Low stakes quizzing in history and geography

Heathfield Community College

Problem: What challenges do your school(s) have that need to be addressed?

Pupil knowledge retention from one lesson to a next, from topic to topic and by the end of each academic year varies, having implications for pupil progress throughout the academic year as some pupils struggle to recall knowledge acquired from a previous topic and then apply it when developing knowledge and skills in a later one. Consequently, pupils can end Years 7 and 8 with only surface knowledge of history and geography which limits their progress and has longer term implications for further study at Key Stage 4. The proposal here would explore the impact of deliberately practiced knowledge retrieval on long term memory and performance.

Innovation: How will the innovation help improve the problem you have identified and benefit teachers and learners?

The research outlined below suggests that regular low stakes quizzing has a positive impact on pupil progress, but impact on developing a conceptual understanding of the subject is unclear. The innovation therefore lies in using low stakes quizzing regularly to recall core knowledge over an academic year with a large cohort of Key Stage 3 pupils in two humanities subjects simultaneously. We seek to establish whether this testing effect leads to an improvement *not only* in the breadth of knowledge but *also* its application. We also seek to establish whether this form of quizzing is sustainable in everyday classroom practice.

Existing evidence: What evidence is there that this innovation will improve outcomes?

Rawson and Dunlosky (2012) recommend that pupils should practice target knowledge until it is correctly recalled once. This would suggest that pupils in the classroom should have the opportunity to regularly practice retrieving knowledge until it is learned, requiring more than one opportunity to retrieve it in a low stakes quiz, over a period of time. Despite taking up lesson time, Daniel and Broida (2004) found that in-class quizzing for 15 minutes a week over a 16-week period had a positive impact on pupil outcomes. Roediger & Karpicke (2006) found that retrieval

practice was more effective than time spent studying on delayed testing performance (for tests taken two days or one week later).

At GCSE history level, Donaghy (2014) also found that using regular, low stakes testing with one Year 10 class in four week cycles improved their knowledge retention, how they applied knowledge in summative assessment and pupils' progress. Dennis (2016) regularly used low stakes testing with two Year 8 classes for the first term of an academic year, which appeared to show some improvement in pupil retention and progress initially, but without further regular re-visiting or locating knowledge effectively after that time, pupils who had been regularly tested in the first term could not always recall and/or apply the knowledge effectively in an assessment six months later.

Research question or hypothesis: What effect will the intervention, implemented for how long, with which pupils, have on what outcomes?

What impact does low stakes quizzing for 10 minutes a week over five half terms, compared to less rigid, ad-hoc retrieval practice, across an academic year have on the application of subject knowledge and progress in Year 8 history and geography pupils?

Method: Include sample, design, measures, intervention, process evaluation, and analysis

Sample/ participants
The Year 8 cohort at Heathfield Community College (HCC) consists of 232 pupils arranged into the same mixed prior attainment classes for history and geography. Parental consent will be collected for pupils' data to be included in the evaluation analysis. Pupils without parental consent will not have their assessment data included in the final evaluation. Pupils will be taught across the academic year by qualified teachers of history and geography.

Design and assignment to condition
The Year 8 cohort at HCC is divided randomly into eight mixed prior attaining classes. 50% of the cohort (the same four classes in both subjects) will be randomly selected to form the intervention group. The remaining four classes will form the control group.

Therefore, four classes will have a weekly 10-minute knowledge quiz in both their history and geography lessons from September 2018 to July 2019. Other than this, the intervention group will follow the year 8 history and geography lessons as per the scheme of learning and

assessment schedules. The remaining 50% (the other four classes) will be the control group, participating in history and geography lessons which will not always include a knowledge quiz although they will continue to receive informal, ad-hoc, verbal quizzing as part of normal teaching practice.

We will analyse pupil data from the pre-tests to ensure that control and intervention groups are comparable before the innovation begins.

Measures

All Year 8 pupils will take a pre-tests in history and geography at the end of the first half term of autumn 2018. This will assess content taught during the first half term of Year 8.

In July 2019, all pupils will sit end of year assessments in both history and geography that test the conceptual knowledge and skills acquired over the course of the academic year. These will act as the post-tests for the evaluation. These end of year assessments will be written prior to September 2018 and given to the college's exam's office so that heads of department have no further access to it.

Both the pre-test and post-test scores will be recorded as raw scores out of a possible total of 40. Both will be taken under exam conditions.

Pupils will be given an exam candidate number and will write their number (but not their name) on their assessment paper. Assessments will then be randomly assigned to, and then marked by, the history and geography teachers using a standardised mark scheme. Only the project leaders will be able to identify the pupils by their identifying number once the marking is complete, helping to avoid any bias in the marking of the assessments. The process of marking the end of year assessments will include standardisation and moderation to ensure consistency of marking.

Intervention

Prior to September 2018, subject teachers at HCC will decide upon the core knowledge, from the curriculum, that pupils would be required to know at the end of year 8. This will be based on the history and geography schemes of learning already in place and the knowledge organisers that pupils currently use to support their studies.

A series of paper based short quizzes will be prepared in advance of each term (this is around 7-8 weeks) on A5 quiz sheets. These will consist of 10 closed questions, based on names, dates, people, places, statistics or key vocabulary. In lessons, pupils in the intervention group will sit one quiz at the beginning of the first history and geography lesson of each week and self-assess the answers using the correct responses provided by the classroom teacher. These answers will

be shared on a slide with the pupils allowing them to mark their answers themselves, helping to keep it low-stakes. All pupils will have the opportunity to complete the quiz and correct their answers as the quizzes will be designed to minimise impact on class time. Year 8 pupils have three history and geography lessons across a two-week period, so this would result in pupils in the intervention group completing a low stakes quiz in two out of the three lessons.

Pupils will be asked to make corrections by writing correct responses. Quiz sheets will be kept in a folder individual to each pupil and retained as evidence. Regular quizzing will commence from term 2 and will consist of 10 closed questions: five of these will be based on the topic currently being studied and the other five will be drawn from previous topics. These quizzes will be created by the heads of department, Mark Enser (geography) and Emma-Louise Smith (history). They will monitor, on a termly basis, pupil responses so that the questions that pupils regularly get wrong reappear in future quizzes. The control group will follow the planned schemes of learning as stipulated and will only experience quizzing as they organically fit the lessons being taught (e.g. ad hoc verbal recap).

To avoid the diffusion of treatment, all geography and history staff will receive simultaneous CPD session to explain the aims and protocol of the evaluation (this will particularly benefit teachers who may be teaching both the control and intervention group). This CPD will stress the importance of following the scheme of work as set out and ensuring that pupils have covered the material to allow them to complete the quiz as per the schedule. This should ensure that the intervention is carried out on a weekly basis, even if there is a slight deviation from the scheme of work. Additionally, teachers who will be teaching the control group will be made aware of the importance of not introducing the innovation to their classes.

Teachers of both the intervention and control classes will keep an implementation log, in the form of a spreadsheet, to log all retrieval activities used (both informal and low stakes quizzing). Time will be allocated on a weekly basis for this to be completed. This will allow us to see the protocol is being followed and to measure how much diffusion may be taking place.

Process evaluation

The quiz folders belonging to the intervention groups will be checked by the project leaders on a termly basis to ensure that all quizzes are being completed and that pupils are properly self-assessing. Project leaders will also observe the start of the lessons of the control classes to ensure that they are not receiving the innovation.

Once the final assessment has been completed surveys will be completed by the teachers involved which will provide data about their perceptions of impact of the innovation and the sustainability of the approach. These will include Likert-scale questions on the ease of

implementation and compliance with the innovation protocol and an open box to allow for other comments.

Data analysis

We will calculate effect sizes to compare progress of those within the intervention group to those in the control group. We will also compare the results of the intervention and control groups of specific groups of pupils to see if recall practice is more effective for boys or girls, pupils in receipt of the pupil premium grant or not, pupils with special educational needs or not and higher prior attaining pupils/middle prior attaining pupils/lower prior attaining pupils (higher, middle and lower prior attainment bands are calculated by FFT Aspire (https://fftaspire.org): FFT rank all pupils within a cohort based on the full range of available prior attainment data, (test and teacher assessment), and then break the ranks into exact thirds). Additionally, we will see whether this intervention has a greater impact on progress of pupils in history or geography.

Teacher surveys will be analysed to establish whether the intervention has been onerous or presents any challenges that affected its implementation. The implementation log will be used to check for any diffusion of treatment and the impact this may have had on the final analysis.

Conclusion: What will happen if your innovation improves outcomes, or not? What are the limitations of your evaluation?

Potential Limitations

1. Over the course of the academic year, holidays, inclement weather and whole school events (e.g INSET days) may mean that classes have an unequal amount of lessons of history and or geography across the year. This could have an impact on final assessment data should some pupils receive more direct instruction than others. The implementation log will allow us to see the extent of this disruption.

2. The overall teaching time received by the innovation group will be less as 10 minutes a week will be spent completing a quiz (in a fortnight's worth of lessons this means that the intervention groups will receive 20 minutes less direct teacher instruction out of a potential 180 minutes) . This could prove frustrating for teacher planning and delivery.

3. Teachers may be teaching classes in both the control and intervention group. It is possible this will influence the teaching of the control group but the CPD session should help to mitigate the effect. This will be done through explaining the protocol clearly and stressing the importance of compliance.

4. Classes are populated randomly, but analysis of the data from the term one pre-test will be needed to ensure comparability.

5. The heads of department will know about the content of the final assessment possibly leading to an unfair advantage for the classes they teach. By writing this assessment a year in advance, and preventing further access to it, we should minimise this risk.
6. There will be a focus for the whole school on retrieval practice in 2018/19. Therefore, all history and geography teachers will have access to CPD on retrieval practice. However, the session introducing the evaluation will highlight this risk of diffusion so all teachers are aware of this. The evaluation is therefore aiming to understand the impact of structured low stakes quizzing when compared to a more ad-hoc approach to retrieval practice.

Implications

Results would be shared at the East Sussex history and geography networks, regardless of a positive/ negative result.

If we found the results were negative or neutral we would look at how retrieval practice was being implemented in the humanities. The theory seems to suggest it should have a positive impact so we would try different forms of intervention and run the evaluation again.

If the results were positive we would extended the innovation by introducing regular low stakes quizzing in KS4 history and geography lessons and share the practice widely across the college to look at implementation in different subjects with further evaluation there.

References and further reading

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