

A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

Review conducted by the Gifted & Talented Review Group

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EPPI-Centre report no. 1612 · September 2008

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

SUMMARY

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

REPORT

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

**TECHNICAL
REPORT**

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

DATABASES

Access to codings describing each research study included in the review

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

The EPPI-Centre reference number for this report is 1612T.

This report should be cited as: Bailey R, Pearce G, Winstanley C, Sutherland M, Smith C, Stack N, Dickenson M (2008) A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented. Technical report. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

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CONTENTS

Abstract	1
1. Background	3
1.1 Purpose and rationale for review	3
1.2 Policy and practice background	3
1.3 Research background	3
1.4 Review questions and approach	4
1.5 Scope and definitional issues	4
1.6 Authors, funders and other users of the review	5
2. Methods used in the review	6
2.1 Type of review	6
2.2 User involvement	6
2.3 Identifying and describing studies	6
2.4 In-depth review	7
2.5 Deriving conclusions/implications	10
3. Results	11
3.1 Identified studies	11
3.2 Selecting studies	12
3.3 Map results	12
3.4 Identifying and describing studies: quality-assurance results	17
3.5 Summary of results of map	17
4. In-depth review: results	19
4.1 In-depth review	19
4.2 Selecting studies for the in-depth review	19
4.3 Assessing the quality of studies and the Weight of Evidence	19
4.4 In-depth review: quality assurance process	19
4.5 Further details of studies included in the in-depth review	22
4.6 Outline of all of the studies included in the review	22
4.7 Weight of Evidence (WoE)	22
4.8 Final synthesis of evidence	22
4.9 Relationship between findings and the Classroom Quality Standards	26
5. Implications	35
5.1 Strengths and limitations of this systematic review	35
5.2 Implications for policy, practice and research	35
6. References	38
6.1 General References in the text	38
6.2 References for studies included in the map	39
7. Appendices	44
7 Authorship of this report	44
7.1 Classroom Quality Standards	46
7.2 Classroom Quality Standards guidance notes	52
7.3 Search Strategy	53
7.4 Quality Standards Tool	57
7.5 EPPI-Centre Data-extraction and Coding Tool for Education Studies - gifted and talented	60
7.6 Definitions	81
7.7 Weight of Evidence (WoE) guidelines	82
7.8 Summaries of characteristics of studies included in the review	84
7.9 Institutional Quality Standards	108
7.10 Institutional Quality Standards guidance notes	114
7.8 Individual synthesis of the articles in the in-depth review	116

List of abbreviations

ADHD	attention deficit hyperactivity disorder
AEI	Australian Education Index
ASSIA	Applied Social Sciences Index and Abstracts
BEI	British Education Index
CERUK	Current Educational Research in the United Kingdom
CQS	Classroom Quality Standards
DCSF	Department for Children, Schools and Families
DfEE	Department for Education and Employment
DfES	Department for Education and Skills
EPPI-Centre	The Evidence for Policy and Practice Information and Co-ordinating Centre
ERIC	Education Resources Information Centre
GEI	Gifted Education International
G and T	gifted and talented
HAS	high ability studies
IBSS	<i>International Biography of the Social Sciences</i>
IOE	Institute of Education
IQS	Institutional Quality Standards
JAA	<i>Journal of Advanced Academics</i> (previously JSGE)
JSGE	<i>Journal of Secondary Gifted Education</i>
OFSTED	The Office for Standards in Education
REEL	The Research Evidence in Education Library
SES	socio-economic status
SNAP	Scottish Network for Able Pupils
SSCI	Social Science Citation Index
SSRU	Social Science Research Unit
WoE	weight of evidence
WWC	What Works Clearinghouse

Abstract

What do we want to know?

Which types of classroom-based interventions improve the educational achievement of pupils identified as gifted and talented?

What was our focus?

The main aim of this review was to focus on studies that investigated effective outcomes from methods of classroom-based teaching and practice for gifted and talented pupils. This review was guided by the Classroom Quality Standards (Appendix 7.1); progressive and focused statements of quality provision for gifted and talented pupils, creating a self-assessment framework. The aim of this review was to inform future policy decisions and guide subsequent provision and research. Even though the review's primary concern was to inform English policy makers, worldwide studies were included if they were written in the English language. This allowed the review team to consider research findings from a wider pool. The review included studies involving pupils in primary, middle, secondary and special needs schools, aged from 5 to 16. The review was carried out in two stages. The first stage analysed a wide pool of studies using a systematic review map, and the second stage took on a narrower focus and analysed the data using an in-depth narrative thematic approach.

Who wants to know about this and why?

There is an expectation that all English schools and local authorities support the education of pupils identified as gifted and talented. In part, these requirements are a response to parents and schools requesting greater help in meeting the needs of these pupils. The validity and urgency of these concerns was confirmed by those government inspections which reported that sufficient challenge for gifted and talented pupils was uncommon in many mainstream schools (Hansard

1999; Freeman 1998).

What did we find out?

- The review supports the use of personalised learning and differentiation. There was evidence in favour of the appropriate use of streaming, differentiated provision within mixed ability classes, and individualised programmes. However, effective provision within mixed ability classes presumes a positive classroom climate.
- The quality and character of group interactions was identified as a significant factor in the effectiveness of support for gifted and talented pupils. There was evidence that collaborative and group activities helped gifted and talented pupils perform better at some tasks. The role of the teacher was highlighted as especially important in promoting and maintaining positive group work.
- Studies indicated that enrichment programmes that help gifted and talented pupils develop self-regulation and higher order thinking skills had a positive effect on their achievement and engagement.

What are the implications of this review?

- The review endorses the policy of focusing support for gifted and talented pupils in mainstream settings. The Classroom Quality Standards materials, which emphasise personalised, differentiated learning, are therefore generally well placed to offer specific guidance.
- It is suggested that the Classroom Quality Standards take account of the review findings in future manifestations, especially emphasising the importance of class organisation, group interaction and enrichment strategies that

2 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

develop skills such as self-regulation and higher order thinking.

- Teachers and schools should be cautious about over-generalising, and of treating gifted and talented pupils as a homogeneous group. It is vital to be sensitive to individual needs and the mediating effects of the teacher, the curriculum and the classroom context.
- Likewise, there is no one strategy or approach to social interaction that will work all of the time with all gifted and talented pupils.
- Most forms of provision for gifted and talented pupils occur in social settings, and pupils' abilities to deal with such contexts are likely to be important factors in academic success and personal motivation. The teacher has an important role to play in generating and sustaining contexts for appropriate social interactions.
- There is an urgent need for funded research focused on English and UK educational settings. In particular, studies are needed that explore the distinctive needs of individual gifted and talented pupils, their social interactions and their pedagogies.

How did we get these results?

In total, 20,947 studies were identified for screening through systematic searches of 18 bibliographic databases of published literature, specialist websites and hand-searching sources. Of these, 101 studies were included for the mapping stage of the review. After the further revision of the review question and additional exclusion criteria, the remaining 15 studies were subjected to in-depth synthesis.

Because the studies are from a range of sources, we need to clarify the key term of 'streaming'. Studies referring to 'streaming' are interpreting the term in its broadest sense. The studies and this review understand the term (in this context) as separating pupils for specific tasks, activities and subjects based on their aptitude for that specific task, activity or subject.

Where can I find more information?

<http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2400&language=en-US>

CHAPTER ONE

Background

This chapter outlines the research, theory, policy and practice backgrounds of the review; the rationale for the review; details of the participants and those funding the review; and the review question.

1.1 Purpose and rationale for review

Gifted and talented education is a relatively recent feature of explicit educational policy in England. Predictably, there are gaps in the published literature in answering questions related to effective pedagogical interventions aimed at improving the achievement of pupils identified as gifted and talented. Reviews of the literature have been published, but none have used a systematic review methodology (Hewston et al. 2005, Riley et al. 2004, VanTassel-Baska 2004, White et al. 2003, Ziegler and Raul 2000, Freeman 1998).

The main focus for this review included studies that investigated effective outcomes from methods of classroom-based teaching and practice for gifted and talented pupils. This review was guided by the Classroom Quality Standards (CQS), which are progressive and focused statements of quality provision for gifted and talented pupils, creating a self-assessment framework. The aim of this review was to inform future policy decisions, and guide subsequent provision and research.

1.2 Policy and practice background

Recent years have seen a radical change in both policy and practice related to the education of gifted and talented pupils. The UK central government introduced a series of initiatives for English schools, such as Excellence in Cities, Excellence Clusters, Residential Summer Schools and World Class Tests (Morley and Bailey 2006) aiming to raise the level of support to these pupils and to improve the quality of their educational experiences substantially. Government agencies have presented clear expectations that schools

and local authorities are required to support the education of gifted and talented pupils (Dracup 2003). In part, these requirements are a response to parents and schools requesting greater help in meeting the needs of these pupils. The validity of these concerns was confirmed by government inspections reporting insufficient challenge for gifted and talented pupils to be common in many mainstream schools (OfSTED 2001).

1.3 Research background

This will be the first systematic review conducted of gifted and talented education research focusing on interventions and educational achievement. Other forms of review published in the UK have had different foci, such as that carried out by Freeman (1998). The latter document is of particular relevance to the current project as it reported contemporary research findings concerning the development and education of 'more able' pupils, with a view to improving communication between researchers, policy makers and practitioners. Freeman's study might, therefore, be seen as a kind of precursor to the current review, although methodology, constraints and scope are different.

Other reviews exist across the world, but these have a broader focus and tend to be critical summaries of research literature in specific subject contexts (e.g. VanTassel-Baska 2004). There are also several edited volumes, but these tend to be collections of papers (e.g. Colangelo and Davis 2003, Heller et al. 2000), rather than reviews of the literature per se.

- 4 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

1.4 Review questions and approach

The overall research question for the mapping stage was:

Which types of interventions improve the educational achievement of pupils identified as gifted and talented?

We used a systematic review methodology to identify the evidence with regard to three provisional sub-questions:

- 1) Do school-based interventions for gifted and talented pupils lead to the improvement of their educational achievement?
- 2) Which interventions demonstrate a positive impact on educational achievement?
- 3) Which contexts are most effective in facilitating educational improvement?

Even though the review's primary concern was to inform English policy makers, worldwide studies were included so long as they were written in the English language. This allowed the review team to consider research findings from a wider pool. The review included studies involving pupils in primary, middle, secondary and special needs schools, aged from 5 to 16. The review used an a priori approach for the mapping stage of the review. However, the review became more iterative for the in-depth stage as the review's focus was made narrower to reflect the data and the funder's needs. The review used narrative empirical data.

As the review moved into the in-depth stage from the mapping stage, the aim changed to reflect a narrower focus. This created a need to revise the research questions and develop them to reflect the narrower aim of the review (see section 2 for the revised version).

1.5 Scope and definitional issues

Most countries recognise the need to support pupils who display high ability. However, differences between countries exist in the way that they conceptualise, and therefore provide for, this group of pupils. A result of this varying conceptualisation is a difference in the vocabulary used to describe the group. Within the UK each of the four constituent countries refers to these pupils in different terms: in England and Northern Ireland they are called 'gifted and talented'; in Scotland they are referred to as 'more able'; in Wales they are known as being 'talented' and 'more able'.

This systematic review adopted the terminology of the English funding agency (Department for Children, Schools and Families - changed from Department for Education and Skills in July 2007), namely 'gifted and talented'. Its working definition of giftedness and/or talent was: 'those who

have one or more abilities developed to a level significantly ahead of their peer group (or with the potential to develop these abilities)' (DCSF 2007). The DCSF (2008) distinguishes between 'gifted' and 'talented' pupils in terms of the curriculum areas in which they excel: the former relates to high ability in academic subjects, such as English or History; the latter in areas requiring visio-spatial skills or practical abilities, such as in games and PE, drama, or art.

Such definitions were functional, allowing for an examination of gifted and talented education that was broader than the traditional conception of high ability within a narrow range of domains, often restricted to mathematical and linguistic aptitude. It also recognised a wider conception of intelligence than in previous multi-dimensional aspects. This allowed for a wider range of abilities and subject areas, and potentially a more inclusive framework. Studies of both 'gifted' and 'talented' pupils were included in this review.

Other elements of this study required articulation; namely the concepts of educational achievement, population, timescale and intervention.

Given the initial stated intentions of the national gifted and talented initiatives in England, and the regular use of concepts such as 'underachievement' and 'potential to achieve', it was felt important to note that the impact of gifted and talented provision might be measured in terms of the capacity of individuals to achieve. This reflected the composition of a gifted and talented population in terms of representation of distinct pupil groups, for instance those from minority ethnic groups or from disadvantaged backgrounds. Increasing pupil participation in provision set aside for gifted and talented pupils can be as important as obtaining higher levels of achievement for those gifted and talented pupils already identified and provided for (Smith 2006). Furthermore, the rationale of these initiatives makes it clear that educational achievement should be interpreted broadly with reference to a holistic view of education, inclusive of development in areas beyond test scores and examinations. This would also allow for achievements usually labelled as 'value-added', where the apparent levels of success and achievement may be low in relation to an accepted average, but in fact improvements from baseline to end of project have been very significant.

The target population for this review was school pupils between the ages of 5 and 16, which represents the range of ages experiencing compulsory schooling in the UK.

This study focused on curriculum interventions for gifted and talented classroom-aged pupils. By intervention, we mean planned, discrete curriculum strategies designed to improve achievement. As a guide, any classroom practice within the scope of the published Classroom

Quality Standards (Teachernet 2007a) will meet inclusion criteria, reference will also be made to the published Institutional Quality Standards (IQS) (Teachernet 2007b).

The review examined research carried out during or after 1998 but before November 2007. Our start date was chosen as the year when gifted and talented education was formally presented as an expectation for schools (DfEE 1997). Our final date reflects the submission date for the interim report.

1.6 Authors, funders, and other users of the review

The team was composed of established researchers and practitioners within a range of experiences and expertise in the areas of gifted and talented education and educational research. It included colleagues already trained and practised in systematic review procedures and other reviewing formats.

Bailey and Pearce were based at Roehampton University and come from a background of mixed methods research and talent development. Winstanley was based at Roehampton University, and is a researcher, writer, practitioner and consultant in the field of gifted and talented education. Sutherland, Smith and Stack worked with the Scottish Network for Able Pupils (SNAP), which has a focus on inclusive approaches to the education of the most able pupils, and is located in the University of Glasgow. Dickenson worked with London Gifted and Talented (an arm of the London Challenge), which provides resources and programmes to teachers and pupils, explicitly targeted towards addressing issues of social disadvantage.

The Peer Review and Advisory Groups were made up of academics and practitioners with expertise in either gifted and talented education or systematic reviewing. It included members from England and other parts of the UK. In addition, the review team drew on the expertise of teacher groups that were regularly convened by London Gifted and Talented, and the Scottish Network for Able Pupils.

The review was funded by the DCSF and managed by the EPPI-Centre, part of the Social Science Research Unit, Institute of Education, University of London.

CHAPTER TWO

Methods used in the Review

This chapter describes the methods used in the systematic review, including the steps taken to minimise bias in the review process and assure quality of the final product.

2.1 Type of review

A two-stage review model was used. The first stage consisted of identifying all studies that met the review inclusion criteria. Descriptive information about these studies was collected and presented in the form of a ‘map’ of research literature related to the education of gifted and talented pupils.

The map provided a basis for informed discussion and decision-making between the review team and review users concerning the focus of the second stage in-depth review which follows. The map also provided valuable information and stands as a discrete document that can be consulted in its own right. The in-depth review was a detailed investigation of a focused subset of the wider literature. The review was focused in a way that corresponded to current policy and practice priorities, such as the Classroom Quality Standards and the Institutional Quality Standards. This required the introduction of a second set of inclusion criteria, developed from a revised and more focused in-depth review question and applied to the studies initially identified in the map. Detailed data-extraction was then undertaken to facilitate synthesis of the final 15 selected studies in order to provide answers to the in-depth review question.

2.2 User involvement

2.2.1 Approach and rationale

As well as our Peer Review and Advisory Groups, which included users from a variety of educational contexts, we utilised existing Teacher Groups organised by London Gifted and Talented and the Scottish Network for Able Pupils. We felt this was appropriate and useful as the review was concerned with classroom practice and the work of teachers of gifted and talented pupils.

2.2.2 User involvement in the review process

The user group was not involved in the design of the review. However, the Peer Review Group was sent the protocol, and the Advisory Group was sent the report of the descriptive map. The Teacher Groups offered guidance on the communication and dissemination of the review’s findings.

2.3 Identifying and describing studies

2.3.1 Defining relevant studies: Inclusion and exclusion criteria

The search strategy identified a selection of abstracts, which were then subject to a screening process of exclusion and inclusion criteria. This narrowed the focus of the studies and ensured that only relevant papers were reviewed. Full text versions of all of the papers whose abstracts were not excluded after applying the criteria, were requested for further review.

Based on the tender document and subsequent discussions with the funder and the EPPI-Centre, the following inclusion and exclusion criteria were developed:

Exclusion

EXCLUDE 1. The study was not written in English.

EXCLUDE 2. The study was published before 1998.

EXCLUDE 3. The focus of the study is not explicitly about gifted and talented/highly able/more able.

EXCLUDE 4. The study is not empirical - it needs to be evidence-based, not conceptual or philosophical only.

EXCLUDE 5. Not an intervention - Scope of intervention should be within the parameters of the Classroom Quality Standards (Appendix 7.1, also refer to Appendix 7.2 for guidance on the CQS).

EXCLUDE 6. Pupils are not aged from 5 to 16 years.

EXCLUDE 7. Study does not report the measure of intervention outcomes.

2.3.2 Identification of potential studies: Search strategy

(See Appendix 7.3 for details of the search strategy)

- Journal articles: searches were undertaken using a wide range of electronic bibliographies.
- The 'grey' literature was searched using online specialist journals (High Ability Studies, Gifted Education International and Journal of Advanced Academics previously known as Journal of Secondary Gifted Education) and online search sources (e.g. Google Scholar, CERUK, What Works Clearinghouse).
- Specialist agencies were contacted directly, inviting the submission of research reports and publisher's articles to the review (National Academy of Gifted and Talented Youth; Young Gifted and Talented; National Association for Gifted Children; Scottish Network for Able Pupils; Campaign for British Teachers Education Trust; National Association for Able Children in Education; GandT Wise).

The specialist software programme EPPI-Reviewer was used to record and code studies analysed during the review.

2.3.3 Screening studies: applying inclusion and exclusion criteria

Inclusion and exclusion criteria were applied successively to titles and abstracts. Full reports were obtained for those studies judged to meet the criteria and where there was insufficient information in the abstract to determine a judgement about relevance. The inclusion and exclusion criteria were reapplied to the full reports and those that did not meet the criteria were excluded. Decisions on the relevance of the study were based upon examination of the titles, keywords, abstracts, and where necessary the complete text, to ensure that all relevant studies were included.

The initial search strategy stated in the review protocol was refined due to an extremely large number of unnecessary articles appearing in searches (see Appendix 7.3 for these details). Prior to duplicate checking, the final search produced 20,947 articles to be abstract screened; this number was still unusually large.

2.3.4 Characterising included studies

Included studies were coded for contextual and methodological information using standardised EPPI-Centre coding frameworks and coding questions developed specifically for this review. There were two levels of coding for data-extraction. The first level for all studies included in the map provided data for the purposes of describing or mapping the overall field of research on the topic area. The second level of coding was full data-extraction, which provided detailed information about studies included in the in-depth review necessary for the purpose of description, quality assessment and synthesis.

2.3.5 Identifying and describing studies: quality assurance process

All team members involved in screening participated in an early moderation exercise in which a sample of potentially relevant papers were screened and discussed and their results compared in order to increase consistency in interpretations of review inclusion criteria. Where a reviewer was unable to reach a decision, the project director carried out an independent screening. Ten percent of all of the screened studies were quality assured by a member of the EPPI-Centre.

All Review Team members took part in the selection and initial coding stage, participating in a practice exercise. A sample of studies was screened and coded, and the subsequent results moderated through comparison and discussion. Ten percent of all of the screened studies were quality assured by a member of the EPPI-Centre.

Full texts of all studies that had been included were re-screened as a consistency check and were constantly checked throughout the map coding and data-extraction stages to ensure validity of those studies being reviewed.

Two members of the review team conducted an independent data-extraction (see Appendix 7.4 and 7.5 for the data-extraction tools) for each included study during the in-depth coding stage of the review to ensure internal consistency, and 20 percent of these studies were data-extracted by a member of the EPPI-Centre's review team, completing a quality assurance check based on the data-extraction guidance given within the data-extraction tools (Appendix 7.4 and 7.5).

2.4 In-depth review

2.4.1 Moving from broad characterisation (mapping) to in-depth review

As the review moved in to the in-depth stage, the focus narrowed. This created a need to revise the research questions and develop them to coincide with the narrower aim of the review. Exclusion

8 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

criteria were introduced at this stage to incorporate these revisions in the questions.

The revised main review question was:

Which types of classroom-based interventions improved the educational achievement of pupils identified as gifted and talented?

The revised sub-questions were as follows:

- 1) Do classroom-based interventions for gifted and talented pupils lead to the improvement of their educational achievement?
- 2) What is the effect of classroom interventions on educational achievement for gifted and talented pupils?
- 3) Which classroom contexts are most effective in facilitating the educational improvement of gifted and talented pupils?

The questions were revised to match the scope of the review changing from broader search and screening criteria to a more focused set of criteria and a smaller specific set of data. The key changes in these revised questions were based on terminology. The language in this set of questions was changed from 'school-based' interventions to 'classroom-based' interventions to reflect the Classroom Quality Standards, as requested by the funder. These are curriculum-based interventions in a classroom setting. 'Children' has been changed to 'pupils', as this term relates more directly to the classroom. The funder also requested that this review focus on pedagogical implications (teaching and learning - see Appendix 7.6 for definition) and therefore 'educational achievement' (see Appendix 7.6 for definition) was added to the questions to specify the outcome of the intervention.

The in-depth review excluded those studies that met all of the initial criteria (1-7), as well as six additional exclusion criteria. Four of these criteria were simply filtered based on the answers given in the earlier coding (8-11), and the other two were manually applied by the Review Group prior to the full data-extraction stage (12 and 13).

- EXCLUDE 7. Study does not report the measure of intervention.
- EXCLUDE 8. The study is not related to the 'engagement of learners and learning'.¹
- EXCLUDE 9. The study does not have a 'what works?' focus.²
- EXCLUDE 10. The study is not set in 'primary',³ 'middle', 'secondary' or 'special needs' school.

- EXCLUDE 11. The study is not related to 'learners'.⁴
- EXCLUDE 12. The study does not explicitly focus on the teaching and learning process.⁵
- EXCLUDE 13. The study does not report on educational achievement.⁶

The 15 studies identified as meeting the inclusion criteria were analysed in depth, using the EPPI-Centre data-extraction and coding tool for education studies (v.3.0, EPPI-Centre, 2006). Data-extraction was undertaken directly onto the EPPI-Reviewer programme. Each paper was reviewed by two members of the Review Group. One of those two members data-extracted every paper in order to ensure some degree of consistency across the reviews. EPPI-Centre colleagues provided quality assurance on three studies. Where there were substantial differences in data-extraction, the relevant reviewers discussed differences and, when and where necessary, repeated data-extraction.

The in-depth review describes in greater detail the characteristics of the included studies. It describes and evaluates the findings of each study, and also determines specific judgements on their methodological quality. The descriptions of the studies were based on a framework agreed by the Review Group, which required that certain details of studies were always recorded:

- the conceptual focus;
- the context;
- research design;
- data-analysis;
- key findings and/or conclusions.

2.4.2 Assessing quality of studies and Weight of Evidence for the review question

The quality of studies and Weight of Evidence (WoE) were assessed using the EPPI-Centre data-extraction framework, with the detail for such assessment being determined by the review-specific framework.

Three elements helped make explicit the process of appointing different weights to the different studies. These WoE were based on:

WoE A: Can the study findings be trusted in answering the study question(s)?

WoE B: Appropriateness of research design and

¹ This relates to the section of the CQS, Appendix 5, page 40, A.1.6.

² This relates to the question regarding the purpose of the study in the EPPI-Centre coding tool, Appendix 3, page 47, B.2.3.C.

³ This relates to the question regarding the educational setting in the EPPI-Centre coding tool, Appendix 3, page 51, C.3.

⁴ This relates to the question regarding sample type in the EPPI-Centre coding tool, Appendix 3, page 52, D.1.1.

⁵ Our interpretation of this phrase centred on the deliberate creation and maintenance of conditions to promote learning, through specifically designed tasks, activities and experiences.

⁶ This refers to how students perform in relation to stated outcomes.

analysis for addressing the question, or sub-questions, of this specific systematic review.

WoE C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question, or sub-questions, of this specific systematic review.

WoE D: Overall weighting, taking into account A, B and C.

The WoE contributed by each study in the in-depth review was derived through assessment by two independent and 'blind' reviewers. In three cases, quality assurance was provided by colleagues from the EPPI-Centre. Any disagreements in WoE were discussed until resolved.

Calculating WoE

WoE A was based on reviewers' responses to the following questions:

- N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools?
- N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods?
- N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis?
- N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis?
- N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study?
- N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?

The meaning of 'sufficient' was judged to be dependent upon whether the reported study was quantitative or qualitative. Where it was quantitative, the judgement related to whether or not relevant statistical measures of reliability and validity were reported. For qualitative studies, the Review Group interpreted 'sufficient' in terms of the explicitness of the reporting of data collection/analysis. In both cases, they included within 'reported' instances when these were addressed explicitly, and also when strategies were used and discussed that were conventionally associated with increasing validity and/or reliability (for example, strategies or information given to increase the validity of the study, such as a pilot study, acknowledging confounding variables, or techniques to reduce error or bias, or research triangulation).

The judgement for the overall WoE for this group was determined by the pattern of response for the above questions: five or six positive responses equated to High; three or four equated to Medium; and zero, one or two equated to Low.

For **WoE B**, judgement was based on the Review Group's responses to the following questions:

- N.1 Were there ethical concerns about the way the study was undertaken?
- N.2 Were users/relatives of users appropriately involved in the design or conduct of the study?
- N.3 Was there sufficient justification for why the study was done the way it was?
- N.4 Was the choice of research design appropriate for addressing the research question(s) posed?
- N.9 To what extent were the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study?

N1 and N4 were treated as one judgement, as these answers required a yes/no response, and the combination of these responses determined how they were rated; i.e., ++ = High; +- = Medium; -- = Low).

The judgement concerning the overall WoE was determined by the pattern of responses: averaged score of High, Medium and Low (N3 was scored High and Low).

WoE C was determined by the answer to:

- N.10 How generalisable/transferable were the study results?

It was necessary to make a judgement about how generalisable/transferable studies were to the review question, as well as judging the extent to which the focus, population, method and outcome related to the research. These were weighted as follows:

Focus: school-based interventions

High = school is the only setting for the study

Med = school is the main setting for the study

Low = school is only one of a number of settings for the study

Population: Gifted 5-16 years

High = population of study is entirely within this age range

Med = the study's population is a significant range

10 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

within the 5-16 range (such as primary/middle/secondary pupils)

Low = less than a significant range (e.g. specific years)

Method: What works?

High = study has a specific and sole focus on 'what works'

Medium = what works is a significant part of the study

Low = what works is one of a number of elements of the study

Outcome: Educational achievement

High = the study is solely concerned with educational achievement as an outcome

Med = educational achievement is either the main or a significant outcome being measured

Low = educational outcome is one of a number of measures

WoE D was an average of the ratings for A, B and C. This was computed by assigning a numerical value to the ratings (Low = 1; Medium = 2; High = 3), and calculating an average score. WoE D was then the nearest equivalent rating.

To ensure internal reliability and validity of the data-extraction and Weight of Evidence judgements made by the review team, systematic guidelines were developed (see Appendix 7.7).

2.4.3 Synthesis of evidence

Studies were synthesised using a narrative approach that sought to identify patterns of results and explore potential cases of variations in findings.

2.4.3.1 Selection of outcome data for synthesis

Data-extraction of the studies included in the in-depth review was carried out using the Quality Standards tool (Appendix 7.4) and the EPPI-Centre's data-extraction tool (Appendix 7.5). This enabled the Review Group to examine each study systematically against the same pre-determined questions. The data-extraction details were stored on the EPPI-Reviewer database.

2.4.3.2 Selection of studies for synthesis

Studies were selected for the in-depth review using the additional exclusion criteria based on the revisions in the review questions. These studies needed to focus on educational achievement and effective pedagogy. The focus narrowed from school-based to classroom-based interventions to be consistent with the Classroom Quality Standards (see section 4.1.1 of the report for these additional criteria).

2.4.3.3 Selection of outcome data for synthesis

The selection of outcome data from each article in the in-depth review consisted of a summary of key data from the study and the Weight of Evidence process. The summary of the article consisted of information about the study's focus, sample, ideas about gifted and talented definitions and identification, the intervention utilised and the outcomes. This summary was then followed by an explanation of the Review Group's considerations made in the in-depth review stage leading to the final judgements given for the Weight of Evidence.

2.4.3.4 Process used to combine synthesis data

These summaries of outcome data were combined to produce an overall result to answer the review question. The summaries were combined using a narrative synthesis method identifying the key themes in the studies. These key themes were then highlighted and discussed in the report. In addition to this, the themes arising from the CQS criteria were discussed, as these criteria represented a key area for policy makers and practitioners.

2.5 Deriving conclusions/implications

We were aware that systematic reviewing has been criticised by some educational theorists for focusing too narrowly on 'what works' and adopting, by implication, a 'technicalist' conception of practice (Hammersely 2001). We were also aware that researchers who had carried out such reviews (such as Nind 2006) stressed that it was not inevitable that they ignored contextual issues, or overlooked the inherent complexity of practice. We recognised as a significant concern that an initiative may have given positive results during the pilot stage but showed little long-term benefit, therefore if the outcomes were not situated, the validity of the data may have been compromised. In other words, it may be a valuable programme, but if it had not been implemented and supported in the exact way as in the study, similar findings ought not to be assumed (Merrell et al. 2007).

Again, the substantial experience of our teacher groups was drawn upon to help strike a reasonable balance between practical implications and insights worthy of further exploration and reflection.

CHAPTER THREE

Identifying and describing studies: results

3.1 Identified Studies

In total, 20,947 studies were identified for screening through systematic searches of 18 bibliographic databases of published literature, specialist websites and handsearching sources. 1,285 were duplicates and were removed, leaving 19,662 references for screening. A breakdown of study sources is given in Table 3.1 below.

Table 3.1 Search sources

Source	Number of items
Education Resources Information Centre (ERIC)	7,834
Australian Education Index (AEI)	6,952
Social Science Citation Index (SSCI)	2,825
Applied Social Sciences Index and Abstracts (ASSIA)	1,801
British Education Index (BEI)	869
PsycINFO and PsycARTICLES	433
ZETOC	218
Google Scholar	6
Journal of Advanced Academics (JAA; formerly the Journal of Secondary Gifted Education - JSGE)	4
Handsearches	3
Department for Children, Schools and Families (DCSF) website	2
International Biography of the Social Sciences (IBSS)	0
The Research Evidence in Education Library (REEL)	0
Current Educational Research in the UK (CERUK)	0
What Works Clearinghouse (WWC)	0
Gifted Education International (GEI) Journal	0
High Ability Studies (HAS) Journal	0
Group of experts/gifted and talented organisations	0
Total	20,947

Some of the search sources with 'zero scores' did show some results but already were sourced from other databases, and were therefore not included to avoid duplication.

3.2 Selecting studies

Figure 3.1 presents a stage-by-stage summary of the process of filtering the large pool of literature initially identified through to the systematic map and in-depth review stages.

No studies were excluded on exclusion criteria 1 (being published in a language other than English) but this was not surprising as this was specified in the initial databases searches prior to screening. Although 1998 onwards was also specified in the searching stage, one study was still identified as published pre-1998.

Full text papers had been retrieved using a combination of searching Google, Roehampton University catalogues and ordering from the British Library. As of 29th November 2007, 29 papers were still to be obtained for full text screening. Of these 29 papers, 18 were still on order from the British Library and the remaining 11 could not be obtained.

For the 101 papers in the 'Include 2 - Meets all criteria' group, 19 remained on order from the British Library and 17 could not be obtained. The papers that could not be obtained were either unpublished or overseas and the authors could not be contacted. The 36 papers that were not obtained in full text were coded for the map based on the content of their abstracts.

The application of exclusion criteria 8-11 resulted in 70 studies being excluded from the in-depth review; the subsequent application of criteria 12 and 13 meant that a further 16 studies were excluded.

3.3 Map Results

The searching and selection process identified 101 studies. Summaries of the main characteristics of the included studies can be found in Appendix 7.8. The 101 studies included in the map have been analysed using section A-E of the EPPI-Centre data extraction and coding tool for education studies v2.0 (EPPI-Centre 2006). The description which follows is based on the data extracted with that tool.

3.3.1 All included studies

3.3.1.1 Quality Standards

Table 3.2 Relationship of the sample to Classroom Quality Standards (not mutually exclusive)

Classroom Quality Standard	Number
Conditions for learning	48
Development of learning	81
Knowledge of subjects and themes	35
Understanding learners' needs	79
Planning	22
Engagement with learners and learning	51
Links beyond the classroom	11

In completing this phase of the coding, reviewers referred to the published Classroom Quality Standards document (Appendix 7.1) and the Review Group's guidelines (Appendix 7.2). In almost all cases, studies related to multiple standards.

In all cases, judgements concerning the relationship between specific papers and the Classroom Quality Standards were based on reviewers' inferences.

The exclusion criteria sought to remove papers that were not focused on classroom based, curricular interventions for school-aged pupils, and so it was perhaps not surprising that the most frequently identified standards related to learners and their learning, as mentioned in four of the seven categories. Similarly, it was expected that the 'links beyond the classroom' option was the least frequently cited standard since the focus was on classroom intervention. In all cases, this particular standard was one of a cluster, where the studies referred to multiple outcomes of which extra-curricular provision was just one aspect.

Table 3.3 Relationship of the sample to Institutional Quality Standards (not mutually exclusive)

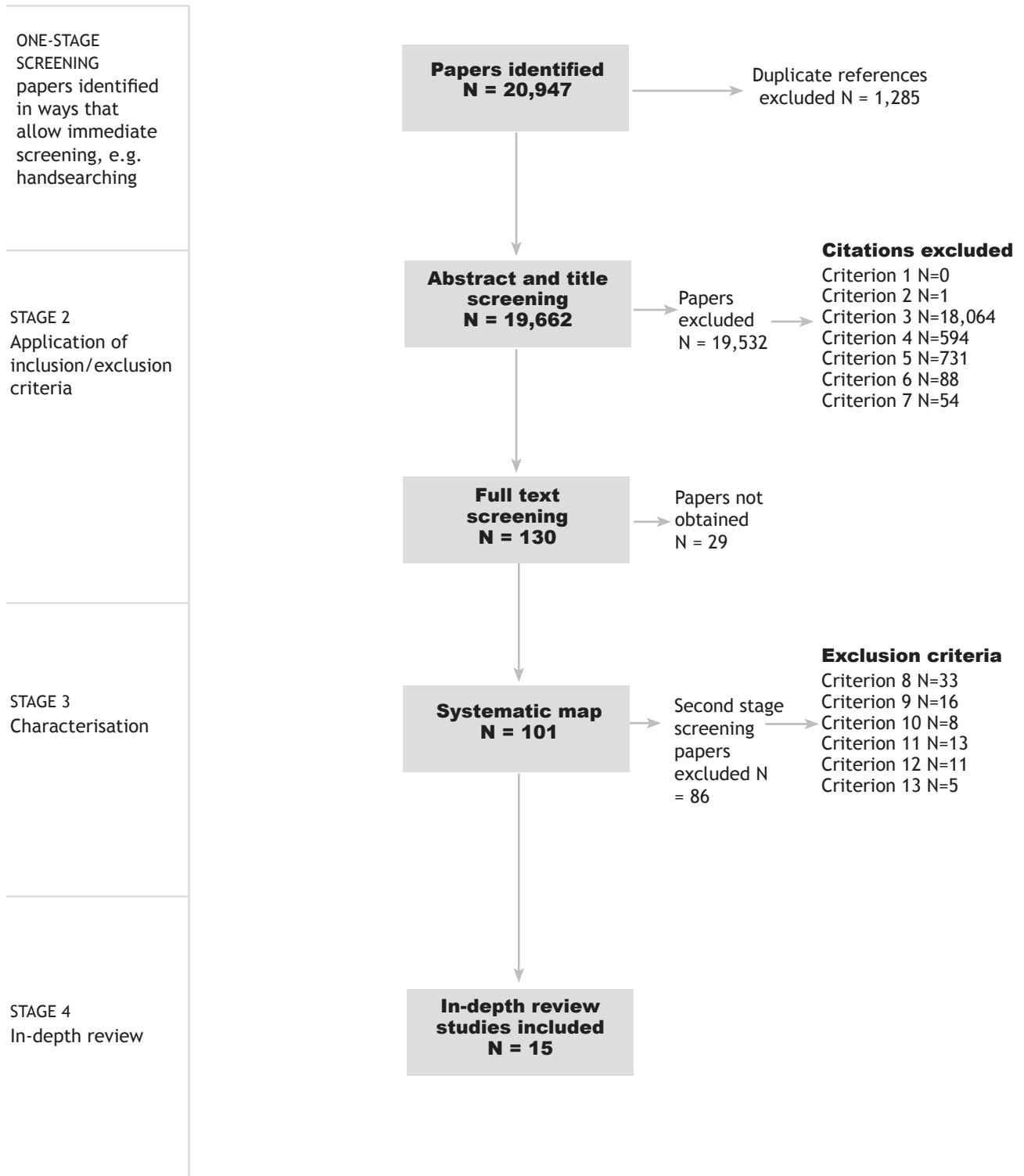
Institutional Quality Standard	Number
Identification	29
Effective provision in the classroom	76
Standards	9
Enabling curriculum entitlement and choice	52
Assessment for learning	13
Transfer and transition	4
Leadership	2
Policy	7
School/college ethos and pastoral care	10
Staff development	9
Resources	5
Monitoring and evaluation	7
Engaging with the community, families and beyond	12
Learning beyond the classroom	12

As above, the published Institutional Quality Standards document (Appendix 7.9) was the reference.

In all cases, judgements about the relationship between specific papers and the Institutional Quality Standards were based on reviewers' inferences (see Appendix 7.10 for the IQS guidance followed by the Review Group).

In the majority of cases, studies related to multiple Quality Standards, although generally fewer than the Classroom Quality Standards. The most frequently cited standards were those that related to classroom

Figure 3.1 Filtering of papers from searching to map to synthesis



14 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

provision and the curriculum, which linked most closely to the focus of this review.

3.3.1.2 Information about the sample

Table 3.4 Ages covered by the sample (not mutually exclusive)

Attribute	Number
0-4	5
5-10	48
11-16	45
17-20	5
Not stated/unclear	20

The studies that covered 0-4 and 17-20 year olds also covered ages between 5 and 16, and were therefore still included in the review.

Table 3.5 Sex of participants

Attribute	Number
Single sex	2
Mixed sex	41
Not stated/unclear	58

The two single sex studies were male participants. The break down of the 41 mixed sex participants consisted of: 12 studies with more male participants than female; 8 with more female participants than male; 7 studies with a 1:1 ratio of male/female participants and 14 studies that stated they contained mixed sex participants but did not explicitly state the break down.

Table 3.6 Socio-economic status of the individuals within the actual samples

Attribute	Number
Explicitly stated	22
Implicit	4
Not stated/unclear	75

Table 3.7 Ethnicity of the individuals within the actual samples

Attribute	Number
Explicitly stated	24
Implicit	2
Not stated/unclear	75

There was considerable variation in the ethnicity of the samples in different studies. Most studies involved mixed groups, although 13 involved significant proportion of pupils from minority ethnic groups.

Table 3.8 Special educational needs of the individuals within the actual samples

Attribute	Number
Not applicable (e.g. study of policies, documents etc)	2
Explicitly stated	28
Implicit	1
Not stated/unclear	70

In almost all instances, 'giftedness' or a similar description was cited as the cause of a special need. Some individual studies focused on pupils with various conditions, including ADHD; autism; specific learning difficulties and cerebral palsy or reported outcomes for children for whom English was a second language.

Table 3.9 Educational settings of the actual samples (not mutually exclusive)

Attribute	Number
Independent school	2
Local education authority	1
Nursery school	2
Other early years setting	1
Primary school	56
Secondary school	47
Special needs school	1
Middle school	2
Other educational setting	2

Studies that included nursery schools and other early years settings also included settings that included pupils within the reviews' age range and therefore these were still included within the review. Please refer also to Table 3.20.

Table 3.10 Countries of the individuals in the actual samples

Attribute	Number
Explicitly stated (please specify)	61
Implicit (please specify)	12
Not stated/unclear (please specify)	28

Please refer also to Table 3.20.

Table 3.11 The type of sample in the studies (not mutually exclusive)

Attribute	Number
Learners	101
Senior management	2
Teaching staff	13
Non-teaching staff	1
Local education authority officers	1
Parents	8
Other sample focus	2

The high sample of 'learners' related to the findings in the Classroom Quality Standards (Table 3.2) and reflected the focus of the review.

Please see Table 3.12 for the disaggregation of these results.

Table 3.12 Total number of participants in the studies

Sample size	Number
1-10	6
10-50	20
50-100	9
100-150	6
150-200	5
200-250	4
250-1000	13
1000+	14

Table 3.13 Proportion of those selected for the studies who actually participated

Attribute	Number
Not applicable (e.g. review)	1
Explicitly stated	36
Implicit	12
Not stated/unclear	52

In most explicitly stated cases, the proportion of the sample who actually took part was 100 percent.

3.3.1.3 Information about the interventions

Table 3.14 Purposes of the studies

Purpose	Number
Description	3
Exploration of relationships	11
What works?	101

All of the articles were 'What works?' studies. These examined the effectiveness of programmes, models and strategies in classroom settings (see Appendix 7.5 for further explanation of categories).

Table 3.15 Studies informed by existing body of empirical and/or theoretical research

Attribute	Number
Explicitly stated	55
Implicit	1
Not stated/unclear	45

Most studies that explicitly stated they were informed by existing research referred to specific empirical studies, and these varied depending on the subject matter. However, some theories and models of gifted and talented education appeared relatively frequently, especially Renzulli's Enrichment and Three-Ring Model (9 references) and other theories often harnessed by educational of gifted and talented children, such as Gardner's Multiple Intelligences Theory (5 references).

Table 3.16 Studies explicitly linked to a specific policy / strategy

Attribute	Number
Yes	34
No	67

Studies were predominantly linked to local and national gifted and talented policies/strategies.

Table 3.17 Foci of the studies (not mutually exclusive)

Attribute	Number
Assessment	15
Classroom management	15
Curriculum	43
Equal opportunities	14
Methodology	6
Organisation and management	15
Policy	3
Teaching and learning	26
Teachers' professional development	7
Other	10

16 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

The most common focus was curriculum, which determined that the study was explicitly associated with a subject or curricular area. The next table (3.18) summarises curricular foci.

Table 3.18 Curricular foci of studies (not mutually exclusive)

Attribute	Number
Art	2
Citizenship	1
Cross-curricular	13
Hidden	1
ICT	4
Literacy (first languages)	8
Literacy (further languages)	2
Literature	3
Maths	19
Music	2
Physical Education	1
Science	12
Other (please specify)	21
Out-of-hours	6

Other attributes that were cited, but are not National Curriculum subjects included themes such as ‘leadership’, ‘social and emotional development’ and ‘Philosophy for Children’.

Table 3.19 Educational settings of the studies (not mutually exclusive)

Attribute	Number
Higher Education institution	2
Independent school	2
Local education authority	1
Nursery school	2
Other early years setting	2
Primary school	52
Secondary School	46
Special needs school	1
Middle school	1

In the majority of cases, the setting for the study was the same as that of the actual sample (Table 3.9), as might be expected in studies of classroom-based interventions.

Table 3.20 Countries in which the studies were carried out

Attribute	Number
Explicitly stated	72
Not stated/unclear	29

The most common countries were: United States (36), Australia (10), United Kingdom (6), Israel (3) and New Zealand (3). Predictably, the explicitly stated countries were usually the same as those of the actual sample. The difference between the figures given in Tables 3.19 and 3.20 was largely accounted for by the fact that some studies simply reported the context for the research, rather than also stating the countries from which the actual sample originated.

Table 3.21 Methods used in the studies (not mutually exclusive)

Attribute	Number
Random experiment with random allocation to groups	4
Experiment with non-random allocation to groups	12
One group pre-post test	15
One group post-test only	12
Cohort study	11
Case-control study	3
Cross-sectional study	5
Views study	7
Other review (non-systematic)	1
Case study	16
Action research	6
Methodological study	1
Secondary data analysis	1

For definitions of these categories, see 7. 5, section G3.

3.3.1.4 Information about the studies’ publication

Table 3.22 Status of publication

Attribute	Number
Published	69
Unpublished	6
Published as a report or conference paper	16

Although the majority were published articles in peer reviewed journals, there were 17 articles that were unpublished (e.g. dissertations) or published as reports or conference papers. Table 3.23 shows the breakdown of the year in which these were published/finalised.

Table 3.23 Year of publication or completion of unpublished report/conference paper

Year of publication	Number
1998	7
1999	9
2000	5
2001	11
2002	14
2003	14
2004	11
2005	11
2006	11
2007	3
Unknown	4

The four studies that were unknown were either conference papers or unpublished studies, and therefore no finalisation date of the study was given.

This review focused on the first date of publication (or finalisation if unpublished), as opposed to the date in which the study was actually completed.

3.4 Identifying and describing studies: quality assurance results

3.4.1 Screening of citations

All team members involved in screening participated in an early moderation exercise where they screened a sample of potentially relevant papers, and discussed and compared results in order to increase consistency in interpretations of review inclusion criteria. Where a reviewer was unable to reach a decision, the project director carried out an independent screening. Ten percent of all of the screened studies were quality assured by a member of the EPPI-Centre.

3.4.2 Screening for full papers

All full text papers were re-screened by the Review Group and 10% percent of all of these studies were quality assured by the EPPI-Centre's Review Group.

3.4.3 Coding for the map

All review team members took part in the selection and initial coding stage, participating in a practice exercise. A sample of studies was screened and coded, and the subsequent results moderated through comparison and discussion. Ten percent of all of the screened studies were quality assured by a member of the EPPI-Centre.

Full texts of all studies that had been included were re-screened as a consistency check and were constantly checked throughout the map coding and

data-extraction stages to ensure validity of those studies being reviewed.

3.4.4 Data-extraction

Two members of the review team conducted an independent data-extraction for each included study during the in-depth coding stage of the review to ensure internal consistency and 20% percent of these studies were data-extracted by a member of the EPPI-Centre's Review Group completing a quality assurance check based on the data-extraction guidance given (Appendix 7.4 and 7.5).

3.5 Summary of results of map

The review began by identifying 20,947 abstracts over a four month period, 1,285 of which were duplicates and were excluded. 19,662 abstracts were then abstract screened and full text screened if more information was needed. Of these, 130 were included; 29 full texts of the papers could not be obtained and so 101 full texts of the papers were coded for the mapping stage. The Review Group applied additional exclusion criteria to narrow the focus of the review, and 15 studies were included in the in-depth review. The data were heterogeneous in nature and so further narrative analyses of the data were needed to create an in-depth synthesis of the data using a meta-empirical approach.

3.5.1 Classroom Quality Standards

In almost all cases, studies related to multiple Classroom Quality Standards. The exclusion criteria sought to remove papers that were not focused on classroom-based, curricular interventions for school-aged pupils, and so it was perhaps not surprising that the most frequently identified standards related to learners and their learning, as mentioned in four of the seven categories. Similarly, it was expected that the 'links beyond the classroom' option was the least frequently (11) cited standard since the focus was on classroom intervention. In all cases, this particular standard was one of a cluster, where the studies referred to multiple outcomes of which extra-curricular provision was just one aspect.

3.5.2 Institutional Quality Standards

In the majority of cases, studies related to multiple Institutional Quality Standards, although generally fewer than the Classroom Quality Standards. The most frequently cited standards were those that related to classroom provision and the curriculum, which linked most closely to the focus of this review.

3.5.3 Sample

The majority of studies specified that their participant age was within the review's age range of 5-16 years old, and the majority of educational settings were based in primary and secondary schools. Some studies included the age range specified by the review as well. Twenty studies did

18 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

not explicitly state their age range but stated that they were primary, middle or secondary school age.

There were two single sex studies, both consisting of male only participants. There was 41 mixed sex participant studies, these consisted of: 12 studies with more male participants than female; 8 with more female participants than male; 7 studies with a 1:1 ratio of male/female participants and 14 studies that stated that they were mixed sex participants but did not explicitly state the break down.

The studies included samples from the full range of socio-economic groups. 11 studies explicitly referred to pupils of low socio-economic status (SES); six to middle and high SES; the rest were from diverse groups.

There was considerable variation in the ethnicity of the samples in different studies. Most studies involved mixed groups, although 13 involved a significant proportion of pupils from minority ethnic groups.

In almost all instances, 'giftedness' or a similar description was cited as the cause of a special need. Some individual studies focused on pupils with other conditions, including ADHD; autism; specific learning difficulties and cerebral palsy, or included outcomes for children for whom English was a second language.

All studies included 'learners' as expected, due to the inclusion criteria requirements based on the CQS. However, other participants within the studies were senior management; teaching staff; local education authority officers; parents; non-teaching staff and others.

3.5.4 Study type

All of the studies were focused on 'what works?', which was expected due to the inclusion criteria based on the review's questions. Some studies also explored relationships and were descriptive.

Most studies that explicitly stated they were informed by existing research referred to specific empirical studies, and these varied depending on the subject matter. However, some theories and models of gifted and talented education appeared relatively frequently, especially Renzulli's Enrichment and Three-Ring Model (9 references) and other theories often harnessed by educational of gifted and talented children, such as Gardner's Multiple Intelligences Theory (5 references).

Thirty-four studies were linked to a specific policy or strategy, and these were predominantly linked to local and national gifted and talented policies/strategies.

The most common focus was 'curriculum' (43 studies), which meant that the study was explicitly associated with a subject or curricular area. Other attributes that were cited, but are not National Curriculum subjects were themes such as 'leadership', 'social and emotional development' and 'philosophy for children'.

The most common countries were: United States (36), Australia (10), United Kingdom (6), Israel (3) and New Zealand (3). Predictably, the explicitly stated countries were usually the same as those of the actual sample. The difference between the figures given in Tables 3.20 and 3.10 is largely accounted for by the fact that some studies simply reported the context for the research, rather than also stating the countries from which the actual sample originated.

Although the majority (69) were published articles in peer reviewed journals, there were 17 articles that were unpublished (e.g. dissertations) or published as reports or conference papers.

CHAPTER FOUR

In-depth review: results

4.1 In-depth review

4.1.1 Moving from broad characterisation (mapping) to in-depth review

It became evident to the Review Group during the course of the mapping exercise that there were a large number of studies, and that it would not be possible to undertake an in-depth review of 101 studies. At a meeting with the Department for Children, Schools and Families, it was agreed that the original research question should be refined, and that supplementary exclusion criteria should be applied. This process of refinement was led partially by the need to narrow the focus of research to a more manageable remit, and also to focus more tightly on reviewing the recently developed CQS for Gifted and Talented Education, which were in the process of being disseminated to schools at the time of the review. This changed the review's approach from a priori to a more iterative review.

The revised research question was:

Which types of classroom-based pedagogical interventions affect the educational achievement of pupils identified as gifted and talented?

4.2 Selecting studies for the in-depth review

Fifteen studies were identified for the in-depth stage of the review (shown in Box 4.1). These studies were selected from the systematic map by focusing on a narrower research question, namely:

Which types of classroom-based pedagogical interventions affect the educational achievement of pupils identified as gifted and talented?

This revised research question resulted in the application of additional exclusion criteria, which left studies that were:

- related to the 'engagement of learners and learning' element of the Classroom Quality Standards;
- evaluative, that is had a 'what works?' focus;
- set in 'primary', 'middle', 'secondary' or 'special needs' schools;
- had a sample of 'learners';
- explicitly focused on the teaching and learning process;
- reported on educational achievement.

4.3 Synthesis of evidence

The data were synthesised to bring together the studies that answered the revised research question ('Which types of classroom-based pedagogical interventions improve the educational achievement of pupils identified as gifted and talented?'), either fully or partially. It was agreed that for the purposes of this study, the most appropriate form for this synthesis would be a structured narrative describing patterns or themes that were evident among the characteristics of the in-depth review. Themes that emerged during data-extraction were subject to rigorous discussion and interrogation by the Review Group, as a whole, initially through telephone and email exchanges, then through meetings of smaller groups within the team, which then fed back to the whole team, and culminated in a group meeting that focused on articulation of themes.

4.4 In-depth review: quality assurance process

Each of the 15 studies selected for in-depth review were independently data-extracted by two members of the Review Group. Any discrepancies were highlighted, discussed and resolved before the data were finalised.

Box 4.1 Studies in the in-depth review

Barron B (Jun 2000) *Problem solving in video-based microworlds: collaborative and individual outcomes of high-achieving sixth-grade students.*

Biakolo M, Afemikhe OA (2002) *The effect of literature-based reading on gifted pupils in Botswana.*

Craven RG, Marsh HW, Print M (2000) *Gifted, streamed and mixed-ability programs for gifted students: Impact on self-concept, motivation, and achievement.*

Fardell R, Geake JG (2003) *Vertical semester organisation in a rural secondary school as a vehicle for acceleration of gifted students.*

Fletcher M, Santoli S (2003) *Reading to learn concepts in mathematics: an action research project.*

Gaultney JF (1998) *Differences in benefit from strategy use: what's good for me may not be so good for thee.*

Landau E, Weissler K, Golod G (2001) *Impact of an enrichment program on intelligence, by sex, among low SES population in Israel.*

Olenchak FR (2001) *Lessons learned from gifted children about differentiation.*

Ryan MJ, Geake JG (2003) *A vertical mathematics curriculum for gifted primary students.*

Stoeger H, Ziegler A (2005) *Evaluation of an elementary classroom self-regulated learning program for gifted math underachievers.*

VanTassel-Baska J, Zuo L, Avery LD, Little CA (2002) *A curriculum study of gifted-student learning in the language arts.*

Walker DE (2005) *Increasing verbal participation of gifted females through the utilization of Multiple Intelligence Theory.*

Webb NM, Nemer KM, Zuniga S (2002) *Short circuits or superconductors? Effects of group composition on high-achieving students' science assessment performance.*

Wood D (1999) *Factors involved in the establishment and development of a special primary school class for academically gifted students: a case study.*

Ysseldyke J, Tardrew S, Betts J, Thill T, Hannigan E (2004) *Use of an instructional management system to enhance math instruction of gifted and talented students.*

Table 4.2 Focus/foci of the studies

Focus	Number	Studies
Classroom management	1	Olenchak (2001)
Curriculum	10	Gaultney (1998); Biakolo and Afemikhe (2002); Wood (1999); Ryan and Geake (2003); Fardell and Geake (2003); Ysseldyke et al. (2004); Fletcher and Santoli (2003); VanTassel-Baska et al. (2002); Olenchak (2001); Barron (2000)
Equal opportunities	2	Walker (2005); Landau et al. (2001)
Organisation and management	4	Fardell and Geake (2003); Ysseldyke et al. (2004); Craven et al. (2000); Webb et al. (2002)
Teaching and learning	5	Fardell and Geake (2003); Stoeger and Ziegler (2005); Walker (2005); VanTassel-Baska et al. (2002); Olenchak (2001)

Table 4.3 Relationship of studies to Classroom Quality Standards

CQS	Number	Studies
Conditions for learning	3	Walker (2005); Olenchak (2001); Craven et al. (2000)
Development of learning	6	Gaultney (1998); Wood (1999); Stoeger and Siegler (2005); Walker (2005); Olenchak (2001); Barron (2000)
Knowledge of subjects and themes	8	Gaultney (1998); Biakolo and Afemikhe (2002); Ryan and Geake (2003); Stoegler and Ziegler (2005); Ysseldyke et al. (2004); Fletcher and Santoli (2003); VanTassel-Baska et al. (2002); Barron (2000)
Understanding learners' needs	8	Wood (1999); Ryan and Geake (2003); Fardell and Geake (2003); Fletcher and Santoli (2003); Olenchak (2001); Landau et al. (2001); Craven et al. (2000); Webb et al. (2002)
Planning	1	Olenchak (2001)
Engagement with learners and learning	15	Gaultney (1998); Biakolo and Afemikhe (2002); Wood (1999); Ryan and Geake (2003); Fardell and Geake (2003); Stoeger and Ziegler (2005); Walker (2005); Ysseldyke et al. (2004); Fletcher and Santoli (2003); VanTassel-Baska et al. (2002); Olenchak (2001); Landau et al. (2001); Barron (2000); Craven et al. (2000); Webb et al. (2002)

Table 4.4 Relationship of studies to Institutional Quality Standards

IQS	Number	Studies
Identification	1	Ryan and Geake (2003)
Effective provision in the classroom	14	Gaultney (1998); Biakolo and Afemikhe (2002); Wood (1999); Ryan and Geake (2003); Fardell and Geake (2003); Stoeger and Ziegler (2005); Ysseldyke et al. (2004); Fletcher and Santoli (2003); VanTassel-Baska et al. (2002); Olenchak (2001); Landau et al. (2001); Barron (2000); Craven et al. (2000); Webb et al. (2002).
Enabling curriculum entitlement and choice	15	Gaultney (1998); Biakolo and Afemikhe (2002); Wood (1999); Ryan and Geake (2003); Fardell and Geake (2003); Stoeger and Ziegler (2005); Walker (2005); Ysseldyke et al. (2004); Fletcher and Santoli (2003); VanTassel-Baska et al. (2002); Olenchak (2001); Landau et al. (2001); Barron (2000); Craven et al. (2000); Webb et al. (2002).
Assessment for learning	4	Ryan and Geake (2003); Stoeger and Ziegler (2005); Walker (2005); Ysseldyke et al. (2004).
Resources	1	Fardell and Geake (2003).

4.5 Further details of studies included in the in-depth review

4.5.1 Purposes of the studies

All of the studies had a focus on ‘what works?’, which was unsurprising in light of the fact that this was one of the stated inclusion criteria. One study, however, also aimed to explore relationships (Webb et al. 2002) between group composition (homogeneous versus heterogeneous) and outcomes for gifted and talented pupils completing science assessments.

4.5.2 Focus/foci of the studies

Ten of the studies had one or more curriculum area(s) as their sole or main focus, which reflected the findings of the descriptive map. Some studies addressed issues of classroom management; equal opportunities; organisation and management and teaching, as outlined in Table 4.2. It needs to be recalled, however, that answers were not mutually exclusive, so multiple answers could be (and were) provided.

As stated, most studies examined specific curriculum areas. Mathematics proved to be the most popular area, in this regard, followed by literacy. Table 4.6 outlines these curriculum areas.

4.5.3 Interventions within the studies

Table 4.6 offers a summary of the interventions (called ‘Theory of Change’ in EPPI-Reviewer database, E2) as well as the effects of those interventions (EPPI-Reviewer, F2). See individual synthesis for further interventions (Appendix 7.11).

4.5.4 Educational setting

The inclusive age range for sampling in the selected studies was 5-16 years of age. Some studies examined cross-phase provision (primary-secondary phases), and one study (Walker 2005) included an early years setting (as well as a school).

Table 4.6 outlines the geographical setting for the studies in the in-depth review (where stated). None of these studies were carried out in the United Kingdom, which raises questions concerning the transferability of their findings into the English schooling system.

4.5.5 Relationship to Classroom and Institutional Quality Standards

It had been agreed with the Department for Children, Schools and Families that studies would be included that related to the ‘Engagement with learners and learning’ standard. However, as the coding for this question was not mutually exclusive, other standards were also recorded, and these are outlined in Table 4.3.

The review also recorded the relationships of the studies with the Institutional Quality Standards, and these are outlined in Table 4.4.

4.6 Outline of all of the studies included in the in-depth review

A narrative outline of each study selected for the in-depth review is presented in Appendix 7.11. Each outline reports the conceptual focus; the context; research design; data-analysis; and key findings and/or conclusions. The Review Group also offers agreed evaluative judgements on each study. Following this, we go on to discuss the Review Group’s final ratings of trustworthiness of the approach taken in each study, and consider the WoE allocated. This leads to a final synthesis of the evidence drawn from the studies.

4.7 Weight of Evidence (WoE)

Trustworthiness of the 15 studies was judged by the Review Group through the application of the data-extraction procedures. Reviewers independently assessed and later agreed their responses to specific questions about trustworthiness. WoE A was based on the answer to the question: ‘Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)?’ As shown in Table 4.5 below, only three of the studies were judged to warrant a High rating, seven were rated Medium, and five Low.

Other measures of trustworthiness were WoE B, which assessed the ‘appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review’, and WoE C, which refers to the ‘relevance of the particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question, or sub-questions, of this specific systematic review’. WoE D is the overall evaluation of each study, and was calculated as the averaged rating of the other three categories.

Trustworthiness and WoE ratings were taken into account when we synthesised the evidence from these studies, with the findings of those studies scoring highly being warranting greater confidence, which was reflected in their influence over the synthesis and subsequent recommendations.

Table 4.5 summarises the WoE ratings for the 15 studies.

4.8 Final synthesis of evidence

4.8.1 Methodological issues

Eleven studies were rated High for one or more WoE criteria, although this figure should be viewed with caution. In eight of these cases the rating related only to WoE C, which assessed the relevance of the particular study for addressing the research question for this systematic review. In light of the extensive

Table 4.5 WoE ratings for individual studies

Studies	WoE A: soundness of the study in answering its questions	WoE B: appropriateness of research design and analysis for addressing the systematic review question	WoE C: relevance of focus for addressing the systematic review question	WoE D: overall rating for addressing the systematic review question
Barron (2000)	Medium	Medium	High	Medium
Biakolo and Afemikhe (2002)	Low	Low	High	Medium
Craven et al. (2000)	High	Medium	High	High
Fardell and Geake (2003)	Medium	Medium	High	Medium
Fletcher and Santoli (2003)	Low	Low	Medium	Low
Gaultney (1998)	Medium	Medium	High	Medium
Landau et al. (2001)	Medium	Medium	High	Medium
Olenchak (2001)	Low	Low	Medium	Low
Ryan and Geake (2003)	Medium	Medium	High	Medium
Stoeger and Ziegler (2005)	High	High	High	High
VanTassel-Baska et al. (2002)	High	Medium	High	High
Walker (2005)	Low	Low	Medium	Low
Webb et al. (2002)	Medium	Medium	High	Medium
Wood (1999)	Low	Low	Low	Low
Ysseldyke et al. (2004)	Medium	Medium	High	Medium

efforts of the Review Group to filter papers by adding additional exclusion criteria and articulating a more narrow research question, it was perhaps not surprising, that so many studies were deemed to relate closely to our concerns in this review. Of greater significance, we would suggest are the three studies that were rated High for WoE D, which was the overall weighting, based on all other categories. A further eight studies were deemed Medium for WoE D. These studies all provide important evidence for answering the review's research question. In the synthesis that follows, the WoE allocated for the different studies was taken into account. This means that studies in which we had more confidence, as reflected in the WoE D, carry a greater influence in the synthesis. This does not mean that the three studies that are rated Low for WoE D will be disregarded in the synthesis; rather that they will hold less influence than the other studies.

Because the studies are from a range of sources, we need to clarify the key term of 'streaming'. Studies referring to 'streaming' are interpreting the term in its broadest sense. The studies and this review understand the term (in this context) as separating pupils for specific tasks, activities and subjects based on their aptitude for that specific task, activity or subject.

4.8.2 Synthesis of research

The review's research question required evidence that will provide teachers and policymakers with an understanding of the types of interventions that support the educational achievement of gifted and talented pupils. It was decided early on that the focus of the review would be on school-based - and later specifically classroom-based - interventions. The 15 studies gathered for the in-depth review provide an evidential base for making recommendations about the kinds of approaches that could support pupils identified as gifted and talented.

Three themes emerged from the studies synthesised for the review question:

- 1) Interventions based on school and class organisation (the focus of these interventions was the ways in which pupils were grouped or placed in different settings for provision)
- 2) Interventions based on social interactions (the focus here was on the ways in which conversations and the exchange of ideas between pupils were prompted)

- 3) Interventions based on the development of new skills and strategies (the focus of these studies was the explicit teaching of specific skills and strategies)

1) Interventions based on school and class organisation

A theme that was common to many of the studies was the impact of different settings for gifted and talented pupils. Craven et al. (2000, WoE High), for example, evaluated three types of organisation: selective programmes (separate provision, sometimes requiring pupils to change schools); streamed classes (providing gifted and talented pupils an enriched environment, without changing schools); and mixed-ability classes (catering for gifted and talented pupils in the context of a regular classroom). These categories captured the different contexts of most of the studies, although not all of them specifically measured the effectiveness of the setting per se. Some of the studies involved samples in selective setting (Barron 2000, WoE Medium; Craven et al. 2000, WoE High; Landau et al. 2001, WoE Medium; Wood 1999, WoE Low). Some involved streaming (Craven 2000, WoE High; Fardell and Geake 2003, WoE Medium; Fletcher and Santoli 2003, WoE Low; Ryan and Geake 2003, WoE Medium; VanTassel-Baska et al. 2002, WoE High; Walker 2005, WoE Low; Webb et al. 2002, WoE Medium; Ysseldyke et al. 2004, WoE Medium). Some studies involved pupils in mixed ability classes (Craven 2000, WoE High; Olenchak 2001, WoE Low; Stoeger and Ziegler 2005, WoE High). Finally, some studies involved specific interventions that occurred independently of classroom organisation, such as Biakolo and Afemikhe 2002, WoE Medium; Gaultney 1998, WoE Medium).

The study by Craven et al. (2000, WoE High) was framed primarily in terms of social comparison theory (or the 'big fish little pond' effect). According to this theory, participation in special gifted and talented classes or schools will lead to declines in academic self-concept. This is clearly of great relevance for gifted and talented education, because one of the most frequently cited justifications for differentiated provision has been that it enhances gifted and talented pupils' self-concepts and learning motivation. The results of this study do not support selective gifted and talented provision; in fact, pupils in the selective cohort in this study had greater declines in academic self-concept and positive motivation than both the streamed and mixed ability groups. It is unlikely that social comparison completely explains this effect, however, since the pupils in the streamed class did not experience the same decline.

An alternative or supplementary explanation for this pattern of effects is that the pupils in the selective group were adversely affected by their change of schools or peer groups. Wood's (1999, WoE Low) study was interesting in this regard, since it involved the establishment of a special

class drawing in pupils from a number of schools. Wood offered no comparative data, and very poor descriptive data, so it was impossible to judge accurately the effects of the intervention on pupils' self-concept and motivation. She did, however, provide a great deal of contextual information about the difficulty of establishing a selective programme within an otherwise non-selective system, as well as indications of antagonism from parents and other teachers.

Streaming offers an alternative solution to the problem of differentiating provision for gifted and talented pupils than selective programmes. Webb et al. (2002, WoE Medium) investigated the effects of group composition (homogeneous or streamed/heterogeneous or mixed) on group processes and outcomes of science assessments for gifted and talented pupils. They found that gifted and talented pupils in homogeneous groups outperformed their gifted and talented peers in heterogeneous groups. However, they also found that the types of social interactions within the groups predicted pupil performance more strongly than either student ability or the overall ability composition of the groups (which is a topic we will return to later). A similar finding was reported by VanTassel-Baska et al. (2002, WoE High), where pupils showed important gains from a new curriculum across all grouping approaches. Walker (2005, WoE Low) approached this issue of interaction within streamed classes from a different perspective in his examination of girls' verbal participation. He did not provide comparative data, but his study does undermine the notion of genuinely homogeneous groups in terms of participation in classes and access to teacher support.

Two studies (Ryan and Geake 2003, WoE Medium; Fardell and Geake 2003, WoE Medium) examined a more radical approach to streaming, which they call the 'vertical curriculum model'. This approach allows pupils to be grouped according to their levels of readiness, rather than according to age, within a school. As such, the vertical curriculum might be seen as a school-wide version of streaming. Ryan and Geake (2003, WoE Medium) found that a vertical mathematics curriculum structure in a primary school resulted in significant increases in mathematics performance for both gifted and talented and other pupils. They suggested that gifted and talented pupils benefited from placement within a group of peers of similar mathematical readiness and interest, where the curriculum was set at an appropriately challenging level of difficulty, and preceded at a suitably challenging pace.

A similar study with secondary pupils (Fardell and Geake 2003, WoE Medium) came to similar conclusions regarding the virtues of vertical curriculum organisation. In this case, pupils undertook 'accelerated' courses in advance of their school year. Both gifted and talented and non-gifted and talented pupils benefited from the opportunity to accelerate, producing better-than-expected

levels of performance in their accelerated units, with gifted and talented pupils performing particularly well. The Review Group is inclined to accept Fardell and Geake's (2003) suggestion that factors other than ability alone may have contributed to these levels of performance, such as greater group homogeneity of ability and interest; fewer interruptions due to bad behaviour; and greater motivation of pupils. However, the extent to which these factors are attributable to acceleration or simply to an element of personal choice in provision is difficult to tell.

Finally, Ysseldyke et al. (2004, WoE Medium) found that gifted and talented pupils who used a self-directed, individualised mathematics instruction experienced significant increases in performance compared to their peers who did not receive the programme. The researchers reported that such personalised learning meant that pupils were able to explore and use concepts beyond those normally taught in the classroom.

Overall, the studies that focused on grouping and class organisation suggest that differentiated provision is an effective approach for gifted and talented pupils of the various models presented, selective programmes in which pupils move to a new school are the least effective. There is evidence that streaming, mixed ability provision and individual programmes lead to improved learning for gifted and talented learners, although the mixed ability provision requires a favourable classroom climate. The 'vertical' approach to curriculum delivery presents a potentially interesting alternative to these more traditional models.

2) Interventions based on social interactions

A number of studies identified social interactions as an important factor in effective provision for gifted and talented pupils. Indeed, most of the studies seemed to presume this in the designs of their interventions. Barron (2001, WoE Medium) found evidence that collaborative learning amongst gifted and talented pupils result in superior performance in an Information and Communication Technology task. She also found that small groups of gifted and talented pupils generated better planning and solutions than those working alone, and that such learning transferred to later individual performance. Barron did not, however, examine the nature of collaborative work, or the conditions under which it might operate most effectively.

This was a subject partially addressed by Webb et al. (2002, WoE Medium) who explored the social interactions amongst pupils in homogeneous (gifted and talented) and heterogeneous (mixed ability) groups. They found that some gifted and talented pupils in mixed ability groups performed as well

as those in homogeneous groups. The differences between the gifted and talented pupils who succeeded in mixed ability classes and those who did less well, in the words of Webb et al. 'probably result from a complex interplay of individual and group factors' (p. 979). Some gifted and talented pupils react positively to working with less able peers, and some do not, and this may well affect the character of their relationships within the group; some dominate discussions and tasks, and some collaborate fully with their group mates. Webb et al. describe this phenomenon, but it is also worthwhile emphasising that group functioning may well be mediated by the classroom climate. So, the role of the teacher as a mediator of social interactions is vital.

This was the premise of Walker's (2005, WoE Low) study, which was concerned with the 'problem' of gifted and talented girls' verbal engagement in lessons. While the Review Group would be somewhat hesitant to accept the universality of some of the presumptions made about girls' social interactions in classes, there is evidence that a series of structured interventions, such as the use of creative arts activities, celebration of a wide range of talents, the development of meta-cognitive strategies, and the development of leadership skills, can encourage otherwise reticent gifted and talented pupils to participate in class discussions. Likewise, Landau, et al. (2001, WoE Medium) included within their intervention a 'social thinking' element - an expectation on the part of teachers to encourage, praise and specifically attend to the learning needs of girls within a gifted and talented class. The development of social skills was also an implicit feature of the intervention reported by Olenchak (2001, WoE Low). Three of the four gifted and talented pupils allocated personal mentors had identified personal and social difficulties, and these difficulties were reported to have significantly reduced after one year.

3) Interventions based on the development of new skills and strategies

Six of the studies were concerned with the development of specific skills or strategies in gifted and talented pupils. This seems to be primarily influenced by the view that gifted and talented pupils require different or advanced content and opportunities for higher-order thinking skills. Certainly, this is the rationale for the project reported by Gaultney (1998, WoE Medium). She suggested that gifted and talented pupils differ from their non-gifted and talented peers, in part, by their superior memory, and this could potentially mean that gifted and talented pupils fail to develop a repertoire of conscious strategies. The need for higher-order thinking skills among gifted and talented pupils was also underlying the study reported by VanTassel-Baska et al.

(2002, WoE High) in which gifted and talented pupils were exposed to units of work based on advanced literature, reasoning skills and a range of communication skills. Similarly, Landau et al. (2001, WoE Medium) offered gifted and talented pupils an enrichment programme consisting of creative, scientific and social thinking tasks. Another study of this ilk is that of Biakolo and Afemikhe (2002, WoE Medium), which employed literature-based reading to increase creativity, reading skills and attitude to reading. Landau's study focused specifically on gifted and talented pupils from low socio-economic groups and found that such pupils benefited from its curriculum model, and that these benefits were especially noticeable among girls. It is not clear why this should be the case, but VanTassel-Baska et al. found broadly similar outcomes from their intervention.

The view that many gifted and talented pupils do not attain the levels of educational achievement of which they are capable is a recurring theme in many of the papers in this review. The studies of VanTassel-Baska et al. (2002, WoE High); Landau et al. (2001, WoE Medium); Walker (2005, WoE Low) and Olenchak (2001, WoE Low) discuss underachievement explicitly. Stoeger and Ziegler (2005, WoE High) found that one way of eliminating some of the causes of underachievement is to help gifted and talented pupils develop self-regulation skills. Their training programme taught pupils to set goals for themselves, manage their time effectively and to plan their homework. In other words, the study succeeded in teaching pupils how to monitor, regulate and control their academic lives to some degree.

Broadly based enrichment programmes that introduce and develop self-regulation and higher order thinking skills can have measurable effects for gifted and talented pupils, irrespective of the socio-economic background and gender. Moreover, the evidence related to gifted and talented pupils' superior memory suggests that there is a need to adapt the difficulty of tasks and the curriculum in order to properly tax them cognitively.

Table 4.6 summarises the studies reviewed above; their related curriculum areas; the outcomes measured; and the emerging themes.

4.9 Relationship between findings and the Classroom Quality Standards

The Classroom Quality Standards

The Review Group included reference to the Classroom Quality Standards (CQS) for Gifted and Talented Pupils (see Appendix 7.1) at each stage of data-extraction. It also referred to the Institutional Quality Standards (IQS), but the discussion that follows focuses on the CQS, as these are the standards that related most closely to the focus

of the research, the research questions, and the interests of the funder.

Engagement with Learners and Learning

Organisational structures and settings emerged as dominant themes from the review. Craven et al. (2000, WoE High), for example, evaluated three types of organisation: selective programmes (separate provision, sometimes requiring pupils to change schools); streamed classes (providing gifted and talented pupils an enriched environment, without changing schools); and mixed-ability classes (catering for gifted and talented pupils in the context of a regular classroom). Their results do not support selective (i.e. separate) provision for gifted and talented pupils. On the contrary, pupils who experienced selective schooling had greater declines in academic self-concept and positive motivation than other pupils who either worked alongside, or in streamed classes, within the same school as their non-gifted peers. Wood's study provided a potential falsification for the view that separate provision can actually harm gifted and talented pupils, as she reported positive outcomes for the pupils in her special class, but the quality of the data was too poor to allow the Review Group to make an informed judgement. More valuable is the study by Webb et al. (2002, WoE Medium) of the effects of group composition (homogeneous or streamed/heterogeneous or mixed) on group processes and outcomes of science assessments. The interesting finding here, with regard to the CQS, was that it was the types of social interactions within the groups that predicted pupil performance most strongly, rather than either student ability or the overall ability composition of the groups. This finding was supported by VanTassel-Baska et al. (2002, WoE High), who found that pupils showed important gains from a new curriculum across all grouping approaches.

Two studies (Ryan and Geake, 2003, WoE Medium; Fardell and Geake, 2003, WoE Medium) examined the effects of what they call 'vertical' organisational structures. Vertical organisation is a version of accelerated provision, whereby gifted and talented pupils were able to progress through curricula at their own rates, rather than according to chronological age. As such, the vertical curriculum might be seen as a school-wide version of streaming. The findings from these studies offer support for vertical organisation: the authors suggested that gifted and talented pupils benefited by working with peers of similar ability and interest, where the curriculum was set and moved on at an appropriately challenging level of difficulty. Acceleration was also a feature of Ysseldyke's et al. (2004, WoE Medium) study. They found that pupils who undertook a self-directed, individualised mathematics programme were associated with significant increases in performance compared to those who did not receive the programme.

Table 4.6: Synthesis of evidence

Study	Curriculum area	Intervention	Effect	Emerging themes
Craven et al. (2000) High Australia	Cross-curricular	Pupils placed in selective gifted and talented setting, streamed classes, or mixed ability classes.	<p>Self-concept: pupils reported a significant decline over time for school and physical self-concept. Pupils in the selective gifted and talented programme had lower reading; mathematics; science; problem-solving; school; general; physical; appearance and self-concept than pupils in streamed or mixed ability classes.</p> <p>Motivation: differences were found between the control group and comparison group. Pupils' self-reported scores on mastery, co-operative and intrinsic motivation were significantly lower for those in the selective gifted and talented programme.</p> <p>Academic achievement: reading and mathematics achievement test scores increased over the period of the six month study. But increases in maths and reading achievement for selective gifted and talented programme did not vary from changes in comparison groups. For reading achievement, pupils in streamed classes improved more than mixed ability classes.</p>	School and class organisation.
Stoeger and Ziegler (2005) High Germany	Mathematics	Training programme: self-evaluation; analysis of tasks at hand, setting of learning goals and strategies in order to achieve these; apply strategies and monitor progress; connection between applied strategy and success and then return to first phase.	<p>The authors reported that a positive but not significant impact on persistence of underachievement (change -0.16 for control group; +0.17 for treatment group)</p> <p>Thus, their preliminary conclusion from the three month study was that the training was able to reach the immediate goals envisioned for the underachievers but that the analysis was made difficult by the rather small number of underachievers in mathematics who could be identified out of a sample of 1200 students.</p>	School and class organisation. Development of new skills and strategies.

Study (Year of publication)/ Overall WoE rating/ Geographical setting	Curriculum area	Intervention	Effect	Emerging themes
VanTassel-Baska et al. (2002) High United States of America	Literacy	Integrated Curriculum Model: advanced literature, embedding a reasoning model into the teaching of the language arts, requiring a high-quality student product, and organising and teaching to the major concept of change as it applies to literature, writing, language study and oral communication.	Overall, the use of the William and Mary language arts curriculum made a difference in student learning for gifted and talented pupils. Pupils were tested for their literary analysis and interpretation skills and persuasive writing skills. Based on an accumulated database drawn from multiple unit use across multiple school districts over a five year period and results reported indicated positive effects. The intervention was also effective with both economically disadvantaged and economically advantaged students and equally effective with males and females.	School and class organisation. Development of new skills and strategies.
Barron (2000) Medium United States of America	Cross-curricular (problem-solving)	Problem solving activities, individually or collaboratively in groups of three.	Group work more effective than individual work for gifted and talented pupils. However, there was a lower performance from boys than girls on the near transfer problem, whereas performance was equivalent on the mastery problem.	Social interactions.
Biakolo and Afemikhe (2002) Medium Botswana	Literacy	A collection of actions consisting of: reading aloud for problem finding/producing alternatives; sustained silent reading for originality; individual reading to highlight the essence/extending boundaries; community share for empathy; reader's response for elaboration and visualise inside; authors' study for rich visualisation; individual conference for assessment of creative writing skills; theme projects for keeping open; and creative dynamic for enjoyment and use of fantasy.	Results reported indicated that literature-based reading can improve the creativity, attitude and reading skills of gifted and talented pupils but did not impact higher values for reading skills and attitude to reading.	School and class organisation. Development of new skills and strategies.

Study	Curriculum area	Intervention	Effect	Emerging themes
(Year of publication)/ Overall WoE rating/ Geographical setting Fardell and Geake (2003) Medium Australia	Cross-curricular	Recorded the variety of units that were on offer to pupils, and if gifted pupils took reasonable advantage of this variety, as well as being able to accelerate their studies.	Interventions showed that more students of high ability availed themselves of opportunities for acceleration, and their grades improved but the next stage of study will investigate these findings further.	School and class organisation.
Gaultney (1998) Medium United States of America	Cross-curricular (memory)	The strategy selected to train and assess was 'elaborative interrogation' in which pupils were taught to construct 'why' questions for the material they read.	Gifted pupils had greater recall than average pupils prior to and one week after training, despite equivalent levels of strategy use. Correlational evidence indicated that average pupils eventually benefited from using the strategy while for gifted pupils strategy use did not correlate with recall at any point. Therefore, the intervention resulted in positive effects for the gifted pupils.	School and class organisation. Development of new skills and strategies.
Landau et al. (2001) Medium Israel	Cross-curricular (thinking skills)	Enrichment programme, using creative and social thinking.	After participation, the performance of gifted and talented girls was higher than that of the gifted and talented boys, compared to a 'slightly lower' starting point. While both girls and boys increased, the girls' average increase was statistically significantly greater than that of the boys.	School and class organisation. Social interactions. Development of new skills and strategies.
Ryan and Geake (2003) Medium Australia	Mathematics	Cohort grouped into five clinics by intellectual ability, mathematical readiness and teacher recommendation. The curriculum selected for each clinic was based on ability, interest and mathematical knowledge.	The vertical curriculum provided an equitable educational outcome for both gifted and non-gifted pupils. As an intervention for gifted and talented pupils, there were positive results.	School and class organisation.
Webb et al. (2002) Medium United States of America	Science	A three-week unit on electricity and electric circuits in their classrooms.	High ability pupils performed well in homogenous and in some heterogeneous groups. However, positive outcomes were based more on the quality of group interaction than group composition.	School and class organisation. Social interactions.

Study	Curriculum area	Intervention	Effect	Emerging themes
(Year of publication)/ Overall WoE rating/ Geographical setting Ysseldyke et al. (2004) Medium United States of America	Mathematics	The effect of a self-directed mathematics programme on the mathematics achievement of pupils who were gifted and talented was evaluated. An instructional management system, Accelerated Math (Advantage Learning Systems 1998a) was used to assign instruction, monitor student progress and provide teachers with the information they needed to differentiate math instruction for gifted and talented learners.	Gifted and talented pupils profit from being able to engage in individualised mathematics intervention. Use of AM resulted in significant increases in mathematical performance for gifted and talented pupils.	School and class organisation.
Fletcher and Santoli (2003) Low United States of America	Mathematics	Supplement teaching strategies with as much reading as the teacher could find or produce. Compiled a list of about 30 of the most fundamental words for each of the classes they teach, and quizzes to encourage reading.	Results showed substantial increases in comprehension of the reasoning behind maths concepts for gifted and talented pupils.	School and class organisation.
Olenchak (2001) Low United States of America	Cross-curricular	Personal level differentiation based on individual interests and strengths/weaknesses across the curriculum.	Results supported personalised differentiation as the optimal means of accommodating the needs of the diversity of gifted and talented youth in schools.	Social interactions. Development of new skills and strategies.
Walker (2005) Low United States of America	Creative arts and literacy	Use of creative and language arts activities; employment of multiple intelligence to encourage verbal discourse; creation of parental/ guardian involvement programme.	There was a positive effect for gifted and talented females. Their verbal participation increased and anxiety levels reduced.	School and class organisation. Social interactions. Development of new skills and strategies.
Wood (1999) Low Australia	Cross-curricular	The introduction of an Opportunities Class (OC), which was 'a special class for academically gifted pupils. The 'cognitive environment' of the class was made up of two consistent elements: differentiation and basic core materials.	The findings indicate that self-esteem increased; motivation became more 'intrinsic'; noticeable difference in learning behaviour (e.g., use of reflection, self-assessment, personal interests and independent studies); and classroom behaviours changed (improved).	School and class organisation.

The lack of studies that examined the effects of generic classroom differentiation is, perhaps, surprising, since this is probably the most common form of provision for gifted and talented pupils. Only Olenchak (2001, WoE Low) specifically examined this area in depth, and the low quality of the data from that study makes it difficult to attribute any confidence in his findings. However, Olenchak's central claim seems at least plausible, namely that gifted and talented pupils are not a homogeneous group, and consequently might benefit from personalised differentiation more than group differentiation. However, this finding should be balanced with reference to the studies mentioned above which show the importance of social learning in the education of gifted and talented pupils.

Many more studies focused on teaching gifted and talented pupils new skills that aimed to support their own learning. For example, VanTassel-Baska et al.'s (2002, WoE High) reported on positive outcomes from an intervention based on a set of well-thought-out materials that aimed to develop a range of cognitive and self-regulatory capabilities, such as analytical and interpretative skills and reasoning skills. Landau et al. (2001, WoE Medium) offered gifted and talented pupils an enrichment programme consisting of activities to develop their creative, scientific and social thinking skills. A similar study is that of Biakolo and Afemikhe (2002, WoE Medium), which employed literature-based reading to increase creativity, reading skills and attitude to reading. Self-regulation was a theme developed by Stoeger and Ziegler (2005, WoE High), who evaluated a programme for the primary phase. They found that an effective way of eliminating some of the causes of underachievement among some gifted and talented pupils was to help them develop self-regulation skills, such as goal-setting, time management and planning.

Knowledge of subjects and themes

Ten studies related to this CQS. Each of them can be understood as supporting the claim that an adapted curriculum is necessary to address the needs of different learners. However in many cases, specific curriculum areas are largely settings for research into other aspects of gifted and talented pedagogy, and so it is misleading to extrapolate findings to discuss the ways in which subject content is used to stimulate and challenge learners. Some studies, though, addressed this issue directly, and these can be loosely grouped as those that offered an enriching curriculum that involved the introduction of supplementary or more diverse programmes, and those that offered an accelerated route through the curriculum.

The 'Integrated Curriculum Model' examined by VanTassel-Baska et al. (2002, WoE High) is a good example of an enrichment programme. The intervention offered gifted and talented pupils a number of tasks that were characterised by advanced content, sophisticated processes

and higher levels of inter-disciplinary concepts. Specifically, the strategy, which resulted in positive outcomes for pupils, involved the use of relatively advanced literature, integrated reasoning skills and higher expectations of the quality of work produced by gifted and talented pupils.

Also in this first group is Landau et al.'s paper (2001, WoE Medium) that offered gifted and talented pupils an enrichment programme consisting of creative, scientific and social thinking tasks. Another example of an enrichment-based study was Biakolo and Afemikhe (2002, WoE Medium) who reported on the effectiveness of adapted literature-based tasks for a gifted and talented group of pupils. These strategies sought to help pupils develop a range of skills and actions, including: problem-finding and the production of alternatives; highlighting the essence of stories and extending boundaries; empathising; elaborating and visualising; and using fantasy.

The second group of studies in this category were those that offered gifted and talented pupils an accelerated curriculum. Ryan and Geake (2003, WoE Medium) and Fardell and Geake (2003, WoE Medium) looked at acceleration in primary and secondary phases, respectively. Pupils were grouped according to their levels of readiness for new material, rather than according to age. Both studies found that in both settings 'vertical' (i.e., accelerated) provision was associated with positive outcomes for gifted and talented pupils (and in some cases other pupils). Similar results were found by Ysseldyke et al. (2004) who tested a self-directed, individualised mathematics instruction programme, in which pupils could progress through the material at their own rate.

Understanding learners' needs

Nine studies reported findings that are relevant to this standard, although in most cases it is presumed that the heterogeneous and wide-ranging nature of gifted and talented learners require differentiated provision. So to some extent, studies such as those of Fardell and Geake (2003, WoE Medium), Ryan and Geake (2003, WoE Medium), Wood (1999, WoE Low), Olenchak (2001, WoE Low) and Fletcher and Santoli (2003, Low) all discuss the need to identify and address gifted and talented pupils. Cravens et al. (2000, WoE High) were more precise in their analysis of the effects of different types of group organisation on gifted and talented pupils' motivation and self-concept. An interesting element of their paper was the notion that special (i.e., separate) provision for gifted and talented pupils could be detrimental to their academic performance, either because it harmed their academic self-concept by being placed into a context in which they were relatively less able compared to their peers, or because of adverse effects of changing schools or friendship groups. The importance of social interactions was also stressed

by Webb et al. (2002, WoE Medium), who found that the quality of such interactions was especially significant in supporting pupil performance.

Landau et al.'s (2001, WoE Medium) study examined a different aspect of this CQS, namely barriers to learning. They focused on gifted and talented pupils from low socio-economic status families, and girls, suggesting that such pupils would experience less freedom to explore and develop spatial thinking, and would be consequently disadvantaged in the development of certain cognitive skills. Their intervention included enrichment activities that sought to counter the limiting effects of their social environments. Overall, the study reported that participation in their programme did, in fact, have the outcomes expected.

Development of learning

Six studies reported findings that are relevant to this CQS.

Stoeger and Ziegler (2005, WoE High) found that an effective approach of supporting the learning of underachieving gifted and talented pupils was to help them develop self-regulation skills. Their training programme taught pupils to set goals for themselves, manage their time effectively and to plan their homework. In other words, the study succeeded in teaching pupils how to monitor, regulate and control their academic lives to some degree. To some extent, Olenchak's (2001, WoE Low) paper also related to the topic of self-regulation, although his findings implied that self-regulation skills improved following an effective mentoring programme.

Gaultney's (1998, WoE Medium) study was more specific in focus, and offered support to the claim in the CQS that teachers need to understand how learning develops, and use this knowledge to support pupils' learning. Her findings corroborated the theory that one of the ways in which gifted and talented pupils differed from their non-gifted and talented peers was in terms of their superior memory. There is a need, therefore, for teachers to differentiate the level of difficulty of tasks to challenge the cognitive abilities of pupils. Failure to do so might result in gifted and talented pupils failing to develop an adequate repertoire of thinking strategies, as they simply rely on their initially superior skills.

Many of the studies in this review presumed benefits for social or collaborative learning. Two of the studies discussed this directly: Barron (2000, WoE Medium) and Wood (1999, WoE Low). Barron, in particular, found evidence that collaborative learning amongst gifted and talented pupils resulted in superior performance. She also found that small groups of gifted and talented pupils generated better planning and solutions than those working alone, and that such learning transferred to later individual performance.

Conditions of Learning

Three studies related to this standard.

Craven et al.'s (2000, WoE High) well designed study could be interpreted as a test of the claim that gifted and talented pupils required separate provision in order to demonstrate, use and develop their gifts and talents. If so, their findings would seem to suggest that such provision is not effective in supporting gifted and talented pupils. On the contrary, it may be the case (this was suggested by the study's authors, but remains conjectural) that gifted and talented learners' wellbeing and enjoyment are best served by keeping them at the same school after their abilities have been identified.

Olenchak (2001, WoE Low) and Walker (2005, WoE Low) both focused on the benefits of providing underachieving gifted and talented pupils opportunities to demonstrate and utilise their gifts. In Olenchak's study, this focused on the selective use of mentoring to offer a sense of shared values in activities and a support mechanism for the exploration of areas of interest. For Walker, the focus was on the facilitation of girls' verbal participation in lessons through structured interventions such as creative arts activities and the development of leadership skills.

Planning

Only one study was related to the Planning standard (Olenchak, 2001, WoE Low), and the description of the process and outcome of planning in that study was inadequate to allow any confident conclusions to be drawn, beyond the general point that planning for gifted and talented pupils was likely to be most effective when it was personalised, that is, based on the individual needs and interests of pupils, rather than a 'gifted and talented' group as a whole.

Classroom Quality Standards (CQS)

The seven CQS are linked to the findings of the review (shown in table 4.7). Each CQS is explained through clarificatory questions and can be achieved at three different levels: entry, developing and exemplary (See Appendix 7.1). In the table, the Weight of Evidence is noted to demonstrate the prevalence of the various findings (D - overall rating for addressing the systematic review question). When considering how this study can be mapped on to the CQS, three key issues need to be considered:

1. Overlap

The findings of the review often (unsurprisingly) overlap with reference to the CQS. This is particularly the case for:

- conditions for learning
- development of learning
- engagement with learners and learning

The first entry in the table therefore takes these three together, followed by a separate entry for each of the CQS where other aspects arise. Other aspects also interconnect, but these links are less marked.

2. Personalised Learning

The personalisation of learning emerges as a

key method to meet the varied needs of the heterogeneous group of gifted and talented pupils. The concept therefore features as a strategy that would help teachers and schools attain the requirements of the CQS. For ease of reading the table, it is noted as ‘Personalised Learning’ only. Further details of each aspect of Personalised Learning are described in Section 4.9.2 and in Section 4.10.

3. Links Beyond the Classroom

There are no findings for this CQS as the review question addressed classroom interventions only.

Table 4.7: Relationship between the CQS and the review’s research findings

Classroom Quality Standard	School and class organisation	Social interaction interventions	New skills and strategies
Conditions for Learning / Development of Learning / Engagement with Learners and Learning	<p>1. Settings - selective educational settings were not always shown to enhance self-concept of gifted learners. This could be due to changing peer groups and disruption from moving schools or classes. (Craven, high WoE.)</p> <p>2. Vertical grouping can have a positive impact on achievement, but the way this is realised affects its efficacy. (Ryan and Geake, medium WoE; Fardell and Geake, medium WoE.)</p> <p>3. Personalised Learning requires careful organisation.</p> <p>4. Accelerated learning can be helpful where this is self-directed (Ysseldyke, medium WoE).</p>	<p>1. Role of the teacher is very important as the mediator of social interactions (Gaultney, medium WoE).</p> <p>2. Collaborative learning seems to promote higher achievement, although some studies did not examine the nature of the collaborative tasks (Webb et al., medium WoE).</p>	<p>1. Learning how to collaborate effectively helps improve learning (Webb et al, medium WoE).</p> <p>2. Recognising abilities helps underachieving pupils demonstrate and use their gifts (Olenchak, low WoE; Walker, low WoE).</p>
Conditions for Learning	Mentoring helps to reduce the impact of personal and social difficulties (Olenchak, low WoE).	The quality of collaborative work is affected by the make-up of the group (Webb et al., medium WoE; Barron, medium WoE).	Mentoring helps to reduce the impact of personal and social difficulties (Olenchak, low WoE).
Development of Learning	Personalised Learning can be more valuable than group differentiation (Olenchak, low WoE).	<p>1. Personalised Learning is helpful for underachieving pupils to develop better management their learning (Stoeger and Ziegler, high WoE).</p> <p>2. Social interaction with the teacher allows for the shaping of tasks to match abilities and needs (Gaultney, medium WoE; Barron, medium WoE; Wood, low WoE).</p>	Underachievement needs to be explored and considered if learners are to develop effectively (Stoeger and Ziegler, high WoE).

34 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

Classroom Quality Standard	School and class organisation	Social interaction interventions	New skills and strategies
Knowledge of Subject Themes	<p>1. Many of the studies focus on mathematics and science, but there is no evidence that particular subjects are more appropriate for the able child.</p> <p>2. Tailored enrichment can produce positive outcomes through the development of relevant skills (VanTassel-Baska, high WoE; Landau et al., medium WoE; Biakolo and Afemikhe, medium WoE; Ysseldyke, medium WoE).</p> <p>3. Literature-based topics can improve reading (Biakolo and Afemikhe, medium WoE).</p>	For good learning, the quality of interaction seems to be more important than the choice of one particular subject over another (Webb et al., medium WoE).	<p>1. Some evidence shows that a new or tailored curriculum can be a useful strategy (VanTassel-Baska, high WoE).</p> <p>2. Self-regulated learning is important for helping students to understand and improve their own learning (VanTassel-Baska, high WoE; Stoeger and Ziegler, high WoE).</p>
Understanding Learners' Needs	Personalised Learning and differentiation provision of some description are recommended for ensuring that needs are met (Fardell and Geake, medium WoE; Ryan and Geake, medium WoE; Wood, low WoE; Olenchak low WoE; Fletcher and Santoli low WoE).	<p>1. Collaboration helps to explore needs and meet them through peer interaction (Craven et al., high WoE; Webb et al., medium WoE; Barron, medium WoE).</p> <p>2. Teachers benefit from better understanding of the nature of high ability to help with grouping and task setting (Gaultney, medium WoE).</p>	<p>1. Learning to question effectively is helpful - teachers gain a better understanding of learners' needs (Gaultney, medium WoE).</p> <p>2. Collaboration needs to be guided and supported so people learn to work well in groups (Craven et al., high WoE; Webb et al., medium WoE).</p>
Planning	<p>1. Planning is necessary in order for different types of classes (streaming, setting etc) to meet learners' needs (Ryan and Geake, medium WoE; Fardell and Geake, medium WoE.)</p> <p>2. Teachers can find it difficult to undertake strategies to help the able where these require a restructuring of any existing school structures (Wood, low WoE).</p>	Need to plan for maximising the quality of group interaction and build on previous learning and experience (Gaultney, medium WoE; Barron, medium WoE).	G and T pupils benefit from training in techniques for organising their learning (VanTassel-Baska, high WoE; Olenchack, low WoE).
Engagement with Learners and Learning	Personalised Learning is more effective than broadly based planning of learning (Olenchak, low WoE).	Discussion with mentors can help minimise difficulties for pupils (Olenchak, low WoE).	Personalised Learning of new and self-regulatory skills will help develop learning (VanTassel-Baska, high WoE; Stoeger and Ziegler, high WoE).

CHAPTER FIVE

Implications

5.1 Strengths and limitations of this systematic review

This review's questions have been answered and the purpose fulfilled, revealing what interventions have been effective and could possibly be effective in future practice. As this was the first EPPI-Centre systematic literature review in this field, it covers a foundation of knowledge and understanding that can be built upon. Areas for further research have been highlighted and both practical and academic guidance can be utilised to develop policy.

The map provided a basis for informed discussion and decision-making between the review team and review users concerning the focus of the second stage in-depth review which follows. The map also provided valuable information and stands on its own as a discrete document that can be consulted in its own right. The in-depth review was a detailed investigation of a focused subset of the wider literature. The review was focused in a way that corresponded to current policy and practice priorities, such as the Classroom Quality Standards.

5.1.1 Limitations

Across the 15 articles there was not one single agreed definition as to what constituted being identified as 'gifted and talented'. Sometimes there was a tacit assumption as to who was included in this cohort rather than an explicit definition of 'gifted and talented'. In many cases, IQ featured highly as a means of definition and identification. Indeed, the implicit notion that gifts and talents can be represented as unitary, heritable phenomena is widely acknowledged to be problematic. While we would not wish for gifted and talented pupils to be considered a homogenous group, the heterogeneity of definitions employed across the studies needs to be explicit. The lack of a clear and agreed definition within the 15 articles offers flexibility, however for practitioners to understand what works, they need to have a clear understanding for whom this will

work and they need to be able to match provision with personalised learning goals. For example, within the Gaultney (1998, WoE Medium) article it is suggested that the range of scores for the gifted pupils may indicate that they are a 'moderately academically gifted group' as opposed to a 'highly gifted group' therefore the nature of the study is exploratory rather than a definitive examination of the cognition of gifted individuals. Thus we can see that definitions impact on identification, provision, research findings and implications drawn from the findings.

Potentially useful studies were omitted due to the narrowly focused systematic method used. This meant that there were none from the UK, as no UK studies matched with the criteria formed from the specific systematic review question, and so this caused limitations in the extent to which the findings could be related to English policy making.

The Weight of Evidence ratings could only be based on what the author had written in the paper reporting on the study. Therefore judgements were actually made on the study's ability to explicitly report what was carried out in their study in relation to the answers needed for the systematic review rather than the actual quality of their methods, so the WoE ratings in this review were more of an indirect measure of quality through the author's reporting, rather than a direct unbiased method judging the methods and outcomes of the study itself.

5.2 Implications for policy, practice and research

5.2.1 Policy

The national strategy for gifted and talented education in England was intended to provide a distinct programme of teaching and learning for gifted and talented pupils. Initiatives such as Excellence in Cities additionally sought to address

issues of inclusion and equity. Organisations, such as London Gifted and Talented, were established with the express aim of addressing the negative effects of social exclusion and disadvantage on achievement. This review set out in part to establish what type of interventions would support the aims of the strategy by identifying research evidence that could inform the further development of the national gifted and talented programme, using studies published since 1998, when the national strategy began.

The national strategy has become embedded in notions of personalised learning. Within the context of gifted and talented education, this has been translated as a strategy to improve understanding of how the needs of gifted and talented pupils may be meaningfully different from their peers and how these needs can be met through a combination of learning experiences both within and beyond the classroom.

The IQS and CQS represent a practical working consensus on what gifted and talented pedagogy and practices look like at different stages of development. Their three levels - entry, developing and exemplary - represent ascending degrees of schools developing capability to personalise provision and, for classroom practitioners, a means to understand how teaching and learning can become more responsive to individual needs. To date, these documents have been informed by conceptions of good practice gathered by expert groups. To a large extent, this review aims to inform future developments in gifted and talented guidance by identifying empirical findings that relate to effective pedagogy.

This review set out to identify what works for gifted and talented pupils in classroom learning, to identify what works in mainstream contexts and to support the development of practice. Studies that did not relate to classroom learning were excluded in order to narrow the focus on what works and to reduce the influence of bolt-on programmes in the synthesis. However, it is interesting that many of the studies also gave evidence of the effectiveness of provision delivered beyond the mainstream classrooms. Generally speaking, policies in England have moved from promoting and funding high cost/low volume enrichment towards an emphasis on providing challenge and high expectations for all pupils as part of everyday learning experiences. The review provided evidence in favour of this policy development.

It is a truism that gifted and talented pupils benefit from learning that is high in challenge, and that teaching sensitive to pupils' needs is most likely to be successful. The three themes discussed in the in-depth synthesis (section 4) relate to the dynamics of classroom learning and a focus on collaborative learning and flexible grouping. Learning processes are supported through social scaffolding. This supports the hypothesis that social

interaction is an effective strategy for the gifted and talented. It may also challenge the emphasis in much guidance on independent learning, which provides extension activities and solitary learning experiences as part of a supplementary strategy.

5.2.2 Practice

The Review Group was fortunate to have access to groups of practitioners with whom they discussed the review and its outcomes. They indicated that they felt it would be beneficial for the review to identify good practice that already exists. They hoped that a review like this might consolidate that many teachers are already doing 'what works' for gifted and talented pupils. Fletcher and Santoli (2003, WoE Low) had explored an interesting and important area of mathematics teaching. However the work had been carried out as part of an ongoing development of teaching techniques and as such had not been undertaken as a 'research project' per se. Thus the paper did not meet the required criteria for being a strong evidence-based paper. This perhaps highlights a common divide in educational research between evidence produced and sourced by teachers on 'what works' and evidence which is considered methodologically sound but does not include practical recommendations for the classroom in its conclusion. For example, of the 15 articles included in the review 13 (Barron 2000, Biakolo and Afemikhe 2002, Fardell and Geake 2003, Fletcher and Santoli 2003, Gaultney 1998, Landau et al. 2001, Olenchak 2001, Ryan and Geake 2003, Stoeger and Zeigler 2005, VanTassel-Baska 2002, Walker 2005, Webb et al. 2002, Ysseldyke et al. 2004) have as an emerging theme grouping and class organisation. While undoubtedly this is important as it can help us to establish the conditions for effective learning, there are contrasting findings. The results from Craven et al. (2000, WoE High), for example, do not support selective (i.e., separate) provision for gifted and talented pupils. Alternatively, Wood (1999, WoE Low) challenges this finding reporting positive outcomes for the pupils in her special class. In light of the evident superiority of Craven et al.'s study, in terms of both research design and analysis, we are led to conclude that planners and teachers should be cautious in considering separate provision of gifted and talented pupils.

The review identified a common thread across the papers, namely that the diversity apparent in this cohort of pupils needs to be married to differentiated provision in which gifted and talented pupils, whether as a group or individually, are offered an adopted form of provision or curriculum that reflects their abilities.

The two other emerging themes from the synthesis of the review were social interaction, and development of new skills and strategies. Across both of these emerging themes, two implications are clear for classroom practice:

1. Specific strategies can be taught that enhance gifted and talented pupils learning and engagement.
2. Most forms of provision for gifted and talented pupils occur in social settings, and pupils' abilities to deal with such contexts are likely to be important factors in academic success and personal motivation. The teacher has an important role to play in generating and sustaining contexts for appropriate social interactions.

Only one paper made clear how the intervention used was uniquely appropriate for gifted and talented populations, yet all papers reported positive results. Thus, it may be that careful attention to generic teaching and learning skills is sufficient to address the needs of many gifted and talented pupils and, further, is also appropriate for a much wider group of learners.

5.2.3 Research

There is a need for well designed research studies in gifted and talented education with both English and wider UK contexts. In this review there were a low number of studies, included in the final synthesis, that were rated as having a High WoE D (overall Weight of Evidence). Only three studies were rated as High for WoE A (the soundness of the study in answering its questions) and only one for WoE B (the appropriateness of research design and analysis for addressing the systematic review question). If this is indicative of the field as a whole then there is cause for concern. This is particularly true, as the interventions employed in many of the studies involved changing the educational experiences of pupils in quite radical ways. Many of these studies also concluded that positive results were generalisable to other gifted and talented populations and advocated the wider use and applicability of interventions. If research in the field of gifted and talented education is to influence practice then it is essential that the quality of research design and reporting be improved.

The strongest studies in this review in terms of methodological rigour were often quantitative, yet it would seem that more in-depth qualitative data and analyses might have addressed some of the concerns that the review team had with regards to a general disregard for relevant variables such as: the impact of the researchers themselves; the wider context; teacher attitudes; student motivation; differences in environment between classrooms, schools and districts; the implications of using 'volunteers' to implement the interventions; teacher experience and education; the existence of multiple exceptionalities; and grouping issues. More research using, or at least incorporating, rigorous qualitative data and analysis would enable these variables to be investigated and the findings from these studies to be tested and firmer conclusions drawn.

Through the data-extraction process, the reviewers specifically identified ethical concerns. It would be advantageous, therefore, if research papers included details of participant involvement in the design and conduct of the study, recruitment methods, data confidentiality, consent and funding.

Similarly, it was not always clear how gifted and talented learners were identified or how samples were obtained from the wider populations with the concept of giftedness being presented as unproblematic. There is a need for key terms such as 'gifted', 'talented' and associated concepts like 'educational achievement' to be defined and for identification procedures to be detailed. This is not just a matter of clarity; different definitions of 'gifted and talented' are likely to result in different pupils, with different abilities, being identified and researched.

It is difficult to draw clear conclusions about generalisable pedagogies due to the large number of variables that can affect pupils, teachers and learning environments. Increasing the quality, quantity and variety of research is one useful response to this difficulty. Comparative studies making use of existing data would be valuable, showing similarities and differences across a range of contexts. This would also help to overcome the problem of small sample groups, which is difficult to avoid in the field of gifted education.

CHAPTER SIX

References

6.1 General References in the text

- ACER (1997) *Progressive achievement tests in mathematics (PATmath) revised - teacher's manual*. CITY: Australian Council for Educational Research Press.
- Bar-On R, Parker JDA (2000) *Bar-On emotional quotient inventory: youth version*. North Tonawanda, NY: Multi-Health Systems.
- Cohen D, Hill H (1998) *Instructional policy and classroom performance: the mathematical reform in California* (Research report number RR-39). Philadelphia: University of Pennsylvania, Consortium for Policy Research in Education.
- Colangelo N, Davis GA (2003) *Handbook of gifted education (3rd ed.)*. Needham Heights, MA: Allyn and Bacon.
- Csikszentmihalyi M (1997a) Flow and education. *North American Montessori Teachers' Association Journal* 22: 3-35.
- Csikszentmihalyi M (1997b) Flow and creativity. *North American Montessori Teachers' Association Journal* 22: 61-97.
- Csikszentmihalyi M, Rathunde K, Whalen S (1993) *Talented Teenagers. The Roots of Success and Failure*. Cambridge: Cambridge University Press.
- Curriculum Standards Framework (1997) Board of Studies, Victorian Education Department.
- Davis GA, Rimm SB (1989) *Education of the gifted and talented*. Englewood Cliffs, NJ: Prentice Hall.
- DfEE (1997) *Excellence in schools*. London: Stationery Office.
- DCSF (2007) *What do we mean by gifted and talented?* London: Standards Site, DCSF (www.standards.dfes.gov.uk/giftedandtalented/identification/gandt/ accessed 3 July 2007).
- DCSF (2008) *What do we mean by gifted and talented?* London: Standards Site, DCSF (www.standards.dfes.gov.uk/giftedandtalented/identification/gandt/ accessed 2 May 2008).
- De Lemos MM (1995) *Standard progressive matrices, Australian manual*. Victoria, Australia: Australian Council for Educational Research.
- Dracup T (2003) Understanding the national approach to gifted and talented students. *Curriculum Briefing 1*: 7-12.
- Dunn L M (1965) *Peabody Picture Vocabulary Test*. Minnesota: American Guidance Service.
- Dweck CS (1986) Motivational processes affecting learning. *American Psychologist* 41: 1040-1048.
- Dweck CS, Leggett EL (1988) A social-cognitive approach to motivation and personality. *Psychological Review* 95: 256-273.
- Feldhusen J (1989) Synthesis of research on gifted youth. *Educational Leadership* 54: 6-12.
- Freeman J (1998) *Educating the very able: current international research*. London: The Stationery Office.
- Hammersely M (2001) On 'systematic' reviews of research literatures. *British Journal of Educational Research* 27: 543-554.
- HANSARD (1999) *Education and employment - third report*. (www.publications.parliament.uk/pa/cm199899/cmselect/cmduemp/22/2202.htm accessed 4 July 2008).

Hewston R, Campbell RJ, Eyre D, Muijjs RD, Neelands JGA, Robinson W (2005) *A baseline review of the literature on effective pedagogies for Gifted and Talented students: Occasional Paper Eight*. Warwick: National Academy for Gifted and Talented Youth.

Heller K, Mönks F, Sternberg R, Subotnik R (eds) (2000) *International handbook of giftedness and talent (second edition)*. Oxford: Elsevier.

James P (2002) Ideas in practice: fostering metaphoric thinking. *Journal of Developmental Education* **25**: 26-33.

Kirschenbaum RJ (1998) The creativity classification system: an assessment theory. *Roeper Review* **21**: 20-26.

Merrell C, Tymms P, Jones P (2007) Changes in children's cognitive development at the start of school 2000-2006. Paper presented at: *EARLI conference*, Budapest, 28 August-1 September.

Morley D, Bailey R (2006) *Meeting the needs of your most able pupils: physical education and sport*. London: David Fulton Publishers.

Nind M (2006) Conducting a systematic review in education: a reflective narrative. *London Review of Education* **4**: 183-195.

Noddings N (1985) Small groups as a setting for research on mathematical problem solving. In: Silver EA (ed), *Teaching and learning mathematical problem solving*. Hillsdale, NJ: Erlbaum.

OFSTED (2001) *Guidance to inspectors - the identification and provision for gifted and talented pupils*. London: Office for Standards in Education.

Pintrich PR (2000) The role of goal orientation in self-regulated learning. In: Boekerts M, Pintrich PR, Zeidner M (eds), *Handbook of self regulation*. San Diego, CA: Academic Press, pages 451-502.

Renzulli JS (1977) *The enrichment triad model: A guide for developing defensible programs for the gifted*. Mansfield Center, CT: Creative Learning Press.

Renzulli JS, Reis SM (1985) *The schoolwide enrichment model: A comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.

Renzulli JS, Reis SM (1997) *The schoolwide enrichment model: A how-to guide for educational excellence*. Mansfield Center, CT: Creative Learning Press.

Riley T, Bevan-Brown J, Bicknell B, Carroll-Lind J, Kearney A (2004) *Gifted and talented education in New Zealand schools*. Wellington: New Zealand Ministry of Education.

Smith C (2006) *Including the gifted and talented: making inclusion work for more gifted and able learners*. London: Routledge.

Subotnik R (1993) *Genius revisited: high IQ children grown up*. Norwood, NJ: Ablex.

Teachernet (2007a) Classroom Quality Standards in gifted and talented education. (www2.teachernet.gov.uk/gat/media/CQSdraft.doc, accessed 7 August 2007).

Teachernet (2007b) National Quality Standards in gifted and talented education. (www2.teachernet.gov.uk/gat/media/QS.doc, accessed 7 August 2007).

VanTassel-Baska J (1986) Effective curriculum and instructional models for talented students. *Gifted Child Quarterly* **30**: 161-169.

VanTassel-Baska J (1995) The development of talent through curriculum. *Roeper Review* **18**: 98-102.

VanTassel-Baska J, Feng A (eds) (2004) *Evaluation of gifted programs*. Waco, TX: Prufrock.

White K, Fletcher-Campbell F, Ridley K (2003) *What works for gifted and talented pupils: a review of recent research* (LGA Research Report 51). Slough: NFER.

Woloshyn V, Pavio A, Pressley M (1994) Use of elaborative interrogation to help students acquire information consistent with prior knowledge and information inconsistent with prior knowledge. *Journal of Educational Psychology*, **86**: 79-89.

Wood E, Pressley M, Winne P (1990) Elaborative interrogation effects on children's learning of factual content. *Journal of Educational Psychology*, **82**: 741-748.

Ziegler A, Raul T (2000) Myth and reality: a review of empirical studies on giftedness. *High Ability Studies*, **11**: 113-136.

Zimmerman B, Bonner S, Kovach D (1996) *Developing self-regulated learners: beyond achievement to self-efficacy*. Washington, DC: American Psychological Association.

6.2 Referenced studies included in the in-depth review

* *Studies in the in-depth review*

Albertson LR, Billingsley FF (2001) Using strategy instruction and self-regulation to improve gifted students' creative writing. *Journal of Secondary Gifted Education* **12**: 90-101.

Anuruthwong U (2003) Creating a higher level of thinking model for gifted at the elementary level. In: *Gifted 2003: a celebration down under*. Adelaide: World Council for Gifted and Talented Children.

Arthington C (2004) Using data to ensure gifted and talented students achieve their full potential in Design and Technology. Paper presented at: *Teacher Research Conference 2004*, Birmingham, UK, 19 March.

Bailey SB, Chaffey GW (2003) The use of dynamic testing to reveal high academic potential and underachievement in a culturally different population. *Gifted Education International* 18: 124-138.

*Barron B (2000) Problem solving in video-based microworlds: collaborative and individual outcomes of high-achieving sixth-grade students. *Journal of Educational Psychology* 92: 391-398.

Berschi JJ, Hampson D, Huesser I (2003) The first five years of Talenta School for the Gifted: empirical and scientific goals, trends and results. In: *Gifted 2003: a celebration downunder*. Adelaide: World Council for Gifted and Talented Children.

*Biakolo M, Afemikhe A (2002) The effect of literature-based reading on gifted students in Botswana. *Research in Education* 68: 15-25.

Bicknell BA, Riley TL (2005) Students' perspectives on a withdrawal program in mathematics. *Australasian Journal of Gifted Education* 14: 27-33.

Bleske-Rechek A, Lubinski D, Benbow CP (2004) Meeting the educational needs of special populations: Advanced placement's role in developing exceptional human capital. *Psychological Science* 15: 217-224.

Blumen-Pardo S (2002) Effects of a teacher training workshop on creativity, cognition, and school achievement in gifted and non-gifted second-grade students in Lima, Peru. *High Ability Studies* 13: 47-58.

Campbell JR, Verna MA (1998) Comparing separate class and pull-out programs for the gifted. Paper presented at: Annual Meeting of the American Educational Research Association, San Diego, CA, 13-17 April.

Campbell JR, Wu R (1998) *Gifted programs from a Chinese perspective*. Paper presented at: Annual Meeting of the American Educational Research Association, San Diego, CA, 13-17 April.

Cartledge G, Sentelle J, Loe S, Lambert MC, Reed ES (2001) To Be young, gifted, and black? A case study of positive interventions within an inner-city classroom of African American students. *Journal of Negro Education* 70: 243-254.

Castillo LC (1998) The effect of analogy instruction on young children's metaphor comprehension. *Roeper Review* 21: 27-31.

Chan DW (2001) Assessing giftedness of Chinese secondary students in Hong Kong: a multiple intelligences perspective. *High Ability Studies* 12: 215-234.

Chan DW (2003) Leadership skills training for Chinese secondary students in Hong Kong: does training make a difference? *Journal of Secondary Gifted Education* 14: 166-174.

Cheng CS, Lin ML (2003) A leadership program for gifted students in primary and secondary schools. In: *Gifted 2003: a celebration down under*. Adelaide: World Council for Gifted and Talented Children.

Chessor D (2004) *The impact of grouping gifted primary school students on self-concept, motivation and achievement*. Doctoral dissertation: University of Western Sydney.

Clark G, Zimmerman E (2001) Identifying artistically talented students in four rural communities in the United States. *Gifted Child Quarterly* 45: 104-114.

Clark TR (2001) *The application of savant and splinter skills in the autistic population through curriculum design: a longitudinal multiple-replication case study*. Doctoral dissertation: University of New South Wales.

*Craven RG, Marsh HW, Print M (2000) Gifted, streamed and mixed-ability programs for gifted students: impact on self-concept, motivation, and achievement. *Australian Journal of Education* 44: 51-75.

Cunningham M, Lopes J, Rudd P (2004) *Evaluation of the excellence in cities/ethnic minority achievement grant (EIC/EMAG) pilot project*. London: DfES.

Darity W, Castellino D, Tyson K, Cobb C, McMillen B (2001) *Increasing opportunity to learn via access to rigorous courses and programs: one strategy for closing the achievement gap for at-risk and ethnic minority students*. Raleigh, NC: North Carolina State Department of Public Instruction.

Davies M (2000) *The effect of gifted education on gifted students*. Master's dissertation: University of Melbourne.

Diezmann CM, Watters JJ (2002) The importance of challenging tasks for mathematically gifted students. *Gifted and Talented International* 17: 76-84.

Douglas D (2004) Self-advocacy: encouraging students to become partners in differentiation. *Roeper Review* 26: 223.

Etkina E, Matilsky T, Lawrence M (2003) Pushing to the edge: Rutgers Astrophysics Institute motivates talented high school students. *Journal of Research in Science Teaching* 40: 958-985.

*Fardell R, Geake JG (2003) Vertical semester organisation in a rural secondary school as a vehicle for acceleration of gifted students. *Australasian Journal of Gifted Education* 11: 16-30.

Feng A X, Van Tassel-Baska J, Quek C, Bai W, O'Neill B (2005) A longitudinal assessment of gifted students' learning using the integrated curriculum model (LCM): impacts and perceptions of the William and Mary Language Arts and Science curriculum. *Roeper Review* 27: 78-83.

*Fletcher M, Santoli S (2003) Reading to learn concepts in mathematics: an action research project. Unpublished report: Davidson High School and University of South Alabama.

Freeman J, Josepsson B (2002) A gifted programme in Iceland and its effects. *High Ability Studies* 13: 35-46.

Friend JI, Degan E (2007) Middle-level reform: the introduction of advanced English and science courses. *Journal of Advanced Academics (JSGE)* 18: 246-276.

Garduno ELH (2001) The Influence of cooperative problem solving on gender differences in achievement, self-efficacy, and attitudes toward mathematics in gifted students. *Gifted Child Quarterly* 45: 268-282.

*Gaultney JF (1998) Differences in benefit from strategy use: what's good for me may not be so good for thee. *Journal for the Education of the Gifted* 21: 160-178.

Gentry M, Owen SV (1999) An investigation of the effects of total school flexible cluster grouping on identification, achievement, and classroom practices. *Gifted Child Quarterly* 43: 224-243.

Gentry ML (1999) *Promoting student achievement and exemplary classroom practices through cluster grouping: a research-based alternative to heterogeneous elementary classroom* (RM99138). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Ginn PV, Keel MC, Fredrick LD (2002) Using 'reasoning and writing' with gifted fifth-grade students. *Journal of Direct Instruction* 2: 41-47.

Henderson L (2005) Unleashing talent: an examination of VanTassel-Baska's integrated curriculum model in an inclusive classroom. *Post-Script* 5: 54-73.

Hodge K (2004) *Issues in the identification of giftedness in young children*. Doctoral dissertation: Macquarie University.

Howley A (2002) The progress of gifted students in a rural district that emphasized acceleration strategies. *Roeper Review* 24: 158-160.

Kalchman M, Case R (1999) Diversifying the curriculum in a mathematics classroom streamed for high-ability learners: a necessity unassumed. *School Science and Mathematics* 99: 320-329.

Kimmel S (2002) *Improving the social skills of fourth- and fifth-grade cognitively gifted students*. Doctoral dissertation: Nova Southeastern University.

Kitano MK, Lewis R B (2007) Examining the relationships between reading achievement and tutoring duration and content for gifted culturally and linguistically diverse students from low-income backgrounds. *Journal for the Education of the Gifted* 30: 295-325.

Klavr R, Gorodetsky M (2001) The processing of analogous problems in the verbal and visual-humorous (cartoons) modalities by gifted/average children. *Gifted Child Quarterly* 45: 205-215.

Konza D (1998) *Inclusion for children with dual exceptionalities*. Paper presented at: *Annual Convention of the Council for Exceptional Children*, Minneapolis, MN, 15-19 April.

Lambert M (2006) *Evaluation of advanced learning centres for gifted and talented pupils*. Research Report RR742. London, DfES.

*Landau E, Weissler K, Golod G (2001) Impact of an enrichment program on intelligence, by sex, among low SES population in Israel. *Gifted Education International* 15: 207-214.

Lee L, Bailey J (2003) Rethinking practices for gifted young children: a collaborative action learning project. *Curriculum Perspectives* 23: 1-7.

Lewis E (2004) *Teaching twice exceptional children: gifted with learning difficulties: professional development and provision in a Montessori school*. Master's dissertation: Edith Cowan University.

Lichtenberger EO, Volker M A, Kaufman AS, Kaufman NL (2006) Assessing gifted children with the Kaufman Assessment Battery for Children - second edition (KABC-II). *Gifted Education International* 21: 99-126.

Lidz CS, Macrine SL (2001) An alternative approach to the identification of gifted culturally and linguistically diverse learners: the contribution of dynamic assessment. *School Psychology International* 22: 74-96.

Little CA, Hines AH (2006) Time to read: advancing reading achievement after school. *Journal of Advanced Academics* 18: 8-33.

42 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

Ma X (2005) A longitudinal assessment of early acceleration of students in mathematics on growth in mathematics achievement. *Developmental Review* 25: 104-131.

Ma X (2003) Effects of early acceleration of students in mathematics on attitudes toward mathematics and mathematics anxiety. *Teachers College Record* 105: 438-464.

Martin J (2006) *Padfoot, pup and claire: academic acceleration in Aotearoa*. Master's dissertation: University of New England.

McFarland V (1998) *An investigation of the problem of identification in the under-representation of culturally diverse students in gifted and talented programs in Utah schools*. Master's dissertation: Weber State University.

McKenna MA, Hollingsworth PL, Barnes LLB (2005) Developing latent mathematics abilities in economically disadvantaged students. *Roeper Review* 27: 222.

Memmert D (2006) Developing creative thinking in a gifted sport enrichment program and the crucial role of attention processes. *High Ability Studies* 17: 101-115.

Milton M, Lewis E (2005) Teaching gifted children with learning difficulties in writing. *Australian Journal of Learning Disabilities* 10: 79-88.

Moon SM, Swift M, Shallenberger A (2002) Perceptions of a self-contained class for fourth- and fifth-grade students with high to extreme levels of intellectual giftedness. *Gifted Child Quarterly* 46: 64-79.

Moon TR, Callahan CM (2001) Curricular modifications, family outreach, and a mentoring program: impacts on achievement and gifted identification in high-risk primary students. *Journal for the Education of the Gifted* 24: 305-321.

Moon TR, Brighton CM, Callahan CM (2003) State standardized testing programs: friend or foe of gifted education? *Roeper Review* 25: 49-60.

Morgan A (2006) Experiences of a gifted and talented enrichment cluster for key stage one pupils. Paper presented at: *British Educational Research Association Annual Conference*, University of Warwick, 6-9 September.

Newman JL (2005) Talents and type ills: the effects of the talents unlimited model on creative productivity in gifted youngsters. *Roeper Review* 27: 84.

Nogueira SM (2006) MORCEGOS: A Portuguese enrichment program of creativity pilot study with gifted students and students with learning difficulties. *Creativity Research Journal* 18: 45-54.

*Olenchak FR (2001) Lessons learned from gifted children about differentiation. *Teacher Educator* 36: 185-198.

Olszewski-Kubilius P, Lee SY (2004) The role of participation in in-school and outside-of-school activities in the talent development of gifted students. *Journal of Secondary Gifted Education* 15: 107-123.

Olszewski-Kubilius P (2006) Addressing the achievement gap between minority and nonminority children: increasing access and achievement through Project EXCITE. *Gifted Child Today* 29: 28-37.

Oswald KJ (2002) *The AVID Program in AISD: program evaluation report, 2000-2001*. Austin, TX: Austin Independent School District, Office of Program Evaluation.

Palmer S (2002) *An individual research program for accelerated science students*. Dissertation: La Trobe University.

Pang V (1999) Grade skipping: lessons from a Malaysian school. In: Kall P (ed.) *Ways of learning: the revolution in teaching and learning*, Altona Vic: Common Ground Publishing, pages 115-124.

Phillips N, Lindsay G (2006) Motivation in gifted students. *High Ability Studies* 17: 57-73.

Rawlins P (2003) Is it better to burn out or to rust? In: Bragg L, Campbell C, Herbert G, Mousley J (eds), *Proceedings of the 26th annual conference of the Mathematics Education Research Group of Australasia. Mathematics education research: Innovation, networking, opportunity*. Melbourne, Australia: Deakin University, pages 586-593.

Rayneri LJ, Gerber BL, Wiley LP (2006) The relationship between classroom environment and the learning style preferences of gifted middle school students and the impact on levels of performance. *Gifted Child Quarterly* 50: 104-118.

Reid C, Udall A, Romanoff B, Algozzine B (1999) Comparison of traditional and problem solving assessment criteria. *Gifted Child Quarterly* 43: 252-264.

Reis SM, Gubbins EJ, Briggs CJ, Schreiber FJ, Richards S, Jacobs JK, Eckert RD, Renzulli J S (2004) Reading instruction for talented readers: case studies documenting few opportunities for continuous progress. *Gifted Child Quarterly* 48: 315.

Richards MRE, Omdal SN (2007) Effects of tiered instruction on academic performance in a secondary science course. *Journal of Advanced Academics (JSGE)* 18: 424-453.

- *Ryan MJ, Geake JG (2003) A vertical mathematics curriculum for gifted primary students. *Australasian Journal of Gifted Education* 12: 31-41.
- Sarouphim KM (2003) *DISCOVER in middle school: identifying gifted minority students*. Paper presented at: *Annual Meeting of the American Educational Research Association*, Chicago, 21-25 April.
- Shaunessy E, Karnes FA, Cobb Y (2004) Assessing potentially gifted students from lower socioeconomic status with nonverbal measures of intelligence. *Perceptual and Motor Skills* 98: 1129-1138.
- Sheehan B (2000) *A study of maximizing the learning potentials of exceptionally gifted eleventh grade students in an advanced track class*. Master's dissertation: Saint Xavier University.
- Smyth E, Ross JA (1999) Developing leadership skills of pre-adolescent gifted learners in small group settings. *Gifted Child Quarterly* 43: 204-211.
- Stamps LS (2004) The effectiveness of curriculum compacting in first grade classrooms. *Roeper Review* 27: 31.
- *Stoeger H, Ziegler A (2005) Evaluation of an elementary classroom self-regulated learning program for gifted math underachievers. *International Education Journal* 6: 261-271.
- Subhi T (1999) The impact of LOGO on gifted children's achievement and creativity. *Journal of Computer Assisted Learning* 15: 98-108.
- Tal R T, Miedijensky S (2005) A model of alternative embedded assessment in a pull-out enrichment program for the gifted. *Gifted Education International* 20: 166-186.
- Teo CT, Quah ML (1999) The knowledge, volition and action programme in Singapore: the effects of an experimental intervention programme on high ability achievement. *High Ability Studies* 10: 23-35.
- Trevallion D (2004) Underachievement: a model for improving academic direction in schools. In: Jeffery PL (ed.) *AARE 2004 Conference Papers*. Melbourne Vic: Australian Association for Research in Education.
- Tyler-Wood TL, Mortenson M, Putney D, Cass MA (2000) An effective mathematics and science curriculum option for secondary gifted education. *Roeper Review* 22: 266-269.
- VanTassel-Baska J, Bass G, Ries R, Poland D, Avery LD (1998) A national study of science curriculum effectiveness with high ability students. *Gifted Child Quarterly* 42: 200-211.
- VanTassel-Baska J, Avery LD, Little C, Hughes C (2000) An evaluation of the implementation of curriculum innovation: the impact of the William and Mary units on schools. *Journal for the Education of the Gifted* 23: 244-272.
- *VanTassel-Baska J, Zuo L, Avery LD, Little CA (2002) A curriculum study of gifted student learning in the language arts. *Gifted Child Quarterly* 46: 30-44.
- *Walker DE (2005) *Increasing verbal participation of gifted females through the utilization of multiple intelligence theory*. Doctoral dissertation: Nova Southeastern University.
- *Webb NM, Nemer KM, Zuniga S (2002) Short circuits or superconductors? Effects of group composition on high-achieving students' science assessment performance. *American Educational Research Journal* 39: 943-989.
- *Wood D (1999) Factors involved in the establishment and development of a special primary school class for academically gifted students: a case study. Master's dissertation: Charles Stuart University.
- Yeung AS, Chow APY, Chow PCW, Liu WP (2005) Self-concept of gifted students: the reddening and blackening effects. Paper presented at: *Annual Meeting of the Australian Association for Research in Education*, Sydney, 27 November-1 December.
- Yoo JE, Moon SM (2006) Counselling needs of gifted students: an analysis of intake forms at a university-based counselling centre. *Gifted Child Quarterly* 50: 52-61.
- *Ysseldyke J, Tardrew S, Betts J, Thill T, Hannigan E (2004) Use of an instructional management system to enhance math instruction of gifted and talented students. *Journal for the Education of the Gifted* 27: 293-319.
- Zeidner M, Schleyer EJ (1999) Evaluating the effects of full-time vs part-time educational programs for the gifted: affective outcomes and policy considerations. *Evaluation and Program Planning* 22: 413-427.

Appendix 7: Authorship of this report

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Conflict of interest

There were no conflicts of interest for any members of the Review Group.

Acknowledgements

This review is funded by the DCSF (Department for Children, Schools and Families).

We would like to acknowledge the research administrators, Marzenna Hodgekinson and Ada Mau, who contributed to this project.

APPENDIX 7.1 Classroom Quality Standards

Classroom Quality Standards in Gifted and Talented Education: Layer 1

Features	Prompts	Evaluation of Practice in relation to providing challenge for all learners			Evaluation of Practice in relation to providing challenge for G and T learners			Evidence to support self-evaluation of practice in relation to G and T learners
		Unsure	Quite well	Very well	Unsure	Quite well	Very well	
1 Conditions for Learning	<ul style="list-style-type: none"> How well do learning conditions ensure that learners are healthy and safe and enjoy their learning? How well is learning linked to the working world beyond the classroom allowing learners to make informed connections and decisions for learning. How well are learners enabled and challenged to demonstrate, use and develop their gifts and talents to make a positive contribution? 							
2 Development of Learning	<ul style="list-style-type: none"> How well is an understanding of how learning develops applied and used to support pupils' learning? How well are learners enabled to take charge of their learning and become self-regulating? 							
3 Knowledge of Subjects and Themes	<ul style="list-style-type: none"> How well are knowledge and skills of subjects and themes used to stimulate and challenge learners? How well is learning developed through specific subject knowledge and skills? How well is the curriculum adapted to address the needs of different learners? 							
4 Understanding Learners' Needs	<ul style="list-style-type: none"> How well are the emotional and social needs of the learner identified and addressed to raise achievement? How well are barriers to learning identified and removed How well is learners' progress assessed, monitored and evaluated in order to raise achievement? How well are the training and learning needs of teachers and classroom assistants identified in order that they meet the needs of learners? 							
5 Planning	<ul style="list-style-type: none"> How well does planning build on learners' prior knowledge and attainment? How well is planning used to improve outcomes for all learners? How well is a range of different teaching and learning styles and strategies used in planning activities to ensure extension, enrichment and progression? 							
6 Engagement with Learners and Learning	<ul style="list-style-type: none"> How well are teaching and learning skills and resources deployed to extend, inspire and challenge learners? How are available organisational structures and settings within the school used to identify potential and raise achievement? 							
7 Links Beyond the Classroom	<ul style="list-style-type: none"> How well are learning, and opportunities for learning, beyond the classroom encouraged, known about, built upon and celebrated? How well are parents and carers included in supporting and developing their children's learning? 							

Classroom Quality Standards in Gifted and Talented Education: Layer 2

Feature and Prompts	Entry	Developing	Exemplary
<p>1. Conditions for Learning</p> <p>How well do learning conditions ensure that learners are healthy and safe, enjoy their learning?</p>	<p>G and T learners enjoy their education, in a safe and healthy environment which is free from adverse peer pressure.</p> <p>Stimulating and well-organised classrooms support achievement.</p> <p>G and T learners show self-discipline and respect for others.</p>	<p>G and T learners are highly motivated, and feel confident and secure in sharing their experiences with others.</p> <p>They evaluate and influence their own learning, and apply themselves well to achieve good progress.</p>	<p>G and T learners confidently develop new ideas and ways of working which help them achieve excellent progress.</p> <p>They are able to direct their own learning and achieve excellent progress free from institutional, social or emotional pressure on their performance.</p> <p>Creative and lateral thinking routinely informs their learning.</p>
<p>How well is learning linked to the working world beyond the classroom allowing learners to make informed connections and decisions for learning?</p>	<p>Activities and tasks enable G and T learners to link their learning in a relevant way with the practical world outside the classroom.</p> <p>They begin to regularly consider the economic, ecological social and moral implications of aspects of life and learning.</p>	<p>Evidence and Next Steps:</p> <p>G and T learners are prepared well for adult life.</p> <p>Learning is regularly linked to the world of work.</p> <p>They evaluate the wider implications of aspects of their learning on others and regularly consider the global implications of social, political, ethical and moral decision making in their learning.</p>	<p>Evidence and Next Steps:</p> <p>G and T learners successfully, apply their learning to study global problems.</p> <p>They contribute productively to projects linked to the ecological and economic world.</p> <p>They routinely and critically analyse their learning in relation to social, political, ethical and moral matters.</p>
<p>How well are learners enabled and challenged to demonstrate, use and develop their gifts and talents to make a positive contribution?</p>	<p>G and T learners have extended opportunities to experience a wide and diverse range of activities.</p> <p>They explore, reflect upon and discuss their work.</p> <p>They contribute positively to lessons and to the school community.</p> <p>Achievement and commitment in relation to past performance is recognised.</p>	<p>Evidence and Next Steps:</p> <p>Opportunities are provided for every G and T learner to develop identified abilities and skills and to discover new areas of talent.</p> <p>The classroom ethos values creativity, and encourages learners to use it to improve achievement.</p>	<p>Evidence and Next Steps:</p> <p>There is an expectation that every G and T learner will have the highest aspirations for themselves and for the school community.</p> <p>Opportunities ensure G and T learners consistently demonstrate exceptional achievement.</p>

Feature and Prompts	Entry	Developing	Exemplary
<p>2. Development of Learning</p> <p>How well is an understanding of how learning develops applied and used to support pupils' learning?</p>	<p>Activities and tasks support personalised learning by identifying and providing for each G and T learner's specific ways of learning.</p> <p>There is provision for collaborative working, individual study and teacher-directed problem solving.</p> <p>Teachers and other experts model and demonstrate effective ways to learn.</p>	<p>G and T learners are encouraged and supported to explore alternative ways of learning, and to develop both team and leadership skills.</p> <p>Regular opportunities are provided to use thinking and problem solving skills, as well as creative and interpretative approaches.</p>	<p>There is strong understanding of how G and T learners achieve excellent performance and of the range of activities and techniques which contribute to high attainment.</p> <p>There is widespread and sustained use of critical thinking skills and problem solving together with regular opportunities to lead and influence others.</p> <p>Learners select and make decisions about which strategies to use to improve their achievement.</p>
<p>How well are learners enabled to take charge of their own learning and become self-regulating?</p>	<p>G and T learners work independently and in groups.</p> <p>They develop an understanding of their personal learning preferences, as well as their strengths and weaknesses. They are given regular opportunities to reflect upon and discuss ways to influence and improve their learning.</p>	<p>There are increased opportunities for learner independence.</p> <p>G and T learners use initiative and independent thinking to deviate creatively from planned activity.</p> <p>Established self-review of all aspects of progress in learning informs the setting of personal targets.</p>	<p>G and T learners follow their own lines of enquiry and critically evaluate their own learning.</p> <p>They contribute to improving their curriculum and to promoting the learning of others.</p>
<p>3. Knowledge of Subjects and Themes</p> <p>How well are subject knowledge and skills of subjects and themes used to stimulate and challenge Gifted and Talented learners?</p>	<p>G and T learners are motivated by confident, enthusiastic communication of the subject or theme using specialist guidance and support.</p>	<p>G and T learning is underpinned by secure subject knowledge and understanding of the subject or theme which enable challenging learning targets to be set.</p> <p>Professionals with more limited subject or theme knowledge and skill receive coaching to sharpen skills and strengthen the pool of expertise.</p>	<p>G and T learners are inspired to apply intellectual initiative and creative interpretation to subject study.</p> <p>Teachers' engagement with wider professional networks strengthens and extends subject expertise and knowledge of learning themes.</p>
<p>How well is learning developed through specific subject knowledge and skills?</p>	<p>G and T learners' subject knowledge and skills are identified, and then enhanced, through linking with other subjects and with experience from their own lives.</p>	<p>G and T learners' proficiency is strengthened by the use of higher order concepts and terminology in reading, researching and talking about the subject.</p>	<p>Clear progressions and connections between subjects are identified and adapted to G and T learners' needs and interests.</p> <p>G and T learners have frequent opportunities to demonstrate expert application of specific skills and knowledge, and this is supported through excellent coaching.</p>
<p>How well is the curriculum adapted to address the needs of different learners?</p>	<p>Specific needs and interests of G and T learners are identified and built on, skilfully using matched and optimum pupil groupings, comprehensive resources and a wide range of activities.</p>	<p>Comprehensive resources, challenging subject content and effective use of ICT develop and extend G and T learners' subject skills and knowledge.</p>	<p>G and T learners confidently use subject specific and cross curricular skills in independent research which is well supported by resources.</p>

Feature and Prompts	Entry	Developing	Exemplary
<p>4. Understanding Learners' Needs</p> <p>How well are the emotional and social needs of the learner identified and addressed?</p>	<p>Accurate identification of G and T learners is informed through a wide variety of provision experiences.</p> <p>Learners' academic, social and emotional needs are recognised and met in a sensitive way. Underachievement is tackled and exceptional ability/talent provided for through effective progress tracking and staff consultation.</p>	<p>Identification is made against criteria which aid discovery of previously unrecognised or latent ability and talent. Identification is shared with learners and their parents/carers.</p>	<p>Identification and review of G and T learners use multiple criteria, performance and value-added data.</p> <p>Provision and its impact are regularly reviewed by professionals working collaboratively.</p>
<p>How well are barriers to learning identified and removed?</p>	<p>There is a comprehensive and inclusive response to the needs of each learner and recognition that there may be outstanding aptitude in one area and difficulty in others. Influences on the G and T learner from outside the school are understood and steps taken to minimise negative factors. Cultural differences are recognised and respected.</p>	<p>There is routine identification of dual or multiple exceptionality.</p> <p>There is targeted support to groups under-represented as G and T learners (e.g. LAC, EAL, BME). Mentoring G and T learners' supports promotion of positive self worth.</p>	<p>Comprehensive strategies counteract adverse social, organisational and curriculum pressures.</p> <p>Specialised, focused support is provided for G and T underachievers and those with exceptional ability or talent.</p>
<p>How well is Gifted and Talented learners' progress assessed, monitored and evaluated in order to raise achievement?</p>	<p>Assessment and evaluation of performance is learner, as well as teacher led.</p> <p>It is recognised that G and T learners need a different starting point for their work.</p> <p>When learners change schools, classes, settings or teachers there is good recognition of prior learning and good practical use is made of transfer information.</p> <p>Assessment and evaluation outcomes are made known to G and T learners and their parents/carers.</p>	<p>G and T learners assess the impact of tasks and activities on development of their knowledge and understanding. Potential and actual performance is evaluated in all learning contexts.</p> <p>G and T learners' self-assess, making use of oral and written feedback.</p> <p>Their self-assessment informs planning and setting of challenging future targets.</p>	<p>Classroom practice regularly requires G and T learners to reflect on progress against their targets and to determine the direction of their own learning.</p> <p>Assessment uses predictive data (local and national) from other subject areas.</p>
<p>How well are the training and learning needs of teachers and classroom assistants identified in order that they can meet the needs of learners?</p>	<p>The CPD needs of adults are met by closely matching training and coaching opportunities to the identified needs of G and T learners, using peer observation, professional consultation and mentoring.</p> <p>All professionals seek opportunities to identify and develop professional knowledge and expertise.</p>	<p>Professional knowledge and subject expertise are shared in designing coaching and professional development opportunities, including support in induction.</p> <p>Collective groups of staff have a shared understanding of G and T learners' needs.</p>	<p>Professionals share their knowledge (including from action research) and their analysis of what good G and T practice looks like.</p> <p>This contributes to enhanced provision for G and T learners in a 'community of learning' of teachers, parents/carers and pupils.</p>
		<p>Evidence and Next Steps</p>	

Feature and Prompts	Entry	Developing	Exemplary
<p>5. Planning</p> <p>How well does planning build on Gifted and Talented learners' prior knowledge and attainment</p>	<p>Past learning experiences and performance of G and T learners are systematically analysed in consultation with learner and parents/carers.</p> <p>Future targets for development are planned to meet identified needs.</p>	<p>Professional collaboration in the systematic exchange of information and transition data ensures that G and T learners' progression in learning is carefully planned for, particularly whenever a transfer or change of setting takes place.</p>	<p>Learning targets are planned to G and T learners' stage of learning rather than chronological age.</p> <p>Teachers and other adults routinely share strategies to improve meeting learner needs and well-being.</p>
<p>How well is planning used to improve outcomes for all learners?</p>	<p>Assessment and evaluation of achievement across all aspects of learning inform future planning and support. Clear objectives for learning determine a balanced range of activities, which are focused on improving outcomes and which reflect individual learners' interests, learning styles and potential.</p>	<p>Planning for G and T learners assures progressive development of higher order learning skills as well as space and opportunity for private enquiry.</p> <p>There is breadth and variety for learners to reveal previously unrecognised gifts and talents.</p>	<p>Planning is provisional and flexible to the progress and style of learners.</p> <p>Resources challenge G and T learners to explore new areas, develop new skills, and to cross subject disciplines.</p>
<p>How well is a range of different teaching and learning styles and strategies used in planning activities to ensure extension, enrichment and progression?</p>	<p>Activities for G and T learners offer increasing complexity and depth, and add breadth through a range of content, tasks and resources.</p> <p>Tasks are qualitatively different rather than merely longer</p>	<p>Activities for G and T learners are planned to accelerate in pace, and to expand their understanding of what makes for effective learning.</p> <p>There are structured opportunities to experiment and take risks.</p> <p>Lesson plans make reference to personalised tasks for G and T learners.</p>	<p>Activities are planned to prompt G and T learners to collaborate and innovate.</p> <p>G and T learners are involved in planning and allocating their own tasks based on an evaluation of holistic learning needs.</p>
Evidence and Next Steps:		Evidence and Next Steps:	

<p>6. Engagement with learning and learners</p> <p>How well are teaching and learning skills and resources deployed to extend, inspire and challenge Gifted and Talented learners?</p>	<p>Tasks and activities for G and T learners have clear learning objectives and involve focused discussion and questioning. Teachers and learning assistants deploy a wide repertoire of skills and resources (including ICT) to raise G and T achievement.</p>	<p>Activity and task intentions are clear and regularly reinforced.</p> <p>There is a high level of productive and stimulating interaction between and with G and T learners, including challenging use of language.</p> <p>A personalised learning approach uses focused intervention based on an understanding that G and T learners are all different and therefore require a variety of pace, depth and complexity of task.</p>	<p>Lesson and activity intentions are positively influenced by learners and teaching assistants who are pro-actively involved in planning and lesson delivery.</p> <p>Secure and sustained processes assure the development and sharing of new knowledge about how G and T learners learn.</p> <p>Sustained progress, attainment and achievement for G and T learners are secured above local and national bench marks.</p>
<p>Evidence and Next Steps:</p>			
<p>How are available organisational structures and settings within the school used to identify potential and raise achievement?</p>	<p>Pupil grouping is informed by ongoing assessment and is planned to provide G and T learners with challenge and support in peer interaction.</p> <p>Groups are structured to enable effective teacher and teaching assistant engagement and collaboration.</p> <p>There are opportunities for G and T learners to develop team and leadership roles.</p>	<p>Grouping is flexible and creative (e.g. not year group specific) and enables learners to join subject groups which promote optimum learning.</p>	<p>Grouping is designed around G and T learners' identified needs.</p> <p>Use is made of other learning settings (e.g. other schools or colleges) when these can provide additional opportunities.</p> <p>Group dynamics are well established so that G and T learners quickly organise learning tasks.</p> <p>They elect and support leaders and team members.</p>
<p>Evidence and Next Steps:</p>			
<p>7. Links Beyond the Classroom</p> <p>How well are learning, and opportunities for learning, beyond the classroom encouraged, known about, built upon and celebrated?</p>	<p>G and T learners access homework that extends interests and raises achievement.</p> <p>Those with particular talents or interests are informed about and supported in accessing, specific activities, events or opportunities.</p> <p>A variety of approaches, notably ICT are used to help G and T learners extend their learning beyond the classroom.</p>	<p>Links between in- and out-of-school activities ensure coherent and broadening experience.</p> <p>G and T learners are helped to explore new and wider learning and are informed about regional & national opportunities (e.g. summer schools).</p> <p>Those who would benefit are supported to attend.</p>	<p>Sustained and secure links are established and maintained with external agencies.</p> <p>These links facilitate an extension of student voice, and support achievement of 'positive contribution' by G and T learners both within the school and wider community.</p>
<p>Evidence and Next Steps:</p>			
<p>How well are parents and carers included and supported in developing their children's learning?</p>	<p>Parents/carers of G and T learners have regular opportunities to discuss the progress and achievement of their children both in and out of school.</p> <p>Ways are suggested in which the home and school may contribute, jointly support and develop learners' progress.</p>	<p>There is an induction programme for the parents/carers of G and T learners.</p> <p>Links are in place to engage and support hard-to reach parents/ carers.</p> <p>These links ensure that learners do not miss out on opportunities both within and outside school.</p>	<p>The insights and skills of G and T learners' parents/ carers are identified and used creatively within specific learning settings to support their children.</p> <p>Strong links with the school including parental networks, workshops and services are promoted and tailored to achieve optimum levels of support.</p>
<p>Evidence and Next Steps:</p>			

Appendix 7.2: Classroom Quality Standards guidance notes

Conditions for learning

Studies in this category would examine how school and classroom contexts actively encourage learners to explore their gifts and talents both within and beyond the classroom through appropriate challenge, e.g. encouraging student creativity; interventions that encourage learners to consider the ethical implications of decision-making; impact of peer pressure.

Development of learning

Studies in this category would examine methods that develop pupils' ability to take control of and reflect on their own learning, e.g. studies that use interventions such as collaborative working; individual study; teacher-directed problem solving; modelling and demonstration.

Knowledge of subjects and themes

Studies in this category would examine how subject content is used to stimulate and challenge learners, e.g. use of higher order concepts and terminology; connections between subjects; adapting the curriculum; independent research.

Understanding learners needs

Studies in this category would examine the heterogeneous and wide-ranging nature of gifted and talented learners, e.g. inclusive identification strategies; diverse learning needs; comprehensive teaching methods.

Planning

Studies in this category would examine how teachers assess and evaluate learning to inform and develop next steps, e.g. appropriate individualised challenge(s); differentiation in terms of subject content, tasks and resources; attainment; interests; learning styles.

Engagement with learners and learning

Studies in this category would examine how people, resources, settings and the organisation of learners and learning are used to engage learners and progress learning, e.g. setting; streaming; flexible grouping; challenging use of language; task design.

Links beyond the classroom

Studies in this category would examine how well learning and opportunities for learning beyond the classroom are encouraged, e.g. homework; lunchtime activities; clubs which provide additional resources (ICT); involvement of parents/carers; off-site activities; summer schools.

Appendix 7.3: Search Strategy

The following electronic databases and grey literature sources were searched (1998-November 2007):

ASSIA
Australian Education Index (AEI)
British Education Index (BEI)
ERIC
ISI Social Science Citation Index
ZETOC
PsycInfo
PsycArticles
DCSF
Journal of Advanced Academics (JSGE)
High Ability Studies Journal
Google Scholar

The following sources have been searched with no results:

CERUK (using simple search strings)
IBSS (In OVID)
REEL - The Research Evidence in Education Library
WWC - What Works Clearing House
Gifted Education International

Specialist agencies were invited to submit research reports and published articles to the review. There were no successful results from this research method.

In order to match the search methodology and findings with the National Quality Standards we have undertaken a mapping of both the Institutional Quality Standards (IQS) and the Classroom Quality Standards (CQS) to guide the search terms. This will link primary key words and 'secondary' terms that may be used to organise findings or to locate these in relation to either document.

The initial protocol search keywords were as follows:

Table 7.1 Initial protocol keywords

children	gifted and talented	intervention	outcome
youth*	gift*	Intervene*	outcome
student*	talent*	evaluate*	improve*
pupil*	able	program*	change
adolescent*	exception*	method	result*
teen*	learn*	activity	measure*
child*	Intelligent*	train*	effect
learn*	skill*	school	score*
	capable	accelerate*	achieve*
	accomplish*	barrier*	assess*
	clever	higher order	attain*
	precocious	creative	
		classroom	
		implement*	
		identify*	
		Include*	
		independent	
		peer	
		personalise*	
		critical	
		pace	
		provide*	
		educate*	
		tutor*	
		stream*	
		select*	

* means the term will be explored in singular, plural and other related forms.

However, these were refined to produce searches of greater validity and quality using a process of piloting and initial searching.

Below are the final search strategies used for each search database/source:

Dialog datastar - BEI and AEI

youth\$ OR student\$ OR pupil\$ OR teen\$ OR child\$ OR learner OR learners OR underachieve\$ OR adolescent\$ AND

Gift\$ OR talent\$ OR able OR genius OR intelligent\$ OR clever OR precocious OR capable OR potential OR accomplish AND

Interven\$ OR program\$ OR method OR activity OR barrier\$ OR higher ADJ order OR creative OR classroom OR identify\$ OR independent OR peer OR personalise\$ OR pace OR provi\$ OR critical OR educat\$ OR stream\$ OR select\$ OR tutoring OR inclu\$ AND

Outcome\$ OR improve\$ OR result\$ OR measure\$ OR effect OR score\$ OR achieve\$ OR assess\$ OR attain\$ OR change

\$ means the term will be explored in singular, plural and other related forms.

NB. Search was originally about 16,000 using the search terms stated in the original protocol, so the use of

wildcards was refined to reduce the main ‘noise’ apparent in the search results. This cut out about 8,000 hits from the search.

CSA - ERIC and ASSIA

youth* OR student* OR pupil* OR teen* OR child* OR learner OR learners OR underachieve* OR adolescent*
AND

Gift* OR talent* OR able OR genius OR intelligent* OR clever OR precocious OR capable OR potential OR accomplish

AND

Interven* OR program* OR method OR activity OR barrier* OR higher ADJ order OR creative OR classroom OR identify* OR independent OR peer OR personalise* OR pace OR provi* OR critical OR educat* OR stream* OR select* OR tutoring OR inclu*

AND

Outcome* OR improve* OR result* OR measure* OR effect OR score* OR achieve* OR assess* OR attain* OR change

** means the term will be explored in singular, plural and other related forms.*

ISI social science citation index and IBSS

youth* OR student* OR pupil* OR teen* OR child* OR learner OR learners OR underachieve* OR adolescent*
AND

Gift* OR talent* OR able OR genius OR intelligent* OR clever OR precocious OR capable OR accomplish

AND

Interven* OR program* OR method OR activity OR barrier* OR higher ADJ order OR creative OR classroom OR identify* OR independent OR peer OR personalise* OR pace OR provi* OR critical OR educat* OR stream* OR select* OR tutoring OR inclu*

AND

Outcome* OR improve* OR result* OR measure* OR effect OR score* OR achieve* OR assess* OR attain* OR change

** means the term will be explored in singular, plural and other related forms.*

NB. The original search had about 9,000 hits. After experimenting, we found that the word ‘potential’ was making a difference of about 6,000 hits, therefore we decided to not use this keyword.

EBSCO - psycINFO and psycARTICLES

Student? OR pupil? OR learner OR learners

AND

Gift? OR talent? OR able

AND

Interven? OR educat?

AND

Outcome?

? means the term will be explored in singular, plural and other related forms.

ZETOC and CERUK and JSTOR

Gifted AND talented AND students

Gifted AND talented AND pupils

Highly AND able AND students

Highly AND able AND pupils

More AND able AND students

More AND able AND pupils

High AND achieving AND students

- 56 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

High AND achieving AND pupils

REEL, DCSF, JAA (JSGE), WWC, Gifted Education Journal and High Ability Studies Journal

Gifted Talented

Google Scholar

Gifted Talented Accomplish

(The first 100 hits from this search were screened and the relevant hits were uploaded on to EPPI-Reviewer and were then put through the screening process again)

Where possible searches were limited to these search parameters:

ENGLISH

SINCE 1998

Appendix 7.4: Quality Standards Tool (CQS and IQS)

Section A: CQS - Classroom Quality Standards

A.1 The standards to which this study relates (tick all that apply)

A.1.1 Conditions for learning

How well do learning conditions ensure that learners are healthy and safe?

How well do learners enjoy and achieve in their learning?

How well is learning structured to ensure that learners can make a positive contribution and make informed decisions about their future?

How well are learners enabled to use, demonstrate and develop their gifts and talents?

A.1.2 Development of learning

How well is knowledge of learning development applied and adapted to support the development of learning?

How well are learners enabled to take charge of their learning and become self-regulating?

A.1.3 Understanding learners' needs

How well are the academic, emotional and social needs of the learner identified and addressed to raise achievement?

How well are barriers to learning identified and removed? How well are learners challenged?

How well is learners' progress assessed, monitored and evaluated in order to raise achievement?

How well are the training and learning needs of adults identified in order that they meet the needs of learners?

A.1.4 Knowledge of subjects and themes

How well are subject knowledge and skills used to stimulate and challenge learners?

How well is learner proficiency developed through specific subject knowledge and skills?

How well is the curriculum adapted to address the needs of different learners?

A.1.5 Planning

How well does planning build on learners' prior knowledge and attainment?

How well is planning used to improve outcomes for all learners?

How well are activities planned that are qualitatively different and ensure extension, enrichment and progression?

A.1.6 Engagement with learners and learning

How well are teaching and learning skills and resources deployed to extend, inspire and challenge learners?

How are available organisational structures and settings within the school used to identify potential and raise achievement?

A.1.7 Links beyond the classroom

How well are learning and opportunities for learning beyond the classroom encouraged, known about, built upon and celebrated?

How well are parents and carers included in supporting and developing their children's learning?

Section B: IQS - Institutional Quality Standards

B.1 The standards to which this study relates (tick all that apply)

B.1.1 Identification

- i) The school/college has learning conditions and systems to identify gifted and talented pupils in all year groups and an agreed definition and shared understanding of the meaning of 'gifted and talented' within its own, local and national contexts*
- ii) An accurate record of the identified gifted and talented population is kept and updated.*
- iii) The identified gifted and talented population broadly reflects the school/college's social and economic composition, gender and ethnicity*

B.1.2 Effective provision in the classroom

- i) The school/college addresses the different needs of the gifted and talented population by providing a stimulating learning environment and by extending the teaching repertoire*
- ii) Teaching and learning is differentiated and delivered through both individual and group activities*
- iii) Opportunities exist to extend learning through new technologies*

B.1.3 Standards

- i) Levels of attainment and achievement for gifted and talented pupils are comparatively high in relation to the rest of the school/college population and are in line with those of similar pupils in similar schools/colleges*
- ii) Self-evaluation indicates that gifted and talented provision is satisfactory*
- iii) Schools/colleges gifted and talented education programmes are explicitly linked to the achievement of SMART outcomes and these highlight improvements in pupils' attainment and achievement*

B.1.4 Enabling curriculum entitlement and choice

Curriculum organisation is flexible, with opportunities for enrichment and increasing subject/topic choice. Pupils are provided with support and guidance in making choices

B.1.5 Assessment for learning

- i) Processes of data analysis and pupil assessment are employed throughout the school/college to plan learning for gifted and talented pupils*
- ii) Dialogue with pupils provides focused feedback which is used to plan future learning*
- iii) Self and peer assessment, based on clear understanding of criteria, are used to increase pupils' responsibility for learning*

B.1.6 Transfer and transition

i) Shared processes, using agreed criteria, are in place to ensure the productive transfer of information from one setting to another (i.e. from class to class, year to year and school/college to school/college)

B.1.7 Leadership

A named member of the governing body, Senior Management Team and the lead professional responsible for Gifted and Talented education have clearly directed responsibilities for motivating and driving gifted and talented provision. The Head teacher actively champions gifted and talented provision

B.1.8 Policy

B.1.9 School/college ethos and pastoral care

- i) The school/college sets high expectations, recognises achievement and celebrates the successes of all its pupils*
- ii) The school/college identifies and addresses the particular social and emotional needs of gifted and talented pupils in consultation with pupils, parents and carers*

B.1.10 Staff development

i) Staff have received professional development in meeting the needs of gifted and talented pupils and Talented education has received appropriate professional development.

B.1.11 Resources

Provision for gifted and talented pupils is supported by appropriate budgets and resources

B.1.12 Monitoring and evaluation

- i) Subject and phase audits focus on the quality of teaching and learning for gifted and talented pupils. Whole school/college targets are set using prior attainment data*
- ii) Elements of provision are planned against clear objectives within effective whole-school self-evaluation processes*

B.1.13 Engaging with the community, families and beyond

i) Parents/carers are aware of the school's/college's policy on gifted and talented provision, contribute to its identification processes and are kept informed of developments in gifted and talented provision, including through the School Profile

ii) The school/college shares good practice and has some collaborative provision with other schools, colleges and the wider community

B.1.14 Learning beyond the classroom

i) There are opportunities for pupils to learn beyond the school/college day and site (extended hours and out-of-school activities)

ii) Pupils participate in dedicated gifted and talented activities (e.g. summer schools) and their participation is recorded

Appendix 7.5: EPPI-Centre data-extraction and coding tool for education studies - gifted and talented

Section A: Administrative details

Use of these guidelines should be cited as: EPPI-Centre (2003) *Review Guidelines for Extracting Data and Quality Assessing Primary Studies in Educational Research*. Version 0.9.7. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

A.1 Name of the reviewer	A.1.1 Details
A.2 Date of the review	A.2.1 Details
A.3 Please enter the details of each paper which reports on this item/study and which is used to complete this data-extraction. <i>(1): A paper can be a journal article, a book, or chapter in a book, or an unpublished report.</i> <i>(2): This section can be filled in using bibliographic citation information and keywords 1, 2, and 4 from the EPPI-Centre Core Keywording Strategy (V0.95)</i>	A.3.1 Paper (1) <i>Fill in a separate entry for further papers as required.</i> A.3.2 Unique Identifier: A.3.3 Authors: A.3.4 Title: A.3.5 Paper (2) A.3.6 Unique Identifier: A.3.7 Authors: A.3.8 Title:
A.4 Main paper. Please classify one of the above papers as the 'main' report of the study and enter its unique identifier here. <i>NB(1): When only one paper reports on the study, this will be the 'main' report.</i> <i>NB(2): In some cases the 'main' paper will be the one which provides the fullest or the latest report of the study. In other cases the decision about which is the 'main' report will have to be made on an arbitrary basis.</i>	A.4.1 Unique Identifier:
A.5 Please enter the details of each paper which reports on this study but is NOT being used to complete this data-extraction. <i>NB (1): A paper can be a journal article, a book, or chapter in a book, or an unpublished report.</i> <i>NB (2): This section can be filled in using bibliographic citation information and keywords 1, 2, and 4 from the EPPI-Centre Core Keywording Strategy (V0.95).</i>	A.5.1 Paper (1) <i>Fill in a separate entry for further papers as required.</i> A.5.2 Unique Identifier: A.5.3 Authors: A.5.4 Title: A.5.5 Paper (2) A.5.6 Unique Identifier: A.5.7 Authors: A.5.8 Title:

<p>A.6 If the study has a broad focus and this data-extraction focuses on just one component of the study, please specify this here.</p>	<p>A.6.1 Not applicable (whole study is focus of data-extraction) A.6.2 Specific focus of this data-extraction (please specify)</p>
<p>A.7 Identification of report (or reports) Please use AS MANY KEYWORDS AS APPLY.</p>	<p>A.7.1 Citation <i>Please use this keyword if the report was identified from the bibliographic list of another report.</i></p> <p>A.7.2 Contact <i>Please use this keyword if the report was found through a personal/professional contact.</i></p> <p>A.7.3 Handsearch <i>Please use this keyword if the report was found through handsearching a journal.</i></p> <p>A.7.4 Unknown <i>Please use this keyword if it is unknown how the report was found.</i></p> <p>A.7.5 Electronic database <i>Please use this keyword if the report was found through searching on an electronic bibliographic database.</i> <i>In addition, if the report was found on an electronic database please use ONE OR MORE of the following keywords to indicate which database it was found on:</i></p> <p><i>aidsline</i> <i>For AIDSLINE</i></p> <p><i>appsocscience</i> <i>For Applied Social and Abstracts</i></p> <p><i>artscitation</i> <i>For the Arts and Humanities Citation Index</i></p> <p><i>aei</i> <i>For the Australian Education Index</i></p> <p><i>bei</i> <i>For the British Education Index</i></p> <p><i>bibliomap</i> <i>For the EPPI-Centre's specialist register of research</i></p> <p><i>cabhealth</i> <i>For CABhealth</i></p> <p><i>cei</i> <i>For the Canadian Education Index</i></p> <p><i>ceruk</i> <i>For CERUK</i></p> <p><i>cinahl</i> <i>For the CINAHL</i></p> <p><i>cochranelib</i> <i>For the Cochrane Library</i></p> <p><i>dissabs</i> <i>For Dissertation Abstracts</i></p> <p><i>dislearn</i> <i>For the Distance Learning Database</i></p> <p><i>eduabs</i> <i>For Education Abstracts</i></p>

62 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

educationline
For Education-line
embase
For EMBASE
eric
For ERIC
healthplan
For Health Planning
healthpromis
For HealthPromis
intbibsocsci
For the International Bibliography of the Social Sciences
langbehrabs
For Linguistic and Language Behaviour Abstracts
medline
For MEDLINE
psycinfo
For PsycINFO
regard
For REGARD
sigle
For SIGLE
socscicitation
For the Social Science Citation Index
socservabs
For the Social Services Abstracts
socioabs
For Sociological Abstracts
spectr
For the Social, Psychological, Educational and Criminological Trials Register

A.8 Status

Please use ONE keyword only

A.8.1 Published
Please use this keyword if the report has an ISBN or ISSN number.
A.8.2 Published as a report or conference paper
Please use this code for reports which do not have an ISBN or ISSN number (e.g. 'internal' reports; conference papers).
A.8.3 Unpublished
Please use this keyword for reports which do not have an ISBN or ISSN number (e.g. 'internal' reports; conference papers).

A.9 Language (please specify)

A.9.1 Details of Language of report
Please use AS MANY KEYWORDS THAT APPLY.
If the name of the language is specified/known, then please use the name as a keyword. For example:
Dutch
English
French
If non-English and you cannot name the language:
non English

Section B: Study Aims and Rationale

<p>B.1 What are the broad aims of the study?</p> <p>Please write in authors' description if there is one. Elaborate if necessary, but indicate which aspects are reviewers' interpretation. Other, more specific questions about the research questions and hypotheses are asked later.</p>	<p>B.1.1 Explicitly stated (please specify)</p> <p>B.1.2 Implicit (please specify)</p> <p>B.1.3 Not stated/unclear (please specify)</p>
<p>B.2 What is the purpose of the study?</p> <p><i>N.B. This question refers only to the purpose of a study, not to the design or methods used.</i></p> <p><i>A: Description</i></p> <p><i>Please use this code for studies in which the aim is to produce a description of a state of affairs or a particular phenomenon, and/or to document its characteristics. In these types of studies there is no attempt to evaluate a particular intervention programme (according to either the processes involved in its implementation or its effects on outcomes), or to examine the associations between one or more variables. These types of studies are usually, but not always, conducted at one point in time (i.e. cross sectional). They can include studies such as an interview of head teachers to count how many have explicit policies on continuing professional development for teachers; a study documenting student attitudes to national examinations using focus groups; a survey of the felt needs of parents using self-completion questionnaires, about whether they want a school bus service.</i></p> <p><i>B: Exploration of relationships</i></p> <p><i>Please use this code for a study type which examines relationships and/or statistical associations between variables in order to build theories and develop hypotheses. These studies may describe a process or processes (what goes on) in order to explore how a particular state of affairs might be produced, maintained and changed.</i></p> <p><i>These relationships may be discovered using qualitative techniques, and/or statistical analyses. For instance, observations of children at play may elucidate the process of gender stereotyping, and suggest the kinds of interventions which may be appropriate to reduce any negative effects in the classroom. Complex statistical analysis may be helpful in modelling the relationships between parents' social class and language in the home. These may lead to the development of theories about the mechanisms of language acquisition, and possible policies to intervene in a causal pathway.</i></p> <p><i>These studies often consider variables such as social class and gender which are not interventions, although these studies may aid understanding, and may suggest possible interventions, as well as ways in which a programme design and implementation could be improved. These studies do not directly evaluate the effects of policies and practices.</i></p> <p><i>C: What works</i></p> <p><i>A study will only fall within this category if it measures effectiveness - i.e. the impact of a specific intervention or programme on a defined sample of recipients or subjects of the programme or intervention.</i></p> <p><i>D: Methods development</i></p> <p><i>Studies where the principle focus is on methodology.</i></p> <p><i>E: Reviewing/synthesising research</i></p> <p><i>Studies which summarise and synthesise primary research studies.</i></p>	<p>B.2.1 A: Description</p> <p>B.2.2 B: Exploration of relationships</p> <p>B.2.3 C: What works?</p> <p>B.2.4 D: Methods development</p> <p>B.2.5 E: Reviewing/synthesising research</p>

64 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

<p>B.3 Why was the study done at that point in time, in those contexts and with those people or institutions? <i>Please write in authors' rationale if there is one. Elaborate if necessary, but indicate which aspects are reviewers' interpretation.</i></p>	<p>B.3.1 Explicitly stated (please specify) B.3.2 Implicit (please specify) B.3.3 Not stated/unclear (please specify)</p>
<p>B.4 Was the study informed by, or linked to, an existing body of empirical and/or theoretical research? <i>Please write in authors' description if there is one. Elaborate if necessary, but indicate which aspects are reviewers' interpretation.</i></p>	<p>B.4.1 Explicitly stated (please specify) B.4.2 Implicit (please specify) B.4.3 Not stated/unclear (please specify)</p>
<p>B.5 Which of the following groups were consulted in working out the aims of the study, or issues to be addressed in the study? <i>Please write in authors' description if there is one. Elaborate if necessary, but indicate which aspects are reviewers' interpretation. Please cover details of how and why people were consulted and how they influenced the aims/issues to be addressed.</i></p>	<p>B.5.1 Researchers (please specify) B.5.2 Funder (please specify) B.5.3 Head teacher/senior management (please specify) B.5.4 Teaching staff (please specify) B.5.5 Non-teaching staff (please specify) B.5.6 Parents (please specify) B.5.7 Pupils/students (please specify) B.5.8 Governors (please specify) B.5.9 LEA/Government officials (please specify) B.5.10 Other education practitioner (please specify) B.5.11 Other (please specify) B.5.12 None/Not stated B.5.13 Coding is based on: Authors' description B.5.14 Coding is based on: Reviewers' inference</p>
<p>B.6 Do authors report how the study was funded?</p>	<p>B.6.1 Explicitly stated (please specify) B.6.2 Implicit (please specify) B.6.3 Not stated/unclear (please specify)</p>
<p>B.7 When was the study carried out? <i>If the authors give a year, or range of years, then put that in. If not, give a 'not later than' date by looking for a date of first submission to the journal, or for clues like the publication dates of other reports from the study.</i></p>	<p>B.7.1 Explicitly stated (please specify) B.7.2 Implicit (please specify) B.7.3 Not stated/unclear (please specify)</p>
<p>B.8 What are the study research questions and/or hypotheses? <i>Research questions or hypotheses operationalise the aims of the study. Please write in authors' description if there is one. Elaborate if necessary, but indicate which aspects are reviewers' interpretation.</i></p>	<p>B.8.1 Explicitly stated (please specify) B.8.2 Implicit (please specify) B.8.3 Not stated/unclear (please specify)</p>

Section C: Study policy or practice focus

C.1 What is/are the focus/foci of the study?	<ul style="list-style-type: none"> C.1.1 Assessment (please specify) C.1.2 Classroom management (please specify) C.1.3 Curriculum (see next question below) C.1.4 Equal opportunities (please specify) C.1.5 Methodology (please specify) C.1.6 Organisation and management C.1.7 Policy C.1.8 Teachers' careers (please specify) C.1.9 Teaching and learning (please specify) C.1.10 Teachers' professional development (please specify) C.1.11 Other (please specify) C.1.12 Coding based on: Author's description C.1.13 Coding based on: Reviewers' inference
C.2 What is the curriculum area, if any?	<ul style="list-style-type: none"> C.2.1 Art C.2.2 Business studies C.2.3 Citizenship C.2.4 Cross-curricular C.2.5 Design and technology C.2.6 Environment C.2.7 General C.2.8 Geography C.2.9 Hidden C.2.10 History C.2.11 ICT C.2.12 Literacy (first languages) C.2.13 Literacy (further languages) C.2.14 Literature C.2.15 Maths C.2.16 Music C.2.17 PSHE C.2.18 Phys. Ed. C.2.19 Religious education C.2.20 Science C.2.21 Vocational C.2.22 EAL - English as an Additional Language C.2.23 Out of hours C.2.24 Other (please specify) C.2.25 Coding is based on: Author(s)' description C.2.26 Coding is based on: Reviewer(s)' inference

66 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

<p>C.3 What is/are the educational setting(s) of the study?</p>	<p>C.3.1 Community centre C.3.2 Correctional institution C.3.3 Government department C.3.4 Higher education institution C.3.5 Home C.3.6 Independent school C.3.7 Local education authority C.3.8 Nursery school C.3.9 Other early years setting (please specify) C.3.10 Post-compulsory education institution C.3.11 Primary school C.3.12 Pupil referral unit C.3.13 Residential school C.3.14 Secondary School C.3.15 Special needs school C.3.16 Workplace C.3.17 Coding is based on: author(s)' description C.3.18 Coding is based on: reviewer(s)' inference</p>
<p>C.4 In which country or countries was the study carried out?</p> <p><i>Provide further details where relevant e.g. region or city</i></p>	<p>C.4.1 Explicitly stated (please specify) C.4.2 Not stated/unclear (please specify)</p>
<p>C.5 Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.</p> <p><i>The questions so far have asked about the aims of the study, but this may not fully capture what the study is about. Please specify or clarify here.</i></p>	

Section D: Actual sample

If there are several samples or levels of sample, please complete for each level

<p>D.1 Who or what is/are the sample in the study? Please use AS MANY codes AS APPLY to describe the nature of the sample of the report. Only indicate a code if the report specifically characterises the sample focus in terms of the categories indicated below</p>	<p>D.1.1 Learners <i>Please use this code if a population focus of the study is on pupils, students, apprentices, or other kinds of learners</i></p> <p>D.1.2 Senior management <i>Please use this code if a sample focus of the study is on those with responsibility in any educational institution for the strategic leadership and management of a whole organisation. This will include the person with ultimate responsibility for the educational institution under study. In the school setting, the term 'headteacher' is typically used ('principal' in the USA, Canada and Australia); the term 'principal' is often used in a college setting, the term 'vice-chancellor' in a university setting</i></p> <p>D.1.3 Teaching staff <i>Please use this code if a sample focus of the study is on staff who teach (or lecture) in a classroom/lecture-hall setting</i></p> <p>D.1.4 Non-teaching staff <i>Please use this code if a population focus of the study is on staff who do not teach, but whose role within the educational institution is administrative/organisational, e.g. equal opportunities coordinators, other support staff</i></p> <p>D.1.5 Other educational practitioners <i>Please use this code if the sample focus of the study includes representatives from other educational bodies, including interest/advisory groups; school governing bodies and parent support groups</i></p> <p>D.1.6 Government <i>Please use this code if the sample focus of the study is on representatives from government or governing bodies e.g. from the DfES (Department for Education and Skills), BECTA (British Educational Communications and Technology Agency), LSDA (learning and Skills Development Agency, formerly FEDA - Further Education Development Agency) etc</i></p> <p>D.1.7 Local education authority officers <i>Please use this code if a sample focus of the study is people who work in a local education authority</i></p> <p>D.1.8 Parents <i>Please use this code if the sample focus of the study refers to the inclusive category of carers of 'children' and 'young people', which may include natural parents/mother/father/adoptive parents/foster parents etc.</i></p> <p>D.1.9 Governors <i>Please use this code if the sample focus of the study is on members of the governing body, which may include teachers or parents. They play a role in the management and vision of the educational institution</i></p> <p>D.1.10 Other sample focus (please specify)</p>
<p>D.2 What was the total number of participants in the study (the actual sample)? <i>if more than one group is being compared, please give numbers for each group</i></p>	<p>D.2.1 Not applicable (e.g. study of policies, documents etc)</p> <p>D.2.2 Explicitly stated (please specify)</p> <p>D.2.3 Implicit (please specify)</p> <p>D.2.4 Not stated/unclear (please specify)</p>
<p>D.3 What is the proportion of those selected for the study who actually participated in the study? <i>Please specify numbers and percentages if possible.</i></p>	<p>D.3.1 Not applicable (e.g. review)</p> <p>D.3.2 Explicitly stated (please specify)</p> <p>D.3.3 Implicit (please specify)</p> <p>D.3.4 Not stated/unclear (please specify)</p>

<p>D.4 Which country/countries are the individuals in the actual sample from? <i>If UK, please distinguish between England, Scotland, N. Ireland and Wales, if possible. If from different countries, please give numbers for each.</i> <i>If more than one group is being compared, please describe for each group.</i></p>	<p>D.4.1 Not applicable (e.g. study of policies, documents, etc.) D.4.2 Explicitly stated (please specify) D.4.3 Implicit (please specify) D.4.4 Not stated/unclear (please specify)</p>
<p>D.5 If the individuals in the actual sample are involved with an educational institution, what type of institution is it? <i>For evaluations of interventions, this will be the site(s) of the intervention.</i> <i>Please give details of the institutions (e.g. size, geographic location mixed/single sex etc.) as described by the authors. If individuals are from different institutions, please give numbers for each. If more than one group is being compared, please describe all of the above for each group.</i></p>	<p>D.5.1 Not applicable (e.g. study of policies, documents, etc.) D.5.2 Community centre (please specify) D.5.3 Post-compulsory education institution (please specify) D.5.4 Government Department (please specify) D.5.5 Independent school (please specify age range and school type) D.5.6 Nursery school (please specify) D.5.7 Other early years setting (please specify) D.5.8 Local education authority (please specify) D.5.9 Higher Education Institution (please specify) D.5.10 Primary school (please specify) D.5.11 Correctional Institution (please specify) D.5.12 Pupil referral unit (please specify) D.5.13 Residential school (please specify) D.5.14 Secondary school (please specify age range) D.5.15 Special needs school (please specify) D.5.16 Workplace (please specify) D.5.17 Other educational setting (please specify) D.5.18 Coding is based on: Authors' description D.5.19 Coding is based on: Reviewers' inference</p>
<p>D.6 What ages are covered by the actual sample? <i>Please give the numbers of the sample that fall within each of the given categories. If necessary refer to a page number in the report (e.g. for a useful table).</i> <i>If more than one group is being compared, please describe for each group</i> <i>if follow-up study, age of entry to the study</i></p>	<p>D.6.1 Not applicable (e.g. study of policies, documents etc) D.6.2 0-4 D.6.3 5-10 D.6.4 11-16 D.6.5 17-20 D.6.6 21 and over D.6.7 Not stated/unclear (please specify) D.6.8 Coding is based on: Authors' description D.6.9 Coding is based on: Reviewers' inference</p>
<p>D.7 What is the sex of participants? <i>Please give the numbers of the sample that fall within each of the given categories. If necessary refer to a page number in the report (e.g. for a useful table).</i> <i>If more than one group is being compared, please describe for each group.</i></p>	<p>D.7.1 Not applicable (e.g. study of policies, documents etc) D.7.2 Single sex (please specify) D.7.3 Mixed sex (please specify) D.7.4 Not stated/unclear (please specify) D.7.5 Coding is based on: Authors' description D.7.6 Coding is based on: Reviewers' inference</p>

<p>D.8 What is the socio-economic status of the individuals within the actual sample?</p> <p><i>If more than one group is being compared, please describe for each group.</i></p>	<p>D.8.1 Not applicable (e.g. study of policies, documents etc)</p> <p>D.8.2 Explicitly stated (please specify)</p> <p>D.8.3 Implicit (please specify)</p> <p>D.8.4 Not stated/unclear (please specify)</p>
<p>D.9 What is the ethnicity of the individuals within the actual sample?</p> <p><i>If more than one group is being compared, please describe for each group.</i></p>	<p>D.9.1 Not applicable (e.g. study of policies, documents etc)</p> <p>D.9.2 Explicitly stated (please specify)</p> <p>D.9.3 Implicit (please specify)</p> <p>D.9.4 Not stated/unclear (please specify)</p>
<p>D.10 What is known about the special educational needs of individuals within the actual sample?</p> <p><i>e.g. specific learning, physical, emotional, behavioural, intellectual difficulties.</i></p>	<p>D.10.1 Not applicable (e.g. study of policies, documents etc)</p> <p>D.10.2 Explicitly stated (please specify)</p> <p>D.10.3 Implicit (please specify)</p> <p>D.10.4 Not stated/unclear (please specify)</p>
<p>D.11 Please specify any other useful information about the study participants.</p>	<p>D.11.1 Details</p>

Section E: Programme or intervention description

<p>E.1 If a programme or intervention is being studied, does it have a formal name?</p>	<p>E.1.1 Not applicable (no programme or intervention)</p> <p>E.1.2 Yes (please specify)</p> <p>E.1.3 No (please specify)</p> <p>E.1.4 Not stated/unclear (please specify)</p>
<p>E.2 Theory of change</p> <p><i>Describe the intervention in detail, whenever possible copying the authors' description from the report word for word. If specified in the report, also describe in detail what the control/comparison group(s) were exposed to.</i></p>	<p>E.2.1 Details</p>
<p>E.3 Aim(s) of the intervention</p>	<p>E.3.1 Not stated</p> <p>E.3.2 Not explicitly stated (Write in, as worded by the reviewer)</p> <p>E.3.3 Stated (Write in, as stated by the authors)</p>
<p>E.4 Year intervention started</p> <p><i>Where relevant</i></p>	<p>E.4.1 Details</p>

70 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

<p>E.5 Duration of the intervention</p> <p><i>Choose the relevant category and write in the exact intervention length if specified in the report</i></p> <p><i>When the intervention is ongoing, tick 'OTHER' and indicate the length of intervention as the length of the outcome assessment period</i></p>	<p>E.5.1 Not stated</p> <p>E.5.2 Not applicable</p> <p>E.5.3 Unclear</p> <p>E.5.4 One day or less (please specify)</p> <p>E.5.5 1 day to 1 week (please specify)</p> <p>E.5.6 1 week (and 1 day) to 1 month (please specify)</p> <p>E.5.7 1 month (and 1 day) to 3 months (please specify)</p> <p>E.5.8 3 months (and 1 day) to 6 months (please specify)</p> <p>E.5.9 6 months (and 1 day) to 1 year (please specify)</p> <p>E.5.10 1 year (and 1 day) to 2 years (please specify)</p> <p>E.5.11 2 years (and 1 day) to 3 years (please specify)</p> <p>E.5.12 3 years (and 1 day) to 5 years (please specify)</p> <p>E.5.13 more than 5 years (please specify)</p> <p>E.5.14 Other (please specify)</p>
<p>E.6 Person providing the intervention (tick as many as appropriate)</p>	<p>E.6.1 Not stated</p> <p>E.6.2 Unclear</p> <p>E.6.3 Not applicable</p> <p>E.6.4 Counsellor</p> <p>E.6.5 Health professional (please specify)</p> <p>E.6.6 Parent</p> <p>E.6.7 Peer</p> <p>E.6.8 Psychologist</p> <p>E.6.9 Researcher</p> <p>E.6.10 Social worker</p> <p>E.6.11 Teacher/lecturer</p> <p>E.6.12 Other (specify)</p>
<p>E.7 Number of people recruited to provide the intervention (and comparison condition) (e.g. teachers or health professionals)</p>	<p>E.7.1 Not stated</p> <p>E.7.2 Unclear</p> <p>E.7.3 Reported (include the number for the providers involved in the intervention and comparison groups, as appropriate)</p>
<p>E.8 How were the people providing the intervention recruited? (Write in.) Also, give information on the providers involved in the comparison group(s), as appropriate.</p>	<p>E.8.1 Not stated</p> <p>E.8.2 Stated (write in)</p>
<p>E.9 Was special training given to people providing the intervention?</p> <p><i>Provide as much detail as possible</i></p>	<p>E.9.1 Not stated</p> <p>E.9.2 Unclear</p> <p>E.9.3 Yes (please specify)</p> <p>E.9.4 No</p>
<p>E.10 Is the study explicitly linked to a specific policy/strategy?</p>	<p>E.10.1 Yes (please specify)</p> <p>E.10.2 No</p>

Section F: Results and conclusions

In future this section is likely to incorporate material from EPPI-Reviewer to facilitate reporting numerical results

<p>F.1 How are the results of the study presented?</p> <p><i>e.g. as quotations/figures within text, in tables, as appendices</i></p>	F.1.1 Details
<p>F.2 What are the results of the study as reported by the authors?</p> <p><i>Before completing data-extraction you will need to consider what type of synthesis will be undertaken and what kind of 'results' data is required for the synthesis</i></p> <p><i>Warning! Failure to provide sufficient data here will hamper the synthesis stage of the review.</i></p> <p><i>Please give details and refer to page numbers in the report(s) of the study, where necessary (e.g. for key tables)</i></p>	F.2.1 Details
<p>F.3 What do the author(s) conclude about the findings of the study?</p> <p><i>Please give details and refer to page numbers in the report of the study, where necessary</i></p>	F.3.1 Details

Section G: Study Method

<p>G.1 Study Timing</p> <p><i>Please indicate all that apply and give further details where possible</i></p> <p><i>-If the study examines one or more samples but each at only one point in time it is cross-sectional</i></p> <p><i>-If the study examines the same samples but as they have changed over time, it is a retrospective, provided that the interest is in starting at one timepoint and looking backwards over time</i></p> <p><i>-If the study examines the same samples as they have changed over time and if data are collected forward over time, it is prospective provided that the interest is in starting at one timepoint and looking forward in time</i></p>	<p>G.1.1 Cross-sectional</p> <p>G.1.2 Retrospective</p> <p>G.1.3 Prospective</p> <p>G.1.4 Not stated/ unclear (please specify)</p>
<p>G.2 when were the measurements of the variable(s) used as outcome measures made, in relation to the intervention</p> <p><i>Use only if the purpose of the study is to measure the effectiveness or impact of an intervention or programme - i.e. its purpose is coded as 'What Works' in Section B2.</i></p> <p><i>If at least one of the outcome variables is measured both before and after the intervention, please use the 'before and after' category.</i></p>	<p>G.2.1 Not applicable (not an evaluation)</p> <p>G.2.2 Before and after</p> <p>G.2.3 Only after</p> <p>G.2.4 Other (please specify)</p> <p>G.2.5 Not stated/unclear (please specify)</p>
<p>G.3 What is the method used in the study?</p> <p><i>NB: Studies may use more than one method please code each method used for which data-extraction is being completed and the respective outcomes for each method.</i></p> <p><i>A = Please use this code if the outcome evaluation employed the design of a randomised controlled trial. To be classified as an RCT, the evaluation must:</i></p> <p><i>i) compare two or more groups which receive different interventions or different intensities/levels of an intervention with each other; and/or with a group which does not receive any intervention at all</i></p> <p>AND</p>	<p>G.3.1 Random experiment with random allocation to groups</p> <p>G.3.2 Experiment with non-random allocation to groups</p> <p>G.3.3 One group pre-post test</p> <p>G.3.4 One group post-test only</p> <p>G.3.5 Cohort study</p> <p>G.3.6 Case-control study</p> <p>G.3.7 Cross-sectional study</p> <p>G.3.8 Views study</p> <p>G.3.9 Ethnography</p> <p>G.3.10 Systematic review</p>

ii) allocate participants (individuals, groups, classes, schools, LEAs etc) or sequences to the different groups based on a fully random schedule (e.g. a random numbers table is used). If the report states that random allocation was used and no further information is given then please keyword as RCT. If the allocation is NOT fully randomised (e.g. allocation by alternate numbers by date of birth) then please keyword as a non-randomised controlled trial.

B = Please use this code if the evaluation compared two or more groups which receive different interventions, or different intensities/levels of an intervention to each other and/or with a group which does not receive any intervention at all BUT DOES NOT allocate participants (individuals, groups, classes, schools, LEAs etc) or sequences in a fully random manner. This keyword should be used for studies which describe groups being allocated using a quasi-random method (e.g. allocation by alternate numbers or by date of birth) or other non-random method

C=Please use this code where a group of subjects e.g. a class of school children is tested on outcome of interest before being given an intervention which is being evaluated. After receiving the intervention the same test is administered again to the same subjects. The outcome is the difference between the pre- and post-test scores of the subjects.

D=Please use this code where one group of subjects is tested on outcome of interest after receiving the intervention which is being evaluated

E=Please use this code where researchers prospectively study a sample (e.g. learners), collect data on the different aspects of policies or practices experienced by members of the sample (e.g. teaching methods, class sizes), look forward in time to measure their later outcomes (e.g. achievement) and relate the experiences to the outcomes achieved. The purpose is to assess the effect of the different experiences on outcomes.

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

G = Please use this code where researchers have used a questionnaire to collect quantitative information about items in a sample or population, e.g. parents views on education

H = Please use this code where the researchers try to understand phenomenon from the point of the 'worldview' of a particular, group, culture or society. In these studies there is attention to subjective meaning, perspectives and experience.

I = Please use this code when the researchers present a qualitative description of human social phenomena, based on fieldwork.

J = Please use this code if the review is explicit in its reporting of a systematic strategy used for (i) searching for studies (i.e. it reports which databases have been searched and the keywords used to search the database, the list of journals hand searched, and describes attempts to find unpublished or 'grey' literature; (ii) the criteria for including and excluding studies in the review and, (iii) methods used for assessing the quality and collating the findings of included studies.

K = Please use this code for cases where the review discusses a particular issue bringing together the opinions/findings/conclusions from a range of previous studies but where the review does not meet the criteria for a systematic review (as defined above)

L = Please use this code when researchers refer specifically to their design/approach as a 'case study'. Where possible further information about the methods used in the case study should be coded

M = Please use this code where researchers have used documents as a source of data e.g. newspaper reports

N = Please use this code where practitioners or institutions (with or without the help of researchers) have used research as part of a process of development and/or change. Where possible further information about the research methods used should be coded.

O = Please use this keyword for studies which focus on the development or discussion of methods; for example discussions of a statistical technique, a recruitment or sampling procedure, a particular way of collecting or analysing data etc. It may also refer to a description of the processes or stages involved in developing an 'instrument' (e.g. an assessment procedure).

P = Please use this code where researchers have used data from a pre-existing dataset e.g. the British Household Panel Survey to answer their 'new' research question.

G.3.11 Other review (non systematic)

G.3.12 Case study

G.3.13 Document study

G.3.14 Action research

G.3.15 Methodological study

G.3.16 Secondary data analysis

Section H: Methods-groups

<p>H.1 If Comparisons are being made between two or more groups*, please specify the basis of any divisions made for making these comparisons <i>Please give further details where possible</i></p> <p><i>* If no comparisons are being made between groups please continue to Section I (Methods - sampling strategy)</i></p>	<p>H.1.1 Not applicable (not more than one group) H.1.2 Prospective allocation into more than one group <i>e.g. allocation to different interventions, or allocation to intervention and control groups</i> H.1.3 No prospective allocation but use of pre-existing differences to create comparison groups <i>e.g. receiving different interventions or characterised by different levels of a variable such as social class</i> H.1.4 Other (please specify) H.1.5 Not stated/unclear (please specify)</p>
<p>H.2 How do the groups differ?</p>	<p>H.2.1 Not applicable (not in more than one group) H.2.2 Explicitly stated (please specify) H.2.3 Implicit (please specify) H.2.4 Not stated/unclear (please specify)</p>
<p>H.3 Number of groups <i>For instance, in studies in which comparisons are made between group, this may be the number of groups into which the dataset is divided for analysis (e.g. social class, or form size), or the number of groups allocated to, or receiving, an intervention.</i></p>	<p>H.3.1 Not applicable (not more than one group) H.3.2 One H.3.3 Two H.3.4 Three H.3.5 Four or more (please specify) H.3.6 Other/unclear (please specify)</p>
<p>H.4 If prospective allocation into more than one group, what was the unit of allocation? <i>Please indicate all that apply and give further details where possible</i></p>	<p>H.4.1 Not applicable (not more than one group) H.4.2 Not applicable (no prospective allocation) H.4.3 Individuals H.4.4 Groupings or clusters of individuals (e.g. classes or schools) please specify H.4.5 Other (e.g. individuals or groups acting as their own controls - please specify) H.4.6 Not stated/unclear (please specify)</p>
<p>H.5 If prospective allocation into more than one group, which method was used to generate the allocation sequence?</p>	<p>H.5.1 Not applicable (not more than one group) H.5.2 Not applicable (no prospective allocation) H.5.3 Random H.5.4 Quasi-random H.5.5 Non-random H.5.6 Not stated/unclear (please specify)</p>
<p>H.6 If prospective allocation into more than one group, was the allocation sequence concealed? <i>Bias can be introduced, consciously or otherwise, if the allocation of pupils or classes or schools to a programme or intervention is made in the knowledge of key characteristics of those allocated. For example, children with more serious reading difficulty might be seen as in greater need and might be more likely to be allocated to the 'new' programme, or the opposite might happen. Either would introduce bias.</i></p>	<p>H.6.1 Not applicable (not more than one group) H.6.2 Not applicable (no prospective allocation) H.6.3 Yes (please specify) H.6.4 No (please specify) H.6.5 Not stated/unclear (please specify)</p>
<p>H.7 Study design summary <i>In addition to answering the questions in this section, describe the study design in your own words. You may want to draw upon and elaborate on the answers already given.</i></p>	<p>H.7.1 Details</p>

Section I: Methods - Sampling strategy

<p>I.1 Are the authors trying to produce findings that are representative of a given population?</p> <p><i>Please write in authors' description. If authors do not specify, please indicate reviewers' interpretation.</i></p>	<p>I.1.1 Explicitly stated (please specify) I.1.2 Implicit (please specify) I.1.3 Not stated/unclear (please specify)</p>
<p>I.2 What is the sampling frame (if any) from which the participants are chosen?</p> <p><i>e.g. telephone directory, electoral register, postcode, school listings etc.</i></p> <p><i>There may be two stages - e.g. first sampling schools and then classes or pupils within them.</i></p>	<p>I.2.1 Not applicable (please specify) I.2.2 Explicitly stated (please specify) I.2.3 Implicit (please specify) I.2.4 Not stated/unclear (please specify)</p>
<p>I.3 Which method does the study use to select people, or groups of people (from the sampling frame)?</p> <p><i>e.g. selecting people at random, systematically - selecting, for example, every 5th person, purposively, in order to reach a quota for a given characteristic.</i></p>	<p>I.3.1 Not applicable (no sampling frame) I.3.2 Explicitly stated (please specify) I.3.3 Implicit (please specify) I.3.4 Not stated/unclear (please specify)</p>
<p>I.4 Planned sample size</p> <p><i>If more than one group, please give details for each group separately.</i></p> <p><i>In intervention studies, the sample size will have a bearing upon the statistical power, error rate and precision of estimate of the study.</i></p>	<p>I.4.1 Not applicable (please specify) I.4.2 Explicitly stated (please specify) I.4.3 Not stated/unclear (please specify)</p>
<p>I.5 How representative was the achieved sample (as recruited at the start of the study) in relation to the aims of the sampling frame?</p> <p><i>Please specify basis for your decision.</i></p>	<p>I.5.1 Not applicable (e.g. study of policies, documents, etc.) I.5.2 Not applicable (no sampling frame) I.5.3 High (please specify) I.5.4 Medium (please specify) I.5.5 Low (please specify) I.5.6 Unclear (please specify)</p>
<p>I.6 If the study involves studying samples prospectively over time, what proportion of the sample dropped out over the course of the study?</p> <p><i>If the study involves more than one group, please give drop-out rates for each group separately. If necessary, refer to a page number in the report (e.g. for a useful table).</i></p>	<p>I.6.1 Not applicable (e.g. study of policies, documents, etc.) I.6.2 Not applicable (not following samples prospectively over time) I.6.3 Explicitly stated (please specify) I.6.4 Implicit (please specify) I.6.5 Not stated/unclear (please specify)</p>
<p>I.7 For studies that involve following samples prospectively over time, do the authors provide any information on whether, and/or how, those who dropped out of the study differ from those who remained in the study?</p>	<p>I.7.1 Not applicable (e.g. study of policies, documents, etc.) I.7.2 Not applicable (not following samples prospectively over time) I.7.3 Not applicable (no drop outs) I.7.4 Yes (please specify) I.7.5 No</p>
<p>I.8 If the study involves following samples prospectively over time, do authors provide baseline values of key variables, such as those being used as outcomes, and relevant socio-demographic variables?</p>	<p>I.8.1 Not applicable (e.g. study of policies, documents, etc.) I.8.2 Not applicable (not following samples prospectively over time) I.8.3 Yes (please specify) I.8.4 No</p>

Section J: Methods - recruitment and consent

<p>J.1 Which methods are used to recruit people into the study?</p> <p><i>e.g. letters of invitation, telephone contact, face-to-face contact.</i></p>	<p>J.1.1 Not applicable (please specify)</p> <p>J.1.2 Explicitly stated (please specify)</p> <p>J.1.3 Implicit (please specify)</p> <p>J.1.4 Not stated/unclear (please specify)</p> <p>J.1.5 Please specify any other details relevant to recruitment and consent</p>
<p>J.2 Were any incentives provided to recruit people into the study?</p>	<p>J.2.1 Not applicable (please specify)</p> <p>J.2.2 Explicitly stated (please specify)</p> <p>J.2.3 Not stated/unclear (please specify)</p>
<p>J.3 Was consent sought?</p> <p><i>Please comment on the quality of consent, if relevant.</i></p>	<p>J.3.1 Not applicable (please specify)</p> <p>J.3.2 Participant consent sought</p> <p>J.3.3 Parental consent sought</p> <p>J.3.4 Other consent sought</p> <p>J.3.5 Consent not sought</p> <p>J.3.6 Not stated/unclear (please specify)</p>

Section K: Methods - data collection

<p>K.1 Which variables or concepts, if any, does the study aim to measure or examine?</p>	<p>K.1.1 Explicitly stated (please specify)</p> <p>K.1.2 Implicit (please specify)</p> <p>K.1.3 Not stated/unclear</p>
<p>K.2 Please describe the main types of data collected and specify if they were used to (a) to define the sample; (b) to measure aspects of the sample as findings of the study?</p> <p><i>Only detail if more specific than the previous question</i></p>	<p>K.2.1 Details</p>
<p>K.3 Which methods were used to collect the data?</p> <p><i>Please indicate all that apply and give further detail where possible</i></p>	<p>K.3.1 Curriculum-based assessment</p> <p>K.3.2 Focus group interview</p> <p>K.3.3 One-to-one interview (face to face or by phone)</p> <p>K.3.4 Observation</p> <p>K.3.5 Self-completion questionnaire</p> <p>K.3.6 self-completion report or diary</p> <p>K.3.7 Examinations</p> <p>K.3.8 Clinical test</p> <p>K.3.9 Practical test</p> <p>K.3.10 Psychological test (e.g. I.Q test)</p> <p>K.3.11 Hypothetical scenario including vignettes</p> <p>K.3.12 School/college records (e.g. attendance records etc)</p> <p>K.3.13 Secondary data such as publicly available statistics</p> <p>K.3.14 Other documentation</p> <p>K.3.15 Not stated/unclear (please specify)</p> <p>K.3.16 Please specify any other important features of data collection</p> <p>K.3.17 Coding is based on: Author's description</p> <p>K.3.18 Coding is based on: Reviewers' interpretation</p>
<p>K.4 Details of data collection instruments or tool(s).</p> <p><i>Please provide details including names for all tools used to collect data, and examples of any questions/items given. Also, please state whether source is cited in the report</i></p>	<p>K.4.1 Explicitly stated (please specify)</p> <p>K.4.2 Implicit (please specify)</p> <p>K.4.3 Not stated/unclear (please specify)</p>

76 A systematic review of interventions aimed at improving the educational achievement of pupils identified as gifted and talented

<p>K.5 Who collected the data? <i>Please indicate all that apply and give further detail where possible</i></p>	<p>K.5.1 Researcher K.5.2 Head teacher/senior management K.5.3 Teaching or other staff K.5.4 Parents K.5.5 Pupils/students K.5.6 Governors K.5.7 LEA/Government officials K.5.8 Other educational practitioner K.5.9 Other (please specify) K.5.10 Not stated/unclear K.5.11 Coding is based on: Author's description K.5.12 Coding is based on: Reviewers' inference</p>
<p>K.6 Do the authors describe any ways they addressed the repeatability or reliability of their data collection tools/methods? <i>e.g. test-re-test methods (where more than one tool was employed, please provide details for each)</i></p>	<p>K.6.1 Details</p>
<p>K.7 Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/methods? <i>e.g. mention previous piloting or validation of tools, published version of tools, involvement of target population in development of tools. (Where more than one tool was employed, please provide details for each)</i></p>	<p>K.7.1 Details</p>
<p>K.8 Was there a concealment of which group that subjects were assigned to (i.e. the intervention or control) or other key factors from those carrying out measurement of outcome - if relevant? <i>Not applicable - e.g. analysis of existing data, qualitative study. No - e.g. assessment of reading progress for dyslexic pupils done by teacher who provided intervention Yes - e.g. researcher assessing pupil knowledge of drugs - unaware of whether pupil received the intervention or not.</i></p>	<p>K.8.1 Not applicable (please say why) K.8.2 Yes (please specify) K.8.3 No (please specify)</p>
<p>K.9 Where were the data collected? <i>e.g. school, home</i></p>	<p>K.9.1 Educational Institution (please specify) K.9.2 Home (please specify) K.9.3 Explicitly stated (write in as worded by the author) K.9.4 Not stated/ unclear (please specify)</p>

Section L: Methods - data analysis

L.1 What rationale do the authors give for the methods of analysis for the study? <i>e.g. for their methods of sampling, data collection or analysis.</i>	L.1.1 Details
L.2 Which methods were used to analyse the data? <i>Please give details (e.g., for in-depth interviews, how were the data handled?) Details of statistical analyses can be given next.</i>	L.2.1 Explicitly stated (please specify) L.2.2 Implicit (please specify) L.2.3 Not stated/unclear (please specify) L.2.4 Please specify any important analytic or statistical issues
L.3 Which statistical methods, if any, were used in the analysis?	L.3.1 Details
L.4 Did the study address multiplicity by reporting ancillary analyses, including sub-group analyses and adjusted analyses, and do the authors report on whether these were pre-specified or exploratory?	L.4.1 Yes (please specify) L.4.2 No (please specify) L.4.3 Not applicable
L.5 Do the authors describe strategies used in the analysis to control for bias from confounding variables?	L.5.1 Yes (please specify) L.5.2 No L.5.3 Not applicable
L.6 For evaluation studies that use prospective allocation, please specify the basis on which data analysis was carried out. <i>'Intention to intervene' means that data were analysed on the basis of the original number of participants, as recruited into the different groups. 'Intervention received' means data were analysed on the basis of the number of participants actually receiving the intervention.</i>	L.6.1 Not applicable (not an evaluation study with prospective allocation) L.6.2 'Intention to intervene' L.6.3 'Intervention received' L.6.4 Not stated/unclear (please specify)
L.7 Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? <i>e.g. using more than one researcher to analyse data, looking for negative cases.</i>	L.7.1 Details
L.8 Do the authors describe any ways that they have addressed the validity or trustworthiness of data analysis? <i>e.g. internal or external consistency, checking results with participants. Have any statistical assumptions necessary for analysis been met?</i>	L.8.1 Details
L.9 If the study uses qualitative methods, how well has diversity of perspective and content been explored?	L.9.1 Details
L.10 If the study uses qualitative methods, how well has the detail, depth and complexity (i.e. the richness) of the data been conveyed?	L.10.1 Details
L.11 If the study uses qualitative methods, has analysis been conducted such that context is preserved? <i>In qualitative approaches interpretation of meaning is derived from the words and actions of the actors within particular context(s). We are therefore interested in whether the approach to analysis in any individual study sufficiently incorporates relevant variations contextual features</i>	L.11.1 Details

Section M: Quality of study - reporting

<p>M.1 Is the context of the study adequately described? <i>Consider your previous answers to these questions (see Section B):</i> <i>Why was this study done at this point in time, in those contexts and with those people or institutions? (B3)</i> <i>Was the study informed by, or linked to an existing body of empirical and/or theoretical research? (B4)</i> <i>Which groups were consulted in working out the aims to be addressed in this study? (B5)</i> <i>Do the authors report how the study was funded? (B6)</i> <i>When was the study carried out? (B7)</i></p>	<p>M.1.1 Yes (please specify) M.1.2 No (please specify)</p>
<p>M.2 Are the aims of the study clearly reported? <i>Consider your previous answers to these questions (See module B):</i> <i>What are the broad aims of the study? (B1)</i> <i>What are the study research questions and/or hypothesis? (B8)</i></p>	<p>M.2.1 Yes (please specify) M.2.2 No (please specify)</p>
<p>M.3 Is there an adequate description of the sample used in the study and how the sample was identified and recruited? <i>Consider your answer to all questions in sections D (Actual Sample), I (Sampling Strategy) and J (Recruitment and Consent).</i></p>	<p>M.3.1 Yes (please specify) M.3.2 No (please specify)</p>
<p>M.4 Is there an adequate description of the methods used in the study to collect data? <i>Consider your answers to the following questions (See Section K)</i> <i>What methods were used to collect the data? (K3)</i> <i>Details of data collection instruments and tools (K4)</i> <i>Who collected the data? (K5)</i> <i>Where were the data collected? (K9)</i></p>	<p>M.4.1 Yes (please specify) M.4.2 No (please specify)</p>
<p>M.5 Is there an adequate description of the methods of data analysis? <i>Consider your answers to previous questions (see module L)</i> <i>Which methods were used to analysis the data? (L2)</i> <i>What statistical method, if any, was used in the analysis? (L3)</i> <i>Did the study address multiplicity by reporting ancillary analyses (including sub-group analyses and adjusted analyses), and do the authors report on whether these were pre-specified or exploratory? (L4)</i> <i>Do the authors describe strategies used in the analysis to control for bias from confounding variables? (L5)</i></p>	<p>M.5.1 Yes (please specify) M.5.2 No (please specify)</p>
<p>M.6 Is the study replicable from this report?</p>	<p>M.6.1 Yes (please specify) M.6.2 No (please specify)</p>
<p>M.7 Do the authors state where the full, original data are stored?</p>	<p>M.7.1 Yes (please specify) M.7.2 No (please specify)</p>
<p>M.8 Do the authors avoid selective reporting bias? (e.g. do they report on all variables they aimed to study, as specified in their aims/research questions?)</p>	<p>M.8.1 Yes (please specify) M.8.2 No (please specify)</p>

Section N: Quality of the study - Weight of Evidence

<p>N.1 Are there ethical concerns about the way the study was done? <i>Consider consent, funding, privacy, etc.</i></p>	<p>N.1.1 Yes, some concerns (please specify) N.1.2 No (please specify)</p>
<p>N.2 Were users/relatives of users appropriately involved in the design or conduct of the study? <i>Consider your answer to the appropriate question in module B.1</i></p>	<p>N.2.1 Yes, a lot (please specify) N.2.2 Yes, a little (please specify) N.2.3 No (please specify)</p>
<p>N.3 Is there sufficient justification for why the study was done the way it was? <i>Consider answers to questions B1, B2, B3, B4</i></p>	<p>N.3.1 Yes (please specify) N.3.2 No (please specify)</p>
<p>N.4 Was the choice of research design appropriate for addressing the research question(s) posed?</p>	<p>N.4.1 yes, completely (please specify) N.4.2 No (please specify)</p>
<p>N.5 <i>Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools?</i> <i>Consider your answers to previous questions:</i> <i>Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)</i></p>	<p>N.5.1 Yes, good (please specify) N.5.2 Yes, some attempt (please specify) N.5.3 No, none (please specify)</p>
<p>N.6 <i>Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods?</i> <i>Consider your answers to previous questions:</i> <i>Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)</i></p>	<p>N.6.1 Yes, good (please specify) N.6.2 Yes, some attempt (please specify) N.6.3 No, none (please specify)</p>
<p>N.7 <i>Have sufficient attempts been made to establish the repeatability or reliability of data analysis?</i> <i>Consider your answer to the previous question:</i> <i>Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)</i></p>	<p>N.7.1 Yes (please specify) N.7.2 No (please specify)</p>
<p>N.8 <i>Have sufficient attempts been made to establish the validity or trustworthiness of data analysis?</i> <i>Consider your answer to the previous question:</i> <i>Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)</i></p>	<p>N.8.1 Yes, good (please specify) N.8.2 Yes, some attempt (please specify) N.8.3 No, none (please specify)</p>
<p>N.9 To what extent are the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study?</p> <p><i>e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?</i></p> <p><i>e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?</i></p>	<p>N.9.1 A lot (please specify) N.9.2 A little (please specify) N.9.3 Not at all (please specify)</p>
<p>N.10 How generalisable are the study results?</p>	<p>N.10.1 Details</p>
<p>N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? <i>Please state what any difference is.</i></p>	<p>N.11.1 Not applicable (no difference in conclusions) N.11.2 Yes (please specify)</p>

N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	<p>N.12.1 Not applicable (results and conclusions inseparable)</p> <p>N.12.2 High trustworthiness</p> <p>N.12.3 Medium trustworthiness</p> <p>N.12.4 Low trustworthiness</p>
<p>N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)?</p> <p><i>In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.</i></p>	<p>N.13.1 High trustworthiness</p> <p>N.13.2 Medium trustworthiness</p> <p>N.13.3 Low trustworthiness</p>
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	<p>N.14.1 High</p> <p>N.14.2 Medium</p> <p>N.14.3 Low</p>
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question, or sub-questions, of this specific systematic review	<p>N.15.1 High</p> <p>N.15.2 Medium</p> <p>N.15.3 Low</p>
<p>N.16 Weight of evidence D: Overall weight of evidence</p> <p><i>Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?</i></p>	<p>N.16.1 High</p> <p>N.16.2 Medium</p> <p>N.16.3 Low</p>

Section N: Quality of the study - Weight of Evidence

<p>O.1 Sections completed</p> <p><i>Please indicate sections completed.</i></p>	<p>O.1.1 Section A: Administrative details</p> <p>O.1.2 Section B: Study aims and rationale</p> <p>O.1.3 Section C: Study policy or practice focus</p> <p>O.1.4 Section D: Actual sample</p> <p>O.1.5 Section E: Programme or intervention description</p> <p>O.1.6 Section F: Results and conclusions</p> <p>O.1.7 Section G: Methods - study method</p> <p>O.1.8 Section H: Methods - groups</p> <p>O.1.9 Section I: Methods - sampling strategy</p> <p>O.1.10 Section J: Methods recruitment and consent</p> <p>O.1.11 Section K: Methods - data collection</p> <p>O.1.12 Section L: Methods - data analysis</p> <p>O.1.13 Section M: Quality of study - reporting</p> <p>O.1.14 Section N: WoE A: Quality of the study - methods and data</p> <p>O.1.15 Section N: WoE B: Appropriateness of research design for review question</p> <p>O.1.16 Section N: WoE C: Relevance of particular focus of the study to review question</p> <p>O.1.17 Section N: WoE D: Overall weight of evidence this study provides to answer this review question?</p> <p>O.1.18 Reviewing record</p>
O.2 Please use this space here to give any general feedback about these data-extraction guidelines	O.2.1 Details
O.3 Please use this space to give any feedback on how these guidelines apply to your Review Group's field of interest	O.3.1 Details

Appendix 7.6: Definitions

Teaching and learning

Definitions of teaching and learning are nebulous and sometimes conflicting.

Learning is a relatively permanent change in behaviour and/or understanding that results from practise, exposure to new ideas, engagement with concepts and/or skills and/or challenge to existing comprehension, opinion and knowledge.

Teaching is the deliberate attempt to develop concepts, knowledge, skills and critical thinking in others through specifically designed tasks, activities, experiences and materials.

Within the field of education, 'teaching and learning' is the aspect of the field that is concerned with how best to create conditions for effective learning, through ideas, knowledge and skills through the efficacious use of resources (human and material), appropriate and varied contexts and specifically designed tasks, activities and experiences.

Educational achievement

This refers to attainment of standards as well as the meeting of personal goals. Generally, measured achievement in formal education refers to how pupils and students in learning contexts perform in relation to stated outcomes. Achievement can be measured in a variety of ways and interpretation of any such results must be nuanced and detailed if it is to be of use. The context and demographics of the test subjects must also be taken into account if the achievement is to be understood more fully.

For example, achievement is often measured normatively in education and in these cases, the test subject is considered against the average performance of a comparable group. However, achievement can also be measured through criterion referencing in which students are examined against a set standard of achievement on specific tasks.

Appendix 7.7: Weight of Evidence (WoE) guidelines

WoE A is based on our responses to the following questions:

- N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools?
- N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods?
- N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis?
- N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis?
- N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study?
- N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?

The meaning of 'sufficient' depends upon whether the reported study is quantitative or qualitative. Where it is quantitative, the judgement relates to the whether or not relevant statistical measures of reliability, validity etc are reported. For qualitative studies, we interpret 'sufficient' in terms of the explicitness of the reporting of data collection/analysis. In both cases, we include within 'reported' instances when these are addressed explicitly (when the author states that a strategy was employed increase validity and/reliability), and also when strategies are used and discussed that are conventionally associated with increasing validity and/or reliability. For example, strategies or information given to increase the validity of the study, such as a pilot study, acknowledging confounding variables, or techniques to reduce error or bias, or research triangulation.

The judgement for the overall weight of evidence for this group is determined by the pattern of response for the above questions: five or six positive responses equates to high; three or four equates to medium; and zero, one or two equates to low.

For WoE B, judgement is based on our responses to the following questions:

- N.1 Are there ethical concerns about the way the study was done?
- N.2 Were users/relatives of users appropriately involved in the design or conduct of the study?
- N.3 Is there sufficient justification for why the study was done the way it was?
- N.4 Was the choice of research design appropriate for addressing the research question(s) posed?
- N.9 To what extent are the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study?

N1 and N4 are treated as one judgement. These answers require a yes/no response, and the combination of these responses determines how they are rated (++ = high; +- = medium; -- = low).

The judgement about the overall weight of evidence is determined by the pattern of responses. It is the averaged score of high, medium and low (for N3 just score high and low).

WoE C is determined by the answer to:

- N.10 How generalisable/transferable are the study results?

It is necessary to make a judgement about how transferable this study is to our review question as well as judging to what extent the focus, population, method and outcome relates to the research. These will be weight as follows:

Focus: school-based interventions

High = school is the only setting for the study

Med = school is the main setting for the study

Low = school is only one of a number of settings for the study

Population: Gifted 5-16 years

High = population of study is entirely within this age range

Med = the study's population is a significant range within the 5-16 range (such as Primary/Middle/Secondary children)

Low = less than a significant range (e.g., specific years).

Method: What works

High = study has a specific and sole focus on 'what works'

Medium = what works is a significant part of the study

Low = what works is one of a number of elements of the study

Outcome: Educational achievement

High = the study is solely concerned with educational achievement as an outcome

Med = educational achievement is either the main or a significant outcome being measured

Low = educational outcome is one of a number of measures.

WoE D

WoE D is an average of the ratings for A,B and C. This is computed by assigning a numerical value to the ratings (Low = 1; Medium = 2; High = 3), and calculating an average score. WoE D is then the nearest .equivalent rating. For example - Low, Low, Medium will yield a WoE D of Low ($1+1+2 = 4$; $4/3 = 1.333$), or High, Low, Low will yield a WoE D of Medium ($3 + 1 + 1 = 5$; $5/3 = 1.666$).

APPENDIX 7.8 Summaries of characteristics of studies included in the review

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Afemikhe OA, Biakolo M. (2002) The effect of literature-based reading on gifted students in Botswana.	Curriculum		explicitly stated (please specify) Gaborone, Botswana	Learners Gifted students	Yes (please specify) <i>With regards to the fact that there is no policy prescription as regards to the education of the gifted in Botswana.</i>	One group pre-post test <i>two group pre-post test with final stage of sample selection being a random selection.</i>
Albertson LR, Billingsley FF (2001) Using strategy instruction and self-regulation to improve gifted students' creative writing.	Curriculum <i>Creative writing methodology (please specify)</i> <i>Instruction methods</i>	coding is based on: author(s') description <i>The office of one of the researchers</i>	explicitly stated (please specify) USA	Learners	No	One group post-test only
Anuruthwong U (2003) Creating a higher level of thinking model for gifted at the elementary level.	methodology (please specify) <i>The purpose of the study was to develop a model for teaching thinking skills for the gifted.</i> coding based on: Author's description			Learners		Action research <i>explicitly described as action research by the author</i>
Arthington C (2002) Using data to ensure gifted and talented students achieve their full potential in Design and Technology	assessment (please specify) <i>Assessment of abilities and identification of the talented student</i>	Secondary School	explicitly stated (please specify) <i>Hartlepool, UK</i>	Learners <i>pupils aged 11-16</i>	No	Experiment with non-random allocation to groups
Bailey SB, Chaffey GW (2003) The use of dynamic testing to reveal high academic potential and underachievement in a culturally different population.	assessment (please specify) <i>culturally fair testing</i> equal opportunities (please specify) <i>culturally fair testing</i>	Primary school	explicitly stated (please specify) <i>Australia</i>	Learners <i>79 children aged 8-11 years</i>	No	Experiment with non-random allocation to groups One group pre-post test

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Barron B (Jun 2000) Problem Solving in Video-based Microworlds: Collaborative and Individual Outcomes of High-Achieving Sixth-Grade Students.	Curriculum	Secondary School <i>US 6th Grade students</i>	explicitly stated (please specify) <i>USA</i>	Learners	No	
Berschi JJ, Hampson D, Huesser I (2003) The first five years of Talenta School for the Gifted: empirical and scientific goals, trends and results.	Curriculum Teaching and learning (please specify) <i>school for the gifted</i>	Independent school Primary school	explicitly stated (please specify) <i>Switzerland</i>	Learners	No	Cohort study
Bicknell B, Riley T (2005) Students' perspectives on a withdrawal program in mathematics.	Curriculum	Primary school	explicitly stated (please specify) <i>New Zealand</i>	Learners		Cross-sectional study <i>The results are based on a student inventory, individual and small group observation, and small group interviews and class observations.</i>
Bleske-Rechek A, Lubinski D, Benbow CP (2004) Meeting the educational needs of special populations - Advanced placement's role in developing exceptional human capital	other (please specify) <i>implications for designing and evaluating educational interventions</i>	Secondary School	not stated/ unclear (please specify) <i>unclear but likely to be USA</i>	Learners	Yes (please specify) <i>Advanced Placement</i>	Cohort study

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Blumen Pardo S (2002) Effects of a teacher training workshop on creativity, cognition, and school achievement in gifted and non-gifted second-grade students in Lima, Peru.	Teaching and learning (please specify) <i>Is an in-service teacher training workshop effective in improving creative performance, cognitive development and school achievement in second-grade children of public schools in Lima?</i> Teachers' professional development (please specify) <i>Is an in-service teacher training workshop effective in improving creative performance, cognitive development and school achievement in second-grade children of public schools in Lima?</i>	Primary school	explicitly stated (please specify) <i>Lima, Peru</i>	Learners Teaching staff	No	Random experiment with random allocation to groups
Campbell JR, Verna MA (1998) Comparing Separate Class and Pull-out Programs for the Gifted.	Classroom management (please specify) <i>pull out programs</i>	coding is based on: reviewer(s) inference <i>doesn't state</i>	explicitly stated (please specify) <i>USA</i>	Learners Teaching staff	Yes (please specify) <i>Pull out programs and separate classes</i>	Case study
Campbell JR, Wu R (Apr 1998) Gifted Programs from a Chinese Perspective.	assessment (please specify) methodology (please specify) Teachers' professional development (please specify)	Primary school	explicitly stated (please specify) <i>Taiwan</i>	Learners Teaching staff	Yes (please specify) <i>pull out programs</i>	Cohort study
Cartledge G, Sentelle J, Loe S, Lambert MC, Reed ES (2001) To Be Young, Gifted, and Black?: A Case Study of Positive Interventions within an Inner-City Classroom of African American Students.	Classroom management (please specify)		explicitly stated (please specify) <i>USA</i>	Learners	No	Case study

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Castillo LC (1998) The Effect of Analogy Instruction on Young Children's Metaphor Comprehension.	other (please specify) <i>cognition and metaphor</i>	Primary school	explicitly stated (please specify) USA	Learners	No	Random experiment with random allocation to groups
Chan DW (Spr 2003) Leadership Skills Training for Chinese Secondary Students in Hong Kong: Does Training Make a Difference?	Curriculum	Higher Education institution	explicitly stated (please specify) Hong Kong	Learners	No	One group pre-post test
Chan DW (2001) Assessing giftedness of Chinese secondary students in Hong Kong: a multiple intelligences perspective.	assessment (please specify) <i>The study evaluates the use of a self - report checklist with students.</i> coding based on: Author's description	Secondary School grades 7 - 12	explicitly stated (please specify) Hong Kong	Learners	No	Cross-sectional study <i>The study uses a self-report checklist to profile the intelligences of a group of secondary aged students identified as being gifted.</i>
Cheng CS, Lin ML (2003) A leadership program for gifted students in primary and secondary schools.	Curriculum	coding is based on: reviewer(s) inference <i>unclear</i>	explicitly stated (please specify) Taiwan	Learners	Yes (please specify) <i>Taiwan Gifted Education Bill, officially including leadership in the categories of giftedness.</i>	Case study
Chessman A () Catering for difference : institutionalising a program for gifted student	Curriculum Organisation and management	Secondary School	explicitly stated (please specify) Australia	Learners	Yes (please specify) <i>Full time gifted class</i>	Action research

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Chessor D () The impact of grouping gifted primary school students on self concept, motivation and achievement.	Classroom management (please specify) <i>Research determines the interrelationship of self-concept, motivation and achievement in gifted and talented primary school children in a variety of groupings.</i>	Primary school	explicitly stated (please specify) Sydney, Australia	Learners	No	Experiment with non-random allocation to groups
Clark G, Zimmerman E (2001) Identifying Artistically Talented Students in Four Rural Communities in the United States.	Curriculum	Primary school	explicitly stated (please specify) USA	Learners	Yes (please specify) <i>high-ability, artistically talented third graders</i>	Case study
Clark TR () The application of savant and splinter skills in the autistic population through curriculum design: a longitudinal multiple- replication case study.	Teaching and learning (please specify) <i>Differentiated curriculum</i> coding based on: Reviewers' inference	Primary school Secondary School coding is based on: reviewer(s) inference	not stated/ unclear (please specify) <i>Coded from abstract</i>	Learners	No	Case study
Craven RG, Marsh HW, Print M (2000) Gifted, streamed and mixed-ability programs for gifted students: Impact on self-concept, motivation, and achievement	Organisation and management <i>Looking at the impact of the differences between the school's organisation in terms of gifted, streamed and mixed-ability</i>	Primary school	explicitly stated (please specify) Sydney, Australia	Learners	Yes (please specify) <i>1992 statewide policy strategies in Sydney</i>	One group pre-post test
Cunningham M, Lopes J, Rudd P () Evaluation of the Excellence in Cities/Ethnic Minority Achievement Grant (EIC/EMAG) Pilot Project.	policy	Local education authority Primary school Secondary School	explicitly stated (please specify) England	Learners Senior management Teaching staff Local education authority officers Parents	Yes (please specify) <i>Excellence in Cities/Ethnic Minority Grant</i>	

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Darity W, Castellino D, Tyson K, Cobb C, McMillen B (2001) Increasing Opportunity To Learn via Access to Rigorous Courses and Programs: One Strategy for Closing the Achievement Gap for At-Risk	equal opportunities (please specify)	Primary school Secondary School	<i>explicitly stated (please specify)</i> North Carolina, USA	Learners Senior management Teaching staff Non-teaching staff Parents	No	Cross-sectional study
Davies M () The effect of gifted education on gifted students.	coding based on: Author's description <i>Four broad issues are explored in this study.</i> <i>Firstly, do gifted and non-gifted students differ in their self-concept? Secondly, are there any effects on the self-concept of gifted students placed in a special program for the gifted? Thirdly, which type of special program for the gifted gives the most positive effect on self-concept? Finally, what are the interests of the gifted student?</i> <i>A cohort of learners was tested with three intelligence measures, a self-concept measurement and an interests measurement.</i>	Secondary School	<i>explicitly stated (please specify)</i> Australia	Learners	No	Cohort study
Diezmann CM, Watters JJ (2002) The importance of challenging tasks for mathematically gifted students	Curriculum	Primary school	<i>not stated/ unclear (please specify)</i> <i>not stated</i>	Learners	Yes (please specify) <i>problem solving tasks in their mixed-ability classrooms.</i>	Action research

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Douglas D (2004) <i>Self-Advocacy: Encouraging Students to Become Partners in Differentiation</i>	Curriculum <i>Differentiated curriculum</i> other (please specify) <i>Student Self Advocacy</i> coding based on: Author's description	Secondary School coding is based on: reviewer(s') inference	not stated/ unclear (please specify)	Learners	No	Action research
Etkina E, Matilsky T, Lawrence M (2003) <i>Pushing to the edge: Rutgers Astrophysics Institute motivates talented high school students</i>	Curriculum Organisation and management Teaching and learning (please specify) <i>cognitive apprenticeship with real time data</i>	Higher Education institution Secondary School	explicitly stated (please specify) USA	Learners	Yes (please specify) <i>Rutgers Astrophysics Institute</i>	One group post-test only
Fardell R, Geake JG (2003) <i>Vertical semester organisation in a rural secondary school as a vehicle for acceleration of gifted students.</i>	Curriculum Organisation and management Teaching and learning (please specify) <i>Vertical Semester Organisation is a form of curriculum organisation that implicitly allows for student and subject acceleration. Moreover, as Vertical Semester Organisation is implemented through guided student choice of units, it avoids overt student labelling. This study of Vertical Semester Organisation in the middle school years of a New South Wales secondary school investigated the extent to which the possible benefits for gifted students were actualised; in particular, how students of high ability availed themselves of opportunities for acceleration, and how their grades were affected.</i>	Secondary School	explicitly stated (please specify) New South Wales, Australia	Learners	Yes (please specify) <i>Acceleration</i>	Cohort study

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Feng AX, Van Tassel-Baska J, Quek C, Bai W, O'Neill B (2005) A Longitudinal Assessment of Gifted Students' Learning Using the Integrated Curriculum Model (Icm): Impacts and Perceptions of the William and Mary	Curriculum methodology (please specify)	Primary school Secondary School	not stated/ unclear (please specify)	Learners	No	One group post-test only
Fletcher M, Santoli S (2003) Reading To Learn Concepts in Mathematics: An Action Research Project.	Curriculum	Secondary School	explicitly stated (please specify) USA	Learners	Yes (please specify) <i>the effects of reading of gifted algebra students</i>	Case study
Freeman J, Josepsson B (2002) A gifted programme in Iceland and its effects	Curriculum Teachers' professional development (please specify) <i>Home-school links</i>	Primary school Secondary School	explicitly stated (please specify) <i>Iceland</i>	Learners Parents	No	One group pre-post test
Friend JL, Degen E (2007) Middle-level reform: The introduction of advanced English and science courses	Curriculum equal opportunities (please specify) <i>Open enrolment policy for advanced courses</i> coding based on: Author's description	Secondary School <i>middle school</i>	explicitly stated (please specify) USA	Other sample focus (please specify) <i>Seven middle schools in large suburban school, learners, teachers and administrators</i>	Yes (please specify) <i>No Child Left Behind</i>	Case study
Garduno, ELH (Fall 2001) The Influence of Cooperative Problems Solving on Gender Differences in Achievement, Self-Efficacy, and Attitudes toward Mathematics in Gifted Students.	Classroom management (please specify) <i>Analysis of the effects of different cooperative learning mixed gender or single gender grouping on achievement in a statistics course</i> <i>Abstract only</i>	Secondary School	not stated/ unclear (please specify) <i>Abstract only</i>	Learners	No	

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Gaultney JF (1998) Differences in benefit from strategy use: What's good for me may not be so good for thee	Curriculum	Primary school	explicitly stated (please specify) USA	Learners	No	One group pre-post test
Gentry ML (1999) Promoting Student Achievement and Exemplary Classroom Practices through Cluster Grouping: A Research-Based Alternative to Heterogeneous Elementary Classrooms.						
Gentry M, Owen SV (1999) An Investigation of the Effects of Total School Flexible Cluster Grouping on Identification, Achievement, and Classroom Practices.	Classroom management (please specify) <i>the use of cluster grouping in two elementary graduation classes</i>	coding is based on: reviewer(s) inference No information in abstract	not stated/ unclear (please specify)		No	
Ginn PV, Keel MC, Fredrick LD (2002) Using 'Reasoning and Writing' with Gifted Fifth-Grade Students. Henderson L (2005) Unleashing talent: an examination of VanTassel-Baska's (1995) integrated curriculum model in an inclusive classroom.	Teaching and learning (please specify) coding based on: Reviewers' inference	Primary school	not stated/ unclear (please specify) <i>Coded from abstract</i>	Learners	No	One group post-test only
Henderson L (2005) Unleashing talent: an examination of VanTassel-Baska's (1995) integrated curriculum model in an inclusive classroom.	methodology (please specify) <i>emphasis on concepts rather than topics</i>	Primary school	explicitly stated (please specify) Australia	Learners	Yes (please specify) <i>VanTassel Baska's Integrated curriculum model (1995)</i>	One group post-test only
Hodge K (2004) Issues in the identification of giftedness in young children.	assessment (please specify)	Nursery school Primary school	explicitly stated (please specify) Australia	Learners	No	Cohort study

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Howley A (2002) The Progress of Gifted Students in a Rural District that Emphasized Acceleration Strategies.	assessment (please specify) <i>Students' progress was documented through pretesting and posttesting with the Woodcock-Johnson Psychoeducational Battery: Tests of Achievement.</i> Curriculum <i>acceleration</i> equal opportunities (please specify) coding based on: Author's description	Primary school coding is based on: reviewer(s') inference	explicitly stated (please specify) USA	Learners	No	Experiment with non-random allocation to groups
Kalchman M, Case R (1999) Diversifying the Curriculum in a Mathematics Classroom Streamed for High-Ability Learners: A Necessity Unassumed.	Teaching and learning (please specify) <i>graphical versus text-based learning</i> coding based on: Author's description	Independent school <i>independent</i> Secondary School coding is based on: author(s') description	explicitly stated (please specify) USA	Learners	No	Case-control study <i>two groups (one control) pre and post test</i>
Kimmel S (2002) Improving the Social Skills of Fourth- and Fifth-Grade Cognitively Gifted Students.	other (please specify) <i>social and emotional development of the gifted</i> coding based on: Author's description	Primary school coding is based on: author(s') description	explicitly stated (please specify) USA	Learners	No	Case study <i>tests and observations</i>
Kitano MK, Lewis RB (2007) Examining the Relationships between Reading Achievement and Tutoring Duration and Content for Gifted Culturally and Linguistically Diverse Students from Low-Income Backgrounds	Curriculum	Primary school	explicitly stated (please specify) UK	Learners	No	One group post-test only

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Klavir R, Gorodetsky M (2001) The Processing of Analogous Problems in the Verbal and Visual-Humorous (Cartoons) Modalities by Gifted/Average Children.	other (please specify) <i>Modality Presentation</i>	coding is based on: author(s) description <i>Middle School</i>	not stated/ unclear (please specify)	Learners	No	Case-control study
Konza D (1998) Inclusion for Children with Dual Exceptionalities.	Classroom management (please specify) <i>Inclusion</i> equal opportunities (please specify) <i>Inclusion</i> policy <i>Inclusion</i> Teaching and learning (please specify) <i>effective teaching and learning for children with dual exceptionalities</i> coding based on: Author's description	other early years setting (please specify) <i>preschool</i> Primary school Secondary School coding is based on: author(s) description	not stated/ unclear (please specify)	Learners	Yes (please specify) <i>Inclusion</i>	Case study
Lambert M (2006) Evaluation of Advanced Learning Centres for Gifted and Talented Pupils	assessment (please specify) Classroom management (please specify) Curriculum equal opportunities (please specify) Organisation and management Teaching and learning (please specify) coding based on: Author's description	Primary school <i>last year of primary school</i>	explicitly stated (please specify) <i>UK</i>	Learners	Yes (please specify) <i>gifted and talented unit of the DfES, Excellence in Cities</i>	One group post-test only Views study

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Landau E, Weissler K, Golod G (2001) Impact of an Enrichment Program on Intelligence, by Sex, among Low SES Population in Israel.	equal opportunities (please specify) <i>how girls fare in comparison to boys</i>	Primary school Secondary School	explicitly stated (please specify) <i>Israel</i>	Learners	Yes (please specify) <i>enrichment program</i>	One group pre-post test
Lee L, Bailey J (2003) Rethinking practices for gifted young children: a collaborative action learning project.	Curriculum	Nursery school Primary school	not stated/ unclear (please specify) <i>unclear - could be Australia or Scotland</i>	Learners		
Lewis E (2004.) Teaching twice exceptional children: gifted with learning difficulties: professional development and provision in a Montessori school.	Teachers' professional development (please specify) <i>teacher attitude</i>	Primary school	not stated/ unclear (please specify) <i>not stated</i>	Learners Teaching staff Parents	No	Cohort study
Lichtenberger EO, Volker MA, Kaufman AS, Kaufman NL (2006) Assessing gifted children with the Kaufman Assessment Battery for Children - second edition (KABC-II).	assessment (please specify)	coding is based on: reviewer(s) inference <i>Information not given in abstract</i>	not stated/ unclear (please specify) <i>Information not given in abstract</i>	Learners	No	

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Lidz CS, Macrine SL (2001) An Alternative Approach to the Identification of Gifted Culturally and Linguistically Diverse Learners: The Contribution of Dynamic Assessment.	assessment (please specify) equal opportunities (please specify) coding based on: Author's description	Primary school	explicitly stated (please specify) United States of America - Pennsylvania	Learners	No	Methodological study The study screened the entire schools population in grades 1 - 5 (N=473). The children who performed in the top tenth percentile range on the measures administered (or who were among the top ten percent of the population, if there were no percentiles) qualified for individual assessment. A total of 81 students (17% of the student population) completed the individual assessment. The study investigated a method of identifying Gifted students as well as exploring the construct and concurrent validity of the dynamic assessment procedures used.
Little CA, Hines AH (Fall 2006) Time to Read: Advancing Reading Achievement after School	Curriculum	Secondary School	explicitly stated (please specify) USA	Learners US students grades 3-6	Yes (please specify) Seems to be linked to a drive to improve reading in the USA	Experiment with non-random allocation to groups
Ma, X (2005) A longitudinal assessment of early acceleration of students in mathematics on growth in mathematics achievement	Curriculum early acceleration equal opportunities (please specify) gender, racial and socioeconomic coding based on: Reviewers' inference	Secondary School coding is based on: reviewer(s) inference	explicitly stated (please specify) USA	Learners	No	Random experiment with random allocation to groups
Ma X (Apr 2003) Effects of Early Acceleration of Students in Mathematics on Attitudes toward Mathematics and Mathematics Anxiety.	Curriculum Organisation and management Teaching and learning (please specify) Acceleration	Secondary School	explicitly stated (please specify) USA	Learners	No	Secondary data analysis

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Martin J (2006) Padfoot, Pup and Claire: academic acceleration in Aotearoa.	coding based on: Author's description <i>Acceleration for gifted children</i>	Primary school	explicitly stated (please specify) <i>New Zealand</i>	learners	No	Case study
McFarland V (1998) An Investigation of the Problem of Identification in the Under-Representation of Culturally Diverse Students in Gifted and Talented Programs in Utah Schools.	equal opportunities (please specify) <i>Access to gifted programmes</i> Teachers' professional development (please specify) <i>Training to improve identification</i>	Secondary School <i>US Fifth Grade students</i>	explicitly stated (please specify) <i>USA</i>	Learners Teaching staff	Yes (please specify) <i>Drive to improve equality</i>	One group pre-post test
McKenna MA, Hollingsworth PL, Barnes LLB (2005) Developing Latent Mathematics Abilities in Economically Disadvantaged Students	Curriculum	Primary school	explicitly stated (please specify) <i>USA</i>	Learners	No	One group pre-post test <i>with control group</i>
Memmert D (2006) Developing Creative Thinking in a Gifted Sport Enrichment Program and the Crucial Role of Attention Processes	Teaching and learning (please specify) coding based on: Reviewers' inference	Secondary School coding is based on: reviewer(s) inference	not stated/ unclear (please specify) <i>Germany?</i>	Learners <i>Pupils aged 8-13</i>	No	Experiment with non-random allocation to groups
Milton M, Lewis E (2005) Teaching gifted children with learning difficulties in writing.	assessment (please specify) Curriculum Teaching and learning (please specify) Teachers' professional development (please specify)	Primary school coding is based on: reviewer(s) inference <i>Abstract only - coding based on key word tag from search.</i>	not stated/ unclear (please specify)	Teaching staff	No	Action research

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<p>Moon SM, Swift M, Shallenberger A (2002) Perceptions of a Self-Contained Class for Fourth- and Fifth-Grade Students with High to Extreme Levels of Intellectual Giftedness.</p>	<p>other (please specify) <i>Abstract - A case study investigated the effectiveness of a new self-contained classroom with curriculum that was differentiated for 24 highly intellectually gifted fourth-and fifth-grade students</i></p>	<p>coding is based on: reviewer(s) inference <i>There are 4th and 5th grade students, but the abstract refers to a special class - if this is a pull out from school - it may not meet the inclusion criterion - review for exclusion against 'not an intervention'</i></p>	<p>not stated/ unclear (please specify)</p>	<p>Other sample focus (please specify) <i>Abstract refers to a case study - focus not explicit - recode once full text available</i></p>	<p>No</p>	<p>Case study</p>
<p>Moon TR, Brighton CM, Callahan CM (Win 2003) State Standardized Testing Programs: Friend or Foe of Gifted Education?</p>	<p>assessment (please specify) <i>impact of standardised testing</i> Teaching and learning (please specify) <i>Effects of state testing practices on instructional practices of elementary teachers and effects of such practices on students' motivation and attitudes</i> Teachers' professional development (please specify) <i>Implications of perceptions on professional development</i> coding based on: Author's description</p>	<p>Primary school</p>	<p>explicitly stated (please specify) USA</p>	<p>Learners Teaching staff</p>	<p>Yes (please specify) <i>minimum competency movement</i></p>	<p>Cohort study Cross-sectional study Views study</p>
<p>Moon TR, Callahan CM (2001) Curricular Modifications, Family Outreach, and a Mentoring Program: Impacts on Achievement and Gifted Identification in High-Risk Primary Students.</p>					<p>No</p>	

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Morgan A () Experiences of a gifted and talented enrichment cluster for key stage one pupils.	Organisation and management policy	Primary school	explicitly stated (please specify) UK	Learners Teaching staff Parents	Yes (please specify) <i>The UK national strategy</i>	Views study
Newman JL (2005) Talents and Type Iiis: The Effects of the Talents Unlimited Model on Creative Productivity in Gifted Youngsters	Curriculum	Primary school	explicitly stated (please specify) USA	Learners	Yes (please specify) <i>Talents Unlimited model and Type 11 Activity - Renzulli</i>	One group post-test only
Nogueira SM (2006) MORCEGOS: A Portuguese enrichment program of creativity pilot study with gifted students and students with learning difficulties	Curriculum	Primary school Secondary School	explicitly stated (please specify) <i>Portugal</i>	Learners	No	One group pre-post test
Olenchak FR (2001) Lessons Learned from Gifted Children about Differentiation.	Classroom management (please specify) <i>Differentiated curriculum</i> Curriculum Teaching and learning (please specify) <i>Differentiated curriculum</i>		not stated/ unclear (please specify) <i>Coded on abstract</i>	Learners	No	
Olszewski-Kubilius P (2006) Addressing the Achievement Gap between Minority and Nonminority Children: Increasing Access and Achievement through Project EXCITE	equal opportunities (please specify) <i>Raising achievement for children from minority backgrounds</i>	Secondary School	explicitly stated (please specify) <i>Chicago, USA</i>	Learners	Yes (please specify) <i>Increasing access</i>	One group pre-post test Cohort study
Olszewski-Kubilius P, Lee SY (2004) The Role of Participation in In-School and Outside-of-School Activities in the Talent Development of Gifted Students	other (please specify) <i>children's participation in organised activities (extra curricular and outside school), independent study and work at home, parents' involvement in academic pursuits</i>	Primary school Secondary School	explicitly stated (please specify) USA	Learners	No	Case study

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Oswald KJ (2002) The AVID Program in AISD: Program Evaluation Report, 2000-2001.	equal opportunities (please specify) <i>increasing participation among minority students</i> coding based on: Author's description	Secondary School 7th to 12th grade coding is based on: author(s') description	explicitly stated (please specify) USA	Learners 7th to 12th grade	Yes (please specify) <i>school board policy to raise participation</i>	Cohort study <i>review of student's participation; questionnaires and interviews of staff</i>
Palmer S (2002) An individual research program for accelerated science students.	Curriculum Teaching and learning (please specify) <i>creating challenge</i> coding based on: Author's description	Secondary School coding is based on: author(s') description	explicitly stated (please specify) Australia	Learners ' <i>accelerated year 7 class</i> '	No	Other review (non systematic) ' <i>quasi-experimental; pre and post test</i> '
Pang V () Grade skipping: lessons from a Malaysian school.	Organisation and management coding based on: Author's description	Primary school coding is based on: author(s') description	explicitly stated (please specify) Malaysia	Learners	Yes (please specify) <i>policy to grade skip in Malaysian primary schools</i>	One group pre-post test <i>not clear - abstract only</i>
Phillips N, Lindsay G (2006) Motivation in Gifted Students	Organisation and management Teaching and learning (please specify) <i>motivation</i>	Secondary School	explicitly stated (please specify) England	Learners	No	Views study
Rawlins P () Is it better to burn out or to rust?	Curriculum Organisation and management Teaching and learning (please specify) <i>acceleration</i>	Secondary School	explicitly stated (please specify) New Zealand	Learners	No	Views study

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Rayneri LJ, Gerber BL, Wiley LP (2006) The Relationship between Classroom Environment and the Learning Style Preferences of Gifted Middle School Students and the Impact on Levels of Performance	Classroom management (please specify) <i>classroom environment</i> Teaching and learning (please specify) <i>Gifted student's learning styles</i> coding based on: Reviewers' inference	Secondary School coding is based on: author(s') description	not stated/ unclear (please specify) <i>coded on abstract</i>	Learners	No	
Reid C, Udall A, Romanoff B, Algozzine B (1999) Comparison of Traditional and Problem Solving Assessment Criteria.	assessment (please specify)	Primary school Secondary School Special needs school coding is based on: author(s') description <i>Middle Schools</i>	explicitly stated (please specify) <i>USA</i>	Learners	No	One group post-test only
Reis SM, Gubbins EJ, Briggs CJ, Schreiber FJ, Richards S, Jacobs JK, Eckert RD, Renzulli JS (2004) Reading Instruction for Talented Readers: Case Studies Documenting Few Opportunities	Classroom management (please specify) <i>differentiated or instructional strategies</i> Curriculum Teaching and learning (please specify) <i>differentiated reading instruction</i> coding based on: Reviewers' inference	Primary school Secondary School coding is based on: author(s') description	not stated/ unclear (please specify) <i>USA probably but not explicitly stated - coding from abstract</i>	Learners Teaching staff	No	Case study
Richards MRE, Orndal SN (2007) Effects of Tiered instruction on Academic performance in a Secondary Science Course	Classroom management (please specify) <i>Tiered Instruction</i> Teaching and learning (please specify) <i>Tiered Instruction</i> coding based on: Reviewers' inference	Secondary School coding is based on: reviewer(s') inference	explicitly stated (please specify) <i>USA</i>	Learners	Yes (please specify) <i>No Child Left Behind</i>	Random experiment with random allocation to groups

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Ryan MJ, Geake JG (2003) A vertical mathematics curriculum for gifted primary students.	Curriculum	Primary school	not stated/ unclear (please specify)	Learners	No	
Sarouphim KM (2003) DISCOVER in Middle School: Identifying Gifted Minority Students.	assessment (please specify) <i>The study focused on the effectiveness of discover which is a performance based assessment which was being used as an identification tool in this case</i> equal opportunities (please specify) <i>The study was asking if 'discover' was effective in reducing the minority underrepresentation in gifted programmes</i> methodology (please specify) <i>Study was investigating if 'discover' and MI were aligned and also the ability of 'discover' to identify gender and ethnic differences</i> coding based on: Author's description	Secondary School	explicitly stated (please specify) USA	Learners	No	One group post-test only
Shaunessy E, Karnes FA, Cobb Y (2004) Assessing potentially gifted students from lower socioeconomic status with nonverbal measures of intelligence	assessment (please specify) coding based on: Author's description	Primary school Grades 2-6 coding is based on: author(s) description	not stated/ unclear (please specify) <i>abstract only USA?</i>	Learners	No	Cohort study
Sheehan B (2000) A Study of Maximizing the Learning Potentials of Exceptionally Gifted Eleventh Grade Students in an Advanced Track Class.	Curriculum Teaching and learning (please specify) <i>compacted curricula</i>	Secondary School	explicitly stated (please specify) USA	Learners Parents	No	One group pre-post test

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Smyth E, Ross JA (1999) Developing leadership skills of pre-adolescent gifted learners in small group settings	Teaching and learning (please specify) <i>leadership for pupils</i> coding based on: Author's description	Secondary School <i>unclear?</i> <i>abstract only</i>	not stated/ unclear (please specify) <i>abstract only</i>	Learners	No	One group pre-post test
Stamps LS (2004) The Effectiveness of Curriculum Compacting in First Grade Classrooms	Curriculum	Primary school	explicitly stated (please specify) USA	Learners Teaching staff	Yes (please specify) <i>Curriculum Compacting</i>	Case-control study
Stoeger H, Ziegler A (2005) Evaluation of an elementary classroom self-regulated learning program for gifted math underachievers.	Curriculum	Primary school	explicitly stated (please specify) Germany	Learners	Yes (please specify) <i>self-regulated learning training programme</i>	Case study
Subhi T (1999) The impact of LOGO on gifted children's achievement and creativity	Teaching and learning (please specify) <i>The impact of programming in LOGO on Mathematical achievement and creativity</i>	Primary school	explicitly stated (please specify) <i>Amman Education District, Jordan</i>		No	Experiment with non-random allocation to groups
Tal RT, Miedijensky S (2005) A model of alternative embedded assessment in a pull-out enrichment program for the gifted.	assessment (please specify)	Secondary School	explicitly stated (please specify) Israel	Learners	No	Views study
Teo CT, Quah ML (1999) The Knowledge, Volition and Action Programme in Singapore: the effects of an experimental intervention programme on high ability achievement.	other (please specify) <i>to teach pupils knowledge of the self, volition, consultation, time management and stress management.</i> coding based on: Author's description	Secondary School coding is based on: author(s') description	explicitly stated (please specify) Singapore	Learners	Yes (please specify) <i>Gifted Education Programme</i>	Experiment with non-random allocation to groups

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Trevallion D (2004) compiled by P L Jeffrey. Melbourne: Australian Association for Research in Education) Underachievement: a model for improving academic direction in schools.	Teaching and learning (please specify) coding based on: Reviewers' inference	Secondary School	explicitly stated (please specify) <i>Australia</i>	Learners	No	One group post-test only
Tyler-Wood TL, Mortenson M, Putney D, Cass MA (2000) An Effective Mathematics and Science Curriculum Option for Secondary Gifted Education.	Curriculum Organisation and management	Secondary School	explicitly stated (please specify) <i>USA</i>	Learners	Yes (please specify) <i>Van Tassel-Baska's own influential research on curriculum</i>	Case study ' <i>experimental case study design</i> '
VanTassel-Baska J, Avery LD, Little C, Hughes C (2000) An evaluation of the implementation of curriculum innovation: The impact of the William and Mary units on schools	Curriculum Organisation and management Teaching and learning (please specify) <i>specific learning modules</i> coding based on: Author's description	Primary school Secondary School coding is based on: author(s') description	explicitly stated (please specify) <i>USA</i>	Learners	Yes (please specify) <i>Van Tassel-Baska's own influential research on curriculum</i>	Case study ' <i>experimental case study design</i> '
VanTassel-Baska J, Bass G, Ries R, Poland D, Avery LD (1998) A National Study of Science Curriculum Effectiveness with High Ability Students.	Curriculum	Primary school	not stated/ unclear (please specify)	Learners	No	Experiment with non-random allocation to groups
VanTassel-Baska J, Zuo L, Avery LD, Little CA (2002) A Curriculum Study of Gifted-Student Learning in the Language Arts.	Curriculum Teaching and learning (please specify) <i>Unit of work</i>	Primary school	not stated/ unclear (please specify)	Learners	No	One group post-test only

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Walker DE (2005) Increasing Verbal Participation of Gifted Females through the Utilization of Multiple Intelligence Theory	Classroom management (please specify) The recommendation of the writer is the establishment of positive, non-competitive learning environments that focus on increasing verbal participation by all reticent students. equal opportunities (please specify) Gifted females' lack of verbal participation in lessons within their elementary school classrooms was perceived as an obstacle to maximisation of their learning potential. The goal of the study was to identify causes of the girls' reticence to demonstrate verbalisation skills that were commensurate with those of their male counterparts and to develop strategies to promote increased female verbal participation in classroom discourse. coding based on: Author's description	other early years setting (please specify) The school that was utilised for the study consists of classes for students in prekindergarten through grade 5. Primary school The school that was utilised for the study consists of classes for students in prekindergarten through grade 5. coding is based on: author(s) description	explicitly stated (please specify) The study was conducted in an academic institution in one of the fastest growing areas of the south-eastern United States.	Learners The focus of the study was the gifted third and fourth-grade females.	No	Action research The following methods were used: daily observation of students; interviews with data provides by use of Bar-on Emotional Quotient-Inventory.
Webb NM, Nemer KM, Zuniga S (2002) Short Circuits or Superconductors? Effects of Group Composition on High-Achieving Students' Science Assessment Performance	Organisation and management other (please specify) working in groups coding based on: Reviewers' inference	Secondary School	explicitly stated (please specify) USA	Learners		One group pre-post test

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Wood D () Factors involved in the establishment and development of a special primary school class for academically gifted students: a case study.	Curriculum	Primary school	explicitly stated (please specify) <i>Australia</i>	Learners Teaching staff	Yes (please specify) <i>special class</i>	Case study
Yeung AS, Chow APY, Chow PCW, Liu WP () Self-Concept of Gifted Students: The Reddening and Blackening Effects	Classroom management (please specify) coding based on: Author's description	Secondary School	explicitly stated (please specify) <i>China</i>	Learners	Yes (please specify) <i>pull out programs</i>	Experiment with non-random allocation to groups
Yeung AS, Chow APY, Chow PCW, Liu WP (2005) compiled by P L Jeffrey. Melbourne	Classroom management (please specify) <i>specialised or mixed ability classes</i> coding based on: Author's description	Primary school coding is based on: author(s') description	not stated/ unclear (please specify) <i>Coded on abstract</i>	Learners	No	
Yoo JE, Moon SM (2006) Counselling Needs of Gifted Students: An Analysis of Intake Forms at a University-Based Counselling Centre	other (please specify) <i>Counselling</i>	coding is based on: author(s') description <i>Counselling Centre</i>	not stated/ unclear (please specify)	Parents	No	Views study

Item	What is/are the focus/foci of the study?	What is/are the educational setting(s) of the study?	In which country or countries was the study carried out?	Who or what is/ are the sample in the study?	Is the study explicitly linked to a specific policy/ strategy?	What is the method used in the study?
Ysseldyke J, Tardrew S, Betts J, Thill T, Hannigan E (2004) Use of an Instructional Management System to Enhance Math Instruction of Gifted and Talented Students	Curriculum <i>This study examined the extent to which teacher use of a curriculum-based instructional management system as an instructional enhancement would result in differential effects in mathematics achievement for gifted and talented students in comparison to gifted and talented students whose teachers did not use the system.</i> Organisation and management <i>Accelerated math is a curriculum-based instructional management system.</i>	Primary school Grades 3 - 6 coding is based on: author(s) description	explicitly stated (please specify) <i>The states in which the participants were educated are listed and so it is made clear in this way that the country in which the research was carried out is The United States of America.</i>	Learners	No	Experiment with non-random allocation to groups <i>The study used a four-group pre-test, post-test control group design. This design consisted of two sets of two grouping variables each.</i>
Zeidner M, Schleyer EJ (Nov 1999) Evaluating the Effects of Full-Time vs. Part-Time Educational Programs for the Gifted: Affective Outcomes and Policy Considerations.	Classroom management (please specify) <i>Ways of organising gifted learners are examined. Are they better served through full time homogeneous classes or through mixed ability classes with a part-time extension program?</i> Organisation and management coding based on: Author's description	Primary school grades 4- 6 in elementary schools	explicitly stated (please specify) Israel	Learners grades 4- 6		Cross-sectional study <i>Questionnaires were used to gather data on the students views of the educational program; demographic data; personal-social characteristics; school attitudes and disposition</i>

APPENDIX 7.9 Institutional Quality Standards

Glossary definition provided for words and phrases shown in bold in the accompanying Quality Standards' User Guide QS Model October 2005 - 1 - NATIONAL QUALITY STANDARDS IN GIFTED AND TALENTED EDUCATION

Generic Elements	Entry	Developing	Exemplary
A- Effective teaching and learning strategies			
1. Identification	<p>i. The school/college has learning conditions and systems to identify gifted and talented pupils in all year groups and an agreed definition and shared understanding of the meaning of 'gifted and talented' within its own, local and national contexts</p> <p>ii. An accurate record of the identified gifted and talented population is kept and updated.</p> <p>iii. The identified gifted and talented population broadly reflects the school/college's social and economic composition, gender and ethnicity</p>	<p>i. Individual pupils are screened annually against clear criteria at school/college and subject/topic level</p> <p>ii. The record is used to identify under-achievement and exceptional achievement (both within and outside the population) and to track/review pupil progress</p> <p>iii. Identification systems address issues of multiple exceptionality (pupils with specific gifts/talents and special educational needs)</p>	<p>i. Multiple criteria and sources of evidence are used to identify gifts and talents, including through the use of a broad range of quantitative and qualitative data</p> <p>ii. The record is supported by a comprehensive monitoring, progress planning and reporting system which all staff regularly share and contribute to</p> <p>iii. Identification processes are regularly reviewed and refreshed in the light of pupil performance and value-added data. The gifted and talented population is fully representative of the school/college's population</p>
Generic Elements	Generic Elements	Developing	Exemplary
Evidence			
Next steps			
2. Effective provision in the classroom	<p>i. The school/college addresses the different needs of the gifted and talented population by providing a stimulating learning environment and by extending the teaching repertoire</p> <p>ii. Teaching and learning is differentiated and delivered through both individual and group activities</p> <p>iii. Opportunities exist to extend learning through new technologies</p>	<p>i. Teaching and learning strategies are diverse and flexible, meeting the needs of distinct pupil groups within the gifted and talented population (e.g. able underachievers, exceptionally able)</p> <p>ii. A range of challenging learning and teaching strategies is evident in lesson planning and delivery. Independent learning skills are developed.</p> <p>iii. The use of new technologies across the curriculum is focused on personalised learning needs</p>	<p>i. The school/college has established a range of methods to find out what works best in the classroom, and shares this within the school/college and with other schools and colleges</p> <p>ii. Teaching and learning are suitably challenging and varied, incorporating the breadth, depth and pace required to progress high achievement. Pupils routinely work independently and self-reliantly</p> <p>iii. The innovative use of new technologies raises the achievement and motivation of gifted and talented pupils</p>

Glossary definition provided for words and phrases shown in bold in the accompanying Quality s' User Guide QS Model October 2005

Generic Elements	Entry	Developing	Exemplary
3. Standards	<p>i. Levels of attainment and achievement for gifted and talented pupils are comparatively high in relation to the rest of the school/college population and are in line with those of similar pupils in similar schools/colleges</p> <p>ii. Self-evaluation indicates that gifted and talented provision is satisfactory</p> <p>iii. Schools/colleges gifted and talented education programmes are explicitly linked to the achievement of SMART outcomes and these highlight improvements in pupils' attainment and achievement</p>	<p>i. Levels of attainment and achievement for gifted pupils are broadly consistent across the gifted and talented population and above those of similar pupils in similar schools/colleges</p> <p>ii. Self-evaluation indicates that gifted and talented provision is good</p>	<p>i. Levels of attainment and achievement for gifted and talented pupils indicate sustainability over time and are well above those of similar pupils in similar schools/colleges</p> <p>ii. Self-evaluation indicates that gifted and talented provision is very good or excellent</p>

Generic Elements	Entry	Developing	Exemplary
4. Enabling curriculum entitlement and choice	<p>i. Curriculum organisation is flexible, with opportunities for enrichment and increasing subject/topic choice. Pupils are provided with support and guidance in making choices</p>	<p>i. The curriculum offers opportunities and guidance to pupils which enable them to work beyond their age and/or phase, and across subjects or topics, according to their aptitudes and interests</p>	<p>i. The curriculum offers personalised learning pathways for pupils which maximise individual potential, retain flexibility of future choices, extend well beyond test/examination requirements and result in sustained impact on pupil attainment and achievement</p>
B - Enabling curriculum entitlement and choice			

Generic Elements	Entry	Developing	Exemplary
C - Assessment for learning			
Evidence Next steps			
5. Assessment for learning	<p>i. Processes of data analysis and pupil assessment are employed throughout the school/college to plan learning for gifted and talented pupils</p> <p>ii. Dialogue with pupils provides focused feedback which is used to plan future learning</p> <p>iii. Self and peer assessment, based on clear understanding of criteria, are used to increase pupils' responsibility for learning</p>	<p>i. Routine progress reviews, using both qualitative and quantitative data, make effective use of prior, predictive and value-added attainment data to plan for progression in pupils' learning</p> <p>ii. Systematic oral and written feedback helps pupils to set challenging curricular targets</p> <p>iii. Pupils reflect on their own skill development and are involved in the design of their own targets and tasks</p>	<p>i. Assessment data are used by teachers and across the school/college to ensure challenge and sustained progression in individual pupils' learning</p> <p>ii. Formative assessment and individual target setting combine to maximise and celebrate pupils' achievements</p> <p>iii. Classroom practice regularly requires pupils to reflect on their own progress against targets, and engage in the direction of their own learning</p>

Glossary definition provided for words and phrases shown in bold in the accompanying Quality Standards' User Guide QS Model October 2005 - 3 -

Generic Elements	Entry	Developing	Exemplary
6. Transfer and transition	<p>i. Shared processes, using agreed criteria, are in place to ensure the productive transfer of information from one setting to another (i.e. from class to class, year to year and school/college to school/college)</p>	<p>i. Transfer information concerning gifted and talented pupils, including parental input, informs targets for pupils to ensure progress in learning. Particular attention is given to including new admissions</p>	<p>i. Transfer data concerning gifted and talented pupils are used to inform planning of teaching and learning at subject/aspect/topic and individual pupil level, and to ensure progression according to ability rather than age or phase</p>
Generic Elements	Generic Elements	Developing	Exemplary
D - School/College organisation			
7. Leadership	<p>i. A named member of the governing body, Senior Management Team and the lead professional responsible for Gifted and Talented education have clearly directed responsibilities for motivating and driving gifted and talented provision. The Head teacher actively champions gifted and talented provision</p>	<p>i. Responsibility for gifted and talented provision is distributed, and evaluation of its impact shared, at all levels in the school/college. Staff subscribe to policy at all levels. Governors play a significant supportive and evaluative role</p>	<p>i. Organisational structures, communication channels and the deployment of staff (e.g. workforce remodelling) are flexible and creative in supporting the delivery of personalised learning. Governors take a lead in celebrating achievements of gifted and talented pupils</p>

Generic Elements	Entry	Developing	Exemplary
Evidence Next steps			
8. Policy	i. The gifted and talented policy is integral to the school/college's inclusion agenda and approach to personalised learning, feeds into and from the single school/college improvement plan and is consistent with other policies	i. The policy directs and reflects best practice in the school/college, is regularly reviewed and is clearly linked to other policy documentation	i. The policy includes input from the whole school/college community and is regularly refreshed in the light of innovative national and international practice

Glossary definition provided for words and phrases shown in bold in the accompanying Quality Standards' User Guide QS Model October 2005 - 4 -

Generic Elements	Generic Elements	Developing	Exemplary
9. School /College ethos and pastoral care			
		D - School/College organisation	
	i. The school/college sets high expectations, recognises achievement and celebrates the successes of all its pupils	i. The school/college fosters an environment which promotes positive behaviour for learning. Pupils are listened to and their views taken into account.	i. An ethos of ambition and achievement is agreed and shared by the whole school/college community. Success across a wide range of abilities is celebrated
	ii. The school/college identifies and addresses the particular social and emotional needs of gifted and talented pupils in consultation with pupils, parents and carers	ii. Strategies exist to counteract bullying and any adverse effects of social and curriculum pressures. Specific support for able underachievers and pupils from different cultures and social backgrounds is available and accessible	ii. The school/college places equal emphasis on high achievement and emotional well being, underpinned by programmes of support personalised to the needs of gifted and talented pupils. There are opportunities for pupils to use their gifts to benefit other pupils and the wider community

Generic Elements	Entry	Developing	Exemplary
Evidence Next steps			
10. Staff development	<p>i. Staff have received professional development in meeting the needs of gifted and talented pupils</p>	<p>i. The induction programme for new staff addresses gifted and talented issues, both at whole school/college and specific subject/aspect level</p>	<p>i. There is ongoing audit of staff needs and an appropriate range of professional development in gifted and talented education. Professional development is informed by research and collaboration within and beyond the school/college</p>
	<p>ii. The lead professional responsible for Gifted and Talented education has received appropriate professional development</p>	<p>ii. Subject/aspect and phase leaders have received specific professional development in meeting the needs of gifted and talented pupils</p>	<p>ii. Priorities for the development of gifted and talented provision are included within a professional development entitlement for all staff and are monitored through performance management processes</p>
Generic Elements	Entry	Developing	Exemplary
Evidence Next steps			
11. Resources	<p>i. Provision for gifted and talented pupils is supported by appropriate budgets and resources</p>	<p>i. Allocated resources include school/college based and nationally available resources, and these have a significant and measurable impact on the progress that pupils make and their attitudes to learning</p>	<p>i. Resources are used to stimulate innovative and experimental practice, which is shared throughout the school/college and which are regularly reviewed for impact and best value</p>

Glossary definition provided for words and phrases shown in bold in the accompanying Quality Standards' User Guide QS Model October 2005 - 5 -

Generic Elements	Generic Elements	Developing	Exemplary
D - School/College organisation			
12. Monitoring and evaluation	i. Subject and phase audits focus on the quality of teaching and learning for gifted and talented pupils. Whole school/college targets are set using prior attainment data	i. Performance against targets (including at pupil level) is regularly reviewed. Targets include qualitative pastoral and curriculum outcomes as well as numerical data	i. Performance against targets is rigorously evaluated against clear criteria. Qualitative and quantitative outcomes inform whole school/college self-evaluation processes
	ii. Elements of provision are planned against clear objectives within effective whole-school self-evaluation processes	ii. All elements, including non-academic aspects of gifted and talented provision are planned to clear objectives and are subjected to detailed evaluation	ii. The school/college examines and challenges its own provision to inform development of further experimental and innovative practice in collaboration with other schools/colleges
Generic Elements	Generic Elements	Developing	Exemplary
E - Strong partnerships beyond the school			
13. Engaging with the community, families and beyond	i. Parents/carers are aware of the school's/college's policy on gifted and talented provision, contribute to its identification processes and are kept informed of developments in gifted and talented provision, including through the School Profile	i. Progression of gifted and talented pupils is enhanced by home-school/college partnerships. There are strategies to engage and support hard-to-reach parents/carers	i. Parents/carers are actively engaged in extending provision. Support for gifted and talented provision is integrated with other children's services (e.g. Sure Start, EAL, traveller, refugee, LAC Services)
	ii. The school/college shares good practice and has some collaborative provision with other schools, colleges and the wider community	ii. A coherent strategy for networking with other schools, colleges and local community organisations extends and enriches provision	ii. There is strong emphasis on collaborative and innovative working with other schools/colleges which impacts on quality of provision locally, regionally and nationally
14. Learning beyond the classroom	i. There are opportunities for pupils to learn beyond the school/college day and site (extended hours and out-of-school activities)	i. A coherent programme of enrichment and extension activities (through extended hours and out of school activities) complements teaching and learning and helps identify pupils' latent gifts and talents	i. Innovative models of learning beyond the classroom are developed in collaboration with local and national schools/colleges to further enhance teaching and learning
	ii. Pupils participate in dedicated gifted and talented activities (e.g. summer schools) and their participation is recorded	ii. Local and national provision helps meet individual pupils' learning needs e.g. NAGTY membership, accessing outreach, local enrichment programmes	ii. Coherent strategies are used to direct and develop individual expert performance via external agencies e.g. HE/FE links, on-line support, and local/regional/national programmes

Appendix 7.10: Institutional Quality Standards guidance notes

Identification

Studies in this category would examine learning conditions and systems that help to identify and profile pupils' gifts and talents within institutional, local and national contexts, e.g. screening to identify under-achievement and exceptional achievement; tracking pupil progress to improve identification processes.

Effective provision in the classroom

Studies in this category would examine how institutions provide support and adapt provision for individual differences and needs, e.g. stimulating learning environments; extending the teaching repertoire; independent learning skills development; technologies to develop tailored learning, to maximise achievement and motivation.

Standards

Studies in this category would examine levels of achievement and attainment for gifted and talented pupils, e.g. comparisons across institutions; differing results from different types of provision.

Enabling curriculum entitlement and choice

Studies in this category would examine how learning is organised to increase choice and flexibility, e.g. opportunities to allow pupils to work beyond their age range or phase; focusing on the learners' interests or aptitudes; personalised learning pathways.

Assessment for learning

Studies in this category would examine how assessment information is used to inform future planning, teaching and learning, e.g. gaining feedback from pupils to plan future learning; self assessment to increase pupils' responsibility for learning; routine progress reviews; reflection on own practice.

Transfer and transition

Studies in this category would examine how information is effectively transferred from one setting to another and how it is then used to inform planning, teaching and learning, e.g. class to class; school to school; school to college/university/work place; ensuring progress in learning; parental input; the use of progression techniques according to ability rather than age.

Leadership

Studies in this category would examine how leaders in the schooling system demonstrate vision and direction in gifted and talented provision, including how they foster a positive and inspiring learning ethos, e.g. distribution of responsibilities to motivate and provide for gifted and talented learners; awards of achievement; organisational structures and their effects on the gifted and talented learners, empowering others and allow them to act upon their own ideas and visions.

Policy

Studies in this category would examine how philosophy and procedures guide practice in institutions and remains consistent with the philosophy and procedures in other policies, e.g. development of strategies or initiatives that include application to gifted and talented pupils; linking best practice with policy.

School/College ethos and pastoral care

Studies in this category would examine how the school fosters an environment which promotes positive behaviour for learning and celebrates both effort and achievement, e.g. high expectations and social/emotional support for gifted and talented pupils; strategies that aim to minimise negative pressure; encouraging a balance of achievement and emotional well-being; encouraging pupils to use their gifts to benefit other pupils and the wider community.

Staff development

Studies in this category would examine how teaching professionals access and utilise continuing professional development, e.g. professional development in meeting the needs of gifted and talented children; induction programmes; effectiveness of the development; ongoing audit of staff needs.

Resources

Studies in this category would examine funding and resources for gifted and talented pupils, e.g. provision support from appropriate budgets; resources have a significant impact on the progress of pupils and their attitudes to learning; resources used to stimulate innovative and experimental practice; allocation of specialist and support staff.

Monitoring and evaluation

Studies in this category would examine how policy, planning and provision is monitored and evaluated against targets and the planning of clear objectives, e.g. whole school self-evaluation processes; reviewing targets at pupil and institutional level; comparisons of school provision to inform development of practice.

Engaging with the community, family and beyond

Studies in this category would examine partnerships with parents, other providers and the wider community, e.g. parents'/carers' contribution to identification of gifts and talents and communication regarding appropriate provision; collaborative projects with other schools and organisations; strategies to engage hard-to-reach parents/carers; integration with other children's services.

Learning beyond the classroom

Studies in this category would examine learning and engagement beyond the school day and the school premises, e.g. activities outside of the classroom; summer schools; local enrichment programmes; collaboration with local and national schools to enhance learning; extended hours and out of school activities; using external agencies and the internet; school trips.

Appendix 7.11: Individual synthesis of the articles in the in-depth review

High-rated WoE D studies

Craven et al. (2000) Gifted, streamed and mixed-ability programs for gifted students.

In recent years, Australia has experienced a substantial growth in the numbers of both gifted and talented primary classes and secondary selective schools. Despite this recent support, reference to well-established research findings is often absent from education policy rationales. The purpose of this study was to evaluate the impact of three different gifted and talented settings (gifted and talented selective programmes, streamed classes and mixed ability classes) on gifted and talented pupils' self concepts, motivational orientations and academic achievement. Consequently, the focus of this study was on evaluating pre-existing provision as opposed to creating a new intervention. Participants in the study included 250 pupils from ten to twelve schools in the region's selective gifted and talented programme; 197 pupils from nine schools in a mixed ability setting and 187 pupils from five schools in a streamed setting.

The definition of giftedness employed in this study was based on the selection criteria used for the three different gifted and talented settings: gifted and talented selective programme criteria included a standardised Intelligence Quotient (IQ) test; recommendations from the teacher and parent; a checklist of behaviours completed by the teacher and parent and an interview with school counsellors. Selection from the streamed and mixed-ability classes was determined by teacher nomination.

The results indicated that pupils in the selective gifted and talented programme had lower reading; mathematics; science; problem-solving; school; general; physical; appearance and self concept at Time 2 (compared with Time 1) than pupils in streamed or mixed ability classes. Time 2-Time 1 differences were increasingly negative for pupils in the selective gifted and talented programme than the comparison groups for mastery, co-operative and intrinsic motivation scores. Increases in maths and reading achievement for selective gifted and talented programmes, did not vary from changes in comparison groups. For reading achievement, pupils in streamed classes improved more than those in mixed ability classes.

The authors recommended that gifted and talented programmes need to be designed to ensure that curriculum activities include strategies to maintain and enhance gifted and talented pupils' self-concepts and desirable motivational orientations. They suggested that more emphasis is needed on identifying pupils who will benefit most from particular settings such as selective gifted and talented classes. Such research may facilitate the development of matching optimally effective gifted and talented programmes with gifted and talented pupils rather than assuming that one type of setting is optimal for all gifted and talented pupils.

The reviewers agreed with the authors' conclusions that increased emphasis is needed on matching gifted and talented pupils with an appropriate programme of study. The research design was well considered with good attention to methodological issues such as reliability and validity. As a result, WoE A was rated as high. However the study contains very little information on the different experiences gifted and talented pupils may have in each setting and the study was based in one cultural setting, so caution should be employed before generalising from these findings. The reviewers were also concerned that no information was provided in the article on ethical issues such as consent, confidentiality or funding. Consequently, WoE B was

rated as medium. The study was focused directly on the review question, so WoE C was rated as high. This resulted in an overall WoE D of high.

Stoeger and Ziegler (2005) Evaluation of an Elementary Classroom Self-regulated Learning Programme for Gifted Math Underachievers.

This study presented the evaluation of an elementary classroom self-regulated learning programme aimed at the central causes of academic underachievement. Self-regulated learning was defined in the study as ‘... an active, constructive process whereby learners set goals for their learning and then monitor, regulate and control their cognition, motivation and behaviour, guided and constrained by their goals and contextual features in the environment’ (Pintrich 2000, p453). The actual aim of the training was to promote the skills involved with time management and the overriding goal was to bring about an improvement in self-efficacy and self-reflective learning behaviours.

The participants of the study were 36 fourth grade gifted underachievers in mathematics (identified discrepancy between IQ (using Raven’s Progressive Matrices) and performance in mathematics), who were identified in a sample of 1,200 pupils. Hence, for the purpose of the study giftedness was defined by IQ, but in relation to underperformance in a specific subject.

The training programme developed by Zimmerman et al. (1996) was conducted within the framework of regular classroom instruction on the subject of mathematics over a period of six weeks. It used a four-phase cycle of self-improvement for the learner:

- 1 - self-evaluation;
- 2 - analysis of tasks at hand, setting of learning goals and strategies in order to achieve these;
- 3 - apply strategies and monitor progress;
- 4 - connection between applied strategy and success and then return to first phase.

Training for teachers in whole-class instructional methods to secure self-regulated learning amongst a target group of pupils was delivered on: the theoretical groundwork on self-regulated learning; topics of time management and behaviour patterns related to home learning; conceptualisation and co-construction of sets of exercises and assessment materials.

The authors administered a range of assessments to assess self-efficacy; self-reflection of own learning; helplessness; persistence; aspirations; ability and achievement. They report that ‘a number of positive training effects could be statistically confirmed. In general, the training was deemed to be suitable for interventions to reduce underachievement.’ Marginally significant training effects reported for the areas of: time management - $F(1,30)=2.82$, $p=0.05$; self-efficacy - $F(1,30)=1.97$, $p=0.08$; and self-reflective learning - $F(1,30)=1.82$, $p=0.09$. ‘Analysis was made difficult by the rather small number of underachievers in mathematics who could be identified out of a sample of 1200 pupils. This meant that the risk of a Type II error was very high in this case, that is, the actual differences may not have been recognised as statistically significant. In fact, the authors suspected that this was indeed the case with this variable in the present study’ (p268).

A number of positive effects were confirmed from the intervention, especially with regard to the improvement of time management and strategic learning. The literature showed that the absence of these skills were important causes of underachievement, along with other factors also evidently addressed in the study, such as unrealistic self-assessment. The relatively small size of the sample of underachieving pupils in mathematics meant that it was not possible to confirm a positive effect in terms of scholastic performance within a MANOVA. Nevertheless, the review concurred with the authors’ ‘optimistic’ evaluation of the findings.

This study took many measures to increase the validity and reliability of the data collection and analysis, with the study design being a random control trial. Some attempts were made to justify the conclusions from the findings. There was no reporting bias and the Review Group agree with the conclusions of the study. Consent of the participants was sought and participants were involved with the self-directed training intervention and there was a sufficient rationale and an appropriate study design to answer the research question posed. The conclusions made are tentative but can be considered tentatively generalisable. The sample, methods and focus all relate to this review. All WoE judgements were rated as high, therefore giving a high overall rating.

VanTassel-Baska et al. (2002) A Curriculum Study of Gifted-Student Learning in the Language Arts.

This curriculum study of gifted-student learning in the language arts explored questions of curriculum efficacy related to the nature of the learner; the type of grouping model employed; and the strength of a curriculum treatment emphasising literary analysis and interpretation and persuasive writing. The study further explored the use of curriculum effectiveness data to improve instruction the next time a unit of study was taught. The call for high-quality curricula for the gifted matched a similar call in the general educational community for higher standards for all pupils. Attempts to bring standards-based reform to US classrooms have been met with scepticism, resistance and concern by many (Cohen and Hill 1998). In gifted education, concerns that the standards may be driving out appropriate curricula for the gifted have also been voiced (Reis 1999). The challenge for gifted education remains to demonstrate that the standards - and the professional disciplines whose voices lie behind them - may be used as a filter through which high quality curricula for the gifted might emanate.

By using a quasi-experimental design mode, the researchers sought to demonstrate the effects of particular units of study on gifted learners at primary, intermediate and middle school levels. Each unit was organised around the Integrated Curriculum Model (ICM, VanTassel-Baska 1986, 1995) and thus sought to enhance learning through an integrated approach of using advanced literature, embedding a reasoning model into the teaching of the language arts, requiring a high-quality student product, and organising and teaching to the major concept of change as it applies to literature, writing, language study, and oral communication.

Seventeen public school districts and one private provided school data for this study. The districts and schools were quite diverse and drawn from 10 states in the United States of America. In all, 46 schools participated in the study. Pupils participating in the study (N = 2189) were all pre-identified gifted learners in grades 2-8 in their local school district.

Analysis of covariance (ANCOVA) was used in the comparisons across groups to answer the questions of whether the treatment and comparison groups; males and females; grouping models and high or low socioeconomic status (SES) were significantly different in their post-test performance after controlling for pre-test differences. Paired samples t-test were used for comparison within each group formed by the gifted-student grouping model or repeated exposure to units to investigate within-group improvement in performance after curriculum intervention. Descriptive statistics were used for item level analysis to diagnose pupils' strengths and weaknesses after treatment.

Findings suggest that the curriculum treatment produces positive, significant and important learning outcomes for gifted pupils across 18 school district entities.

Several issues emerge for researchers from these study findings. For example, how do variables such as length of treatment time; teacher education and grouping effects impact on student learning results; how would the curriculum work with various special populations beyond the economically disadvantaged and with less gifted pupils; and that there is a need for comparative studies looking at curricular and instructional approaches for different subject areas and stages of development. Implications for practitioners include the need to recognise the benefits in the use of a defined differentiated curriculum that also addresses national and state standards and the importance of teaching models of learning in a systematic way to enhance overall cognitive development in literary analysis and interpretation in persuasive writing.

The authors used the term 'gifted' to refer to the sample identified. However, the study did not define what it meant by the term gifted nor did it provide the criteria used to identify the samples as gifted.

The research design was sound for the questions posed and the limitations of the study were acknowledged. As a result WoE A was rated as high. The reviewers had ethical concerns about the study as no information was provided on involvement of participants; recruitment methods; consent; data confidentiality or funding. As a result WoE B, was rated as medium. The study addressed directly the questions and sub-questions set in this systematic review and so WoE C was rated as High. This resulted in an overall WoE (WoE D) of High.

Medium-rated WoE D studies

Barron (2000) Problem Solving in Video-based Microworlds: Collaborative and Individual Outcomes of High-Achieving Sixth-Grade Students.

In this study based in the USA, it was hypothesised that gifted pupils would be able to transfer benefits obtained through collaboration to individual problem solving activities. Previous mixed results indicate the need for studies that assess the effects of collaboration under specific conditions for specific groups of

pupils. The aim of this article was to study the effects of collaborative activity on gifted pupils' learning. Ninety-six sixth grade pupils participated in the study.

All pupils attended a magnet school that served academically talented pupils. The definition of giftedness employed in this study was based on the enrolment criteria for these magnet schools. Eligibility for enrolment in the school was based on scores obtained on a nationally standardised achievement test.

To test the hypothesis, the following intervention was conducted in the study: Pupils earning scores at the 75th percentile or above on the mathematics portion of a standardised test were randomly assigned to group condition (groups of three pupils) or individual problem solving condition in this study.

The effects of collaboration on initial performance were assessed by comparing the average performance of collaborative groups with the average performance of individuals. To investigate learning outcomes for individuals, two types of follow-up problems were presented (a) to assess mastery, the problem solved during the first session was re-administered and solved individually by all study participants; and (b) to assess transfer, a structurally identical problem with different numbers was solved individually by all study participants. Gender differences were also considered.

The results of the intervention were positive. Pupils who solved the problem in teams and those who solved the problem independently were equally competent at specifying the variables that needed to be computed to solve the sub-problems during the mastery and transfer sessions. Superior performance was demonstrated by pupils who had worked in teams to that of pupils who had worked individually on solution. The effect of gender and time was also significant - lower performance of boys than girls on near transfer problem, whereas performance was equivalent on the mastery problem.

On the basis of these findings the authors recommended collaboration learning as it possibly holds great potential for the quality of joint work and for individual learning for gifted pupils.

The research was well executed and the limitations of the study were acknowledged. However, the reviewers would be more cautious in the conclusions derived given the limitations of sample and also because of other limitations stated in the article, including differences in problem solving environment, possible ceiling effect and difficulties in generalising the findings to normal class practice. As a result, WoE A and WoE B were rated as medium. The study directly addressed the review question and so WoE C was rated as High. This resulted in an overall WoE D of medium.

Biakolo and Afemikhe (2002) The effect of literature-based reading on gifted students in Botswana.

An assessment of the reading scene for gifted pupils in Botswana indicated limited educational opportunities and a lack of gifted education facilitators; a non-challenging reading curriculum and lack of a reading model in the society. In addition, reading instruction seemed inadequate: whole-class teaching was utilised, irrespective of individual ability, and there were no creativity objectives. The question that arose was whether one could put in place a programme rich in curricular materials, easily implemented and yet effective. It is against this background that the researchers investigated the utilisation of literature-based reading.

Literature-based creative reading has the feature that there were no designated textbooks. Trade books; daily newspapers; poems; journals and periodicals are used as the primary materials of instruction. In addition, there were regular individual conferences with the teacher, pupils selected what was to be read and the readers' responses formed part of an integrated feature of instruction. Also involved was the use of thematic units, reading and writing connection and pupils' study of authors.

The design used for the study was a 2 x 2 non-randomised factorial design. The two factors were treatment and gender, each with two levels. The levels of treatment were literature-based reading (LBR) and control groups. The criterion variables were creativity, attitude to reading and reading skills. Pre-treatment and post-treatment measures were obtained on each of these variables.

The population of the study comprised of all gifted pupils in year 1 of the 14 Community Junior secondary schools in Gaborone, Botswana. The age of the pupils ranged from 12 years to 14 years, with a modal age of 14 years. Two schools were identified for the study with a combined student enrolment of 510.

The subjects were selected in two stages. Using some characteristics of giftedness outlined by Davis and Rimm (1989), pupils with achievement records which ranged between 78 per cent and 85 per cent were initially identified from both schools for further screening for giftedness. The second stage involved the administration of the Slosson Intelligence Test (SIT-R). The manual for the SIT-R indicated that a total

standard score of 120 was appropriate as a cut-off point, and this was used to identify sixty pupils in each school. A random sample of twenty pupils (ten males and ten females) was selected from the identified pupils in each of the schools. The data collected were analysed using t test and multivariate analysis of covariance.

What could be concluded from this study was that literature-based reading could improve the creativity, attitude and reading skills of gifted pupils. These skills are a necessity for success in academic endeavour and the literature-based reading approach could therefore be expected to serve as a good preparation for school work.

The authors looked at gifted pupils but suggested that future studies attempt to find out how well the approach works for the majority of pupils who also need to improve their academic performance.

The authors used the term 'gifted' to refer to the sample identified. However, the study did not define what it means by the term gifted nor did it provide the criteria used to identify the samples as gifted.

The research design had flaws related to validity and trustworthiness of data collection tools and methods as well as for data analysis. As a result WoE A was rated as having low trustworthiness. The reviewers had ethical concerns about the study as no information was provided on recruitment methods; consent; data protection or funding. There was very little involvement of participants and no reported involvement of the pupils themselves, thus WoE B was also rated as having low trustworthiness. The study focused on highly relevant issues for this systematic review and so WoE C was rated as high giving an overall WoE (WoE D) of medium.

Fardell and Geake (2003) Vertical semester organisation in a rural secondary school as a vehicle for acceleration of gifted students.

This was a study of Vertical Semester Organisation (VSO) in a New South Wales secondary school in Australia. VSO is a curricular organisational process in which pupil progression through units of study is dependent on factors other than age, such as learner needs, abilities and interests. In the case of this paper, the VSO was organised through subject areas. The intervention was established for the less able pupils, but teachers noted the positive effects on the more able. They therefore worked with investigators to examine the extent to which possible benefits for gifted pupils were actualised. Particular foci included how pupils of high ability availed themselves of opportunities for acceleration, and how their grades were affected. Those defined as 'gifted students' for this study were those who achieved the top 25 percent of grades in the school.

This was the first of two papers on the intervention; this paper focused on the facts and figures and the second paper investigated the qualitative data through detailed interviews. This particular paper addressed the following three questions:

1. Did the implementation of VSO at the research school provide sufficient organisational infrastructure for an effective gifted educational provision?
2. To what degree did gifted pupils take advantage of organisational provisions for acceleration by enrolling in units in advance of the level of study commensurate with their age and grade?
3. How do the grades of gifted pupils who accelerated compare with those who only enrolled in units commensurate to their age and grade and how do accelerants' grades in accelerated units compare to their grades in units in which they did not accelerate?

The third of these points was the key to the review question.

Three years of extant school data were mainly used (1994-1997) examining the grades and choices of the top 25 percent achievers in the secondary school (approximately 108 pupils). Issues such as gender and subject choice were also considered. Patterns of choice, acceleration choices and grades were evaluated and there were also semi-structured interviews with the school Principal and Head Teacher. The data analysis was largely undertaken as descriptive numerical data; percentages; means and standard deviations. No rationale for the methods was given and there was no discussion of how the interview data was utilised. It was the inference of the reviewer that this was blended into the general discussion throughout the paper. Problems of confounding variables were mentioned explicitly.

The measures of achievement for the students were the grades achieved in the subjects where pupils chose to pursue the accelerated classes. A further measure of the effect of the intervention was the uptake of the acceleration offer. Results showed that pupils who accelerated achieved higher grades than anticipated:

‘the results suggest that factors other than relative ability have contributed to the better than expected levels of performance. Such factors could include greater cohort homogeneity of ability and interest, fewer interruptions due to indiscipline, and greater pupils and teacher motivation and enthusiasm’ (p. 28).

Concerns about the study were difficult to encapsulate. The researchers used readily available data and so it was not clear that consent would have needed to be sought; this was a review of a school policy that was implemented by school managers and consent would certainly not have been required for this rearrangement of the curriculum. The researchers stated that teachers were invited to offer accelerated classes rather than being required to provide them but that ‘there exists a career imperative for the teaching staff. When pupils “voted with their feet” in favour of or rejection of, certain subjects, the positions of the teaching staff were affected, i.e. re-enforced or possibly placed in jeopardy’ (p27). This seriously affected the potential replicability of the study for even if it was found that VSO was a generalisable answer to the needs of able pupils, there were serious concerns about the treatment of teachers.

There were some attempts to increase replicability of the study and a longitudinal approach analysing some confounding variables helped increase the validity of the methods. However, more information was needed, especially with regards to the qualitative analysis and therefore the WoE A score was rated medium. Some details regarding ethical considerations, bias and the study’s justification were explicitly stated but these explanations were not sufficient and therefore, the WoE B was rated medium.

The VSO method could be generalised, but the school was rural and so this vertical grouping may have been more appropriate than in other settings. The study clearly related to the focus of this review. Methodological weaknesses aside, it did set out to explore the sample and intervention outcomes relevant to this review. The score given for WoE C for this study was therefore high. In terms of trustworthiness, appropriateness of research design, analysis and relevance, the overall WoE D score was medium.

Gaultney (1998) Differences in benefit from strategy use.

The purposes of this study, which was carried out in the USA, were to explore the phenomenon of memory utilisation deficiencies in general and specifically to examine the patterns of strategy acquisition and the impact of strategy use on text recall among gifted and average pupils. Rather than measure a spontaneously produced strategy (e.g. organisation during list learning), the present study trained pupils in the use of a text comprehension strategy to ensure that any strategy use subsequent to training was, in fact, a newly acquired strategy rather than one that may have been differentially familiar to and practiced by the participants. The strategy taught in the study, elaborative interrogation, was a self-questioning approach in which the reader asked ‘why’ questions in response to story statements. This particular strategy was chosen because it was measurable, could be taught within a specific time frame, and has found to improve comprehension (see Wood, Pressley and Winne, 1990).

The course of gifted pupils’ strategy use was of particular interest since questions remained as to whether gifted pupils’ memory advantage was due to strategy use; some aspect of better metacognition; nonstrategic; basic factors or some combination of these characteristics. In addition, those charged with developing curricula for the education of the gifted must decide if it is worthwhile to actively teach strategies to gifted pupils, whether they will benefit from using those new strategies, and what sort of demands and learning tasks will ‘nudge’ gifted pupils to spontaneously discover and use learning strategies.

It was hypothesised in this study that gifted pupils would be quicker to acquire and to benefit from the new strategy and, therefore, be less likely to demonstrate or maintain a utilisation deficiency.

Pupils designated as gifted had been identified as academically gifted by their school district at the end of the third grade on the basis of a composite score consisting of their performance on TCS (Tests of Cognitive Skills), performance on a standardised achievement test, and classroom grades. The range of scores for the gifted pupils may indicate that they are a ‘moderately academically gifted group’ as opposed to a ‘highly gifted group’. The author acknowledged that this definition of giftedness is limited and consequently the nature of the study was exploratory rather than a definitive examination of the cognition of gifted individuals. Seventeen gifted and sixteen average fourth and fifth grade pupils participated in the study; participation was based on the return of parental consent forms. The intervention strategy selected to train and assess was elaborative interrogation (Woloshyn et al. 1994) in which pupils were taught to construct ‘why’ questions for the material they read.

The results indicated that after the intervention gifted pupils had greater recall than that of average pupils prior to and one week after training, despite equivalent levels of strategy use. Correlational evidence

indicated that average pupils eventually benefited from using the strategy while for gifted pupils strategy use did not correlate with recall at any point.

Based on the findings from the intervention the author recommended that in practice gifted pupils, because they seem to have superior nonstrategic memories, may require more difficult tasks than average pupils in order to acquire and use memory strategies and that an optimal level of strategy use may differ as a function of one's cognitive abilities. The findings of the study were negative in that a ceiling effect meant the intervention was of limited value to gifted pupils. However, a positive outcome of the findings was the evidence that gifted pupils require tasks suitable to their cognitive abilities.

As a consequence of the identification methods employed and the small sample the author states that the study was exploratory and they were cautious in their conclusions. The reviewers felt this caution was merited, as although the focus of the study related to the review question generalisability was low. It would be possible to replicate the study but difficult to draw conclusions based on current findings given sample and design limitations. Further information on the design would also have been beneficial. As a result WoE A and B were rated as medium. WoE C was rated as high as the study did directly address the review question. This resulted in an overall WoE D of medium.

Landau et al. (2001) Impact of an Enrichment Program on Intelligence, by Sex, among Low SES Population in Israel.

The study was based on data collected in an enrichment programme of 80 Israeli gifted and talented pupils (grades 4-8) from disadvantaged neighbourhoods who were taking part in an enrichment programme (Young Person's Institute for the Promotion of Creativity and Excellence at Tel Aviv University). Its goals were to examine the work: whether there would be an increase in intelligence from the pre- to the post-test in all the participants; how girls fared in comparison with boys; and whether special attention to avoid sexism would bring girls who began with a lower intelligence to show the greatest improvement of all.

Pupils were accepted into the programme on the basis of teacher recommendations - teachers evaluated pupils according to a checklist of factors designed to capture various aspects of intelligence and creativity. For the purposes of the study relative giftedness was defined solely by IQ measurement, intelligence being measured using a Peabody Test (Dunn 1965) adapted to the Israeli population. This was used to allocate programme participants into four groups of high/low ability by gender.

The study presented an analysis of literature and built on work of Czikszenmihalyi (1993), Subotnik (1993) and Feldhusen (1989) relating to gender differences in self-assurance and posits that girls should be taught in a more creative way to develop the positive leadership skills that boys are given access to more routinely. It discussed a combination of internal and external motivational factors affecting achievement, the authors speculating that external factors affecting girls require investigation.

Participants attended weekly enrichment classes on creative thinking, scientific thinking and social thinking over the course of two years. Instructors were given training on methods to avoid classroom sexism and to encourage participation of girls. Intelligence measured using the modified Peabody test pre- and post-intervention. Participants were grouped as high/low intelligence and by gender.

Data analysis showed that both boys and girls' scores increased following the intervention, with girls improving more than boys. Examination of means showed that the difference between pre and post-test scores for girls was an increase of about ten points, compared to five for boys. Pupils whose pre-test scores were lower improved more than those whose pre-test scores were higher. Pre-post difference of ten points in the lower ability group compared to six in the higher group. MANOVA analysis showed that the difference was significant. There was also a tendency to support the conclusion that girls who began the programme with lower test scores would improve the most, but the MANOVA did not support significance. The MANOVA showed that pre- and post-test difference was significant for all pupils.

After participation, girls' performance was higher than boys, compared to a 'slightly lower' starting point. Whilst both girls and boys increased, the girls' average increase was significantly greater than that of the boys. The authors attributed this result to the co-operative, rather than competitive nature of the programme; atmosphere of freedom and security and the emphasis on creativity, which was supported by conscious avoidance of sexism and gender-stereotyping.

The reviewers had few concerns about the overall trustworthiness of the study, but highlighted that the analysis was of the effects of an intervention programme as a whole and not of the specific elements of the intervention. There was no qualitative analysis of the dynamics of the motivation of the pupils taking part, or to the impact of pupil choices within the programme, and this would have usefully supplemented the quantitative data in this case.

Some attempts were made to ensure validity and reliability but these were mainly those measures that occurred alongside the data analysis itself. The Review Group agrees with the conclusions drawn and some attempts were made to justify the conclusions made from the findings. Therefore the WoE A was rated medium for this study. There were some ethical concerns as consent, funding and privacy issues were not discussed. However, participants were involved with the decisions made during the intervention and therefore WoE B was rated medium. The study did not aim to generalise their findings and the authors reported that this was an area that needed to be investigated further before it can be generalised. The sample, focus and relevance of the study were closely linked to the review's focus and therefore WoE C was rated high, resulting in an overall medium WoE D rating.

Ryan and Geake (2003) A Vertical Mathematics Curriculum for Gifted Primary Students.

The study took place in Australia and sought to evaluate the effectiveness of a vertical curriculum structure in a primary school designed to provide an effectively differentiated curriculum for a wide variety of student abilities. The study also sought to evaluate the effectiveness of the vertical curriculum model for pupils identified by the Raven's Progressive Matrices test as intellectually gifted. It focused on the implementation of a vertical curriculum in mathematics for Grades 5 and 6 (N=88) over a one year period in a Victorian school. The cohort was grouped into five 'clinics' by intellectual ability; mathematical readiness; and teacher recommendation. Intellectual ability was determined by non-verbal reasoning ability score measured by the Raven's Progressive Matrices (De Lemos 1995). Mathematical readiness (and progress in learning throughout the study) was measured by the Progressive Achievement Tests in Mathematics (PATMath) (Australian Council for Educational Research 1997). Teachers' qualitative assessments were also used to place pupils in appropriate vertical curriculum clinics. These assessments included anecdotal records and observations, and teachers' past and current experiences with each student. Each of the five vertical curriculum clinics had a mix of pupils from each of the five ability groups. Gifted pupils were concentrated in the top clinic whose curriculum was accelerated by one or two years.

'Achievement' was assessed in terms of the levels articulated in the Curriculum Standard Frameworks (CSF) guidelines (CSF Teacher Manual, 1997). Relative achievement or progress was determined through comparisons of these achievement levels across the school year. Progress was measured in three ways:

-Absolute gain	-Initial gain	-Relative gain
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There was a significant positive shift in the distribution across the scaled scores of the PATMath scaled scores. Clinics operating at the lowest level (Grade 4 and below) and at the highest level (year 7, i.e. at secondary level) showed the most progress in absolute, initial and relative gain scores.

There were no significant differences in any of the three measures of progress between any of the ability groups. The result that the progress of the gifted group was not significantly different from the other ability groups, taken together with the result that the highest level vertical mathematical clinic made similar or significantly greater progress than the other clinics, suggests that gifted pupils benefited from placement within a group of peers of similar mathematical readiness and interest, where the curriculum was set at an appropriately challenging level of difficulty (here, the secondary school level) and proceeded at an appropriately challenging pace. The findings indicated that gifted pupils placed within the highest level vertical curriculum group made significant mathematical progress at a level at least a year advanced of the primary curriculum. Moreover, pupils in lower level vertical curriculum groups also made significant mathematical progress during the year. The vertical curriculum allowed all pupils to work according to readiness and ability. Thus the vertical curriculum provided an equitable educational outcome for both gifted and non-gifted pupils.

Pupils were referred to as gifted and talented and appeared to have been identified through intellectual ability; mathematical readiness; and teacher recommendation. There was no definition given as to what gifted and talented meant or what these pupils would be doing to merit the title.

There was a lack of information regarding the qualitative aspects of the project. While the study is fairly replicable it does not have a large enough sample or rule out enough confounding variables to be generalisable. For example, there is no reporting of power and effect sizes. There was no discussion of other possible impacts on learning. Thus WoE A and B rated as Medium. The study was highly relevant to the review question in that it looked at a particular intervention and thus for WoE C it rated high. However, overall the study was judged to be Medium.

Webb et al. (2002) Short Circuits or Superconductors? Effects of Group Composition on High-Achieving Students' Science Assessment Performance.

This study investigated the effects of group ability composition for high ability pupils on group processes and outcomes for high ability pupils completing science performance assessments. The rationale seemed to be a response to the need to link assessment to pedagogy as raised by various USA school boards in the 1990s. The study considered 'what works' and the intervention was a comparison of different group compositions, with mixed and homogenous groupings evaluated in relation to one another in science activities.

The authors referred to standard gifted education literature, plus social psychology and emotional aspects of learning (e.g. Dweck 1986, Dweck and Leggett 1988, Noddings 1985, etc.) as their focus was mostly on the behaviour and emotions of the pupils. They carried out detailed analysis of group interactions (videoing some groups for independent analysis) and examined the following:

[a] co-construction of task solutions; [b] helping behaviour; [c] socio-emotional processes within the groups; and, [d] whether the pupils' contribution to group discussion all of the knowledge they demonstrated prior to the group work.

The sample consisted of around 162 11-16 year-old pupils and all undertook individual pre-tests (pencil and paper and practical tests); the New Jersey test of verbal reasoning (IQ-type measure); specific science sessions; group work (with analysis of discussion, including video analysis), and various post-tests. Definitions of high ability were based on the verbal reasoning test results. The observations of the group work focused on the effects of different groupings on achievement and the socio-emotional aspects of learning and communication.

Measures of the group efficacy were made through analysing the data drawn from the observations and the breakdown of the quality and the nature of the discussion. The data were analysed through a range of statistical measures (correlation, ANOVA, ANCOVA, etc) and very detailed and specific discussion was made of confounding variables and other effects. Despite the emphasis on statistical analysis of the interactions, the overall focus of the paper and study was on the quality and type of interaction (often presented through more qualitative measures).

It was found that:

- (a) high ability pupils performed well in homogeneous and in some, but not all, heterogeneous groups;
- (b) types of group interactions that occurred during group work strongly affected performances;
- (c) group interaction predicted student performance more strongly than either student ability or the overall composition of a group.

This result was not surprising given the detail of the analysis of pupil behaviour and interaction. Previous studies had assumed that high ability pupils had been disadvantaged through being grouped with less able peers, but the detailed analysis in this study shows that the disadvantage is due to poorly functioning groups, rather than the mix of abilities.

The authors made the following recommendation: 'An important challenge for future research and practice is to devise strategies for maximising the group functioning of all groups so that the potential of each group's intellectual resources can be realised' (p983).

Reliable and valid methods and analysis were used but no baseline or control measures were taken and therefore the WoE A score was rated medium. Some details regarding ethical considerations, bias and the study's justification were explicitly stated but these explanations were not sufficient and therefore, the WoE B was rated medium. The study related to the focus, sample and intervention outcomes relevant to this review. The WoE C for this study was therefore high. In terms of trustworthiness, appropriateness of research design, analysis and relevance, the overall WoE D score was medium.

Ysseldyke et al. (2004) Use of an Instructional Management System to Enhance Math Instruction of Gifted and Talented Students.

This study was carried out in the United States of America.

Accelerated Math (AM; Renaissance Learning 1998a) is a curriculum-based instructional management system

for mathematics. It is based on a number of what are called 'Renaissance Learning Principles'. These principles include the following: assessment of student skill level and provision of instruction matched to skill level; personalised goal setting; provision of significant amounts of practice time; and provision of direct and immediate feedback to pupils and teachers on the pupils' performance. This study examined the extent to which teacher use of a curriculum-based instructional management system as an instructional enhancement would result in differential effects in mathematics achievement for gifted and talented pupils in comparison to gifted and talented pupils whose teachers did not use the system. They also examined what happens to gifted and talented pupils when such an instructional management system is put into place. In addition, investigation was held into the differences in gains between the gifted and talented pupils and non-gifted and talented pupils receiving the AM intervention; non-gifted and talented pupils receiving AM; and non-gifted and talented pupils not receiving AM.

They conducted both qualitative and quantitative analyses. For the quantitative analysis, they used a four-group pre-test, post-test control-group design. The intervention spanned a four-month period of time between pre-test and post-test.

The pupils were part of a larger study in which AM was implemented. Four groups of pupils were evaluated in this study. Two of the groups were made up of pupils who were classified as gifted and talented and two groups comprised regular education pupils who received the AM intervention and those who did not. Forty-eight gifted and talented pupils were enrolled in classrooms that used the AM programme in addition to their regular math programme. An additional fifty two gifted and talented pupils were enrolled in the same schools, but in classrooms that did not use AM. Ten of the schools had gifted and talented pupils.

ANCOVA was used to examine differences in gains in math achievement between the groups of pupils. They used pre-test STAR Normal Curve Equivalent (NCE) as the covariate and post-test STAR NCE as the dependent variable.

Results suggested that the pre-test scores were not significantly different between the gifted and talented pupils. There was a significant difference in gain as a function of treatment ($F = 6.7, p < .01$) in favour of the group that was provided with the AM intervention. Results of the ANCOVA ($F = 9.718, p = .002$) indicated significantly greater outcomes for gifted and talented pupils when compared to non-gifted and talented pupils participating in the experimental condition. There were significant differences between groups in percent correct on practice exercises, number of tests attempted, percent correct on tests, and objectives mastered. There were no significant differences between groups on practice items attempted. These results suggested that gifted and talented pupils did not attempt any more practice items when compared to non-gifted and talented pupils. Gifted and talented pupils were able to get a greater percentage of their practice items correct. These pupils also attempted more test items and were able to achieve a higher percentage correct when compared with their non-gifted and talented peers.

The final analysis completed was one of variability among gifted and talented pupils in each of the intervention variables. The results of this study indicated that gifted and talented pupils did profit from access to the AM intervention. This suggests that a structured and engaging intervention that provides an option for pupils to proceed at their own pace and that also manages instruction for teachers has a great practical advantage to the regular curriculum provided to gifted and talented pupils. The authors argued that without an individualised instructional system, the pupils may not have had the opportunity to learn these more advanced concepts in lieu of the intervention.

Although the work was undertaken with recognised gifted and talented pupils, there was no definition given of what constituted giftedness and no information was given as to how these pupils were identified. Pupils were recognised as being gifted and talented in the States in which they were enrolled. Again no evidence was given as to what constitutes 'being gifted' within each state. Thus the study works from the premise that these pupils were gifted and talented and offered no indication of how this was measured.

According to the researchers, the results of this study indicated that in comparison with gifted and talented pupils who did not receive the AM intervention, gifted and talented pupils do profit from access to the AM intervention. This suggests that a structured and engaging intervention that provides an option for pupils to proceed at their own pace and that also manages instruction for teachers has a great practical advantage to the regular curriculum provided to gifted and talented pupils. The researchers suggested that the fact that we were able to accelerate performance and achievement so radically validated many of the findings in the literature, indicating that gifted and talented pupils are not being provided effective interventions that allow them to capitalise on their abilities. The results might suggest that simply giving a student any intervention will result in greater growth. This may be true to some extent, but the fact is that the control group in the study was identified as gifted and talented and designated to be provided appropriate instruction. Researchers claimed that results indicated that the extent to which pupils were merely provided extra time and opportunity for learning may not matter as much as the type and structure of the practice

provided matched with individual pacing and feedback. There is also prior evidence suggesting that AM enhances the mathematics achievement outcomes in the average general education classroom.

Overall the WoE D was judged to be medium. There were some issues regarding the sample and the qualitative aspects of the study and so WoE A was rated medium. The lack of information that was presented on the qualitative aspects of the study were concerning and so WoE B was rated medium. There was not enough detail about the use of baseline measures. The sample size was as a whole reasonable. However, the amount of gifted pupils was probably too small to create a strong enough effect size. The study linked to the review question well and so WoE C was high. It was disappointing that the overall score was medium as the study was highly relevant.

Low-rated WoE D studies

Fletcher and Santoli (2003) Reading to Learn Concepts in Mathematics.

This study investigated the importance of reading and writing in understanding mathematical principles. It took place in Alabama, USA. The research focused on studying the effects of reading on the Gifted Algebra 1 and the Gifted Pre-calculus class. The target classes contained four and five pupils respectively. A list was compiled of the 30 most fundamental words and pupils were surveyed as to their understanding of these words. Pupils in the researcher's class and in classes of other teachers of the same subject undertook the survey. The researcher supplemented traditional numerical problem solving with vocabulary quizzes, reading assignments and problems which required the pupils to explain the processes they would use and why, in answering mathematical problems. Pupils in the pre-calculus class did not receive the additional material well as they had gained high grades following the old methods. Pupils in the Algebra class were not as highly motivated to achieve good grades and received the material more easily.

After the treatment period of three weeks the pupils were given an evaluation to communicate what they had learned and the other classes also undertook this. Results indicated that pupils were unaware of their mathematical vocabulary and teachers needed to emphasise it more in lessons. Test grades among pupils remained high but the tests changed drastically. Pupils took longer to finish the tests. The results from the control group showed almost no comprehension of the concepts. The study reported that working on reading, writing and communicating in mathematics class was hard work but the rewards were a healthier and stronger understanding of mathematics. It was important that pupils understood the relationships among ideas and the underlying concepts practiced when completing textbook problems. Results suggested that where pupils did not have a good written model provided by either the teacher or the authors of good textbooks then they were disadvantaged when asked to communicate what they know. The writer stated they would continue with the work in their class. However, there was an acknowledgement that it was easy to integrate reading and writing in certain topics but in others it took much more time. The authors believed the intervention had improved their teaching and the ability of their pupils to understand mathematics.

Overall WoE was judged to be low. While the researcher had explored an interesting and important area of mathematics teaching, the work had been completed as part of an on going development of teaching techniques and as such had not been undertaken as a 'research project' per se. Thus the paper did not meet the required criteria for being a strong evidence based paper. The pupils in the study had already been identified as being gifted and talented but no indication was given as to how they were identified. The Algebra pupils were described as being 'average to above average' with the Pre-Calculus class consisting of 'the top five girls who were highly motivated and not used to any other grade past the first letter of the alphabet'. They were all referred to generally as gifted. It would appear then that identification was based on test results.

The purpose of this 'intervention' was not to impact on scores directly but to ensure that pupils had a deeper understanding of mathematical concepts and to this end the study was successful. While the style of teaching embraced slowed down the teaching, the pupils reported positive benefits to the approach adopted. The study was also about changing the practice of the teacher and again the researcher reported that as a result of undertaking this work the teacher would continue to use it as it improved teaching ability and the ability of the pupils to understand maths. Thus there was a clear link between the work carried out in this paper and the review question.

The research design had flaws related to validity and dependability, although this was a classroom intervention by a class teacher and it was not their intent that this would be replicated in another setting, however WoE A was rated low. However, the study perhaps highlights the tensions between interventions that are carried out at classroom level by class teachers and research methodology. For example, the

reviewers held ethical concerns about the study as there was no information about recruitment or consent and yet pupils' views were sought in relation to how they had perceived the intervention impacted on their mathematics learning, thus WoE B was cited as low. The study focused on relevant issues for this systematic review and so WoE C was rated medium, thus giving an overall rating of WoE D as low.

Olenchak (2001) Lessons Learned from Gifted Children about Differentiation.

Olenchak's study focused on the differentiated provision offered to four gifted and talented pupils aged 9-12 years. Implicit within the rationale for the study was the view that despite wide-scale and longstanding acceptance of differentiation strategies in gifted and talented education, definitions and practices continue to vary widely. Teachers tended to view differentiation for gifted and talented pupils 'globally'; that is, adapted curricula/instruction was based on how they are different as a group from others, rather than individual-level differentiation.

The study entailed the development of detailed case studies of the young people, using a combination of methods including: observations over 1-3 years; quarterly interviews; analysis of documents embracing field notes; pupils' journals and school records. The author did not define or explain his use of the phrase 'gifted and talented', and merely stated that the pupils in the study were identified as such. The four pupils in the study were: a 14-year-old girl with avid interest in computers, with a history of social isolation and truancy; a 12-year-old boy who had been nominated by his teacher, but whose IQ score means he is excluded from the district's gifted and talented education provision; a 10 year old girl with increasing incidents of emotional difficulties, who is bilingual and exhibits high ability in various subjects; and a 15-year-old boy with few friends, identified as gifted and talented for his work with pupils with learning disabilities. The intervention was informed by Renzulli and Reis' (1997) guidelines for analysing student strengths; further information related to their interests was gathered using 'formal instruments as well as interviews and experiential observations' (p. 193). Thereafter, each student was provided with a mentor from their own school, and an individualised strength profile was used to create a personally tailored programme. This plan became the centrepiece of each pupil's provision, emphasising real word thinking and action; affective development and self-identification; group and individual counselling; and recognition of out-of-school accomplishments. At the same time, weaknesses were identified, but were de-emphasised in favour of their strengths.

The findings after one school year reported positive changes for each student: 'improvements were at least noteworthy and occasionally were remarkable' (p. 194). Individual findings were given for the four pupils. The first student responded positively to her mentor's knowledge of computers, and her truancy greatly decreased. The second enthusiastically engaged in research into environmental issues, and benefited from personal and group counselling, as well as protected curriculum time for projects. The third pupil's emotional difficulties reduced. The fourth student responded to his mentor's interests in music and sport to compose a musical piece for the school basketball game. The author concluded that differentiation ought to be personalised. He also argued that school-based mentors with similar personal interests are critical for identity development and clarification, and that talent development activities ought to be purposefully scheduled as the focal point in programmes for gifted and talented pupils.

The reviewers questioned the confidence in the findings in light of the absence of baseline data. They also suggested that the lack of detailed information on the intervention itself, and on the process of data-gathering, meant that it was difficult to judge the validity of the conclusions drawn. However, the study did relate to the focus of this review: methodological weaknesses aside, it did set out to explore the effectiveness of a narrow range of pedagogical interventions for a small group of pupils identified as gifted and talented.

In light of the limited information provided on the intervention, the research methods and the data-analysis, it was difficult to assess the soundness of the conclusions. The Review Group felt that insufficient attempts had been made to justify the conclusions drawn from the findings, so the conclusions were of low trustworthiness. No explicit attempts were made to ensure reliability or validity and avoid reporting bias. The study generalised the results and recommended the intervention be used in schools, whereas the reviewer suggested future research using the suggested baseline and longitudinal research. Therefore the WoE A score was low. Very little information was provided about ethical concerns and why the study was implemented in this particular way. The author stated that there was the need for an explanation regarding how 'to develop and implement intervention plans that, to the greatest extent possible, would allow for differentiation on a personal level'. But this only related to the type of intervention offered, not the overall form of the research. The WoE B was rated low. The results were only minimally generalisable, as so little information was provided about the content of the intervention, the methods used to study it, and the data gathered. The study clearly related to the focus of this review. Methodological weaknesses aside, the paper

did set out to explore the effectiveness of a narrow range of pedagogical interventions for a small group of students identified as gifted. The score given for WoE C for this study was therefore medium. In terms of trustworthiness, appropriateness of research design, analysis and relevance, the study scored poorly and the overall WoE D score was low.

Walker (2005) Increasing Verbal Participation of Gifted Females through the Utilization of Multiple Intelligence Theory.

Gifted females' lack of verbal participation in lessons within their elementary school classrooms was perceived as an obstacle to the maximisation of their learning potential. The goal of the study was to identify causations of the girls' reticence to demonstrate verbalisation skills that were commensurate with those of their male counterparts and to develop strategies to promote increased female verbal participation in classroom discourse.

Giftedness in this study was defined according to two measures; pupils eligible for the gifted programme all met the state criteria of an IQ of 131 or above and qualifying scores on two teacher checklists of required characteristics (not supplied, p.8).

The study utilised multiple intelligence theory as a method for encouraging gifted females to increase their verbal interactions within classroom lessons. A review of literature was presented in support of the design of a 20 week programme of interventions. These encompassed principles of Renzulli's school-wide enrichment model (Type II and III interventions) (Renzulli 1977, Renzulli and Reis 1985, 1997), Csikszentmihalyi's (1997a, 1997b) theory of flow, Kirschenbaum's (1998) creativity templates, James (2002) and numerous other writers.

All of the gifted learners were observed daily for quantitative data to assess the frequency with which each gender communicated verbally; initiated verbal contact; was offered higher-level query; and engaged in dialogue with teachers. All pupils were interviewed four times during the study. Both teachers of the gifted met weekly to discuss the study's progress, and parents of gifted females were randomly selected for interviews. All of the gifted learners were administered the Bar-On Emotional Quotient-Inventory: Youth Version (Bar-On and Parker 2000) to collect pre- and post-test data. The pre- and post-test data demonstrated little significant change in female pupils' emotional quotient above the mean. Tallies on the observational sheets documented an increase in verbal participation by female learners. However, the females' frequencies of self-initiated speaking and responses to higher-level inquiries did not increase to the levels projected. Although positive changes were recorded, the sample size was too small to generalise from the data.

The study was of some use in answering the review questioning that the intervention was effective. The writer concluded that 'the learning experience was heightened and that female verbal participation increased when the pupils explored lessons that combined several of the intelligences'. The recommendation of the writer is the establishment of positive, non-competitive learning environments that focus on increasing verbal participation by all reticent pupils. Through utilisation of researched strategies, increased discourse was observed in males and females whose taciturn nature had previously been identified by their parents and teachers. The Review Group noted, however, that there was no analysis that would clarify which of the interventions had produced the effect. Moreover, there was a lack of evidence related to the actual impact on attainment.

Overall, WoE D was judged to be low. The reviewers expressed concerns about the overall design of the study. WoE A was rated as low. The theoretical background is aligned to multiple intelligences and a range of different authors and theories affecting different parts of the intervention programme. The interventions themselves differed from the plan in response to learners' needs. Discussion concerning unintended consequences and changes to the process would have enhanced the value of the study. The writer himself discounted the significance of his findings. WoE B was therefore low. Although the participants were involved in the design of the study, the process was loosely defined. The writer recounted that he quickly became overwhelmed by the qualitative data generated, his own workload and the inflexibility of his plan. Given that a wide range of influences were cited in the design of the research and these were not subject to consideration in the analysis, alternative explanations for the findings cannot be ruled out. This is also a factor in rating the study as low for WoE C.

Wood (1999) Factors Involved in the Establishment and Development of a Special Primary School Class for Academically Gifted Students.

This study sought to examine the history and effects of a special class for academically gifted and talented primary-aged pupils. The class for pupils in their final two years at primary school was instigated in a medium sized rural town in New South Wales. Pupils were selected for the class based on teacher and parent nomination; IQ score (120+); literacy and numeracy assessments; a problem-solving assessment; a test of general abilities; and class results from the year's mathematics.

There was a mixed reaction to the class in the community and little information was provided by the educational authorities to describe the needs of gifted and talented pupils and the appropriate educational experiences for them. This case study examined the establishment and development of the class over its initial four years. There were major contributing factors to the development that emerged from the analysis of the data: the teacher; the process of differentiation (in the classroom and programme to meet the special educational needs of gifted and talented pupils) and the local school and community.

While there was considerable reference to the first two factors in literature from Australia and overseas, there was limited reference to the influence of the others - in particular the school, its staff and its system - on the development of gifted classrooms. Over the time period, the teacher evidenced changes in her knowledge and skills; and in her philosophy, which was dynamic and evolved in response to the pupils; the school environment and the outside community of educators and parents. Curriculum differentiation in all its aspects created a learning environment that challenged the gifted and talented pupils in a holistic fashion.

Reactions of the local community had both positive and negative influences on the programme and its development. Positive relationships with other staff members and professionals can be seen to have supported and affirmed the teacher while giving her information and allowing her to demonstrate appropriate education for gifted and talented pupils. Reflection; the concept of achievement; a child-centred approach to teaching and a sense of flexibility and consistency were four processes that the teacher used and which were required by the pupils to master and apply in order to demonstrate their potential. In the programme, the pupils showed development in their personal and learning skills, an outcome that was paralleled by the teacher's response and professional development. Implications were found for the development of awareness of giftedness; fostering the potential of gifted and talented pupils; the development of skills to encourage academically gifted and talented pupils to become autonomous and responsible and the training of staff members in the provision of differentiated programmes for gifted and talented pupils with particular needs.

Although the study's focus was closely related to that of this review, the reviewers held reservations about the research design and the analysis of data. They also questioned the transferability of the study's findings.

The Review Group felt that sufficient attempts were not made to justify the conclusions drawn from the findings, so the conclusions were of low trustworthiness. The problem with the trustworthiness of the conclusions is that they did not directly relate to the initial research question. The research question for this paper, like the question posed by this review, related to pedagogical practices for gifted children. In practice, this question was barely addressed at all, and the bulk of the paper focused on the political context around the implementation of the intervention, rather than the intervention itself. Therefore the WoE A score was low. The research design was poor. It would have been possible to utilise the researcher/teacher's personal observations and reflections as data in addressing the question, but this did not happen, and therefore the WoE B was rated low. The research question related extremely closely to the review. However, the research design and data-analysis departed from this, and the result was that clues to effective practice occurred only occasionally in the report. In terms of transferability, it was difficult to see how this experimental class could be employed within the English context (or most other systems). It required the establishment of a special class, drawing children from a range of schools. Funding approaches at present make this difficult. Moreover, the removal of pupils from classes on a long-term basis seemed to directly conflict with the guidance given in the classroom Quality Standards. The score given for WoE C for this study was therefore low. In terms of trustworthiness, appropriateness of research design, analysis and relevance, the study scored poorly and the overall WoE D score was low.

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

SUMMARY

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

REPORT

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

**TECHNICAL
REPORT**

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

DATABASES

Access to codings describing each research study included in the review

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First produced in 2008 by:

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