Research for Teachers

The enduring impact of quality early years education

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How does quality early years education affect achievement at primary level?
This TLA research summarises the final report from the primary phase of the Effective Pre-school and Primary Education project (EPPE 3-11)*, Europe's largest longitudinal investigation into the effects of pre-school and primary education on pupils' development. The researchers followed more than 2,800 children from the start of pre-school (around the age of 3) along with a further 300+ children with no pre-school experience, until the end of Key Stage 2 (age 11 years) by which time 2,600 children were still in the study.

The project originally over-sampled children from disadvantaged groups because they were important for policy. Being disadvantaged was related to parents' educational experiences (or lack of them), the quality of the early years home learning environment, the need for English as an additional language support, development problems early in life and other factors such as socio-economic status and low income.

The benefit of longitudinal studies is that they enable various influences on development to be compared in terms of the relative magnitude of each influence and also the development stage in which particular influences have the strongest impact. They can also demonstrate the ways that different phases of education interact with one another. For this phase of the project, the researchers set out to explore the effects of pre-school at the end of Key Stage 2, the contribution of the family and home learning environment, the contribution of primary schools to children's development and how pre-school and primary school interact to affect pupils' learning and development. The researchers also carried out a sub-study of more than 500 children and families to shed light on effective transition to secondary school at the end of KS2.

Our earlier summary 'Effective provision of pre-school education' examined the impact of pre-school provision on children's intellectual, social and behavioural development at age five and seven. This summary reports on the enduring impact of quality pre-school experiences at Key Stage 2. It also looks at the difference effective

primary schools made and what made primary schools effective. The difference home background made to children's progress - particularly the importance of parental expectations - is examined as well as how schools promoted a successful transition at the end of Key Stage 2.

As usual, this summary provides a number of independent case studies carried out by teachers, which explore some of the key findings from the research about effective primary schools. These include examples of how one group of teachers set about improving the way they developed their pupils' problem-solving skills and how another developed their pupils' speaking and listening skills during group work. Other case studies detail one school's approach to improving outcomes for disadvantaged children and an innovative way of easing transfer to secondary school for underachieving pupils who found transition difficult.

* Sylva, K., E. Melhuish, P. Sammons, I. Siraj-Blatchford and B. Taggart. *Final Report from the Primary Phase: Pre-school, School and Family Influences on children's development during Key Stage 2 (7-11)*. DCSF (RR 061), 2008.
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Overview

Why is the issue important?
Poorer quality pre-schools and less academically effective primary schools may reinforce existing inequity, while good provision and experiences on the other hand can help to counteract the risk of poor development (of particular concern for disadvantaged children).

What did the study find out?
The study showed the enduring impact of attending a high quality pre-school throughout primary school. It also confirmed the impact on pupils of attending a more academically effective primary school. Attending an effective primary school made a significant, positive difference to reading, mathematics and behaviour including self-regulation (such as being able to take responsibility for their own tasks) and pro-social behaviour (such as sharing with other children).

What made primary schools effective?
Practices observed in high quality primary schools included:

- engaging children in thought-provoking discussions
- children using hypothesis to experiment with a range of ways of tackling a problem, and
- teachers using the three-part lesson structure, but particularly the plenary which offers important opportunities for pupil feedback and consolidation of learning.

The study also found three factors besides quality teaching that helped children to make progress at primary school:

- use of homework
- enhancing pupils' achievement and views of themselves through giving pupils a more active voice in their learning, and
- active communication by schools with parents.

How was the research designed to be trustworthy?
This was part of a longitudinal study of 2,800 children from 3 years of age. The data collected included:

- pupils' cognitive outcomes from NFER reading tests and KS2 National assessment scored in English and mathematics.
- statistical analyses of national assessment data sets for all pupils in approximately 950 primary schools
- interviews with and questionnaires to parents to gain background information about the pupils
- observation of a sub-sample of 125 schools to find out about Year 5 classroom practices and school processes for 1,160 pupils.

What are the implications?

The research showed the importance of teachers:

- giving pupils opportunities to problem-solve and experiment with different ways of tackling a problem
- providing pupils with opportunities to engage in sustained interactions with other pupils through structured group work
- developing their use of plenaries to consolidate learning
- enhancing pupils' views of themselves through pupil voice, and
- supporting parents to become more involved in their child's learning at home.

What do the case studies illustrate?

The case studies show how, for example:

- teachers in one school developed the way they promoted their children's problem-solving skills
- one school developed its use of pupil voice so that all pupils learned to express themselves, think about and contribute to the learning process, and
- a group of teachers set about enhancing their pupils' discussions during group work.

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Study

The study has been divided into 13 sections:

- How did good quality pre-school experiences affect children's progress at KS2?

- How did effective primary schools influence children's progress?

- What practices made primary schools effective?

- What practices were observed in schools serving disadvantaged areas?

- What school factors other than quality teaching influenced children's progress at primary school?

- What difference did home background make to children's progress?

- What helped to promote an effective transition to secondary school?

- What were the barriers to a successful transition and how can these be tackled?

- How was the research designed?

- Some implications from the research

- Gaps in the research

What is your experience?

Do you have any evidence regarding strategies for improving the educational outcomes for pupils from deprived backgrounds? Do you have action research or enquiry-based development programmes that are designed to explore what schools and teachers can do to effectively support the learning for this group of vulnerable pupils? We would be interested to hear about examples of effective approaches, which we could perhaps feature in our case study section.

Your feedback

Have you found this study to be useful? Have you used any aspect of this research in your own classroom teaching practice? We would like to hear your feedback on this study, which we can share and use to inform our work. Click on the link 'Tell us what you think' on the left to share your views with us.

Effect of good quality pre-school experiences

How did good quality pre-school experiences affect children's progress at KS2?

Good quality pre-school experiences
The researchers noted how quality teaching and learning in pre-school included:

- planned learning environments
- structured interactions between adults and small groups of children
- sustained shared thinking to extend children's learning
- both teacher-initiated group work and freely chosen, yet potentially instructive, play activities
- formative assessment
- the selection of activities to provide cognitive challenges
- adult support in talking through conflicts, and
- shared child-related information between parents and staff.

Our earlier summaries 'Researching effective pedagogy in the early years' and 'Effective provision of pre-school education' explored these factors in some detail.

The impact of quality pre-school experiences at KS2
The researchers' findings showed that attending a quality pre-school was associated with higher attainment at age 11 and at each social class level. The scores of disadvantaged children who had not previously attended pre-school by comparison, fell below the expected minimum level. Attending a pre-school also showed a positive effect on children's pro-social (considerate) behaviour at the end of Year 6 compared with not attending, but there were no statistically significant differences for other aspects of social behaviour.

Which children particularly benefited?
Boys benefited more from previously attending a higher quality pre-school than girls in terms of increased levels of self-regulation and especially pro-social behaviour. Overall, girls had much better scores than boys on all four aspects of behaviour tested by the researchers (independence, peer-sociability, hyperactivity and anti-social behaviour); but boys who previously attended a higher quality pre-school showed greater benefit relative to girls.

Children identified as having special educational needs (SEN) during primary school gained more from having attended a higher quality pre-school in terms of increased self-regulation, pro-social behaviour, lower hyperactivity and anti-social behaviour in Year 6. As might be expected, children who were never identified as having SEN had better scores on all four social/behavioural outcomes than children who were identified as having SEN during primary school. But children identified as having SEN showed significantly better outcomes if they had attended a higher quality pre-school.

Influence of effective primary schools

How did effective primary schools influence children's progress?
The research showed that having attended a quality pre-school was not the only factor influencing children's achievement and progress during primary school - attending academically effective primary schools was important too.

Attending a more effective school made a significant, positive difference to reading, mathematics and behaviour. The aspects of behaviour that were examined by the researchers were:

- self-regulation (such as being able to take responsibility for their own tasks or showing leadership during group work)
- pro-social behaviour (such as sharing with other children or offering to help others)
- hyperactivity (such as being easily distracted, restless, or impulsive), and
- anti-social behaviour (such as fighting with other children, lying or stealing).

The combination of attending a higher quality preschool and then moving on to an academically effective primary school had clear benefits for pupils' attainment at age 11, especially for mathematics. While those

children who did not go to pre-school but who attended a high academically effective primary school showed a significant boost (effect size = 0.65), those children who attended both a high quality pre-school and a high academically effective primary school showed an even greater boost (effect size = 0.83).

The researchers also found that attending a high quality pre-school provided some protection against attending a less effective primary school. Pupils who attended high quality pre-schools did better in less effective primary schools than pupils who had not attended pre-school or those who had attended lower quality pre-schools.

The reverse was also true. Pupils who attended a primary school of high academic effectiveness made more progress in Key Stage 2 (compared to children in schools of low academic effectiveness) even if they had not attended a pre-school or if their pre-school was of low quality.

Attending an academically more effective primary school had more impact on children's progress (particularly in mathematics) than that of the pre-school, something the researchers attributed to the length of time children spend at primary school.

Effective primary school practice

What practices made primary schools effective?
To find out about effective primary school practice, the researchers carried out observations in Year 5 classes in a sub-sample of 125 schools. Pupils in schools where teaching quality was high did significantly better in both reading and mathematics than those attending schools where quality was observed to be low.

Characteristics of classrooms that the researchers rated highly were:

- group work and thought-provoking discussions
- use of plenary sessions, and
- teachers modelling problem-solving and children using hypothesis to experiment with a range of ways of tackling a problem.

You may like to read case study 1 which describes how a group of teachers investigated the way children's problem solving skills were developed in their school and how this helped them to develop their practice. The psychologist Jerome Bruner advocated learning by through enquiry linked to problem solving. You may also like to read our earlier summary about his 'constructivist' model of teaching and learning.

Group work
The researchers highlighted how other research shows that there can be benefits from collaborative group work at KS2 as pupils engage in more (and more sustained) interactions with other pupils, but this study indicated that such group work was not common. You may like to read case study 2 which describes how a group of teachers introduced group work in order to improve their pupils' speaking and listening skills. You may also like to read the earlier RfT about raising achievement through group work which explores structuring group work so that it enables pupils to hold productive conversations with each other.

Use of plenary sessions
The researchers found the quality of teaching was significantly higher in classes where plenaries for pupil feedback and consolidating learning were used (for both literacy and numeracy), but around half the literacy (51%) and numeracy (49%) lessons the researchers observed did not use plenaries. The lowest quality of teaching was found in classes where plenaries were absent. You can find out more about facilitating plenaries effectively in the further reading section.

Practices observed in disadvantaged areas

What practices were observed in schools serving disadvantaged areas?

The researchers' observations showed that the quality of teaching tended to be poorer in schools with higher levels of social disadvantage (measured by the percentage of pupils eligible for Free School Meals).

- In mathematics, there were fewer opportunities for pupils to practise basic skills in the context of problem solving (which encourages higher order thinking).
- In literacy, pupils spent more time in off-task talk and their classrooms were less likely to be well organised and have well managed transitions between activities.

Behaviour tended to be worse in schools where there were more children eligible for free school meals. The researchers suggested a number of possible of reasons for this, including that it may be:

- harder for teachers to maintain good order in schools serving higher proportions of disadvantaged children
- that poorer classroom practice is a contributory factor in explaining the poorer outcomes of children from disadvantaged families
- the influence of lower teacher expectations, and
- that less experienced teachers are recruited in schools serving more disadvantaged communities.

The researchers argued that expectations can be self-sustaining. They affect both perception (by causing teachers to be alert for what they expect and less likely to notice what they do not expect); and interpretation (by causing teachers to interpret and perhaps adjust what they see so that it is consistent with their expectations).

You may like to read our earlier summary about effective behaviour strategies for pupils with emotional and behavioural difficulties.

The researchers concluded that initiatives that promoted the overall quality of teaching and emphasised creating a more orderly classroom climate are likely to improve educational outcomes for all pupils. They suggested this may be particularly important for schools with higher proportions of disadvantaged pupils (because these schools are more likely to have higher levels of classroom disorder). You may like to read case study 3 which shows how one school located in a disadvantaged area set about improving educational outcomes for all its pupils.

You may like to read our earlier summary 'Deprivation and Education' which explores a number of strategies schools and teachers have used successfully in the classroom to counter the disadvantages experienced by pupils from deprived backgrounds, such as assessment for learning practices, supporting small groups, enriching the curriculum, providing positive learning environments.

School factors

What school factors other than quality teaching influenced children's progress at primary school?
The researchers reported on three factors besides quality teaching that helped children to make progress at primary school:

- use of homework
- enhancing pupils' achievement and views of themselves through giving pupils more active voice in their learning, and
- school communication with parents.

Use of homework
The research indicated a positive relationship between the use of homework with mathematics progress and better self-regulatory and pro-social behaviours. Use of homework included teachers:

- setting homework every week for their class
- marking and returning homework promptly, and

- setting high enough standards for pupils.

Giving pupils a voice

Progress in reading and self-regulation were positively linked to pupils being given greater opportunities to organise activities for themselves and having their views listened to. The researchers' results also showed that those who perceived their schools more favourably in terms of teachers' support for their learning made better progress. The researchers' findings suggested that schools that took steps to explore pupils' views and perceptions and encourage greater pupil participation in school were more likely to encourage and promote the development of positive self-perceptions in pupils as well as improve pupils' achievements and enjoyment of school. However, high levels of enjoyment of school on their own did not predict better attainment or behaviour.

You may like to read case study 4 which shows how one school developed its use of pupil voice so that all pupils learned to express themselves, and think about and contribute to the learning process. You may also like to read the RfT participation anthology which explores ways of fully involving pupils in learning.

School communication with parents
In schools where teachers reported active communication with parents, pupils made better academic progress. Good communication included:

- parents being regularly informed about their child's progress/achievements, and
- the school being good at communicating its expectations of pupils to parents.

Where teachers reported strong parental support, pupils made better progress in reading and pro-social behaviours, such as being considerate of other people's feelings and being helpful if someone is hurt or upset.

You may like to read the earlier summary about parental involvement which shows the benefits of parental support and the way it works in more detail and the earlier summary about home-school knowledge exchange which shows effective ways of communicating with parents.

Home background and children's progress

What difference did home background make to children's progress?

Case studies the researchers made of children at age 10 who had succeeded against the odds (selected because they had high attainment, but low socio-economic status) showed the importance of a high quality early years home learning environment and high parental expectations.

Interviews with parents and pupils that explored what might account for the pupils' success showed:

- a range of family members provided support for pupils' learning - all of the families from each of the more stimulating early years home learning environment, low socio-economic groups studied, provided their children with a good deal of structure and learning activities, such as reading to their children in their early years and listening to them read at an early age
- pupils themselves were active in maintaining these practices, and
- education was valued highly by the family as a means of improving life chances - the families had a fairly broad understanding of education and a strong desire to benefit from the services available.

Parents and the pupils with a higher quality early years home learning environment from a disadvantaged context thought that the reason some pupils did better in school was because they were more attentive and made more of an effort. The parents of these children had high expectations for them and saw education as important for achieving economic independence and employment opportunities in the future. They hoped their children would attend higher education and have a professional career. The role of schools was important here. The researchers suggested that some parents may lower their own expectations of their children's capabilities according to a pre-school or school report on their child's progress.

Family members became involved in the education of their children when they believed that their own (and the child's) efforts would be rewarded. If they considered the child's educational success to be less dependent upon effort and more upon the child's (or their own) innate ability, then they were less likely to become involved. This resonates with the psychologist Carol Dweck's work on the effects of fixed and growth mindsets. She found that learners who believed that intelligence was innate and fixed gave up when faced with a learning challenge. But those who believed that ability on a task could be improved through effort and trying new approaches remained resilient. You can find out more about her research, including ways of promoting a growth mindset, in the TLA research summary 'Promoting students' persistence in meeting challenges'.

Efficient transition to secondary school

What helped to promote an effective transition to secondary school?
Most of the 500 pupils (84%) involved in the researchers' sub study of transition practices had felt prepared for moving to secondary school, and after spending a term at their new school nearly three quarters of the children said they felt happy.

Transfers were found to be better when:
o curriculum continuity was achieved with the use of bridging materials, for example, where the same workbooks were used in both Years 6 and 7
o transferees (either a whole classes or families) could see examples of work, and sample lessons in secondary school
o Year 7 teachers made familiarisation visits to primary schools where they shared information on skills and understanding needed in Year 7 as well as the style of lessons pupils might experience, and
o the first day in secondary school allowed them opportunities to experience the space and facilities without other pupils around.

Another important indicator of a successful transition was the extent that children had more and new friendships, higher self-esteem and reported greater confidence after their transition to secondary school. This, the researchers argued, demonstrates a need to help children develop their social and personal skills in order to manage transition.

Secondary schools helped by:
o offering help with study skills e.g. how to use reference sources, how to revise, how to make notes and how to write an essay
o orientating pupils quickly in the geography of new buildings
o relaxing rules in the early weeks and offering support with homework
o making helpful visits to primary schools (see procedures above), and
o offering induction/taster days and extensive information booklets.

You may like to read the earlier RfT about transfer from the primary school which explores practices that make for a smooth transition from primary to secondary school in some detail.

Barriers to transition

What were the barriers to a successful transition and how can these be tackled?
Although most of the pupils involved in the research had felt happy after moving to secondary school, a minority of children did not feel prepared. We explore some of the reasons given by the researchers for this below.

Pupils worrying about their ability to do the work

A child's interest in the curriculum and continuity were two indicators of a successful transition. The researchers suggested children need to understand what is expected of them in secondary school, be prepared for the level and style of work, and be challenged to build on progress at primary school. This helps to ensure a growing interest in school and work. Teachers wanted more information and a better understanding of the different approaches to teaching between primary and secondary schools. Parents also wanted to see schools better preparing their children for secondary school work. The most successful schools were those with very close links and coordination between primary and secondary schools.

On the positive side, the researchers found that children with SEN and other health problems were experiencing greater curriculum continuity between Years 6 and 7. This may have been due to these children having an earlier and more individual transfer process to prepare them better for the move and the work they will do in Year 7.

Pupils worrying about fitting in and making friends
Settling well into school life and getting used to new routines were two important elements of a successful transition. The researchers suggested that these aspects can be improved by encouraging children in the same class to work collaboratively and help each other even if they are not always together in the same lessons. Most secondary schools are structured around a form system. Whilst this is usually used as a registration and/or PSHE group, Heads of Year could use this time to enhance children's social skills and self-esteem - perhaps by establishing smaller tutor/focus groups within the form.

Bullying
Thirty per cent of parents reported their children having been bullied at secondary school. The researchers found that children with special educational needs (SEN) were more likely to be bullied, although on the whole they (and those from other vulnerable groups) did not experience less successful transition than other children. The researchers suggested that secondary schools could involve older children to help Year 7 children settle and this may alleviate children's and parents' worries as well as reduce bullying. Children with older siblings also adjusted better in this regard. The researchers suggested it would be beneficial to develop clear systems and offer guidelines for Year 7 tutors to identify bullying, in order to refer those who appear to have problems to a support system or a scheme of buddies.

You may like to read case study 5 which describes how one secondary school set about overcoming barriers for underachieving pupils in particular by setting up a 'transition club' during the summer term for Year 6 pupils from the feeder primary schools who were expected to achieve Level 3 in the Key Stage 2 tests.

Research design

How was the research designed?
The Effective Pre-school and Primary Education (EPPE 3-11) project studied pre-school and primary school experiences for a national sample of approximately 2,800 children in England - 2,600 children were still involved by the end of the primary phase. The original EPPE study (published in 2004), investigated children's development between the ages of 3-7 years. The report formed the basis of an earlier Research for Teachers summary. The follow-up report detailed findings relating to the same sample of children up to the end of Key Stage 2 (7-11 year olds). This examined the overall influence of pre-schools and primary schools as well as the combined impact of pre-school and primary school on pupils' development.

This (longitudinal) study combined quantitative and qualitative methods. A variety of data were collected including:

- (Year 5) NFER tests of reading and mathematics
- (Year 6) Key Stage 2 National assessment scores in English and mathematics
- teacher assessments of four kinds of behaviours (self-regulation, hyperactivity, pro-social and anti-social behaviour)

Value-added measures of overall primary school academic effectiveness in English and mathematics were derived from statistical analyses of national assessment data sets for all pupils in approximately 950 primary schools in 155 local authorities over three successive years.

The researchers gathered background information about the pupils from interviews with and questionnaires to parents. This enabled them to control for background influences when analysing the contribution of particular factors to pupil outcomes. Information about pupils' self-perceptions and experiences of school was collected through a self-report questionnaire in Year 2 and Year 5.

The researchers also visited a sub-sample of 125 primary schools to collect observational and questionnaire data in order to describe Year 5 classroom practices and school processes. A sub study of around 500 children and families, including 12 case studies that involved interviews with the children and their primary and secondary teachers, was carried out to explore effective transition practices.

The work of the EPPE 3-11 project has now been extended by two further projects: Effective Pre-school, Primary and Secondary 3-14 (EPPSE 3-14) running until 2011 which follows the pupils to the end of Key Stage 3 and then EPPSE 16+ which runs till 2013 and sees the sample to their post 16 destinations.

Implications from the research

Some implications from the research

Teachers, particularly those in schools with higher proportions of disadvantaged pupils, may like to consider the following implications of the research.

- One of the characteristics of effective primary classrooms was that pupils were given the opportunity to problem-solve and experiment with different ways of tackling a problem. Could you provide more opportunities for pupils to work together to tackle problems that require them to hypothesise, ask questions and discuss lines of enquiry? Could you share ideas about areas of the curriculum where problem-solving works best? (You may find case study 1 a helpful starting point).
- The researchers highlighted how other research shows that there can be benefits from collaborative group work at Key Stage 2 as pupils engage in more (and more sustained) interactions with other pupils, but that their study indicated that such group work was uncommon. Could you make more use of structured group work in your lessons, including training your pupils in the use of group work skills such as listening, taking turns and questioning? (You may find case study 2 a useful starting point for this).
- According to the research, exploring pupils' views and perceptions and encouraging their participation in learning encourages and promotes positive self-perceptions in pupils as well as improving pupils' achievements and enjoyment of school. Do you consult your pupils about their experiences of teaching and learning and then use their suggestions to inform your teaching? (You may find case study 4 a helpful starting point for this).
- The researchers found the quality of teaching was significantly higher in primary classes where plenaries were used. Plenaries allow teachers an opportunity to gain informative feedback from pupils about their learning and provide consolidation. What do your pupils' responses tell you about their learning? (You may find it helpful to video record a couple of your plenaries and/or invite a colleague to observe them and reflect on them with you afterwards).
- Parental involvement was important for pupil progress and counteracted other disadvantaging influences. Parents became involved in the education of their children when they believed that their and their child's efforts would be rewarded. Could you monitor whether the strategies you use to involve parents (such as homework tasks that invite parents and pupils to work together or joint homework club sessions) contribute to increased pupil learning and use the resulting evidence to share with parents about the impact of their and their children's efforts?

Leaders may like to consider the following questions.

- The researchers found that plenaries were a sign of good quality teaching and school effectiveness, but around half the literacy and numeracy lessons they observed did not have plenaries. How could you promote effective use of plenaries in your school? For example, you could introduce this issue at a staff meeting and ask your colleagues to identify the key purposes of the plenary and problems they have in running effective plenaries. Your colleagues could also trial different approaches to organising plenaries, such as asking pupils to write down three things they have learned in the lesson and share with a partner or prepare a quiz or a web page on the theme of the lesson for homework. They could then report back at a future meeting how they got on.
- Parents of children who succeeded against the odds saw education as important for achieving economic independence and employment opportunities in the future. They hoped their children would attend higher education and have a professional career. Could you help to raise parents' expectations about their children's possible future careers, by for example, inviting professionals such as the police or medical students into your school to work with groups of children on projects related to their profession and through taking groups of children to events at local colleges and universities etc?
- Behaviour tended to be worse in schools located in disadvantaged areas. Reasons for this given by the researchers included pupils being taught by less experienced teachers. Could you create more opportunities for colleagues to discuss and reflect upon the behaviour challenges they face and ways of tackling them jointly using a whole-school approach? Could you support colleagues in trying out different strategies for improving behaviour, by for example, organising workshops to explore research evidence about effective approaches? (You may find our behaviour for learning anthology a useful starting point).

Gaps in the research

Gaps in the research

Gaps - of basic premises, related issues methods, analysis and/or interpretation - that are uncovered in a piece of research also have a useful role in making sure that future research can fill in the gaps and build cumulatively on what is known. If research is also to inform practice, it needs to be convincing to teachers, and to take account of their views of its adequacy; so practitioners' interpretation of the gaps and follow-up questions are crucial.

We think the following kinds of studies would usefully supplement the findings of this research:

- case studies of approaches by teachers and schools which have a positive impact on enhancing the learning of disadvantaged pupils, and
- studies that evaluate the impact of parental involvement initiatives on pupils' achievement.

What is your experience?

Do you have any evidence regarding strategies for improving the educational outcomes for pupils from deprived backgrounds? Do you have action research or enquiry-based development programmes that are designed to explore what schools and teachers can do to effectively support the learning for this group of vulnerable pupils? We would be interested to hear about examples of effective approaches, which we could perhaps feature in our case study section.

Your feedback

Have you found this study to be useful? Have you used any aspect of this research in your own classroom teaching practice? We would like to hear your feedback on this study, which we can share and use to inform our work. Click on the link 'Tell us what you think' on the left to share your views with us.

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Case studies

We have chosen five independent case studies carried out by teachers to illustrate effective approaches to improving the quality of children's experiences at school in order to boost children's progress at Key Stage 2 and beyond. The five case studies describe how:

- a group of teachers investigated the way children's problem-solving skills were developed in their school and how doing this helped them to see how they could develop their practice (case study 1)
- a group of teachers introduced group work in order to improve pupils' speaking and listening skills (case study 2)
- a primary school serving a deprived area set about improving educational outcomes for all its pupils (case study 3)
- how one school developed its use of pupil voice so that all pupils learned to express themselves, think about and contribute to the learning process, and how doing this led to greater motivation and engagement (case study 4)
- one secondary school set about overcoming the barriers associated with transition specifically for underachieving pupils who found transition particularly difficult (case study 5).

Case study 1

Case study 1: Investigating the development of children's problem-solving skills
We chose this case study because it shows how a group of teachers investigated the way children's problem-solving skills were developed in their school (one of the characteristics of effective primary classrooms noted by the researchers). Through doing this they saw how they could develop their practice. The research arose from a whole school concern that although staff built in opportunities to develop skills, the children did not use them independently to enhance their learning. The study focused on the two Year 3/4 classes, the two Year 5/6 classes and the Foundation Stage class. The teachers collected data from a number of sources including: lesson observations, questionnaires and informal discussions with colleagues and scrutiny of planning documents.

How were the children's problem-solving skills developed?
The teacher researchers explored the kinds of activities that teachers of different age groups within the school used to develop their pupils' problem-solving skills. For example:

- in the Year 5/6 classes, the worked in groups of four, to plan and produce a programme for Ancient Greek Olympic games using 36 given statements, e.g. competitors must be involved in three different games, but wrestling and running cannot occur at the same time
- in the Year 3/4 classes, the children were asked to find a way to ensure that an egg, dropped from a height, would have a safe landing, and
- in the Foundation Stage classroom, four children were playing with a train set. Their teacher acted as a co-player, and suggested that they added a bridge.

What did the teachers find out from their study?
The teachers found that teachers seemed to find it easier to plan a problem-solving activity involving mathematics, as the activities they observed frequently involved mathematics. This may have been because, with the exception of the Foundation Stage classes, the resources available in the school supported mainly mathematics-based activities. It may also have been because the teachers felt more in control when there was a measurable outcome.

The children in Years 3 and 4 in particular, tended to rely upon the support of their teacher both in terms of ideas/permissions and resources. For example, one group requested assistance from their teacher on two occasions rather than working through their problem with the group.

In the early years classes, self-initiated activities were undertaken throughout the day, while opportunities for problem-solving approaches lessened as the pupils got older. The younger children appeared to be confident about trying things, accepted failure and worked effectively together. As they got older, the children appeared to be constrained by the desire to get it right, their need to please the teacher and to conform to rules.

What impact did the study have on the teachers' practice?
The teachers concluded that independence in problem-solving was dependent on teachers' attitudes and understanding, the availability of resources and the culture, size and make up of groupings.

A number of learning points were gained from the study and the teachers hoped to improve their practice by:

- sharing the findings with staff and discussing the implications

- agreeing with staff that planning for all curriculum subjects will contain provision for problem-solving activities

- providing opportunities for children to work in different groupings on a regular basis

- developing a set of success criteria to demonstrate effective, independent problem-solving

- asking staff to monitor pupils' progress and revisit termly

- seeking out resources that will support problem-solving across the curriculum, and

- giving staff the opportunity to observe effective problem-solving in the Foundation Stage and devise a plan with whole staff to promote problem-solving.

Reference
Laing, S., B. Scriven and M. Baskerville. *Knowledge and understanding + skills = wonder child?* National Teacher Research Panel, 2008.

NTRP Publications

Case study 2

Case study 2: Improving children's interactions during group work
We chose this case study because it shows how a group of teachers introduced group work in order to improve pupils' speaking and listening skills. (The researchers of the main study highlighted how other research shows that there can be benefits from collaborative group work involving pupils in sustained interactions with each other, but that their study showed that such group work was uncommon). The study took place in a primary school in an area of high social deprivation and involved Year 1, 2 and 4 teachers and their classes. The school had an above average percentage of pupils receiving free school meals (FSM) and also pupils registered with special educational needs (SEN).

Why did the teachers select speaking and listening as an area for improvement?
Staff at the school recognised there was a lack of social interaction among pupils which they felt was hindering pupils' ability to develop their speaking and listening skills and affecting pupils' ability to progress in other areas of learning. The staff felt that for sustained improvement they would need specifically to teach the skills needed for effective group work to take place.

What did the teachers do to improve speaking and listening in group work?
The teachers developed a series of 'I can' statements which they shared with their classes. These demonstrated what good speaking and listening might look like and encouraged children to try them out, for example 'I can take a turn' or 'I can listen to others'. Posters containing the statements were displayed in the classrooms for all the children to see and take note of. Using the 'I can' statements as a starting point, teachers observed pupils during an initial group work activity to identify areas that needed developing. The teachers then created ground rules for group work based on these observations and pupils were reminded of them whenever they worked in groups.

Each class worked through a series of four tasks specifically designed by teachers to develop their speaking and listening skills during group work. The tasks for the Years 1 and 2 children included:

- generating ideas for what to do 'if we get stuck on our work?'

- planning a party for which the group were given choices they had to agree on.

The Year 4 tasks included:

- working in groups to consider 'what makes a good friend?'
- creating a poster on how to stay calm and what is best to do when tempers flare.

The teachers observed the children during each task to identify their areas of strength and weakness. They then used their observations to structure the next group work activity. This ensured children worked on the areas that needed improvement, while at the same time enhancing those areas already strengthened through previous group work activity.

What did the teachers find?
The teachers' observations showed how the pupils' speaking and listening skills improved over the course of the four group work tasks as they grew in confidence and came to understand what was expected. Using the 'I can' statements reminded pupils throughout their group work activity of what was expected of them during group work. Some children began to use the 'I can' statements to regulate others in their groups, for example reminding others that they needed to wait their turn.

The improvement in pupils' ability to listen (rather than talk over each other) also led to an improvement in their ability to answer questions effectively and appropriately. At the beginning of the project teachers had noted how the pupils made a large number of inappropriate comments during group work, but such incidences were reduced by the end. But although the children considered their answers a lot more, many of their responses were short - the children found it difficult to elaborate on their ideas. The teachers noted this as an area of further development.

What did the teachers conclude from their project?
The teachers concluded that:

- groups need to be small to give children a greater opportunity to talk and be heard
- groups need to have a mix of personalities for successful learning - the children need to be in a group where they feel confident to talk
- speaking and listening needs to be embedded in all subjects, and
- pupils need the opportunity to work collaboratively on a regular basis.

Reference
Bilborough, K., L. Hawes and L. Dixon. *Can we improve the standard of speaking and listening during group work?* National Teacher Research Panel, 2008.

NTRP Publications

Case study 3

Case study 3: Improving outcomes for disadvantaged children
We chose this case study because it is an example of how a primary school serving a deprived area set about improving educational outcomes for all its pupils through promoting quality teaching. The researchers of the main study highlighted the importance of such initiatives. The school had over 350 children on roll, mostly of white British background. The proportion of children with disabilities and those entitled to free school meals was above the national average. The school's approach involved focusing on language and literacy as a lever to enable all children to access the curriculum, making the curriculum more engaging and relevant, and careful monitoring of pupil progress and the impact of interventions.

A focus on pupils' language and literacy skills
Many children entered the school without being able to speak in sentences or make eye contact with the person they talked to. The school believed in the importance of early intervention, so introduced a range of speaking and listening development strategies alongside intensive literacy

work in the early years and foundation stage classrooms.

The early years practitioners for example, modelled good communication and constantly challenged children to speak clearly and in sentences. They developed children's speaking and listening skills not only during the formal literacy development sessions but all the time youngsters were in school. Having identified their pupils' communication 'gaps' , the early years practitioners developed a set of 'golden rules' of good communication (such as listening when somebody else is talking) which they reinforced through pictures in a series of posters which they referred to regularly.

Building on the intensive language and literacy development programmes in the early years, the school then continued monitoring it at Key Stages 1 and 2 and had strategies in place to support pupils lacking basic skills to access the curriculum. Children whose progress in language and literacy development caused concern at KS1 or KS2 were offered support through relevant interventions. These interventions were mainly delivered one-to-one by teaching assistants, lasted only 10-15 minutes and were very focused.

Making the curriculum more engaging and relevant
The school also aimed to close the gap by increasing motivation and participation through learning outside the classroom and involving the children in curriculum design. These approaches were applied particularly at KS2, where low motivation and disengagement from learning was felt to be one of the major reasons for underachievement. The school had a policy of offering its pupils at least one educational visit every term. The residentials were seen as an opportunity for children to get involved in curriculum design and shape their own learning.

Enabling the pupils to take responsibility for their learning happened at other times too. For example, Year 5 and 6 teachers invited learners to come up with questions they wanted to research or things they wanted to learn about within particular themes such as 'Tudors' or 'Winter Olympics'. They then identified the common themes and used them to define the range and content of learning. Working in this way created a buzz and excitement about learning among the pupils. Those children who tended to be disengaged responded particularly well.

Careful monitoring of progress
The school felt that using data to monitor progress and identify the needs of pupils at individual, group and cohort level was a prerequisite for closing the gap. They used a mixture of methods to identify vulnerable learners.

- On entry into the school, initial assessment was supplemented by finding out more about a child's background and pre-school development through questionnaires for parents to complete.

- Assessment data was centrally monitored using specialist software which allowed the school's senior leadership team to identify children who were not making progress. As well as monitoring the progress of the school population as a whole, the school leaders tracked particular groups of learners known to be prone to underachievement, using criteria such as gender, FSM, SEN, or any particular intervention group. They then worked with classroom teachers to discuss possible reasons for underachievement and identify ways of supporting each learner.

- Class teachers and members of the SLT used their professional judgement to spot any issues, (behavioural, emotional, motivational, learning skills or achievement related) and call on additional support for a particular learner.

- Assessment and tracking data was used as the basis of a discussion (typically termly) about the progress of all learners as well as particular groups of learners. Teachers also used the outcomes to assess the effectiveness of their teaching and learning strategies and to reflect on their own practice and need for professional learning and development.

Staff also sought to evaluate the impact of individual interventions through staff observations, collecting

pupils' perspectives (through learning logs for example) or through collective discussions at staff meetings, identifying 'what works'.

What impact did the school's approach have?
Most children entered the school with lower levels of development than expected for their age. Their Ofsted report (2010) commented that despite the attainment at Key Stage 2 being slightly lower than the national averages, the children made good progress during their time at the school. The school was praised particularly for effectively supporting children with special educational needs and disabilities, whose progress was viewed as 'outstanding' which Ofsted put down to regular high quality support they received n small groups and individually.

The evaluation activities of the literacy work led by the early years practitioners suggested that their efforts were effective in improving children's language skills. As a result of speaking and listening activities around 66% of children are on track according to age related expectations by KS1 compared with 93% being below their age related expectations on entry.

Reference
QCDA Building the Evidence Base project: Closing the gap probe

Case study 4

Case study 4: The effects of enabling children to have a voice
We chose this case study because it shows how one school developed its use of pupil voice so that all pupils learned to express themselves and were able to think about and contribute to the learning process, and how doing this led to greater motivation and engagement. The researchers of the main study highlighted how having their views listened to was important for raising pupil achievement and enjoyment of school. The study involved all 280 pupils in the school (aged 3-9), 12 teachers and 24 support staff.

To start with the school considered what was already successful and how to build upon the existing culture to establish a learning-centred community of practice. The school set up a school council, but staff quickly recognised that there were weaknesses in the practice of using a school council as a vehicle for pupils' views. Those who were unsuccessful at being elected to the council often felt rejected and excluded from the decision-making process. Consequently, they turned to pupil voice as a way of challenging assumptions about education. They decided to develop all pupils' skills in pupil voice processes and adopted several strategies to do this, including Philosophy for Children lessons, and developing the voice of the pupil in classroom processes for learning.

The Philosophy for Children lessons
As a first step to involving children in pupil voice activities, thirty-minute Philosophy for Children lessons were introduced into all classes, so the children could gain positive experiences of discussing together and expressing themselves. The starting points for the discussions ranged for example, from 'Why did Humpty Dumpty sit on the wall when he knew that his shell might break/' with the Foundation children to 'What is God?' in Year 4. The children enjoyed the fact that there were no right or wrong answers and that all points of view were valued:

"In philosophy you get to relax when you think, it isn't about yes and no or wrong or right it is just about thinking what you think!" (6 year old)

"You can think what you think and it doesn't matter if someone thinks differently". (8-year old)

Developing the voice of the pupil
The philosophy sessions enabled the children to think more widely about the learning processes they were engaging in. This led to a shared, active questioning in all classrooms by children and staff. Exploration of classroom conditions for learning began with frank discussions about what it felt like to be a child in the class.

The open nature of the discussion led to many comments from pupils such as,

"It was funny that we all said the answer [to mathematics questions] a different way". (6-year old)

"I think my way isn't as quick as the others. I am going to try the quick way next time". (8-year old)

The depth of children's understanding about what they experienced amazed the teachers and through sharing their quotes they planned a way forward. When, for example, an eight-year old suggested having an area for group work and working alone, the teacher rearranged the classroom furniture so that the classroom had straight rows in one area and group tables in another. The children felt that the change in seating arrangements had a positive effect on their motivation levels.

What difference did enabling the children to have a voice make?
Semi-structured interviews with staff, reflective logs kept by the staff and focus groups with children showed that relationships between children and adults were enriched because adults showed curiosity about the children's points of view, rather than simply telling them what to do. Instead of adults being seen as authority figures, they were seen as expert partners in learning. This led to a greater feeling of trust and caring.

Pupils' motivation and engagement increased as they took control over their own learning. They enjoyed being free to explore their own ideas and showed improved skills in discussion, as this teacher's comment indicates:

"Many of the children are now able to take turns in conversations and are becoming better skilled at listening to and considering one another's opinions, and accepting them, even if it is not a view that they share. The children are learning to debate rather than argue and the impact of this, for some, is transferring into other roles they undertake within school such as Playground leaders. The opportunities for children to openly discuss things in philosophy without a fear of being wrong has given some of the quieter less confident children more confidence."
(Teacher's reflective log entry)

The Philosophy for Children lessons helped the children to develop more flexible views about how their classrooms might look and how lessons might be structured. They also helped teachers to feel more willing to experiment in their classrooms. Furthermore, instead of evaluating their lessons in the usual way, teachers used the philosophy approach for the plenary which involved the children stating what they saw, heard and felt about the activities completed in the lesson. This enabled them to understand learning from the children's perspective. For example:

"I found out more about misconceptions and misunderstandings by listening to their discussions than I ever had in lessons before, even when I was working with a group or one-to-one".

Reference
Attard, S. *Whose voice is important in decision-making in a primary school*? National Teacher Research Panel, 2008.

[NTRP Publications](#)

Case study 5

Case study 5: Easing transfer to secondary school through a 'Transition club'
We chose this case study because it describes how one secondary school set about overcoming the barriers associated with transition specifically for underachieving pupils who found transition particularly difficult. The school decided to pilot a 'transition club' during the summer term for Year 6 pupils from the feeder primary schools who were expected to achieve Level 3 in the Key Stage 2 tests. Thirty-eight pupils participated altogether.

What did the transition club involve?
Usually, Year 6 pupils attended a one 'open day' at their new school during the final weeks of Year 6. The Transition Club took place over a six-week period towards the end of the summer term. In each week Year 6 pupils spent three days at the secondary school and two days at their primary school. During the time at the secondary school, pupils followed an integrated curriculum with a focus on developing their literacy and numeracy skills that could facilitate academic progress in Year 7. This was achieved by pupils' participation in work that spanned Levels 3 and 4 of these subjects (that is, the work bridged the gap between pupils' current attainment and the standard of attainment expected in their first year of secondary school).

The pupils also took part in extensive learning activities centred around the use of ICT. Pupils were supported by a team of teachers and learning mentors at all times, and participated in whole school activities (e.g., assemblies) wherever possible.

What difference did the transition club make?
Observations, questionnaires, and a focus group interview were used to evaluate the new approach. Five key areas emerged from the data:

- fear of the unknown
- a sense of belonging
- navigating the maze
- making learning fun, and
- improvements for all.

Fear of the unknown
The pupils experienced a mix of emotions when they thought about their upcoming change of school. A number of pupils (14) reported general feelings of fear or anxiety (a common reaction to unknown situations), for example:

"I was very, very scared. I thought 'oh no, high school'".

Alongside these general feelings were more specific worries, such as:

"I used to think, 'Where am I going to go? What if I get lost?'"

"I was worried about the big kids picking on me and calling me".

'I was worried about not making friends".

Allaying such worries as early as possible was therefore a key consideration.

A sense of belonging
A strong need to feel 'part of' their new school was apparent in the responses of several (9) pupils and this emerged as one of the key benefits of their participation in the Transition Club. For example, one pupil commented: *'It felt like we were part of the school".*

More specifically, a large number of pupils (18) made reference to the development of new friendships:

'Before talking to them, I assumed they were sitting with pupils from their own school; their interactions are so natural, one would think they had been friends for a long time. Yet they had only met each other two days ago'.

The instilment of a sense of belonging (exemplified by the formation of new friendships) was a crucial feature as pupils struggled to adjust to the complex and often daunting secondary environment. As one teacher put it, *'In primary school, the children...were big fish in a small pond, now they are small fish in a big pond'.*

Navigating the maze

The school was aware that one of the primary fears pupils often experience regarding transition to their secondary school is finding their way around it as secondary schools can be up to 10 times larger than primary schools both in terms of physical size and number of pupils, making effective navigation and orientation difficult tasks in the early months following transition. A notable number (10) of pupils who participated in Transition Club, however, reported their experiences somewhat differently:

"When we come in September we will know the school, some teachers, and where the toilet is, compared to others".

"I know things that other people don't know like where to go".

Making learning fun

The teachers were aware that pupils who struggle academically are at particular risk of developing a view of learning as something unpleasant that needs to be avoided, especially at transition from primary to secondary school. One of the key achievements of Transition Club, therefore, was to create a learning environment in which pupils were able to fully participate and enjoy the process of appropriating knowledge. Pupils commented:

"Here it is a more fun way of learning".

"It is more fun and we get to do some cool work on computers".

Alongside making learning enjoyable and participatory, staff involved in Transition Club also set out to help 'bridge the academic gap' between primary and secondary school. This too appeared to be one of the key achievements of the process, as one pupil remarked:

'[But did those lessons help when you started in September?] Yeah cause when you do something wrong in a lesson you could learn by it and then we knew the right thing when we actually started'.

Improvements for all

There was evidence that pupils who had participated in the Transition club were also able to help those who had not adjust to life in their new school:

'They [pupils not on scheme] were a bit scared cause they didn't know where to go... so we went with them'.

So empowering was the experience of participation that pupils were keen to help with the future development of Transition Club, suggesting the introduction of a 'buddy' system for new pupils:

'We know our way round the school so we could help them around the school'.

Reference

Humphrey, N. and M. Ainscow (2006). 'Transition Club: Facilitating Learning, Participation and Psychological Adjustment during the Transition to Secondary School'. *European Journal of Psychology of Education*, 21 (3) p319-331.

Further reading

Related research

The Effective Provision of Pre-school Education (EPPE) project

A number of papers on the theme of closing the gap written by Professor Steve Strand at Warwick Institute of Education

Related TLA research

Behaviour for learning anthology
Effective behaviour strategies for pupils with EBD
Effective provision of pre-school education
Deprivation and education
Home-school knowledge exchange
Jerome Bruner's constructivist model and the spiral curriculum
Parental involvement
Promoting students' persistence in meeting challenges
Pupil participation anthology
Raising achievement through group work
Transfer from the primary classroom

Summaries of research

Can instructional and emotional support in the Key Stage 1 classroom make a difference for children at risk of school failure?

Continuities and discontinuities at transfer

Getting engaged: possibilities and problems for home-school knowledge exchange

Inequality in the early cognitive development of British children in the 1970 cohort

What makes a successful transition from primary to secondary school?

Resources

Making good use of the plenary (national strategies leaflet)

Pedagogy framework

Plenary activities (go to 'Plenary activity suggestions')

School leadership and closing the gap

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Appraisal

Sylva, K., E. Melhuish, P. Sammons, I. Siraj-Blatchford and B. Taggart. *Final Report from the Primary Phase: Pre-school, School and Family Influences on children's development during Key Stage 2 (7-11)*. DCSF (RR 061), 2008.

Robustness
The Effective Pre-school and Primary Education project (EPPE 3-11) studied pre-school and primary school experiences for a national sample of approximately 2,800 children in England. The original EPPE study (published in 2004), investigated children's cognitive and social/behavioural development between the ages of 3-7 years. The report formed the basis of an earlier TLA research summary. The follow-up report details the findings relating to the same sample of children up to the end of Key Stage 2 (7-11 year olds). This, the final report from the primary phase, examined

the overall influence of pre-schools and primary schools as well as the combined impact of pre-school and primary school on pupils' cognitive and social/behavioural development.

A variety of data were collected. Briefly, the pupils' cognitive outcomes were derived from (Year 5) NFER tests of reading and mathematics and (Year 6) Key Stage 2 National assessment scores in English and mathematics. Four kinds of social/behavioural outcomes (self-regulation, hyperactivity, pro-social and anti-social behaviour) were obtained from teacher assessments.

Value-added measures of overall primary school academic effectiveness in English and mathematics were derived from independent statistical analyses of national assessment data sets for all pupils in approximately 950 primary schools in 155 local authorities over three successive years.

Background information about the pupils was obtained from interviews with and questionnaires to parents. This enabled the researchers to control for background influences when analysing the contribution of particular factors to pupil outcomes.

The researchers also visited a sub-sample of 125 schools to collect observational and questionnaire data in order to describe Year 5 classroom practices and school processes for a sub-sample of 1,160 pupils.

Relevance

The study's results indicate that the combination of different influences at home and in education - namely a high quality early years home learning environment along with a higher quality, more effective pre-school and a more academically effective primary school - can give a significant boost to children's outcomes (academic, affective and behavioural) at age 11 years. These findings add to the debate about reducing the achievement gap for disadvantaged groups. The results also have implications for the Excellence and Enjoyment agenda since they indicate that the affective, behavioural and academic domains are complementary and remain important for all round good child development.

Applicability

The research showed that after taking background characteristics into account the contribution of pre-school continues to have significant though modest effects through to age 11. But the quality of the primary school experience is vital too. By age 11 its effects are actually stronger than those of pre-school or of family characteristics like low income.

Primary teachers and leaders, particularly those in schools with higher proportions of disadvantaged pupils may like to reflect on the researchers' findings relating to high quality teaching and learning, which included:

- thought-provoking reciprocal discussions
- children using hypothesis to experiment with a range of ways of tackling a problem
- teachers modelling problem-solving, and
- teachers using the three-part lesson structure, but particularly the plenary which offers important opportunities for pupil feedback and consolidation of learning .

Primary teachers and leaders may also want to consider the researchers' finding that group work was not a commonly used strategy. The researchers highlighted how other research indicates that there can be benefits from collaborative group work at KS2 as pupils engage in more (and more sustained) interactions with other pupils.

Other findings teachers and leaders may like to consider include:

- progress in reading and self-regulation were positively linked to pupils being given greater opportunities to organise activities for themselves and from having their views listened to and accommodated.
- pupils made better progress in schools where there was good communication with parents, including regularly informing parents about their child's progress/achievements and communicating high expectations of pupils to parents.

The researchers concluded that initiatives that give a stronger emphasis to promoting the overall quality of teaching and creating a more orderly classroom climate are likely to improve educational outcomes for all pupils, but may be particularly important for schools with higher proportions of disadvantaged pupils (because these schools are more likely to have higher levels of classroom disorder).

Writing
The report is detailed but well signposted, with each section helpfully headed by a bulleted list of the key findings. These are summarised in more detail in the concluding discussion. The findings in the main text are presented along with the results of the researchers' statistical analysis. Though academic in tone, the writing style used is relatively straightforward.

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