

Whakatupuhia te reo, whakatupuhia te tamaiti

Student Voice

Learning Story 1 – Developing a shared language of learning

Overview

BES Exemplar 1: Developing communities of mathematical inquiry describes how Ava and Moana, teachers at a small, multicultural primary school, adopted a new and more effective approach to teaching mathematics. This new approach gave the students the skills and confidence necessary to talk about and explore their mathematical ideas. Both classrooms evolved into communities of learners in which students engaged in constructive learning talk.

This exemplar is a powerful example of the value of not just listening to student voice, but actively teaching students strategies for sharing their thinking. The new intervention accelerated student progress by around four to five years' business-as-usual achievement gains.

This learning story focuses on what the teachers did to give students the skills to express their voices and share their ideas while learning mathematics.

Primary source

Alton-Lee, A., Hunter, R., Sinnema, C., & Pulegatoa-Diggins, C. (2012). *BES Exemplar 1. Ngā kete raukura – He Tauira 1. Developing communities of mathematical inquiry*. Wellington: Ministry of Education. [<http://www.educationcounts.govt.nz/topics/BES/resources/bes-exemplars-quality-teaching>]

Further information

Video

TVNZ: Developing Mathematical Inquiry Communities [<https://www.educationcounts.govt.nz/topics/bes/developing-mathematical-inquiry-communities>]
This TVNZ item reports on the programme's implementation in a group of South Auckland schools. Students share how cool it is to work together!

Supporting literature

Anthony, G., & Walshaw, M. (2007). *Effective pedagogy in mathematics/pāngarau: Best evidence synthesis iteration*. Wellington, New Zealand: Ministry of Education. (See Chapter 4, Mathematical communities of practice) [<https://www.educationcounts.govt.nz/publications/series/2515/5951>]

Anthony, G., & Walshaw, M. (2009). *Effective pedagogy in mathematics: Educational practices series, 19*. International Academy of Education, International Bureau of Education & UNESCO. [www.educationcounts.govt.nz/topics/bes/resources/bes-programme]

Anthony, G., & Walshaw, M. (2009). *Te ako pāngarau whaihua: Educational practices series, 19*. International Academy of Education, International Bureau of Education & UNESCO. [<https://www.educationcounts.govt.nz/topics/bes/resources/bes-programme>]

Hunter, R. (2007). *Teachers developing communities of mathematical inquiry*. Albany, Massey University: Unpublished doctoral thesis. Available from the New Zealand Education Theses database. [www.educationcounts.govt.nz/goto/BES]

Example	Student voice rubric indicator
<p>In this excerpt, Ava uses revoicing to clarify and define mathematical terms:</p> <p><i>Jo: Isn't that just plussing three sticks, not timesing it? You are not timesing, you're adding.</i></p> <p><i>Pania: Well, what she sort of means, it is like it is going up.</i></p> <p><i>Alan: Is that timesing, going up?</i></p> <p><i>Ava: When we talk about timesing, what do we actually mean?</i></p> <p><i>Jo: We mean multiplying not adding. Adding is a plus [indicates + with her fingers], that sign.</i></p> <p><i>Sandra: You mean when you add two more squares on, that is multiplying?</i></p> <p><i>Ava: Rachel was saying she is adding 3, adding another 3, so that's 3 plus 3 plus 3. So if you keep adding 3 all the time, what is another way of doing it?</i></p> <p><i>Alan: You can just times instead of adding. It won't take as long and it is more efficient.</i></p> <p><i>Ava: Yes, you are right. Did you all hear that? Alan said you can just times it, multiply by [groups of] three, because that is the same as adding on 3 each time. What word do we use instead of 'timesing'?</i></p> <p><i>Alan: Multiplication, multiplying.</i></p>	<p>Teachers teach and use a shared language of learning that supports students to discuss learning, achievement, and next steps.</p>
<p>Moana and Ava wanted their students to engage in 'mathematical argumentation'. That is, they wanted the students to challenge each other to explain their mathematical thinking while remaining polite and respectful. In the following quote, Moana pushes her students to provide evidence to support their reasoning.</p> <p><i>At some point, you are going to have an opinion about it. You are going to agree with it or disagree with it.</i></p>	<p>Teachers create an open and inclusive classroom environment where students are comfortable taking risks with their learning.</p>

Make sense of it. If you don't agree, say so but say why. If there is anything you don't agree with, or you would like them to explain further, or you would like to question, say so. But don't forget that you have to have reasons. Remember it is up to you to understand.

Moana

Moana noticed that the Māori and Pasifika girls found it particularly difficult to express their thinking when paired with boys. She set about making them feel safer to take risks in their talk by putting students in single-sex pairs and putting particular girls together. As the students became more confident, she varied the groupings so they could transfer their use of learning talk to different situations. Both she and Ava provided specific feedback to the students on the quality of their interactions:

Donald is really listening... He is not only listening to the person; he is watching when they write things down. His questions are really specific to what the person is doing.

Over time, students began to take on responsibility for ensuring their peers felt safe to share their voices. They had taken on and internalised the rules for constructive classroom discourse. In this example, a student intervenes to stop another student from treating a peer with disrespect.

Wiremu: *Don't dis her, man, when she is taking a risk.*

Here a group of students is engaging in mathematical argumentation. Aroha is explaining a solution strategy for adding 43, 23, 13, and 3. She records 43, 23, 13, 3, and then $3 \times 4 = 12$:

Aroha: *I am adding 43, 23, 13, and 3, so 3 times 4 equals 12.*

Kea: *Why are you trying to do that with those numbers? Where did you get the 4?*

Aroha: *[Points at the 3 digit on each of the four numbers] These 3s, the four 3s.*

Donald: *All she is doing is, like, making it shorter by, like, doing 4 times 3.*

Hone: *Because there are only the 10s left.*

Donald: *Three times 4 equals 12, and she got that off all the 3s; like the 43, 23, 13, and 3. So she is just like adding the 3s all up and that equals 12. Students can use a shared language of learning to discuss learning, achievement, and next steps. 1S4*

Students feel safe and are confident to take risks with their learning

Students can use a shared language of learning to discuss learning, achievement, and next steps

The intervention worked because it was a whole school enterprise. The school leaders prioritised the learning, setting up systems that enabled teachers to engage in deep professional learning. Data gathering to support teacher inquiry included videoing lessons, which opened classroom practice to scrutiny. Teachers repeatedly viewed and examined these videos in a teacher study group. The learning was shared with parents in newsletters and homework sheets that explained the types of problems the children were working with and the questions they were being encouraged to use.

Leaders:

- provide opportunities for teachers to reflect on their use of student voice
- ensure shared understanding of what makes an effective learner
- encourage and use a shared language of learning.

Members of the wider school community are informed partners who actively engage in supporting their children's learning at school.