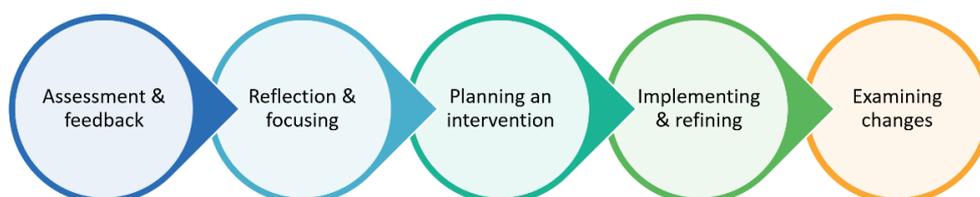


NSI Partnerships Case Study: Maggie, Year 12 Mathematics



Maggie¹ is a high school mathematics teacher who was relatively new to teaching when her school began working with NSI. This case study describes Maggie's inquiry efforts in one of the years that her school was involved with NSI. The class that Maggie chose to work with in this particular year was a small class (15 students) of able Year 12 students.



Step 1: Assessment and feedback

The students in Maggie's class completed NSI's Classroom Climate Questionnaire (CCQ). NSI provided Maggie with a personalised feedback package summarising her students' responses.

Maggie chose to share the summarised feedback with the class as well as with a trusted colleague. This helped her think through what the data were saying and what areas of her classroom practice could be improved.

Step 2: Reflection and focusing

Maggie noticed that for two aspects of the classroom climate, there was a big difference between what her students *preferred* the learning environment to be like and what they felt it was *actually* like at present. These two aspects were **Equity** (whether students were treated fairly by the teacher) and **Involvement** (students' level of engagement and participation in class). In each case, the survey data showed that the actual classroom environment was not as good as the students would like it to be.

Maggie commented:

In terms of Equity, I thought carefully about what was happening in the classroom and realised that there were students who sat at the rear of the class who were quiet and students who sat at the front of the room who were enthusiastic. I also realised that I tended to engage with the students at the front as they were more likely to ask questions of me. While I assumed that the students at the back were doing okay, I really did not know if they were paying attention or understood the work.

On reflection, Maggie felt that she could see links between equity and involvement. She hypothesised that if she was able to increase students' involvement in learning activities (particularly for those who were currently 'hanging back' from active participation), her classroom might become more equitable.

¹ Pseudonym.

Step 3: Planning an intervention

Maggie drew on the expertise of other staff in the mathematics department to help her identify cooperative learning strategies that would increase student involvement. She also referred back to resources and ideas from previous professional development that she had attended. As often happens, she had enjoyed the professional development sessions at the time but 'never got around' to trying out the new cooperative learning strategies. Now, motivated by the data her students had provided and the collaborative inquiry process, Maggie started to put these strategies into action.

Maggie hoped that using specific cooperative learning strategies would engage all students (through the structured expectations for participation associated with each strategy). She also hoped that the small groups associated with these strategies would offer safer spaces for naturally quieter students to participate.

Step 4: Implementing and refining

Maggie set aside six weeks to focus on implementing the new cooperative learning strategies with the Year 12 mathematics class. This gave the students time to get used to the new ways of working and avoided the risk of Maggie discarding a strategy simply because it hadn't gone perfectly smoothly the first time she tried it.

As Maggie implemented the strategies, she referred back to readings and materials from the earlier professional development workshops. She also regularly checked in with other colleagues from her department who were supporting her.

During the six week intervention period, Maggie became increasingly aware of the way her questioning practices affected the levels of equity and involvement across the class. She realised that she typically addressed questions to the whole class, and the same students consistently volunteered to answer. This meant that Maggie was not engaging the rest of the class and was not getting information about all students' learning progress. Maggie therefore refined and extended her planned intervention by seeking to improve her questioning practices.

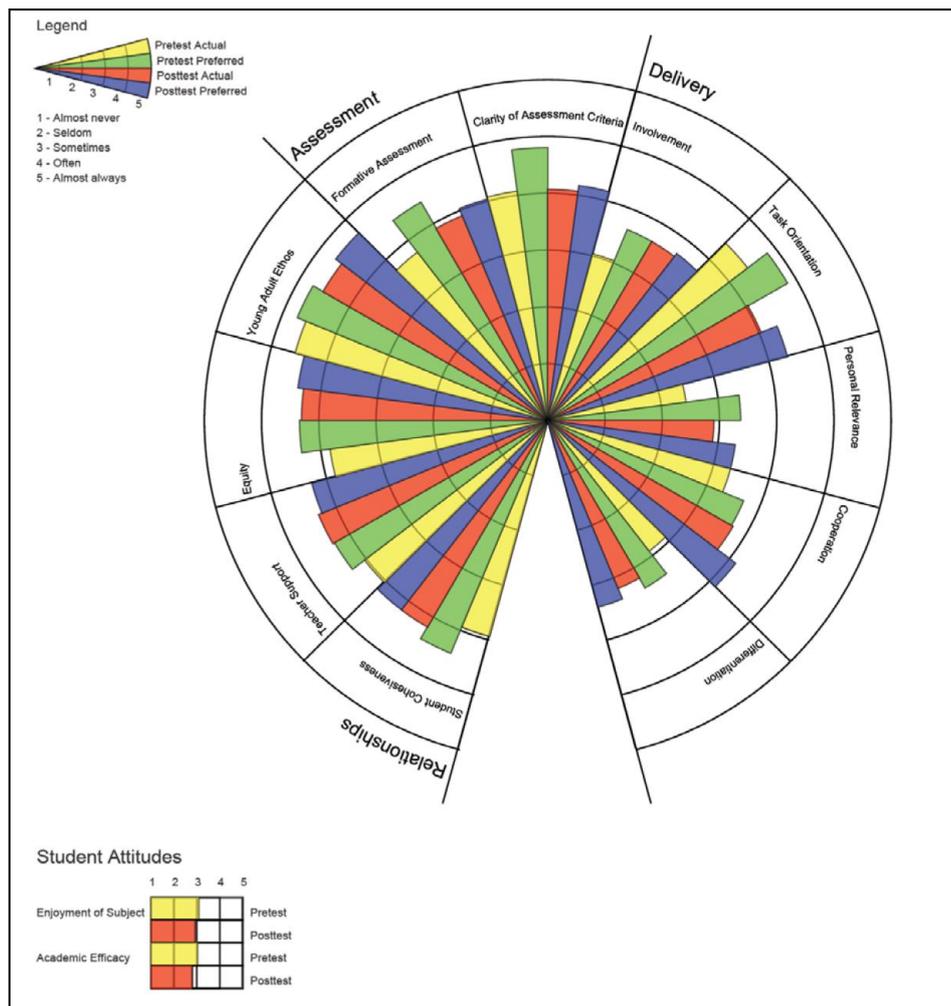
Step 5: Evaluating the changes

After six weeks, Maggie's class completed the Classroom Climate Questionnaire for a second time. NSI analysed the responses and provided Maggie with a feedback package that let her see the *before* and *after* data side by side.

The figure below shows students' scores for:

- Actual perceptions before the intervention (yellow)
- Actual perceptions after the intervention (red)
- Preferred perceptions before the intervention (green)
- Preferred perceptions after the intervention (blue).

Comparing the yellow and green scores shows the gaps between students' actual and preferred perceptions of the classroom environment at the beginning of this process. Comparing the yellow and red scores shows the change in students' perceptions of the actual classroom environment as a result of Maggie's intervention.



The *actual* scores for the two areas that Maggie had targeted – equity and involvement – had improved significantly and were now approximately aligned with students *preferred* scores for these areas. This improvement matched Maggie’s own perceptions of the class and her informal conversations with students about how they liked the new teaching approaches she was using.

An unexpected bonus was that the scores for teacher support and student cohesiveness had also improved. While Maggie had not directly targeted these scales, on reflection, she could see how her efforts to engage all students and foster cooperative ways of working would have added to student’s perceptions of teacher support and student cohesiveness.

Maggie summed up her experience like this:

In terms of my teaching practice, I have been able to put into practice a number of strategies that I have picked up from professional learning activities undertaken through the school, conversations with colleagues and what I already knew. In particular, I have increased the type and effectiveness of teaching and learning strategies that I use in the classroom. I feel that my questioning techniques are now more effective and, as a result of my efforts with this class, I know how to check for understanding and know how to implement a range of strategies to get students more actively involved in their learning which I hope means that their understanding of the work has also improved.