Professional Knowledge

Standard 1 – Know Learners

Significant Episode: Supporting others

Orange East Teacher
Orange Cluster

Finding 1.3: Collaboration
Know that learners may prefer to collaborate rather than compete in their mathematics learning.

Background

In Semester 1, the class completed a learning unit on Multiplication and Division. They had been working on learning times tables and developing number patterns on a weekly basis to develop general number knowledge and skills. The Multiplication and Division unit focused on using mental strategies to divide by a one digit number, recognising and using the division symbol, and developing an understanding of the inverse relationship between multiplication and division.

Student A (Year 3), an Indigenous student in the class, had been gradually developing his times table knowledge. However he had experienced difficulty understanding basic division concepts. He was reluctant to take part in learning activities about division and became withdrawn in some lessons. He was more willing to take part in hands-on activities and worked with teacher support to represent division by a one digit number using concrete materials. Student A could show division by sharing groups of counters, however he had difficulty explaining the concept or showing it in writing.

Story

During one lesson the students were introduced to the inverse relationship between multiplication and division. This started with a yarn up (see Learning Map below) where the teacher described a situation about going on a school excursion with a class of students and having to break into smaller groups to take part in excursion activities. The teacher asked the students to think about how the 'students' could be grouped for excursion activities. Several students volunteered ideas and built the discussion, with responses such as: "Let them choose which group to go to"; "How many activities are there?"; "Put them in groups of two so everyone has a friend"; "All the groups should be equal". Students were then told there were 24 students on the excursion and the discussion continued.

"Student A was highly engaged in the lesson and moved to writing multiplication facts and their inverse division facts without the use of concrete models."

Student A, who had not joined in the discussion yet, said, "Put them in 6 groups of 4". When asked if he could explain why this would work he said, "Well, 6 x 4 = 24, so that would make equal groups, if you put four kids in each group, there'd be six groups and nobody would be left out". He then got excited and said, "Or you could put them in eight groups of three, that makes 24 too!" The teacher encouraged Student A and asked if he could show this using counters or words. He took out some counters and arranged them in six groups of four, then counted by fours to 24. He then did the same with eight groups of three. Student A also wrote '6 x 4 =24' and '8 x 3=24' on the Smartboard.

The teacher wrote the inverse division fact for each of Student A's multiplication facts underneath and started a discussion about how "knowing one can help you work out the other". The teacher demonstrated this with counters. Students worked in small groups to model the relationship and write both multiplication and division facts related to their model. Student A was highly engaged in the lesson and moved to writing multiplication facts and their inverse division facts without the use of concrete models. He was confident in using his knowledge of 3 & 4 times tables to write and explain division facts, once he recognised the relationship

between the concepts. Student A's confidence allowed him to support other students in the class and he took on the role of 'teacher' with a group, modelling and describing his knowledge to others.

Some questions to prompt discussion:

1. ***Going from concrete mathematical experiencs to abstract or symbolic representation is an important part to becoming a mathematician. How were teachers responsive to Student A's learning?***
2. ***How did the teacher contextualise the mathematics?***
3. ***What other interesting or important aspects are in this Signficant Episode?***

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