

CLEVELAND ROAD PRIMARY SCHOOL: LESSON STUDY RESEARCH EVALUATION REPORT

Research Question:	How can the 'Learning Triangle' model be used to inform differentiation and intervention?
Who was involved? (Include job roles)	Core Practitioners- N. Padda (Assistant Head teacher) K. Williams (Year 1 teacher) F. Khanom (Year 1 teacher)

ABSTRACT

The findings of this research will inform teachers, support staff, specialist teachers and school leaders, on the most effective strategies used to ensure all pupils make progress in their learning. It will focus on those who lack conceptual understanding, procedural knowledge and language proficiency.

- Conceptual understanding - refers to an integrated and functional grasp of ideas. Students with conceptual understanding know more than isolated facts and methods. They understand why an idea is important and the kinds of contexts in which it is useful. They have organised their knowledge into a coherent whole, which enables them to learn new ideas by connecting those ideas to what they already know.
- Procedural knowledge - refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.
- Language proficiency - refers to the capacity to think logically about the relationships among concepts and situations. Such reasoning is correct and valid, stems from careful consideration of alternatives, and includes knowledge of how to justify the conclusions.

Although previous research focuses on Mathematics, this research aims to investigate whether these threads of learning are present in other subjects. Observations occurred in Science, Reading and Maths lessons and focused on the use of specific teaching approaches and resources that improved learning.

AIMS

(a) The reasons for undertaking this lesson study project

Based on Maths Moderation, Pupil Progress Meetings and data analysis, it was evident that children's reasoning skills required development. Teachers found that some children did not retain key mathematical concepts from year to year, could not transfer skills to other subject areas easily and did not feel confident solving word problems.

The project sought to investigate whether planning lessons, which focused on these skills, had an impact on learning in Science, Maths and Reading.

(b) The identified target learners

We selected three pupils from each class: one child lacking conceptual understanding, one pupil lacking procedural knowledge and the third child lacking language proficiency.

(c) How we intended to improve children's learning

- Encouraging exploratory talk
- Active participation during carpet discussions
- Structure thoughts in coherent manner
- Deepen understanding and consolidation
- Modify procedures for different purposes
- Understand the limitations of specific solutions

(d) The success criteria for the research lessons

- To gain knowledge rich in understanding of concepts
- To show confidence in speaking and participating
- To complete procedures effectively

METHODOLOGY

(a) The teaching approaches we tried

- Diagrams for children lacking procedural understanding in order to break things down into small steps
- Pre- teaching vocabulary for children who lacked language proficiency giving them a chance to orally rehearse and gain confidence before the actual lesson followed by choral talk
- Speaking frames to support exploratory talk
- Inquiry based collaborative learning to develop conceptual understanding

(b) Specific resources we tried

Science

- *Videos – Uses of materials and classifying*
- *Sentence starters* - for forming hypothesis (e.g. I predict the objects I collect will be classified into ____ groups. These groups will be _____. I think this because.....)
- Visual cues/pre teaching vocabulary – Material labels
- Instructional guide – steps for conducting experiment
- Concrete objects

Maths

- Concrete objects – Diennes and cubes
- *Speaking frames* – ‘__ tens and ____ ones’

Reading

- Big picture books – for whole group reading
- Pre teaching vocabulary – Words children were unfamiliar with e.g. ballistic
- Concrete objects – Examples of vouchers and cereal box

OUTCOMES AND IMPACT

(a) The Impact on pupil learning

- Depth of understanding leading to inquisitiveness
- Procedural understanding
- Better recall as a result of repetition
- More independence and confidence during individual work
- Better language development
- More active participation
- Increased confidence in explaining concepts

(b) Evidence of impact on pupil learning

Procedural understanding

- Children were able to complete tasks correctly
- Varied opportunities for making predictions, estimation, hypothesis and designing ways to test them leading to enhanced learning
- Through practice and reflection students were able to apply these skills in new contexts and recognise their own and critical thinking abilities of others

Conceptual understanding

- Children demonstrated conceptual understanding by recognising and generating examples of concepts, using, manipulating and apply them in everyday learning providing depth of understanding
- Meaningful links were made between new learning and prior knowledge.

Language competency

- Children were able to internalise their new learning.
- Pre teaching vocabulary enabled them to gain confidence and removed barriers to learning.
- Children were keen to participate and use speaking frames to explain complex concepts.

(c) Impact on teaching

- Pre teaching vocabulary incorporated in the timetable
- Diagrams providing a breakdown of instructions especially for science experiments
- visual instructions
- Repetition throughout the lesson
- More time in lesson to model responses and for consolidation
- Use of speaking frames to support oral rehearsal for explanation of difficult concepts

(d) Evidence of impact on teaching

Pupils have a better understanding of concepts and procedures. They are able to explain challenging concepts using technical vocabulary and are able to transfer their procedural skills to other areas of the curriculum.

(e) Impact upon school culture and leadership

Staff now have a better understanding of how to adapt their lessons to provide opportunities for conceptual understanding, procedural knowledge and language proficiency providing personalised learning for pupils.

(f) Evidence of impact upon school culture and leadership

Discussions with teachers reveal that they are much more confident in catering to the needs of all children in class; this is evident through lesson observations, planning and monitoring.

CONCLUSIONS AND RECOMENDATIONS

(a) Our conclusions

This lesson study highlighted the need for personalised provision for different types of learners. It has led to further differentiation (not just based on ability) based on the kind of learner a child is. It helped in highlighting the importance of improving students' understanding of core concepts and procedures through factual knowledge, explanation, out-of-the box thinking and oral rehearsal. It impacted greatly on learning in Mathematics and Scientific Enquiry.

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