

Lesson Study Project 2020

School: **St Patrick's National School**

Lurgybrack, Letterkenny, Co. Donegal.

Team: Michelle Doherty, Laura Bannon, Sheenagh McGeehan, Rosemary Daly & Brighdín Carr (absent from photo).



Our School Context

Our school is situated three miles outside Letterkenny on the main Sligo road. There are currently 458 pupils attending the school. The staff is made up of twenty-six teachers, twelve SNAs, our school secretary and caretaker. Lurgybrack NS is a happy and welcoming place. All staff and pupils work together in an atmosphere of respect and encouragement. Our school has a purpose-built Autism Centre called "An Crann Óg" where twelve pupils are taught.



Our Goal

That the children who transition from Lurgybrack NS to post-primary will have a strong algebraic skills base.

Research Question

Can Lesson Study help us to develop an inclusive primary mathematics classroom in fractions?

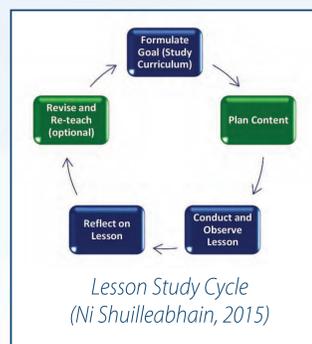
Planning Process

The school is currently engaging in co-teaching practices. This year, the school have reviewed the practice to include mathematics in third class. A professional learning community was established between one classroom teacher and four special education teachers to inquire, research and collaborate over how to plan and respond to the identified needs of pupils who require support under the continuum of support in primary mathematics. The Lesson Study model of teacher sustained professional learning and development was followed. This process was led by deputy principal Rosemary Daly as a place for sharing, creating and crafting the knowledge and the skills regarding the inclusion of SEN pupils in the mainstream primary mathematics classroom. The process was facilitated by Dennis Mulligan from the PDST Primary STEM Team and the inquiry followed the below cycle.

The teachers learning was supplemented with research readings regarding inclusion (Lani Florian's 2014 article - What counts as evidence of inclusive education? With a particular focus on the inclusive pedagogical approach in action (IPAA) framework). This provided the teachers with evidenced based research to critically reflect upon and examine their own values and beliefs regarding inclusion. This reflection was further developed by engaging with Alan Schoenfeld's work regarding Teaching for Robust understanding (TRU) in mathematics. The TRU framework identifies five essential dimensions of classroom practice:

(1) the Content, (2) Cognitive Demand, (3) Equitable Access, (4) Agency, Ownership, and Identity, and (5) Formative Assessment. The community also focused in particular to think about the mathematics lesson through the eyes of the child – and in this case, the child with additional needs.

This research base provided the foundation for the team to follow the Lesson Study cycle as they collaboratively conducted a teacher led inquiry in which they researched, co-planned, taught, observed and critically reflected upon the process that is inclusion in primary mathematics. At the heart of this process, the teachers had identified case study pupils and sought to research and engage with new innovative ways to respond to these learning needs.



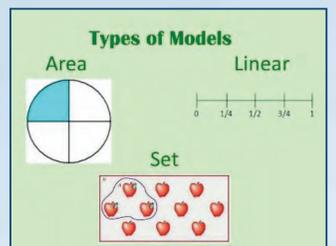
Observe the lesson through a student's eyes	
The Mathematics	<ul style="list-style-type: none"> What's the big idea in this lesson? How does it connect to what I already know?
Cognitive Demand	<ul style="list-style-type: none"> How long am I given to think, and to make sense of things? What happens when I get stuck? Am I invited to explain things, or just give answers?
Equitable Access to Mathematics	<ul style="list-style-type: none"> Do I get to participate in meaningful mathematical learning? Can I hide or be ignored?
Agency, Ownership, and Identity	<ul style="list-style-type: none"> Do I get to explain, to present my ideas? Are they built on? Am I recognized as being capable and able to contribute in meaningful ways?
Formative Assessment	<ul style="list-style-type: none"> Do classroom discussions include my thinking? Does instruction respond to my thinking and help me think more deeply?

Figure 1 (Schoenfeld and the Teaching for Robust Understanding Project, 2016) Observing a mathematics lesson from the student perspective.

Teachers' Reflections on the project

Key learning

- To take a risk and engage with unknown and innovative teacher professional learning and development initiatives such as Lesson Study
- Every teacher is a leader within the school
- To identify skills baseline in fractions
- The many resources that are available to support the teaching of fractions
- Teacher's own subject knowledge learning – in particular the linear, area and set models in fractions and using the materials to best effect along with the PDST manuals
- The benefits of collaboration – not isolated in your own classroom and developing the confidence with working with all the teachers
- The establishment of a professional learning community and how it supports the School Self-Evaluation process
- Inclusion of all pupils – equal opportunity & having high expectations of all pupils while extending the higher attaining pupils
- The time to observe an individual pupil and compare their predicted responses to the problem with their actual response.



Implications of Lesson Study for whole school teaching of mathematics

- Creating quality preventative structures, methods, programmes using a co-teaching model
- Making links to early intervention using Ready Set Go Maths and building on these learning experiences
- Use of concrete materials to support conceptual understanding throughout the whole school
- The potential of the Empty Number Line for all pupils
- It supports and encourages a way of moving from high dependence on maths text books
- Review and encourage collaborative co-teaching practices
- Extend co-teaching to senior end of school.

Opportunities

- To collaborate with teachers
- To access a facilitator with specialist knowledge in the area
- Pupils were given the opportunities to develop their skills and their pupil voice was sought and listened to and valued
- A time to reflect upon our learning and consider the barriers to achieving what we consider success. We saw the gap and also the ideal outcome. Now we are best placed to address this and further develop in our own school context
- The class teacher can tailor future lessons to the actual needs of the pupils rather than the perceived needs. We saw the value of assessment and how it enhances our teaching in responding to the needs of the pupils from where they are at.

Challenges

- Time – to schedule meetings
- The buy in from the school – the process was not easy to comprehend at the start and how it would work. We wanted a ready-made scheme such as Ready Set Go Maths that would direct us. We were happy to assume the role of a technician. Now we are developing the skills to tailor ready made programmes to meet the needs of our pupils and to create our own programmes.

Possible solutions

- Collaborate and review our Ready Set Go Maths programme - to ensure it meets the diverse needs of our pupils.
- Leadership domain – to work and build on the established Lesson Study model and further expansion in the future
- The learning has been shared with whole school at staff meeting. It may be best to share in cluster groups within the school of the relevant year grouping.
- As the process becomes more embedded, it is envisaged that we would become more efficient with our time, whilst still valuing the collaboration process.

References

Florian, Lani (2014) What counts as evidence of inclusive education? European Journal of Special Needs Education, 29:3, 286-294, DOI: 10.1080/08856257.2014.933551

Ní Shuilleabháin, Aoibhinn, and Professional Development Service for Teachers (2018). Lesson Study Introductory Booklet. Available from <http://hdl.handle.net/10197/9870>

Schoenfeld, Alan H., and the Teaching for Robust Understanding Project. (2016). *The Teaching for Robust Understanding (TRU) observation guide: A tool for teachers, coaches, administrators, and professional learning communities*. Berkeley, CA: Graduate School of Education, 22 University of California, Berkeley. Retrieved from: <<http://TRU.berkeley.edu>> or <<http://map.mathshell.org/>> or <<http://ats.berkeley.edu/>>.