Metacognition and Self-regulated Learning

Exploring the impact of metacognition and self-regulated learning strategies on Year 9 pupils' writing

Olchfa Research
Olchfa School, UWTSD, NFER

OLCHFA RESEARCH
Bridging the gap between research and practice

@OlcfaResearch

Background Literature

American developmental psychologist, **John Flavell,** is most commonly recognised for introducing the term 'metacognition' as a result of his research in the 1970s which focused on children's knowledge and control of their memory processes. It has since become widely acknowledged that metacognition has two dimensions: 'knowledge' and 'regulation'. The **Education Endowment Foundation (EEF)** state that a number of systematic reviews and meta-analyses have consistently found strategies related to metacognition to have large positive impacts. The **EEF** describes the overarching aim of metacognition approaches as helping pupils to think about their own learning more explicitly. This, they argue, is often achieved through teaching them specific strategies for planning, monitoring and evaluating their learning. **Dylan Wiliams'** assertion that "metacognition *can* be taught" justifies its recent popularisation within schools - the metacognition strand on the EEF Teacher Toolkit is currently the organisation's most visited. The impact of metacognition approaches on pupils' outcomes is particularly pertinent considering the research conducted by **Zimmerman (1990),** who describes self-regulated learners as 'diligent', 'confident', 'resourceful' and 'proactive' - all of which are attributes that teachers are keen to promote. Furthermore, **Schunk & Zimmerman (1994)** illustrate that pupils who are able to self-regulate their learning achieve better outcomes than those who do not and this is undeniably a key focus for educators.

ETHICS

Ethical approval was granted by the **Research and Ethics Committee of the School of Education, University of Wales Trinity Saint David's in May 2018.** Initially, consent was gained from the headteacher and teachers. Following the principles of active informed consent, written consent was then obtained from pupils. Pupils were fully informed about the intervention and its aims, and they were introduced to the research team members carrying out the data collection. Regular and meaningful opportunities were given to pupils prior to the commencement of data collection throughout the intervention. Pupils involved in semi-structured interviews were reminded verbally that they could opt-out at any point prior to, during or after the interviews had taken place. Letters for information were sent home to the parents/carers of all pupils involved in the intervention lessons. Parents/ carers were also given the opportunity to contact the research team for further information. Pupils were informed that they could not opt-out of the teaching and learning that was occurring as part of the intervention as this was considered part of everyday practice. Verbal consent was obtained from teacher participants and ongoing collaboration between the teachers and research team was integral.

Methods

The intervention was carried out with two mixed ability Year 9 classes. 6 pupil participants from each class were randomly selected using stratified sampling to ensure a range of abilities were represented. There were two teacher participants in total. The study took a pre-experimental design: all pupil participants were closely observed and their progress in lessons tracked. Data was collected prior to the intervention, during the course of the intervention and again after 8 intervention lessons had been delivered. Pupils completed a pre and post self assessment of metacognitive strategies and took part in post-intervention semi-structured interviews. A significant proportion of the analysis stemmed from qualitative data collected during lesson observations. We aimed to triangulate data from pupil questionnaires, lesson observations and interviews with both pupil and teacher participants.

Results

Analysis of pre and post data collected as part of the **Developing METACOGNITION** intervention enables us to assess the extent to which the explicit teaching of metacognition - namely through the use of graphic organisers - has impacted on pupils' learning in English:

1. It is evident from a plethora of data sources that pupils who could be deemed as 'tacit' learners (Perkins, 1992) benefited from the intervention and began to demonstrate a wider range of metacognitive processes - this had a positive impact on those pupils' outcomes.
2. **Activating prior knowledge** was an effective tool for getting pupils to explicitly think of strategies related to the task, such as mnemonics.
3. **Planning** strategies were regarded by pupil and teacher participants as the most valuable and worthwhile aspect of the intervention.
4. A more thorough approach to **planning** was effective: 80% of pupil participants who received peer advice at this stage were able to produce higher quality work as a result. All participants felt better equipped to complete the writing task as a result.
5. Pupils' understanding of **planning** developed the most, as evidenced by the pre and post self assessment data.
6. **Monitoring** strategies prompted pupils to consider work more deeply.
7. **Evaluating** is something that pupils think it important and they feel that they do naturally. Semi-structured interview data, however, highlighted that some of our more 'tacit' pupils were more 'reflective' when discussing their learning.
8. Teachers promoted and facilitated metacognitive talk throughout the intervention, and this had a positive impact on the learning environment - with pupils willing and eager to engage in discussion about their learning processes.

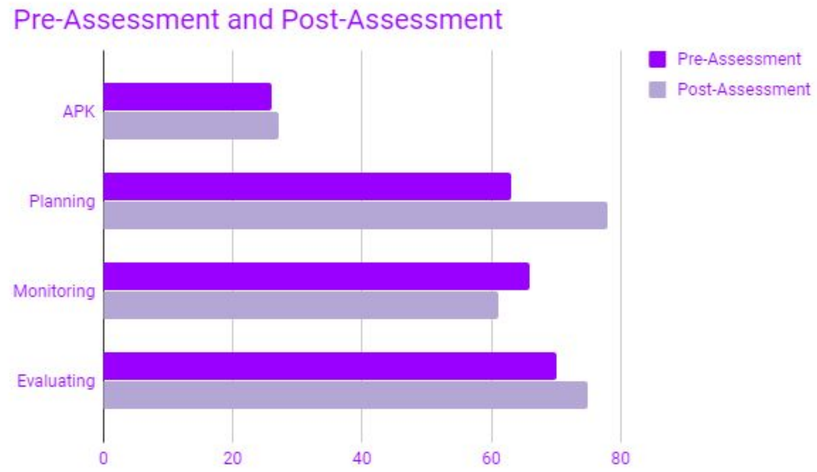

Table 1. Pre and Post Self-assessment of Metacognition

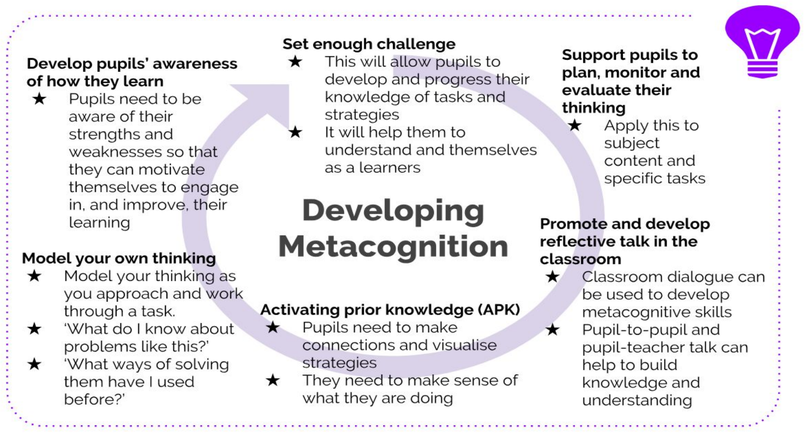

Image 1: Metacognition poster developed to aid teaching and learning

Discussion

Pupils randomly selected to provide feedback during semi-structured interviews spoke positively about the intervention, for example:

- Pupil A said that he thought "***a lot more carefully***" about his work.
- Pupil B said that he "***took [his] time.***"
- Pupil C said that she "***thought about what she was writing.***"

Analysing the end writing piece produced helped us to corroborate these views. Interestingly, however, the work produced by the lower attaining pupils improved more significantly than the work produced by the higher attaining pupils in both classes. From evaluating observational and incidental qualitative data, we can infer that the structured and thorough approach to planning, coupled with the time spent discussing the model, made the most substantial difference to these pupils. Surprisingly, one of our supplementary findings is that the explicit teaching of metacognition helped to enhance some pupils' self-efficacy and confidence - particularly regarding planning and evaluating their own work.

Teacher participants were positive about the project, and one teacher subsequently began to utilise a range of the strategies with other classes and year groups immediately following the intervention. This helps to affirm that metacognitive approaches to improve improve writing the resources created are valuable.

Conclusions

This project was not about proving that metacognitive approaches are effective - there is an extensive body of evidence to support that view. On the contrary, the broad focus of this project was to explore ways in which teachers at Olchfa can adopt metacognitive strategies and embed them into schemes of work. The evidence informed resources and graphic organisers created by the research team at Olchfa proved to be highly effective in **Developing METACOGNITION**. It is reasonable to conclude that explicitly teaching metacognitive skills has had a positive impact. In fact, all pupil participants demonstrated the ability to plan, monitor and evaluate their writing and all pupils' work improved as a result of them utilsiing 1 or more of the resources/strategies. Some of our lower attaining pupils' writing skills improved the most significantly. We also witnessed pupils exhibiting higher levels of confidence and self-belief. Although these benefits are more difficult to quantify, these gains are truly important to us as educators - especially as many of our lower attaining pupils appear to have very low levels of self-efficacy, particularly when completing extended writing tasks in English. It is important to note that some of our higher attaining pupils already possessed excellent metacognitive skills. These pupils did not benefit from the explicit teaching; nonetheless, our higher attaining pupils involved in the intervention were able to highlight a range of benefits relating to planning, monitoring and evaluating and teacher modelling - they were certainly able to internalise the strategies at a much quicker rate. The challenge moving forward will be to ensure metacognition is rooted in subject specialisms, as this is necessary for the biggest impact to be experienced across the whole-school. Ongoing and high quality professional development is needed to ensure that metacognition becomes part of the fabric (EEF, 2018) of effective learning at Olchfa. As a school, we also need to build upon the insights gleaned from the **GREAT Discussion** project to ensure metacognitive talk is a feature of all lessons.

Contact

Kathryn Wall
Olchfa School
Gower Road, Sketty, SA2 7AB
Research@olchfa.org.uk
01792 534300

References

1. Education Endowment Foundation (2018). Metacognition and Self-regulated Learning: Guidance Report. https://educationendowmentfoundation.org.uk/tools/guidance-reports/metacognition-and-self-regulated-learning/
2. Flavell, J. H. (1976). Metacognitive aspects of problem solving. The nature of intelligence, 12, 231-235.
3. Perkins, D. (1992). Smart Schools: Better Thinking and Learning for Every Child. New York: Free Press
4. Schunk, D. H., & Zimmerman, B. J. (1994). Self-regulation of learning and performance: Issues and educational applications. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
5. Zimmerman, B. J. (1990). Self-regulating academic learning and achievement: The emergence of a social cognitive perspective. Educational Psychology Review, 2, 173-201.