

What do we know about effective curriculum development?

Answer

Quite a lot. Far from slavishly following a tightly specified curriculum, more and more practitioners are planning teaching and learning activities creatively in response to the needs and abilities of students. Now researchers have synthesised the evidence from reviews of curriculum related research and found that there are some key findings about learning, whatever the subject, phase or pedagogic focus, that might help teachers in doing this. They found that learning thrives when:

- students engage in **collaborative learning and structured dialogue in group work**
- the curriculum is designed around **context based teaching and learning**
- **cross curricular learning** can take place within a flexible curriculum
- the curriculum and its delivery **builds on students' current knowledge and understanding**
- the curriculum **extends to home and family**
- teachers receive appropriate **professional development** to build on and improve subject knowledge

The reviews also found that ongoing teacher **professional development** was a consistently important feature of effective curriculum innovation and development.

What do we know about structured dialogue in group work and collaborative learning?

Answer

They are effective learning strategies, but only when teachers provide clear guidance for groups to follow, tasks to undertake and activities that help students develop the skills they need to work collaboratively. The reviews found that structured dialogue could enhance student learning by encouraging a more thorough understanding of the purpose of the learning as well as subject specific knowledge. The review also suggested that group work could be used for effective, collaborative learning. Researchers found that students could be helped to use dialogue particularly effectively in science and maths, for example, to develop joint understanding of theories and problems.

What are the distinctive characteristics of collaborative learning?

Answer

In groups where learning is not collaborative there may be no specific requirement that students work together; they often work individually, albeit side by side, on tasks for their own ends. The role of the teacher is key to making group work collaborative, helping to structure effective patterns of discussion and eliciting pupils' responses¹. In particular, ensuring that pupils:

- work together as a group to solve problems and reach conclusions;

¹ Bell et al, (2007) *Map of Research Reviews QCA Building the Evidence Base Project* p5

- exchange ideas and resources;
- contribute to group discussions e.g. by building on each others' contributions;
- challenge others' reasons and understandings;
- discussing alternatives; and
- accept responsibility for the group's decisions.²

What do we know about conceptual development and the curriculum?

Answer

The review found that for the effective development of students' conceptual understanding of the world around them and their place within it, it is important to make the curriculum less rigid. This enables teachers to structure their approaches to teaching and learning in response to the specific needs of the classes and students involved. Teaching strategies that are linked with effective conceptual development include:

- developing pupils' understanding of the purpose of the work
- small group and class discussion
- greater inclusion for the whole class, including gifted and talented as well as underachieving pupils; and
- greater levels of class interactivity

These approaches are linked both with significant impact on the ability of pupils to develop conceptual understanding and on their ability to transfer learning across subject groupings.

Allowing time and space for conceptual development is also supported by cross-curricular learning. For example, primary foreign language teaching may be more effective if it is used incidentally throughout the day; it can be related to other subjects (such as history) and can be used in games and songs which may make the language more accessible and enjoyable to students. This kind of cross-curricular learning has been shown to have a significant impact on student learning and understanding.

What do we know about connecting with students' starting points?

Answer

There is a strong need to create opportunities to identify and build on students' existing conceptual understandings. The review suggests that pupils often start with conceptual misunderstandings which, if they are not addressed, may inhibit achievement. Structuring group discussions to focus and build on students' existing concepts and understandings is an important foundation for progression.

Way back in 1947, one researcher³ described mathematics learning like this:

² Gillies, R.M. (2004) The effects of co-operative learning on junior high school students during small group learning Learning and Instruction 14 pp.197-213

'...many errors are systematic. In other words, not as many errors are accidental and attributable to carelessness as teachers are inclined to think... If the youngsters who have such incorrect rules are to be helped, the teacher should know the child's rule because the child's need is just as much to unlearn his incorrect rule as it is to learn the correct rule. To work in ignorance of his rules is to give him a feeling of confusion'.

In this research, short, individualised interventions over a four week period were successful in building on pupils' starting points as a means of enhancing student achievement

How can we make the curriculum context based?

Answer

By using teaching methods which explore phenomena in real or simulated situations. Teaching methods that deal with ideas in real or simulated situations can be effective across the curriculum, including in subjects that are sometimes seen as distinctive such as maths and science. Such approaches help to include all students because they draw on contexts with which the students – particularly those from minority groups – are familiar. For example, one study⁴ found that involving students in sharing the full range of their personal perspectives (see page 3) through active participation in lessons helped to sustain their achievement.

How can we connect the curriculum with parental involvement and the community?

Answer

The review found that inclusive, context based teaching and learning and citizenship education that connects with the students' community beyond the school can make a difference to student learning. The review also highlights the effectiveness of connecting the curriculum to students' learning in the home and of involving parents in their children's learning. This can be a difficult area for practitioners as, for many, the only point of contact with parents is at parents' evenings.

The research highlights strategies for promoting conversations between children and their parents at home, through, for example, asking children to collect artefacts or take photos at home to bring into school or setting interactive homework activities specifically designed to involve parents.

What do we know about the importance of professional development?

Answer

³ Ann Dowker (2004) *What works for children with mathematical difficulties?* DfES Research Report 554 www.dfes.gov.uk/research

⁴ Deakin Crick, R., Coates, M., Taylor, M. and Ritchie, S. (2004) A systematic review of the impact of citizenship education on the provision of schooling. In: Research Evidence in Education Library. London: EPPI-Centre, Social Science Research Unit, Institute of Education. This can be accessed at: http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?page=/reel/review_groups/citizenship/review_one.htm

These reviews found that the ongoing need for the professional development of practitioners through strategies known to be linked to benefits for students as well as teachers, for example mentoring, coaching and co-coaching, is a key issue. This is of particular importance for NQT's and early career teachers in order for them to be ready and able to create the most appropriate classroom environments and adapt to the needs of students from an early stage. It is also important that those who have been teaching for a significant length of time do not get 'set in their ways'. The review suggests that professional development is important in all subjects across all age groups.

What else do we know from these reviews?

Practitioners might also be interested in the subject specific findings from the review. These are a snapshot from the reviews, which were all addressing specific and tightly focused questions. The reviews identified a number of topic specific findings in areas such as thinking skills and citizenship and some subject specific findings in English, ICT and Modern Foreign Languages.

Thinking Skills

In recent years there has been a lot of research into accelerating learning. The range of approaches that has been developed is called 'thinking skills.' Some approaches use specific subjects to deliver general thinking skills. CASE (cognitive acceleration in science), CAME (mathematics) and 'Thinking through...' (for example, geography) fall into this category. Others involve explicit and dedicated lessons in thinking skills. A third group aims to embed thinking skills across the curriculum. They all share a core of similar techniques for developing thinking skills⁵. These are:

- preparation for the task – often known as concrete preparation
- the setting of a challenge that contains surprises or ideas in tension that perplex or puzzle pupils to make them think – sometimes called cognitive conflict
- collaborative work with other pupils to solve the challenge- sometimes called social construction of knowledge
- sharing thinking aloud about their own thinking to raise pupils' awareness of what's involved – sometimes called metacognition
- using skills and insights that have just been acquired in one context to consider a problem in a new context – often called bridging.

These processes involve pupils working with each other to learn from and with each other, to make thinking skills explicit, and to construct a deeper understanding through separate insights.

The evidence shows that these methods have a positive impact on skills such as reasoning and problem solving, as well as an immediate impact on

⁵ *Engaging with Research: Behaviour for Learning*, found at http://www.gtce.org.uk/shared/contentlibs/85419/1372774/191738/bfl_anthology.pdf p9-10

learning within the curriculum. There is also evidence that the use of structured tasks focusing on specific thinking strategies is of particular benefit to low-achieving students.

Inclusion

The review found that inclusive schools are likely to have a high level of staff collaboration and joint problem solving. SEN pupils, the review suggests, do best when practitioners make use of five key classroom strategies: co-operative teaching, co-operative learning, individualised planning, collaborative problem solving and differentiation.

The reviewers infer that in effective schools, curriculum reform does not need to be treated separately for different groups of students, providing that differentiation is built into the teaching and learning processes.

Observation from one research study⁶ showed that students made good progress when teachers:

- clearly explained tasks - with models where appropriate to ensure that everyone was clear what was required - which could be completed by students in different ways depending on their abilities;
- demonstrated appropriate skills in dealing with challenging behaviour, such as talking quietly to individuals, ensuring all students could access the materials they needed, maintaining an even-tempered style, 'often employing a rather gentle humour'; and
- encouraged all students to participate by, for example, giving them some choice over the activities and how far they took them.

The reviewers also noted however, that teachers' own perceptions about the practical challenges of inclusive curricula are very demanding.

ICT

The use of ICT can motivate and engage students, provided teachers are confident in their subject and teaching and learning strategies, and have the appropriate software. For example, ICT can be an effective vehicle for assessment because it enables an active and purposeful response to students' unfolding understanding in a way which traditional information storage and written work may not. ICT can be structured to require students to probe their own understanding of the subject, and to making explicit the reasoning involved.

One research study⁷ suggested that ICT resulted in increased student learning when teachers used ICT to teach students how to interact with each other and work collaboratively around a common focus so that effective learning could take place. Using ICT to promote discussion has been found to develop a range of approaches to students' thinking (mathematical and higher order thinking, reasoning and conceptual change in science) together with

⁶ Dyson, A., Farrell, P., Polat, F., Hutcheson, G. and Gallanaugh, F. (2004) Inclusion and pupil achievement, London: RR578, DfES. Available online at: <http://www.dfes.gov.uk/research/data/uploadfiles/ACFC9F.pdf>

⁷ Higgins, S. (2003) *Does ICT improve learning and teaching in schools?* British Educational Research Association

creativity through (for example) LOGO programming, a simple computer programming language developed as a teaching tool.

Primary Modern Foreign Languages

Primary schools have only recently started to teach modern foreign languages, but the findings so far suggest that there is evidence for the need of specialist language teachers and training who also have specialist skills in supporting learning in the primary environment. Without the right mix of specialist knowledge there is a risk that approaches developed for use with older, secondary students⁸ may be used in primary schools. The key here is for teachers to be involved with professional development focuses on the needs of their particular pupils.

English

There were two clear findings relating to the teaching of English; firstly, the quality and accuracy of writing is not influenced by the formal teaching of grammar at all, though this is not to say that grammar is not worth teaching. Second, the quality and accuracy of writing can be improved through sentence combining, an approach which may also improve thinking skills and understanding of the subject.

The term 'sentence combining' covers different activities to help writers create longer and more complex sentences. For example, two sentences can be combined into one with a connective term (such as, because, whilst, if, although, when, with, otherwise, as, since, rather):

The bag felt heavy. It had books in it.

The bag felt heavy because it had books in it.

A simple sentence can have complex constructions embedded into it. For example, the simple sentence, 'The bag felt heavy' could become, via a number of embeddings:

The faded blue bag, which (according to the detective) had been lying on platform 10 overnight, felt heavy to John when he picked it up on Thursday morning.

How young people are taught sentence combining is important – the activity is best set within meaningful writing contexts rather than presented as drill and practice exercises. The method of sentence combining has been shown⁹ to be far more effective than traditional grammar teaching.

Citizenship Education (CE)

⁸ Bell et al, (2007) *Map of Research Reviews QCA Building the Evidence Base Project* p6

⁹ Andrews, R., Torgerson, C., Beverton, S., Freeman, A., Locke, T., Low, G., Robinson, A. and Zhu, D. (2004) The effect of grammar teaching (sentence combining) in English on 5 to 16 year olds' accuracy and quality in written composition. In: Research Evidence in Education Library. London: EPPI-Centre, Social Science Research Unit, Institute of Education [Online]. Available at:

http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?page=/reel/review_groups/english/review_seven.htm

The review shows that there is little consistency across schools in the assessment of CE. Nonetheless the teaching of CE is often characterised by discussion, which has a positive impact on thinking skills and inclusion. The embedding of such skills within CE was also found to have positive impact on:

- positive development of both curricular and non-curricular skills; and
- encouraging participation across all subjects and phases.

There is also evidence that students involved in CE participate more actively in civic and political life as an adult, and often have improved social skills. One research review¹⁰ found that effective methods for teaching CE included good quality teacher-student relationships that are inclusive and respectful.

Teachers who listened to the voices of students empowered them to express their views and make sense of their experiences.

How could you act on this research?

In order to find ways of acting on this research, it may be helpful to go back to the original six findings. Learning thrives when:

- students engage in collaborative learning and structured dialogue in group work
 - Small group work can be very effective, but only when teachers provide clear guidance for groups to follow. How do you organise small group work? Could you make tasks more explicit and clear to all? This may also have the advantage of making the work more inclusive;
 - Structured dialogue can enhance student learning by encouraging a more thorough understanding of the purpose of the learning, as well as subject specific knowledge. Have you considered talking to colleagues about effective structuring methods? Are any methods more appropriate for some subjects than others?
- the curriculum is designed around context based teaching and learning
 - Effective context based teaching can mean listening to students and helping them to express their opinions and make sense of their experiences. Could you fit this into lessons, encouraging students' to explore and develop their opinions? Could you use class or small group discussion to allow students to compare and discuss their views?
- cross curricular learning can take place within a flexible curriculum
 - Many subjects can be taught in combination with others, and Environmental initiatives, drama productions, international exchanges and school visits all create opportunities for connecting up lots of areas of learning. They also help students to connect experiences in their homes and communities with

¹⁰ Deakin Crick, R., Coates, M., Taylor, M., & Ritchie, S. (2004). A systematic review of the impact of citizenship education on the provision of schooling. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education.

school. How are subjects and major projects arranged in your school? Could you make more use of time by integrating them more closely and/or creating lessons which involve several skills and domains?

- the curriculum and its delivery builds on students' current knowledge and understanding
 - Class discussion and small group work can be effective in recognising and building on students' knowledge and understanding. Could you create classroom activities or discussions which allow students to focus on their different starting points and develop this knowledge through group work? It is also important to recognise and correct any conceptual misunderstandings students may have. Building up individual relationships with a student can be an effective way of discovering any such issues. Have you developed this relationship with your students, particularly the most at need?

- the curriculum extends to home and family
 - It may be helpful to build on the conversations that take place at home between parents and their children. Would it be helpful to share ideas with your colleagues for ways of doing this? It may be useful to monitor whether the strategies you use to increase parental involvement at home contribute to increased pupil learning, and share with parents' evidence of the impact of their efforts.

- teachers receive appropriate professional development to build on and improve subject knowledge
 - Professional development is a continuous process involving all members of staff. What opportunities and structures are in place in your school to support this? Are there opportunities for wrapping support process like mentoring and coaching around curriculum development work or even lesson on scheme of work planning?

You might like to work with your colleagues to identify how one or two of these findings relate to core practices in a range of different subjects at present and to gather and discuss them through sharing evidence about how your pupils' progress throughout the school. Once you have a shared picture of the curriculum through your students' eyes you might like to use this to enrich your planning of future lessons and schemes of work.