
WHAT WORKS IN IMPROVING THE EDUCATIONAL ACHIEVEMENT OF GIFTED AND TALENTED PUPILS?

A systematic review of literature

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Introduction and background

This review investigates evidence concerning classroom interventions that improve the educational achievement of gifted and talented pupils.

Recent years have seen a radical change in both policy and practice related to the education of gifted and talented pupils. Initiatives have been introduced aiming to raise the profile of these pupils and to improve the quality of their educational experiences substantially, especially for those underachieving as a consequence of disadvantage (consequently helping to narrow achievement gaps). Government agencies have presented clear expectations that schools and local authorities are required to support the education of gifted and talented pupils.

National Quality Standards have been introduced. These include Classroom Quality Standards, which are a tool for classroom teachers providing a benchmark for auditing effective provision. One of the aims of this review was to provide evidence to inform the Quality Standards.

Key findings

The overall conclusion from the study is that there does not appear to be any evidence to support a claim that any single strategy is more effective for this heterogeneous group of pupils. The diversity means that personalised, differentiated provision is needed. What works for gifted and talented pupils in the classroom depends on the student, the teacher, the curriculum and the classroom context. However, within this, the review group interpreted the review results as indicating that:

- Participation in special classes (away from school), or in schools specifically for gifted and talented children, did not always enhance the self-concept of gifted learners. This could however be due to children changing peer groups and the disruption caused by moving schools or classes, rather than the nature of the targeted activities.
- Providing special provision for gifted and talented pupils within their existing school can be effective. Examples were teaching gifted and talented children in separate ability groups within a school, and a 'vertical curriculum' where gifted and talented pupils are allowed to progress through the curriculum at their own rate, making their own choices about their studies.
- Gifted and talented pupils can succeed in mixed ability settings, but the role of the teacher in managing these classes is important. If gifted and talented pupils struggle to participate effectively in mixed ability classes then structured interventions can be helpful, such as mentoring, or the development of dialogue and communication skills for gifted and talented pupils.

- Gifted and talented pupils can benefit from an adapted or enriched curriculum including advanced literature and teachers clearly expressing their high expectations of the quality of students' work.
- Good quality collaborative learning can help gifted and talented pupils; small groups of gifted and talented pupils seem to demonstrate improved planning and generate better solutions to set problems. This learning transfers to other areas, resulting in enhanced individual performance.
- Gifted and talented pupils benefit from being taught to improve their thinking and reasoning and to hone communication skills. Self-regulation skills (e.g. how to set goals, manage their time effectively, plan their homework etc) are also particularly useful.

Methodology

The overall research question was: ***“Which types of classroom interventions improve the educational achievement of children identified as gifted and talented?”***

The review looked at international initiatives covering school pupils between the ages of 5-16, published between May 1998 and November 2007. A map of 101 relevant studies was produced.

The in-depth review concentrated on studies that examined planned, classroom-based strategies in schools catering for primary and/or secondary aged children, which were designed to promote educational achievement among its gifted and talented learners. 15 relevant studies were identified.

Synthesis of the research studies

3 themes emerged from the studies:

Interventions based on school and class organisation

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 seem to be the least effective. There is some evidence that teaching gifted and talented children in separate ability groups within a school, mixed ability provision and individual programmes lead to improved learning for gifted

and talented learners, although mixed ability provision requires a favourable classroom climate.

Participation in special gifted and talented classes or schools can sometimes lead to decline in academic self-concept.

Teaching gifted and talented children in separate ability groups within a school offers an alternative solution to selective programmes for addressing the problem of differentiating provision for gifted and talented pupils. The review 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, rather than the alternative provision, predicted pupil performance more strongly than either student ability or the overall ability composition of the groups.

A more radical approach was also examined in the research. This was the 'vertical curriculum model' which allows pupils to be grouped within a school according to their self-perceived levels of readiness, rather than being grouped by age. A vertical mathematics curriculum structure in a primary school resulted in significant increases in mathematics performance for both gifted and talented and other pupils which may suggest that gifted and talented pupils benefited from placement within a group of peers of similar mathematical readiness and interest, where the curriculum is set at an appropriately challenging level of difficulty. A related study with secondary pupils came to similar conclusions regarding the virtues of vertical curriculum organisation.

Finally, 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.

Interventions based on social interactions

A number of studies identified social interactions as an important factor in effective provision for gifted and talented pupils. There was evidence that collaborative learning amongst gifted and talented pupils results in superior performance in an Information and Communication Technology task. This study also found that small groups of gifted and talented pupils generated better

planning and solutions than those working alone and this learning transferred to later individual performance.

Some gifted and talented pupils in mixed ability groups performed as well as those in homogeneous groups. Some pupils react positively to working with less able peers, but others do not, and this may well reflect and affect the character of their relationships within the group; some dominate discussions and tasks, and others collaborate fully with their group mates. Group functioning tends to be mediated by the classroom climate, so the role of the teacher as a mediator of social interactions is vital.

There is some evidence that allowing underachieving gifted and talented pupils the opportunity to demonstrate and use their talents is effective. This can involve mentoring; the use of creative arts activities; the celebration of a wide range of talents; the development of meta-cognitive strategies; and the development of leadership skills for gifted and talented pupils. These structured interventions can encourage otherwise reticent gifted and talented pupils to participate more fully.

Interventions based on the development of new skills and strategies

Some studies looked specifically at the development of specific skills or strategies in gifted and talented pupils. There is a view that, in order to fulfil their potential, gifted and talented pupils require different or advanced content and opportunities for higher-order thinking skills. It has been suggested that gifted and talented pupils differ from their peers, in part, by their superior memory, and this could mean that they fail to develop a repertoire of conscious strategies.

One way of eliminating some of the causes of underachievement is to help gifted and talented pupils develop self-regulation skills. In one study, a training programme taught pupils to set goals for themselves, manage their time effectively and to plan their homework.

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

Implications

The review endorses the policy of focusing support for gifted and talented pupils in mainstream settings.

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 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 isolated strategy or singular 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, personal motivation and a positive experience of schooling. The teacher plays an important role to in generating and sustaining contexts for appropriate social interactions.

Further research is required in gifted and talented education. In particular, studies are needed that explore the distinctive needs of individual gifted and talented pupils, their social interactions and their teachers' pedagogies.

Studies included in the in-depth review

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

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

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-J-G. (2003) Vertical semester organisation in a rural secondary school as a vehicle for acceleration of gifted students.

Fletcher, Mike; Santoli, Susan (2003) Reading To Learn Concepts in Mathematics: An Action Research Project.

Gaultney, Jane F. (1998) Differences in benefit from strategy use: What's good for me may not be so good for thee

Landau, Erika; Weissler, Kineret; Golod, Gail (2001) Impact of an Enrichment Program on Intelligence, by Sex, among Low SES Population in Israel.

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

Ryan-M-J, Geake-J-G. (2003) A vertical mathematics curriculum for gifted primary students.

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

VanTassel-Baska, Joyce; Zuo, Li; Avery, Linda D.; Little, Catherine A. (2002) A Curriculum Study of Gifted-Student Learning in the Language Arts.

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

Webb, N. M.; Nemer, K. M.; 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, Jim; Tardrew, Steve; Betts, Joe; Thill, Teri; Hannigan, Eileen (2004) Use of an Instructional Management System to Enhance Math Instruction of Gifted and Talented Students

Additional Information

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Copies of this report are available in three formats from the EPPI-Centre website – a summary, report and technical report. These can be downloaded or accessed at <http://eppi.ioe.ac.uk/reel/>

This research brief is available from the DCSF website: <http://www.dcsf.gov.uk/research/>

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