Our Goal
To enable the children to develop problem-solving abilities and a facility for the application of mathematics to everyday life.

Planning Process
The planning process took place over four days. We began each of our sessions by setting out an agenda and assigning roles. Our starting point for our first session was to consult the 1999 Primary School Curriculum Introduction document. We looked closely at the broad aims of the curriculum. Following this, we had a discussion about potential topics for the lesson. We spoke about various pupil misconceptions that are continually arising in the classes in question and we decided that our focus would be on reading the time from an analogue clock. We then considered the aims once again and discussed them through the lens of our potential lesson.

The next meeting involved consulting recent and relevant research on the topic of time and reading the time. The main source of research we consulted on a number of occasions was ‘The Measurement of Time: Children’s Construction of Transitivity, Unit Iteration and Conservation of Speed’ written by Kathy Long and Constance Kamii in 2001. This provided us with an insight into misconceptions about time and helped to inform our lesson planning, which took place over the next two sessions. Time was spent determining the most suitable hands-on activities to address the reading of an analogue clock over the next two sessions. We decided to present the idea of ‘Time on a Line’ as an alternative approach to the standard circular analogue clock. Following some discussion, it was decided to make this a curved number line to aid the children’s understanding. Following this, we formally wrote the lesson plan for the research lesson.

Our School Context
Belmayne Educate Together National School was established in 2008. It has grown significantly since then. It is a co-educational, vertical school with 16 classes and 450 students. It is a DEIS school in North Dublin. The school is moving to a spacious new build in the coming months.

Learning Outcomes for Lesson
- Work in pairs to sequence real-life events, on sorting cards, to represent the linear nature of time
- Adapt a number line to help their understanding of the analogue clock
- Use a number line to help with telling the time on an analogue clock, following the Time on a Line activity

Teachers’ Reflections on the Project
Key Learning
- The importance of allowing children time to engage in discussions and learn from each other time for us to reflect on how we might teach a topic.
- Focusing on having measurable, achievable and precise learning outcomes which can be achieved in one lesson.
- The importance of providing space for children to direct their own learning and be a support for each other in their learning.
- The importance of allowing the space for children to engage with concrete materials without restrictions or too much direction from the teacher.
- Children were highly engaged.
- Opening activity allowed scope for individuality. This was very interesting for teachers to see what concept of time the children already had.
- Very engaging discussion throughout.

Implications of Lesson Study for whole school teaching of mathematics
- To provide for more reasoning and justification in Maths activities.
- To focus an appropriate amount of planning on number sense as well as procedure.
- To challenge students through their ability to connect, apply and argue their knowledge of mathematical concepts, rather than move them on to the next concept.

Challenges
- Limited time to plan together.
- Focusing in on activities for one lesson.
- Having learning outcomes that could be achieved in one lesson.
- A challenge may include finding and/or inventing suitable activities.
- Time to co-plan a scheme of work.

Possible Solutions
- More time to plan collaboratively and more teachers involved.
- More time to take part in lesson study and to develop it throughout the school so classes such as 3/4th or 5th/6th could do it together.
- The PDST has a wide range of resources. Our facilitator also gave us access to websites, names of books which have an abundance of appropriate materials.
- Developing a whole school long term plan of how to adapt number sense and reasoning into the key areas of the curriculum.