reay 1991) actually made influential contributions to these theoretical and analytical developments. But in others, notions of gender and opportunity are presented relatively unproblematically.

The included studies were often quite complicated. Sometimes the person writing the report was the intervention-evaluator. However, sometimes the author was the intervention-provider rather than the evaluator, and occasionally the author had both provided and evaluated the intervention, or had assessed a need and then provided an intervention. Therefore, when reviewing the study, it was sometimes difficult to separate out the intervention from the research. Sometimes interventions had contained multiple features and assessment/evaluation of the various features was not necessarily clear in reports.

The focus of the reports was often slightly different from EPPI-Centre concerns, sometimes due to the feminist perspective of the authors and sometimes due to the style of publication usual in the education paradigm. For example, details about data-analysis methods and some finer research method details were often not described to the depth required to complete the necessary sections of the EPPI-Centre in-depth review. For example:

- Does the author address issues of reliability of their data collection tools?
- Does the author address issues of validity of their data collection tools?
- Are examples given of the questions/items used to collect data?
- Does the author describe any methods for ensuring the reliability of data analysis?

We suggest that such omission is usual in education journal papers, where one has a limited word-count in which to present findings and where discussion and findings are usually prioritised over methodological details, it being common practice to devote no more than a few paragraphs to this apparently mundane section. Methodological details asked for in the EPPI-Centre Guidelines are more often found in PhD theses, and books on empirical research than journal articles. Further, some authors had prioritised the reporting of self-reflexivity in analysing their own role in the research, over details of other methodological aspects. We would argue strongly that such self-reflexivity ought to be an integral part of the research process, and ought to be a criterion for good practice.

6.2 Methodological quality of included studies

The studies included in our final review are a real mixture, ranging from carefully prepared and detailed research with rich illustration and extensive analysis, to simple descriptions of the implementation of classroom-based strategies. Our appraisal of methodological aspects, drawn from the data extraction documents, is presented in Appendix D.

Most of the studies included in our final review were organic case studies, conducted in the classroom within the school curriculum, sometimes by teacher researchers as part of their professional practice. As such, they did not set out to be highly representative or exactly replicable. Indeed, we would argue that, as each school and the pupils within it are different, educational research should not always be concerned with direct replication, but rather with the ability to transfer good ideas which can be adapted by teachers for use in their own environment. What the interventions did was to attempt to change pupils' views, behaviour and/or experience, and the research aimed to provide fellow practitioners and academics with an account of these processes.

Therefore, the Gender Review Group give more weight to the stated intentions of the authors whose studies have been included, rather than quality criteria that are purely related to study design and method. We required a report of the methods and processes of the intervention itself, adequate to describe sufficiently what had taken place, and a credible account of the way in which study findings were reached.

We are also concerned with ethical research practice. In terms of ethics, educational interventions conducted as part of the curriculum are themselves somewhat problematic because, as with most aspects of schooling, children mainly had no choice about participation. (One of the authors has discussed this issue elsewhere in relation to ethnographic educational research methods such as classroom observation [Francis, 2000]). Moreover, the improvement of equality of opportunity by deconstructing gender stereotypes may be seen to be a good idea by feminist teachers and researchers, but may not necessarily be seen or experienced as positive by pupils. We suggest that, in future, researchers might seek to ascertain pupils' responses to the subject of the intervention, both before and after it is conducted. The majority of the studies included in our review did not question the pupils about their views on the intervention topic/aims. Where evaluation took place, it usually concerned effectiveness of the intervention in promoting changed attitudes in pupils. An exception is Reay's work and, in some of her included studies (e.g. Reay 1990a, 1990b), she explicitly recognises and considers the point that pupils may not see interventions as positive in relation to boys' responses. She weighs up the boys' negative responses to interventions against girls' positive reception to, and development from, the interventions. Moreover, Reay (1990a, 1990b, 1993), Woodward (1997) and Wing (1997) all apply reflexivity to their own role in, and impact on, the research.

The extent of recognition and discussion of aspects of identity other than gender across the studies was high. As Appendix D demonstrates, almost all the studies included a basic discussion of the ethnic and social class components of the school and/or sample populations, and some analysed these factors in details, and/or discussed issues pertaining to these factors. In most cases, it appeared that this good practice was driven by the reflective, feminist approach adopted by many of the researchers concerned. However, as we discuss later, there is room for more work which applies recent theorisations of the impact of interaction of multiple factors of identity in evaluations of access to equality of opportunity in the classroom.

In terms of general methodological quality, there was a common divergence between the reporting of the methods used in the intervention, and of those used in the study/evaluation. The description of the processes of the intervention was usually rich and detailed, including consideration of various factors which impacted negatively or positively on the processes and/or outcomes. Basic descriptions were usually provided concerning the sample location, type and size. However, description of the methods adopted for the evaluation of the intervention or the study itself was often extremely sketchy. This also applied to the methods of analysis (details of which were often missing altogether), and to the presentation of evidence to support the conclusions (which was again, often sketchy). Because of the complexity and ambitious nature of many of the studies (including multiple methods and aims in the interventions), there was often a lack of consistency in the presentation of evidence to support different claims and findings, so that where one strategy or argument might seem convincing, others were harder to assess. Details of study design are presented in Appendix C, and more detail on the methods in Table 2.

6.3 What did studies find?

The basic information in this regard is set out in Tables 2 and 3.

Table 2: Study findings relating to: ‘What strategies delivered by teachers or researchers in the classroom (in publications between 1990 and 2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?’

Study	Strategies for equal opportunities	Authors’ conclusions
Cunnison (1990)	Staff meetings and INSET days supported teacher-led projects for children, challenging gender stereotyping, especially using ‘imaging’ and non-gender-traditional role models.	Findings were somewhat unclear but there was some evidence of reduction of stereotyping in some areas. All staff and some parents had become aware of, and committed to, educational opportunity issues. Children had become slightly less stereotypical in thinking about skills and work. A few had become aware that gender roles are socially defined and maintained, although it was clear that these were a minority. Note: The reviewers agreed with findings about awareness of educational opportunity issues, but were not able to assess extent of impact from the data provided.
Jacklin and Lacey (1997)	Children’s groups were mixed by gender and ability. The teacher avoided allusions to ‘the girls’ and ‘the boys’.	There were increased cross-gender friendship choices among children, and reduction in gender-stereotypical subject-preferences.
Reay (1990) – boys	Boys addressed gender stereotyping, bullying and co-operative skills in single-sex groups.	This raised awareness of gender stereotyping and sexism among boys, developed their communication skills, allowed them to articulate feelings about issues such as bullying, and improved their observed and reported behaviour.
Reay (1990) – girls	Once a week, children were in single sex groupings. The girls-only group focused on drama therapy, carpentry, computing, bookmaking, self-defence and dance. The boys-only group focused on early childhood development with nursery class involvement, drama and dance, woodwork and computing.	This intervention celebrated female qualities and provided non-traditional experiences for girls. It countered ‘patriarchal privileges’ of the boys. Previously underachieving girls’ test results were also improved.

Table 2: Study findings relating to: 'What strategies delivered by teachers or researchers in the classroom (in publications between 1990 and 2001) reduce stereotypical gender constructions among girls and boys in mixed-sex UK primary schools?' (cont'd)

Study	Strategies for equal opportunities	Authors' conclusions
Reay (1991)	Children were organised in mixed-sex and single-sex groupings.	Girls-only groups were more inclusive and co-operative, whereas boys' behaviour was competitive; but this is gender stereotypical. However, one girl was able to work against gender-stereotypical behaviour, apparently due to her privileged social class.
Reay (1993)	A single sex group of boys worked on a collaborative book-making project under the direction of a teacher.	Boys were made aware of other children's needs, and engaged with given tasks, producing thoughtful work. However, a high level of resource input was required to achieve these aims.
Westland (1993)	Activities included discussion, art work and story-writing relating to traditional and 'upside-down' fairy-tales.	There was some success. The immediate reactions of boys and girls to stories were uncritical. But in writing stories, a sizeable proportion of girls opted for independent, strong-minded heroines.
Wing (1997)	Children were read <i>Bill's New Frock</i> by Anne Fine. The content of the book was discussed with them.	Children were able to articulate, and reflect on, their stereotypical constructions of gender and those in the world at large. There was evidence of children considering 'the different treatment that boys and girls receive', and of classroom discussion enabling stereotypes to be challenged.
Woodward (1997)	Activities included gender-awareness exercises; book review and class discussion of gendered aspects of the story; and single-sex computer club, using non-sexist resources.	Girls in particular improved their self-confidence and social skills working in single-sex groups. Through reviewing and discussing books, both boys and girls modified their gendered attitudes in terms of their attitudes towards, and expectations of, the characteristics of the opposite sex.

Table 3: Study findings relating to: 'What are the practicalities involved in implementing strategies for reducing stereotypical gender constructions among UK primary school children?'

Study	Strategies for equal opportunities	Authors conclusions about implementation
Cunnison (1990)	Staff meetings and INSET days supported teacher-led projects for children, challenging gender stereotyping, especially using 'imaging' and non-gender-traditional role models.	<p><i>Needs assessment:</i> Teachers' classroom behaviour showed they generally gave more time to boys.</p> <p><i>Barriers:</i> Area known for strong macho traditions; 1988 Education Act; working in a new school; no extra resources from LEA or EOC; background sexual stereotyping evidence from needs assessment; low morale and stress from other sources (e.g. end-of-term fatigue); some teachers distinctly reluctant to co-operate.</p> <p><i>Favourable factors:</i> Feminist head and deputy; interest and support from feminist researchers; interest from EOC; head committed 1/3 of in-service training budget and half of deputy's time; researchers' time given free; support from Humberside County Council; enthusiastic Chief County Advisor; benefit for teachers in terms of increase in professional competence and opportunity to gain experience in staff appraisal and pupil assessment; parental participation already integral part of school policy; pressure from head and peers; meetings and INSET day; positive feedback in terms of less disruptive behaviour; open evening; equal opportunities presented as an educational issue; and integrated cross-curricula approach.</p>
Jacklin and Lacey (1997)	Children's groups were mixed by gender and ability. The teacher avoided allusions to 'the girls' and 'the boys'.	<p><i>Favourable factor:</i> Enthusiasm and commitment of the class teacher who designed and implemented the intervention.</p>
Reay (1990) – boys	Boys addressed gender stereotyping, bullying, and co-operative skills in single-sex groups.	<p><i>Barrier:</i> Group dynamics</p> <p><i>Favourable factor:</i> Boys favoured discussing some of the issues (e.g. bullying, Black history).</p>

Table 3: Study findings relating to: 'What are the practicalities involved in implementing strategies for reducing stereotypical gender constructions among UK primary school children?' (cont'd)

Study	Strategies for equal opportunities	Authors conclusions about implementation
Reay (1990) – girls	Once a week, children were in single-sex groupings. The girls-only group focused on drama therapy, carpentry, computing, bookmaking, self-defence and dance. The boys-only group focused on early childhood development with nursery class involvement, drama and dance, woodwork and computing.	<i>Implementation:</i> Barriers included the need to occupy boys while convening girls-only groups; perception of boys as innately superior; boys' resistance; and women teachers' ambivalent feelings. <i>Favourable factors:</i> These included experience of single-sex groups in the school; support from LEA; and positive feedback during intervention. <i>Acceptability:</i> Girls enjoyed the process, but boys were more negative and some teachers (especially women) ambivalent.
Reay (1991)	Children were organised in mixed-sex and single-sex groupings	Processes differed according to whether the researcher was in or out of the room. <i>Acceptability:</i> Girls in single-sex groups particularly liked the sessions.
Reay (1993)	A single-sex group of boys worked on a collaborative book-making project under the direction of a teacher.	<i>Barriers:</i> This intervention would not be possible for a teacher with responsibility for the whole class. The intervention also highlighted the possible importance of race and class in the 'failure' of the two central boys.
Westland (1993)	Activities included discussion, art work and story-writing relating to traditional and 'upside-down' fairy-tales.	
Wing (1997)	Children were read <i>Bill's new frock</i> by Anne Fine. The content of the book was discussed with them.	<i>Favourable factor:</i> Children have generally been found to enjoy this book and others by the same author so would be well disposed to it.
Woodward (1997)	Activities included gender-awareness exercises; book review and class discussion of gendered aspects of the story; and single-sex computer club, using non-sexist resources.	<i>Favourable factor:</i> Support of the headteacher

7. DISCUSSION

7.1 Introduction to the Review Group's findings

Table 3 indicates the difficulty for us of devising a clear set of recommendations that can be applied to any primary school classroom. For example, in the successful strategies column, 'mixed groupings' sit alongside 'single-sex groupings'. A strong feature that has emerged in analysing the various intervention strategies is the importance of the intended aim of the intervention. Within our review, the aims of the included studies and the interventions concerned were quite diverse. (This illuminates the importance of a highly specific review question when conducting a systematic review, although to have made this one more specific would of course have resulted in even fewer included studies.) For example, the teacher in Jacklin and Lacey's (1997) research wanted to increase gender integration amongst her class of infant children so that they did not start to 'write themselves off' from activities simply on the grounds of gender. For this teacher, mixing groups by gender and ability achieved a reduction in gender differentiation in terms of encouraging cross-gender friendships and in reducing children's stereotyped favoured curriculum subjects. In contrast, Woodward (1997) and Reay (1990a) utilised single-sex groups as a means of improving the self-confidence, self-esteem, social skills and academic attainments of girls. (Woodward used single sex groups with boys and girls for these purposes, but found effectiveness only in girls' single-sex groups.) In another study, Reay (1991) also introduced a single-sex girls group in order to investigate if girls worked more effectively in mixed or single-sex settings and similarly discovered that the latter provided the most successful.

The intentions of researchers in experimenting with the gender components of groups of pupils differed, despite their common aim of addressing gender-stereotypical constructions among the children. This also applies to research outcomes, which again differed in intention depending on the focus of the study.

What teachers can take away from this research is the information that mixed and single-sex groups may have particular functions in specific circumstances. Age is also a factor here, in terms of the development of gender identity. For example, Jacklin and Lacey (1997) observe that the infants in their study were more amenable to encouraged mixed sex interaction than older children might have been. Single-sex settings seem to be effective in reducing stereotypical gender constructions when the aim is to:

- increase the self-confidence of girls and/or encourage their experimentation with non-gender-traditional activities
- provide a setting for boys to tackle aspects of traditional forms of masculine attitudes and behaviours. (As Reay [1990b] observes, "By working on attitudes and feelings in a single sex context, teachers can support boys in questioning and analysing peer group hierarchies in a forum that is non-threatening and non-confrontational").

Mixed groups may be more effective in:

- encouraging cross-gender friendships
- reducing stereotypical curriculum preferences, particularly with younger children
- tackling stereotypical attitudes and behaviours (through discussion and awareness of the perspectives of the opposite sex)

At the same time, simply grouping children together in various settings does not tackle some of the more fundamental inequalities relating to social power. As Reay (1991) indicates in her research, no amount of single sex group experience will provide black, working-class girls with sufficient resources to challenge effectively white, middle-class male power, especially within a system that traditionally maintains and validates that power.

A second feature to emerge from the various research findings is the significance of the knowledge, understanding and commitment related to the gender of the teacher/intervention provider. Jacklin and Lacey (1997), Wing (1997), Reay (1990b; 1993) and Woodward (1997) all report that teachers are sensitive to gender differentiation and equality which influences their classroom management, organisation and routine interactions with pupils.

The perception that resourcing and wider institutional attitudes influence the success or failure of interventions aiming to reduce gender stereotypical constructions is a further strong theme that threads through these studies. Cunnison (1990) observes the value of a whole-school approach to equal opportunities, the importance of backing and support from those in powerful positions within the primary school hierarchy, and the confidence of fellow-teachers (although the latter can be difficult to achieve, as Cunnison describes). Jacklin and Lacey (1997) stress the value of teacher commitment and enthusiasm, and Reay's studies (1990a, 1990b, 1991, 1993) also highlight the fruitful collaboration between committed teachers and researchers, or teachers as researchers. Continued, close and thoughtful adult supervision is stressed by Woodward (1997), Jacklin and Lacey (1997), and Reay (1991, 1993) as integral to the success of many of these strategies: tokenism is warned against as doomed to failure. Conversely, Reay (1990b, 1993) also discusses how the effect of these classroom interventions will inevitably be limited if adequate resources are not available to perpetuate them in the long term. She observes further (1991, 1993) that such interventions do not of course address continuing inequalities (in terms of gender, ethnicity and social class) which operate at a wider level; if these inequalities persist, then the effect of local classroom interventions will inevitably be short-lived.

This being said, an exciting finding from our analysis of the various study findings is the extent to which the different interventions were considered successful in challenging, and often in reducing, primary school children's stereotypical constructions of gender. Seven of the nine studies reported some success in achieving their intended outcomes; many considered this success to be significant. It is possible that there may be some 'publication bias' here, in that unsuccessful studies, or those of low impact, tend to go unreported. The extent of this phenomenon is difficult to assess. Within the margins of our review, however,

no studies reported failure where a reduction in gender stereotypical constructions among pupils was attempted. Further, in reporting the success of a teacher's introduction of small elements of positive discrimination in favour of girls, such as giving them the job of unpacking new Lego when it arrived, Jacklin and Lacey's (1997) study reminds us of the significance of the micro in deconstructing gender-stereotypical constructions. Clearly, the best institutional will in the world may do little to address traditional stereotypes if it is undermined by the views and actions of individual teachers (Cunnison, 1990). It seems important, then, that teachers attempting to reduce gender-stereotypical constructions among pupils in the primary classroom adopt a holistic approach, addressing both micro and macro issues.

Many of the studies include useful ideas which could easily be drawn on and/or adapted by primary school teachers for their classroom practice. Besides the general successful strategies outlined in the tables earlier, some of the studies contained descriptions of specific ideas and tips for practice as aids to reducing stereotypical gender constructions in the primary classroom. Examples include:

- lining children up as helicopters and aeroplanes in mixed sex lines, rather than as boys and girls (Jacklin and Lacey, 1997)
- inviting non-gender traditional role models such as female mechanics and male nurses to talk to the pupils (Cunnison, 1990)
- using particular reading and course materials to initiate and develop discussion of expectations and roles according to gender (Woodward, 1997; Wing, 1997; Reay 1993; Westland, 1993). The book *Bill's New Frock* by Anne Fine is praised by Wing (1997) as exemplary in its humorous approach to the issues.

Practitioners interested in implementing strategies to reduce gender stereotyping in the primary classroom are encouraged to return to the publications themselves for full details of the strategies adopted.

7.2 Statement of principal findings

Various strategies are considered successful in reducing aspects of gender-stereotypical constructions among primary schoolchildren. However, different approaches are required depending on the aspects that the intervention provider seeks to tackle. The key effective strategies reported included single and mixed-sex groupwork to provide an experimental space or to tackle gendered behaviours; and discussion and development of reading materials to engender reflection on gender roles. Findings highlight the importance of a committed and long-term approach on the part of intervention providers, and the benefit of gaining support from the institution as a whole (including powerful figures, such as the headteacher and other teachers). Adequate resourcing appears essential for the success of the interventions. Some researchers also pointed to the necessity of consideration of factors other than gender, such as social class, ethnicity and school location. Hence a holistic approach to interventions is recommended, with attention to macro as well as micro issues.

7.3 Strengths and weaknesses of the review

We do not know of any other reviews which have focused solely on, and assessed, classroom-based interventions aimed at reducing gender stereotypical constructions among primary school children in the UK. Broader ranging reviews, identifying the various interventions taking place in relation to gender (e.g. Arnot *et al.* 1996; Arnot *et al.*, 1998), have the benefit of breadth and provide more information about the general scope of the field. In comparison, our review might be criticised for its highly specific (and thus limited) focus. However, this review has the advantage of being able to provide more detailed information to teachers and policy-makers about ‘what works’ in the classroom.

In terms of method, we are aware that the breadth of our initial literature search was somewhat limited by our finite resources. Likewise, some of our exclusion criteria (such as ‘non-UK’) were introduced because we had not the capacity to process too large a body of work. However, decisions about such exclusions were also based on what information was going to be most useful for practitioners.

Applying systematic methods for appraising the studies in-depth raised issues about interpretation, quality assessment, relevance and research tools.

The detail required by the EPPI-Centre data extraction tool is extremely extensive, and may be over-ambitious. Despite this, as Appendix D records, the data extraction tool often failed to elicit the information required for our actual analysis of findings, and it was therefore necessary to return to the actual research reports to examine their findings and conclusions. This issue was recognised by EPPI-Centre colleagues at a workshop convened to elicit feedback from the EPPI Review Groups; it is intended that the data extraction document and approaches to the data extraction task will undergo further development.

Nevertheless, the application of the data extraction tool has been useful for revealing gaps in current dissemination practice which arguably should be addressed. One ought to be able to understand the processes of a study and reach one’s own conclusions about the validity of the study’s findings; in this case, one needs at least basic details of the methods adopted in data collection and analysis, and of the data themselves.

When reviewing studies in depth, independent data extraction by two or more reviewers revealed discrepancies that could usually be resolved by discussion. Differences had often been caused by oversight of particular details, or from a misunderstanding of the criteria and/or aspects of the study being reviewed. Where differences in interpretation could not be resolved, this was recorded in the reviews; for example, there was, in one case, a disagreement concerning ‘soundness’. As we see all research interpretation as based on socially constructed perspectives, we assume such differences result from reviewers’ different paradigm and discursive positionings. For example, all those involved in the ‘data extraction’ phase were white women, the majority of whom are from middle-class backgrounds. The review group members involved are also feminists. These factors inevitably have an impact on our interpretation of the data.

This perspective explains some of our concerns about the limitations of methods already available from the EPPI-Centre for reviewing and 'synthesising' studies. Most of these concerns relate to positivist assumptions that studies can and should be rated for quality and 'soundness'. Previous EPPI-Centre reviews have applied two strategies for assessing the overall quality of studies. Non-intervention studies have been assessed (but not judged as sound or unsound overall) according to a total of seven criteria that addressed the reporting of the theoretical framework and/or background literature review; aims and objectives of the study; contextual factors for interpreting the results; the sample; study design and methods; efforts to ensure validity and reliability; and the inclusion of sufficient original data to mediate between data and interpretation. Studies evaluating the effects of interventions have been judged 'sound' for providing evidence of effectiveness only where they have employed a control or comparison group equivalent to the intervention group on socio-demographic and outcome variables; provided pre-intervention data for all individuals or groups as recruited into the evaluation; provided post-intervention data for all individuals/groups; and reported on all outcomes. Conclusions drawn in this review have not been weighted according to whether or not studies of effectiveness were 'sound'.

Some members of the Gender Review Group considered that applying weightings would give the wrong messages about the value of the research in a field which includes some useful, smaller scale, practical studies that might influence classroom practice appropriately. Some accounts were produced for books geared at practitioners, unconcerned with reporting methods. Certainly they were not produced with an EPPI-style analysis in mind, and hence to pick them apart and grade them accordingly based on criteria of which they were unaware and not concerned with seems very undermining. Moreover, weighting would place the Review Group in the position of 'objective experts' awarding grades to the work of colleagues. Again, many in the group are uncomfortable with such a positioning and its implications.

The other objections concern the positivism inherent in such an approach. As many of us in the group are social constructionists, we feel that weighting implies the existence of some fixed and 'natural' criteria of quality or soundness for all studies, rather than recognising that different aspects of studies can be viewed as more or less important depending on the reader or user (and their reasons for consulting the work). Another concern is that studies may well have values other than those being graded which are lost or marginalised by such an approach. For example, studies might have a high theoretical or political value. Finally, many of us are anyway uncomfortable with the very particular view of methodological soundness used by the EPPI-Centre to determine weighting (as it is quite a positivist perspective). The stage of data extraction, using EPPI-Centre tools, was of course a concern, but we tried to accommodate this approach with our principles as best we could at the time given our desire to complete the project.

In fact, in the majority of cases a judgement over methodological 'soundness' was not required of our reviewers, as the data extraction document currently only applies this criteria to studies categorised as experimental interventions. Even in our review, which specifically looked at interventions, there were only three studies that fell into this category; process evaluations were more common. Only

one of the studies included was rated 'not sound'; there was disagreement over the rating of another. As the detail provided in the 'not sound' study was actually richer than in some of the others (to which the criterion of 'soundness' was not applied), we have retained the study concerned in our data analysis. Given the rating of this study, it seems likely that, had the criteria of 'soundness' been applied to more of the studies involved in our review, the majority could have been judged 'not sound'. It is, of course, problematic to present findings and recommendations from a 'literature review' which are actually only drawn from one or two studies. Therefore, we have included all the studies that were data-extracted in our synthesis. Because there were only nine of these, their properties (and any limitations) are clearly transparent from their presentation in Appendix D.

Our findings recognise study limitations and seek to be tentative and reflective, rather than ultimately conclusive. We have not included the details on 'soundness' in this report as we consider them potentially inaccurate, because studies that may appear 'unsound' may have been conducted well but not fully reported.

Finally, it might have been beneficial to have had more research 'users' – particularly parents and primary school teachers – in our Review Group in order to feed in their priorities and needs. Pupils were not represented on the group either (although, as our review dealt with the infant and primary age-group, such inclusion would have been difficult). In order to encourage the greater participation of teachers in future reviews, we recommend that funding continues to be allocated to pay for teachers' time as an incentive to their participation.

7.4 Unanswered questions

Although successful strategies for reducing gender-stereotypical constructions among primary school pupils were identified from this review, it was not clear from the studies included whether the strategies are equally effective with all primary-school age groups (or according to other variables, such as school environment, and so on). Moreover, as Reay flags up in some of her studies, more work needs to be done on the impact of strategies according to factors such as social class and ethnicity, as well as gender. Further research is required to address these issues.

Inclusion of research from outside the UK might or might not have impacted on our results. Given that only a small proportion of the retrieved studies were from countries outside the UK, it is quite possible that none would have been included in the final, targeted review (hence having no impact on our results). However, it is possible that such studies might have been less successful in addressing issues of equal opportunity than were the UK studies, or that they contained other significant findings. The nature and findings of such studies might constitute an interesting area of further research.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

Various strategies appear successful in reducing aspects of gender-stereotypical constructions among primary schoolchildren. However, different strategies should be selected according to the particular issue which the intervention provider seeks to address. This decision will also depend on the resources available and the particular school/classroom environment concerned. The key strategies which were identified as promising included single and mixed-sex group work to provide an experimental space or to tackle gendered behaviours; and discussion and development of reading materials to engender reflection on gender roles. Findings highlight the importance of a committed and long-term approach on the part of intervention providers, and the benefit of gaining support from the institution as a whole (including powerful figures, such as the headteacher and other teachers). Adequate resourcing appears essential for the success of the interventions. Some researchers also pointed to the necessity of consideration of factors other than gender, such as social class, ethnicity and school location.

The finding that little research has been carried out recently in this area has implications for pupils themselves and for primary schools in terms of their ability to promote opportunities among pupils. More research is therefore required in the area, examining strategies that are effective in reducing gender-stereotypical constructions among primary pupils. Such research might build on the findings concerning strategies reported in the studies included in this review, particularly, many of the studies involved very small, localised samples, and only one age-group of children. As gender identity develops very quickly through the early years and primary school age-range (Davies, 1989; Lloyd and Duveen, 1992), it is important that work be carried out to assess the extent of the success of various strategies when applied to children of different ages (i.e. what works with 5-6 year olds may not be appropriate with 10-11 year olds, and vice versa). The studies reviewed often served to highlight the particular problems that girls face in primary school due to gender constructions and expectations, and remind us of the importance of research and educational strategies that address the needs of girls as well as those of boys.

Our experience with the data extraction process also highlights the need for researchers to consider their reporting of research methods when disseminating their findings. Basic details of sample, data-collection and analysis processes should be transparent in order to allow the reader to evaluate findings. Researchers should try to ensure that findings are presented for all the aspects which their study (or research paper) sought to address. This is particularly important in research which intends to evaluate classroom strategies and processes, in order to allow teachers to make use of the research in their teaching practice.

The findings demonstrate the significance of environment in deciding the type of intervention applied and the extent of the intervention's success. Practitioners

should consider the nature of their pupil group, the type of institution and locality in which they work, the level of support and the resources available, in deciding which strategies to implement in the classroom. The findings reveal the immense importance both of the strategies themselves (in terms of their ability to successfully reduce gender-stereotypical constructions among pupils and hence to broaden their opportunities) and of adequate resourcing in order to guarantee the success of the strategies. This should be of concern to education managers and policy-makers. Work of this kind should be encouraged in primary schools and good practice applauded and rewarded. It should also be supported with practical resources in terms of time and money. Financial support must continue and develop for research work in this area too – research which views gender as relational and aims to develop strategies to improve the opportunities of both boys *and* girls.

8.2 Recommendations

8.2.1 For policy

The development and implementation of strategies that reduce gender-stereotypical constructions among primary school pupils appear to have beneficial effects, and ought to be encouraged. We recommend that they are encouraged by policy-makers and education managers in the following ways:

- By building the strategies identified in this review into existing policies such as consideration of literature used within the literacy strategy
- through the principles given in guidance, flagging up good practice and the benefits of such work
- practically: in terms of funding provision for research on this subject, and crucially in providing resources of funding and time for the long-term implementation of such strategies.

8.2.2 For practice

Again, these strategies can be effective and beneficial for pupils (and indeed for teachers: see Cunnison, 1990; Reay, 1993), and hence could be utilised by practitioners. Strategies should be adopted in terms of fitness for purpose, taking context and aims into consideration when choosing which to use. Identity factors other than gender in the pupil population (ethnicity, social class, and so on) may also need to be taken into consideration in the decision over which strategies are to be used and the way in which they are to be applied and developed in particular schools. Teachers should consider the needs of girls *and* boys, and ensure that neither group feels marginalised by the processes. Finally, in implementing interventions to reduce gender stereotypical constructions among primary schoolchildren a holistic approach is recommended, with attention to macro (e.g. institutional) as well as micro issues. Where possible, strategies should be conceived as long-term and practical, and psychological support sought from colleagues and managers.

8.2.3 For research

More research is needed to develop and evaluate strategies that reduce gender-stereotypical constructions among primary schoolchildren, bringing the latest theoretical work to bear on this work. Particularly, further research needs to be done in testing the effects of strategies on different age-groups.

Many of the studies included in our focused review have a sole focus on gender as a point of analysis, as the importance of attempting to analyse the interaction between, and impact of, multiple aspects of identity (such as gender, ethnicity, social class, and so on) had not yet been brought to the fore in the literature at the time of their production. (Reay is an exception, as her work was influential in its early recognition of, and development of theory on, these issues.) However, the interplay between different aspects of identity construction and their impact on access to equality of opportunity needs further research.

In disseminating research findings in this area, researchers need to be aware of the teacher audience and their needs. Teachers need full details about the extent to which the strategies concerned were effective and the nature of the strategies themselves, if they are to apply them. They also require information about the specific environment in which the research was conducted as they will need to adapt strategies to fit their own school environments. Finally, teachers and fellow researchers need to be able to assess whether the research evidence is reliable; the reporting of at least basic aspects of the research methods should be prioritised as good practice.

9. REFERENCES

9.1 Included studies (final in-depth review)

Cunnison S (1990) Implementing a whole school equal opportunities policy: a primary school in Humberside. *Gender and Education*, 2 (3)

Jacklin A, Lacey C (1997) Gender integration in the infant classroom: a case study. *British Educational Research Journal* 23(5): 623-639

Reay D (1990a) Girls' groups as a component of anti-sexist practice: one primary school's experience. *Gender and Education* 2(1): 37-48

Reay D (1990b) Working with boys. *Gender and Education* 2(1): 269-281

Reay D (1991) Intersections of gender, race and class in the primary school. *British Journal of Sociology of Education* 12(2): 163-182

Reay D (1993) 'He doesn't like you miss': working with boys in an infant class. In Claire H, Maybin J, Swan J (eds) *Equality matters: case studies from the primary school*. Cleveland: Multilingual Matters

Westland E (1993) Cinderella in the classroom: children's responses to gender roles in fairy tales. *Gender and Education* 5(3): 237-250

Wing A (1997) How can children be taught to read differently? *Bill's new frock and the 'hidden curriculum'*. *Gender and Education* 9(4): 491-504

Woodward D (1997) Children's perceptions of gender: an action research study with year three primary school children. Unpublished PhD thesis. University of Sussex

9.2 Excluded studies

The following items were included in the initial review, but excluded under application of the specific review question.

Adler S (2000) When Ms Muffet fought back: a view of work on children's books since the 1970s. In Myers K *Whatever happened to equal opportunities in schools? Gender equality initiatives in education*. Buckingham and Philadelphia: Open University Press (Philadelphia, USA)

Arnot M, David M, *et al.* (1996) *Educational reforms and gender equality in schools*. Manchester: Equal Opportunities Commission

Arnot M, Gray J, James M and Rudduck J (1998) *Recent research on gender and educational performance*. London: OFSTED

Bennetts J (1989) Gender and mathematics. *Primary Teaching Studies* 4(3): 239-258

Blunt R (2000) Equal to the task? The role of the NUT in promoting equal opportunities in schools. In K. Myers *Whatever happened to equal opportunities in schools? Gender equality initiatives in education*. Buckingham and Philadelphia: Open University Press

Bradshaw JAO (1995) An investigation into gender bias in educational software used in English. *Gender and Education* 7(2): 167-174

Browne N (ed) (1991) *Science and technology in the early years: an equal opportunities approach*. *Gender and Education Series*. Buckingham and Philadelphia: Open University Press

Campbell, Brooker (1990) Tom, Dick and/or Harriet: some interventionist strategies against boys' sexist behaviour. In Tutchell E (ed) *Dolls and dungarees*. Milton Keynes: Open University Press

EOC Research *Gender and differential achievement in education and training: a research review*. Manchester, Cardiff, Glasgow

Everley B (1983) Measures to reduce sex role stereotyping in the primary school. *NUT Primary Education Review* (17)

Fennema E C, Thomas P, Jacobs VR, Franke M (1998) New perspectives on gender differences in mathematics: a reprise. *Educational Researcher* 27(5): 19-21

French J (1984) Gender imbalances in the classroom: an interactional account. *Educational Research* 26(2): 127-136

Gewirtz D (1991) Analyses of racism and sexism in education and strategies for change. *British Journal of Sociology of Education* 12(2)

Gold D, Reis M (1978) *Do male teachers in the early school years make a difference? A review of the literature*. Quebec: Department of Education

Gribbin M (1986) Boys muscle in on the keyboard. In Burton L (ed) *Girls into maths can go*. London: Holt, Rinehart and Winston

Gropper N, Froschl M (1999) The role of gender in young children's teasing and bullying behavior. Paper presented at the Annual Conference of the American Educational Research Association. New York, USA

Haycock C (1987) Equal opportunities: a child's view. *Primary Teaching Studies* 3(1): 77-83

Headlam Wells J (1985) Humberside goes neuter: an example of LEA intervention for equal opportunities. In: Whyte J, Deem R, Kant L, Cruickshank M. *Girl friendly schooling*. London: Routledge

Hey V, Leonard D *et al.* (1998). Boys' underachievement, special needs practices and questions of equity. In Epstein D, Elwood J, Hey V, Maw J. *Failing boys? Issues in gender and achievement*: 128-144. Buckingham and Philadelphia: Open University Press

Hill D (1997) Equality in primary schooling: the policy context, intentions and effects of the Conservative 'reforms'. Introduction to Cole M, Hill D, Shan S *Education Promoting Equality In Primary Schools*. London: Cassell

Holden C (1993) Giving girls a chance: patterns of talk in co-operative group work. *Gender and Education* 5(2): 179-190

Holden C (Not stated) You can't read a book when you're on a bike: gender and achievement in the middle years. Paper presented at the British Educational Research Association Annual Conference, Cardiff University, September 2000. Education-line internet document collection: <http://leeds.ac.uk/educol/documents/00001554.htm>

ILEA (Inner London Education Authority) (1983) *Education for girls: what do you think?* London: ILEA

Leder GC (1986) Mathematics learning and socialisation processes. In Burton L (ed) *Girls into maths can go*. London: Holt, Rinehart and Winston

Letts W J (None stated) *Boys will be boys (if they pay attention in science class)*
Madden A (2000) Challenging inequalities in the classroom: the role and contribution of the Equal Opportunities Commission. In Myers K *Whatever happened to equal opportunities in schools?* Buckingham and Philadelphia: Open University Press

McCoy L (1996) Studies in teaching *1996 Research Digest*: 99

Millman V (2000) Was there really a problem? The Schools Council Sex Differentiation Project 1981-3. In Myers K *Whatever happened to equal opportunities in schools? Gender equality initiatives in education*. Buckingham and Philadelphia: Open University Press

Morgan V (1989) Primary science: gender differences in pupils responses. *Education 3-13* 17(2): 33-37

Myers K (2000) *Whatever happened to equal opportunities in schools?* Buckingham and Philadelphia: Open University Press

Noble C, Bradford W (2000) *Getting it right for boys...and girls*. London and New York: Routledge

Northam J (1986) Girls and boys in primary maths books. In Burton L (ed) *Girls into maths can go*. London: Holt, Rinehart and Winston

NUT (1983) Girls and boys in primary classrooms. *Primary Education Review* 17(7)

- NUT (1987) *The Education Bill and equal opportunities*. London: NUT
- NUT (1989) *Working for equality: a summary of the NUT guidelines on countering sexism in schools*. London: NUT
- NUT (not stated) *Towards equality for girls and boys: guidelines on countering sexism in schools*. London: NUT
- Orr P (2000) Prudence and progress: national policy for equal opportunities (gender) in schools since 1975. In Myers K *Whatever happened to equal opportunities in schools?* Buckingham and Philadelphia: Open University Press
- Party A-SW (1985) 'Look, Jane, Look!' Anti-sexist initiatives in primary schools. In Weiner G *Just a bunch of girls*. Milton Keynes: The Open University Press
- Pearse S (1989) Addressing race and gender in rural primary schools using two case studies. *Gender and Education* 1(3): 273-281
- Schwean-Kowalchuk VL, Roadhouse, AJ (1990) A school-based social cognitive intervention for aggressive boys. *BC Journal of Special Education* 14(1): 27-37
- Scott-Hodgetts R (1986) Girls and mathematics: the negative implications of success. In Burton L (ed) *Girls into maths can go*. London: Holt, Rinehart and Winston
- Sealey A, Knight C (1990) 'We don't like talking in front of the boys: classroom and inequality.' *Education 3-13* 18(3): 55-59
- Sloan CA, Cunneen J (1982) In quest of the best primary school teacher: Which gender will you offer a tender? Does gender affect minority students? USA: Illinois
- Stones RN (1980) Sex roles in the primary school. *Primary Education Review* (8)
- Straker A (1986) Should Mary have a little computer? In Burton L *Girls into maths can go*. London: Holt, Rinehart and Winston
- Sukhnandan L, Lee B, *et al.* (2000) *An investigation into gender differences in achievement, Phase 2: school and classroom strategies*. Berkshire: National Foundation for Educational Research
- Taylor H (1985) Experience with a primary school implementing an equal opportunities enquiry. In Burton L *Girls into maths can go*. London: Holt, Reinhart and Wilson
- Taylor H (1985) INSET for equal opportunities in the London Borough of Brent. In Whyte J, Deem R, Kant L and Cruickshank M *Girl friendly schooling*. London, Routledge

- Taylor H (2000) Now you see it, now you don't: gender equality work in Brent, 1982-8. In Myers K *Whatever happened to equal opportunities in schools? Gender equality initiatives in education*. Buckingham and Philadelphia: Open University Press
- Turner E, Riddell S, *et al.* (1995) *Gender Equality In Scottish Schools: The Impact of Recent Educational Reforms*. Manchester, Glasgow, Cardiff and London: Equal Opportunities Commission
- Underwood GJN (1994) Gender difference and effects of co-operation in a computer-based language task. *Educational Research* 36(1): 63-73
- Walden JWV (1986) Characteristics, views and relationships in the classroom. In *Girls into maths can go*. East Sussex: Holt, Rinehart and Winston
- Walden JWV (1983) A for effort, E for ability: the case of girls and maths. *NUT Primary Education Review: Girls and boys in primary classrooms* (17)
- Warrington M, Younger M, *et al.* (2000). Boys' underachievement at school: a research and intervention project. Unpublished ongoing research at the University of Cambridge (funded by DfES)
- Weiner G (1985) Equal opportunities, feminism and girls' education: introduction. In Weiner G *Just a bunch of girls*. Buckingham: Open University Press
- Weiner G (1985) *Just a bunch of girls*. Buckingham: Open University Press
- Weiner G (1987) Equal opportunities for girls: the role of the primary school: report of the European Teachers' Seminar (36th, Donaueschingen, Federal Republic of Germany, June 22-27 1987) Strasbourg, France: Council for Cultural Cooperation BYA19770
- Whyte J (1983) *Beyond the Wendy House: Sex role stereotyping in primary schools*. York: Longman for Schools Council
- Whyte J (1983) How girls learn to be losers. *NUT Primary Education Review* (17)
- Whyte J *et al.* (1985) *Girl friendly schooling*. London: Methuen
- Whyte JE (1985) Editor's introduction. In Whyte J, Deem R, Kant L, Cruickshank M *Girl friendly schooling*. London: Routledge
- Witcher H (1985) Personal and professional: a feminist approach. In Whyte J, Deem R, Kant L, Cruickshank M *Girl friendly schooling*. London: Routledge
- Woodward C, Woodward N (1998) Girls and science: does a core curriculum in primary school give cause for optimism? *Gender and Education* 10(4): 387-400

9.3 Other studies

Arnot M, David M, Weiner, G (1996) *Educational Reforms and Gender Equality in Schools*. Manchester: EOC

Arnot M, David D, Weiner, G (1999) *Closing the Gender Gap*. Cambridge: Polity Press

Arnot M, Millen D, Maton K (1998) *Current Innovative Practice in Schools in the UK*. Cambridge: University of Cambridge

Cealey Harrison, W and Hood-Williams J (1998) More varieties than Heinz: social categories and sociality in Humphries, Hammersley and beyond. *Sociological Research Online* 3(1)

Davies B (1989) *Frogs and Snails and Feminist Tales*. Sydney: Allen and Unwin

Davies B (1993) *Shards of Glass*. Sydney: Allen & Unwin

EPPI-Centre (2001) Notes: Flow of studies through a systematic review – from search to synthesis. London: Social Science Research Unit, Institute of Education

EPPI-Centre (2001) *EPPI-Centre Review Group Manual*. London: Social Science Research Unit, Institute of Education

EPPI-Centre (2002) Data extraction document. London: Social Science Research Unit, Institute of Education

Epstein D, Elwood J, Hey V, and Maw J (eds) (1998) *Failing Boys?* Buckingham: Open University Press

Francis B (1998) *Power Plays: Primary School Children's Constructions of Gender, Power and Adult Work*. Stoke-on-Trent: Trentham Books

Francis B (2000) *Boys, Girls and Achievement: Addressing the Classroom Issues*. London: RoutledgeFalmer

Francis B (2000b) The gendered subject: students' subject preferences and discussions of gender and subject ability. *Oxford Review of Education* 26(1): 35-48

Francis B and Skelton C (eds) (2001) *Investigating Gender: Contemporary Perspectives in Education*. Buckingham: Open University Press

Gill J and Starr K (2000) Sauce for the Goose? Deconstructing the Boys-in-Education Push. *Discourse* 21(3): 323-333

Gillborn D and Gipps C (1996) *Recent Research on the Achievement of Ethnic Minority Pupils*. London: HMSO

- Gorard S, Rees G, Salisbury J (1999) Reappraising the apparent underachievement of boys at school. *Gender and Education* 11(4): 441-54
- Griffin C (1998) Representations of youth and the 'boys' underachievement debate': just the same old stories? Presented at the 'Gendering the Millenium' International conference, University of Dundee
- Kenway J (1997) Taking stock of gender reform policies for Australian schools: past, present, future. *British Educational Research Journal* 23(3): 329-344
- Lloyd B and Duveen G (1992) *Gender Identities and Education*, London: Harvester Wheatsheaf
- Myers K (2000) *Whatever Happened to Equal Opportunities in Schools?* Buckingham: Open University Press
- Rees T (1999) *Mainstreaming Equality in the European Union*. London: Routledge
- Skelton C (1997) Primary boys and hegemonic masculinities. *British Journal of Sociology of Education* 18:349-68
- Skelton C (2001) *Schooling the Boys: Masculinities and Primary Education*. Buckingham: Open University Press
- Warrington M and Younger M (2000) The other side of the gender gap. *Gender and Education* 12(4): 493-507
- Warrington M, Younger M, Williams J (2000b) Student attitudes, image and the gender gap. *British Educational Research Journal* 26(3): 393-408

APPENDIX A: Search strategy

The literature was searched according to the following search terms (both individually and appropriate combinations of these): 'primary education', 'elementary education', 'gender', 'equality' and linked words: 'sex differences / stereotypes', 'sex bias', 'sex roles', 'intervention'. Keywords, their combinations (e.g. 'gender and primary', 'gender and elementary', 'gender and equality'; 'sex differences and primary', 'sex differences and elementary', and so on for each term), and the resulting number of references, have been recorded for each database. Free-text searching has largely been adopted: thesaurus terms (e.g. 'equal opportunities') have been used where possible, but have been found to be a limited resource as they are not always consistent across databases. Records have been kept of all resources included in the search.

Due to cost and time constraints, an 'on-screen screening' approach was adopted. In other words, rather than keywording every study raised from these databases by the keywords (numbering thousands of mainly irrelevant studies), those which were clearly not related to our focus of interest were rejected during the initial search. Their titles/abstracts were not retrieved (and hence not recorded in our review). This approach introduces the risk that some relevant studies may be accidentally excluded by researchers during this process: to limit this risk, a subject expert conducted this stage of the review and a strategy of inclusion was adopted where there was any element of doubt. The criteria for the on-screen exclusion was as follows: studies clearly outside primary/compulsory education; studies not related to gender in any way (e.g. to ethnicity rather than gender); studies not concerned with equal opportunities; and literacy strategies because literacy strategies would fall within another EPPI body, the English Review Group.

The following are the resources included in our search. These have been selected according to significance in terms of quantity and quality. For example, databases such as ERIC hold an enormous quantity of information on diverse research projects, and hence have been included. Conversely, a journal such as *Gender and Education* includes comparatively few research items, yet is likely to contain information on a number of studies relevant to our review due to the focused (and pertinent) subject-matter of the journal. Similarly, some of those academics known to be conducting work in the field have been identified by review group members and contacted directly for information. Where searches have been made within a specific time-period, these are noted. Where no dates are given, then an entire search of that database has been undertaken.

Bibliographic databases

British Education Index
ERIC 1966-1983
ERIC 1984-2000
Regard
Zetoc

Other databases	EducationLine Jisc Social Science Gateway NFER
Bibliographic journals	Educational Research abstracts
General web searches	NISS
Government/quangos, etc	DfES, LEAs, ILEA, EOC, QCA, OfSTED, EAZs
Trade unions/Professional organisations	NUT, NAPE
Calls for contributions	Email dissemination lists
Professional contacts/References in key texts	Members of the Gender and Education Review Group; Madeleine Arnot; those working on gender issues in schooling at Homerton College; Bronwyn Davies; Jane Kenway; Jo-anne Dillabough; Kate Myers
Academic journals	<i>Gender and Education</i> (all years hand-searched; all contents pages registered)
University Research Centres / Departments	

Note: A number of databases could not be accessed during the research due to reasons such as lack of institutional subscription and lack of funds to purchase access. As one of the referees to this report noted, this has meant that the strategy is somewhat UK-oriented. This again highlights the necessity of adequate (extensive) funding if reviews are to be comprehensive. On the other hand, total comprehensiveness is, of course, impossible.

APPENDIX B: Keywording criteria

We used the following criteria in order to classify (keyword) studies.

What kind of printed material does it concern? (one keyword only)

BOOK
REPORT
JOURNAL
RESOURCE

Focus of book/report, etc (as appropriate)

How was the report located?

CITATION (from bibliography of another report)
ERIC
BEI
REGARD
EDUCATIONLINE
SSG
ZETOC
NFER
HANDSEARCH
PERSONAL CONTACT
GOVERNMENT (DfEE, etc)
LEA
EOC
QCA
UNION (e.g. NUT)

Who located the report?

What is the status of the report?

PUBLISHED
IN PRESS
UNPUBLISHED

On what basis have the keywords been allocated?

TITLE
ABSTRACT
FULL REPORT

What type of study does the report describe?

LITERATURE REVIEW
APPLIED INTERVENTION
RESEARCH INTERVENTION
POLICY EVALUATION
OTHER: (write in)

Country/countries carried out in:

*Focus of the report:
(as many as appropriate)*

Attainment:	improved pupils' scores in KS tests and/or improvement in pupil performance in curriculum subjects
Peer interaction:	attitudes, behaviours of pupils in mixed and single sex situations
Aspirations:	hopes and expectations of pupils towards future goals hopes and expectations of teachers for pupils
Behaviour:	actions, attitudes towards peers – same and opposite sex actions, attitudes of teachers to pupils – same and opposite sex actions, attitudes of pupils to teachers – same and opposite sex
Cognitive style:	
Mental health:	improvements in -/ reducing challenges to –
Literacy:	reading, writing – may include speaking and listening
Numeracy:	number, mathematics
Teaching styles:	preferred approaches of individual teachers to teaching processes (eg didactic, collaborative, whole class, group work, setting)
Learning styles:	preferred approaches to classroom learning by individual pupils
Delinquency:	classroom and playground behaviours that seriously contravene rules (eg verbal/physical attacks on teacher, vandalising school property), anti-social behaviour outside of the school (eg vandalism, theft, violence)
Other(s):	(state)

Characteristics of the study population: (as many as appropriate)

YEAR 1
YEAR 2
YEAR 3
YEAR 4
YEAR 5
YEAR 6
5, 6, 7, 8, 9, 10, 11 YEARS
PRIMARY
ELEMENTARY
JUNIOR
SECONDARY

School:

CO-ED
SINGLE SEX MALES
SINGLE SEX FEMALES

Study population sex:

GIRLS (only)
BOYS (only)
MIXED SEX

Name of intervention program: (where appropriate)

Cost indication:

YES
NO

Intervention site:

SCHOOL (only)
CROSS SITE (where school is located on more than one campus site or where intervention involves more than one school or where intervention involves additional sites such as the home, local community)

Intervention provider(s):

TEACHER
ACADEMIC RESEARCHER
PSYCHOLOGIST
SOCIAL WORKER
HEAD TEACHER
COMMUNITY WORKER
PARENT
COMPUTER

OTHER(s):

Type of intervention strategy:

CURRICULUM – The taught, formal aspects of the curriculum (i.e. those set out in the National Curriculum)

SINGLE/MIXED SEX CLASSES – Where intervention involves one sex or both sexes of pupils

TEACHER EXPECTATIONS – To bring about a shift in teacher stereotypical attitudes towards the abilities and behaviours of boys and girls (for example, teachers assuming that girls are better behaved, boys are more confident in their approaches to learning)

TEACHING STYLES – intervention into awareness of ways of approaching teaching that are equitable (for example, avoiding using one style which may appeal to ‘boys’ learning styles’ (memorisation of abstract, unambiguous facts and rules, competitiveness) or ‘girls’ learning styles’ (sustained, open-ended, process-based tasks, related to realistic situations)

PROFESSIONAL TRAINING – Raising awareness of teachers, governors or other educational agents of gender differences in young children

CLASS SIZES – The size and gender composition of a class

PLAYGROUND PRACTICES – For example, challenging the dominance of boys’ appropriation of physical space, violent behaviours towards each other, harassing behaviours towards girls

RESOURCES – Books and materials used by teachers in curriculum teaching

PARTICIPATION – Where intervention requires the actual involvement of teachers and/or pupils and/or parents and/or other educational workers and/or community workers. For example, a strategy aimed at reducing sexual harassment by older boys of younger girls might require the active

co-operation of the boys in developing a set of ground rules and an agreement to monitor the implementation of these ground rules by teachers and parents.

SELF-ESTEEM – Strategy underpinned by idea that, if you raise a pupil's self-esteem, they are more likely to co-operate with school rules, through an awareness of school values and come to appreciate their own contribution to these.

CODES/PRACTICES – The implicit and explicit ethos and values of a school: for example, are there certain ways in which the school views 'boys' (as naughty, disruptive) and 'girls' (caring and compliant), and treats each gender accordingly?

PARENTS – Strategy aimed specifically at parents only involving gender equality/inequality

SCHOOL ORGANISATION – For example, attempts to ensure teachers do not take responsibility for school management in traditionally gendered ways: female teachers teach youngest children in school, responsible for home-school liaison whilst male teachers teach football and lead out of school sports clubs, teach older pupils and are seen as the disciplinarians.

ROLE MODELS – Intervention aimed at exploring if boys and girls respond differently to teacher according to teacher's gender

LINKS – For example, where intervention is part of an LEA initiative or wider community project.

COUNSELLING – For example, mentor schemes (older pupil to younger pupil or teacher/pupil)

SINGLE SEX/MIXED GROUPS – Intervention may be applied to whole class or sets

AWARENESS RAISING – Intervention focusing on teachers and/or pupils and/or governors and/or parents and/or other education agents aimed at raising awareness of gender equity and gender differences in the classroom and playground

OTHER(s)

APPENDIX C: Study design of included reports

Study	Number of participants	Age group and location of study	Methods	NOTES
Cunnison (1990)	Not clearly stated (whole school)	5-11; primary school	Main method was participant observation – also discussion group – and ‘questions asked to children’ but no information as to whether this was a questionnaire or just asked.	Methods of evaluation not clearly specified
Jacklin and Lacey (1997)	70 pupils	5-6; primary school	Methods included interviews with children who were asked six questions. The researcher also talked to the teachers about their classroom strategies, and collected background data (ages, test scores) and seating patterns of children.	
Reay (1990) – girls	20 pupils	Year 4 (8-9); primary school	Documentation, observation, questionnaire, tests	
Reay (1990) – boys	35 pupils, 1 teacher	9-11; primary school	Participant observation plus questionnaires plus student ongoing evaluations and self-evaluations.	
Reay (1991)	1 mixed-sex (2 boys, 2 girls) and one single-sex (4 girls) group; two groups of 3 boys and 3 girls	7-8 year olds; primary school	Participant observation (sessions tape recorded and transcribed), focus group (with children being asked to evaluate sessions)	
Reay (1993)	27: 18 boys and 9 girls	6-7; primary school	Participant observation and interviews	

Appendix C: Study design of included reports (cont'd)

Study	Number of participants	Age group and location of study	Methods	NOTES
Westland (1993)	113 children	Mainly 10-11; primary school	Researcher analysed responses to classroom tasks which were not necessarily part of the formal curriculum. Children prepared pictures and stories in response to traditional and 'upside-down' fairy-tales.	Setting task and analysing results rather than traditional methods
Wing (1997)	32 pupils	10-11; primary school	Observation. The teacher/researcher analysed children's responses to her questions about the book <i>Bill's new frock</i> .	See above
Woodward (1997)	54 pupils: Year 3 (1990 intake) 13 boys, 13 girls Year 3 (1991 intake) 14 boys, 12 girls	7-8; primary school	Documentation (school and LEA documents); small group and whole class discussions; interviews; participant and non-participant observations; questionnaires; samples of children's work.	

APPENDIX D: Details of methods of included studies

	Cunnison (1990)	Jacklin & Lacey (1997)	Reay (1990 – boys)	Reay (1990 – girls)	Reay (1991)	Reay (1993)	Westland (1993)	Wing (1997)	Woodward (1997)
Was there sufficient description of the methods of evaluation?	No	No	Yes	Yes, though somewhat limited	Yes	NA because a descriptive study, not evaluative	Yes (concerning the methods of the descriptive study)	Yes	Yes
Was there sufficient description of the methods of intervention?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was there sufficient description of the intervention strategies*?	In some cases	Yes	Yes, although hard to know from data-extraction document	Yes	Yes	In some cases	Yes	Yes, although hard to know from data-extraction document	Yes
Was there sufficient description of the processes** of evaluation?	Yes	Yes	Yes	Yes	Yes	Yes	Some detail about the study processes, but not much	Yes	Yes

Appendix D: Details of methods of included studies (cont'd)									
	Cunnison (1990)	Jacklin & Lacey (1997)	Reay (1990 – boys)	Reay (1990 – girls)	Reay (1991)	Reay (1993)	Westland (1993)	Wing (1997)	Woodward (1997)
Does it discuss ethnicity and social class?	Not stated	No	Yes: in detail	Yes, though a bit vague (described in terms of population of school, rather than sample)	Yes	Yes, in considered detail	Explicit about ethnicity, vague reference to social class, although schools selected to provide a mixture	No	Yes
Is there sufficient description of the school/classroom environment?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not much information	Yes
Did the intervention succeed in achieving its aims?	Yes	Yes	Yes: impact on awareness, behaviour (observed and reported), and on social and communication skills	Yes: improved girls' confidence in non-gender traditional areas, and their self-esteem; positive impact on test results, but boys hostile and resistant	Yes, girls more inclusive	Yes	Yes	Yes Children reflected on stereo-typical constructions of gender.	Yes

Appendix D: Details of methods of included studies (cont'd)

	Cunnison (1990)	Jacklin & Lacey (1997)	Reay (1990 – boys)	Reay (1990 – girls)	Reay (1991)	Reay (1993)	Westland (1993)	Wing (1997)	Woodward (1997)
If not, did it say why?	NA	NA	Author notes that some boys reverted to previous behaviour in the long term, due to lack of resources available.	Boys hostile to girls' gaining attention; teachers also somewhat ambivalent to girls' new confidence	Impact limited without wider inequalities being addressed	NA	NA	NA	NA
Do the data substantiate the findings of the evaluation?	No. Not enough data provided to enable to make an adequate assessment	Yes	Yes	Yes for process evaluation; no for outcome evaluation	Yes	No, due to insufficient data provided to enable an adequate assessment	Yes	Yes	Yes

* tools of the intervention (e.g. curriculum materials involved), rather than their methods of implementation
 ** factors and issues encountered in implementing the evaluation