# Inclusion in Practice

FROM THE PROFESSIONAL DEVELOPMENT RESOURCE
*INCLUSIVE PRACTICE AND THE SCHOOL CURRICULUM*

## Acknowledgments

The Ministry of Education acknowledges the contributions of the following in developing these resources:

- the Inclusive Education Capability Building (IECB) project team
- the IECB Sector Advisory Group
- critical friends to the IECB project.

This icon brings together the symbols we associate with the New Zealand Curriculum and inclusive education:

- The **nautilus** is a symbol of growth, of intellectual and spiritual development that builds on what has gone before.
- The tip of the **feather** represents our maunga (mountains), our heritage and foundation, challenging us to ascend and strive for success; the three koru represent three fountains of Ka Hikitia – the learner, whānau, and professionals.

Integrating these two symbols signals that in New Zealand we have one education system for all.

Published by the New Zealand Ministry of Education.
www.education.govt.nz



ISBN 978 0478 16365 0

MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

# Contents



These classroom examples illustrate how teachers supported all the students in their class to participate and learn across the learning areas of the New Zealand Curriculum.

Each example uses the teaching as inquiry model to show effective strategies the teacher used. The examples include student, whānau, and teacher voices to show how these strategies affected student learning and participation.

To enhance professional learning conversations, the examples include questions for discussion and links to related content in *Implementing an Inclusive Curriculum*. If you are working with hard copy, you will need to access the online version to activate these links. *Facilitating Professional Learning* also provides suggestions for working with the examples.

# Example 1: English, Reading, Level 1 - Greedy Cat

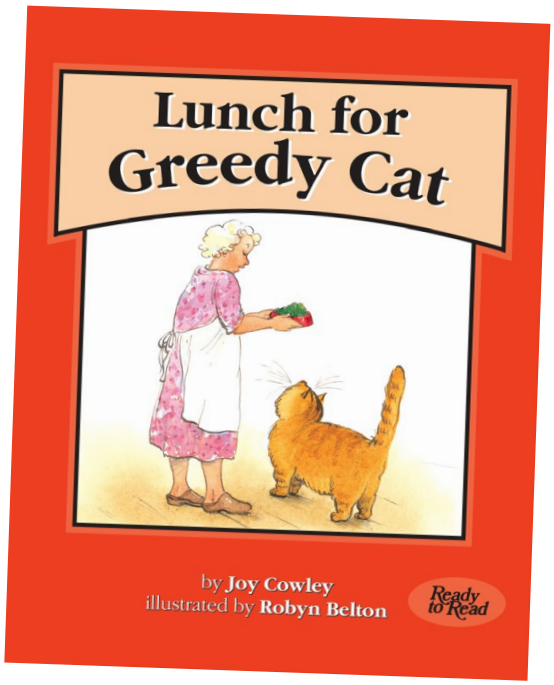
This example demonstrates how a teacher used differentiation in an English reading lesson to support all her students to explore *Lunch for Greedy Cat* by Joy Cowley. She differentiated content so all students could engage with and think about the book at their reading level.

## Task

After shared reading of the big book *Lunch for Greedy Cat*, the students were each given a small copy of the book and chose from a range of reading responses:

- Read the book with your buddy onto the iPad and share with another pair.
- Draw a picture of Greedy Cat. Inside his tummy, write a story that explains why he is always hungry.
- Draw Greedy Cat. Around the outside of the picture, write all the words you know that rhyme with 'cat'. Then create a sentence using as many of the rhyming words as you can.
- Put the pictures of the story in order. Match the right word for what Greedy Cat ate with each picture. Tell the story to your buddy.

These ideas were recorded on a chart with simple sketches or examples beside the instructions to remind the students.




## New Zealand Curriculum achievement objectives

- Acquire and begin to use sources of information, processes, and strategies to identify, form, and express ideas:
  - has an awareness of the connections between oral, written, and visual language
  - uses sources of information (meaning, structure, visual and grapho-phonic information) and prior knowledge to make sense of a range of texts
  - selects and reads texts for enjoyment and personal fulfilment (level 1).

## Opportunities to use and develop key competencies

Students were *participating and contributing* when they worked together as a community of learners supporting each other and listening, sharing, practising skills, and talking together. Students were *thinking* and developing knowledge as they made sense of text through a wide range of experiences and interactions. As they learned together, students were *using language, symbols, and texts* to make meaning and connections in reading.

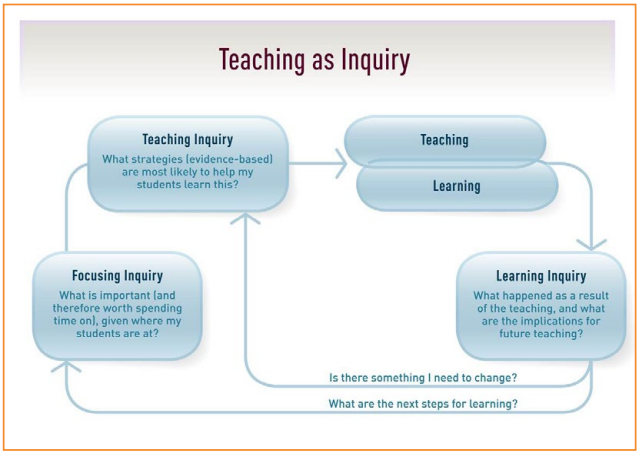
## Class description

Miss Rose teaches a class of 19 students in years 1–2. Several students require additional support to actively participate and learn in reading lessons.

- **Cindy**, **Matthew**, **Hettie**, and **Henry** have been at school between six and nine months and are reading at the Red 1 level of Ready to Read. Their school entry assessments suggested these students required support to develop oral language and concepts about print. They also have difficulty processing language and attending to tasks. They currently participate in a Talk to Learn programme. A teacher's aide supports the class during reading and writing time every day to enable the teacher to spend one-to-one time with each of these students.
- **Mai Ling** has spina bifida and a heart condition. She uses a walker and tires easily. She receives support (as needed) from a physiotherapist and an occupational therapist from the local Ministry of Education office through the Physical Disability Service. They work with Mai Ling's teacher to make suggestions for adapting the environment so Mai Ling can access the classroom with minimal effort. Mai Ling is a bright and active class member who is learning at the same level as most of her peers. She is reading at Green 3 in Ready to Read.
- **Rikki** has Smith-Megenis syndrome, which means his learning and skill development is likely to be slower than other children. He is reading at Magenta in Ready to Read. Rikki can become upset when people don't understand him or when he doesn't understand what people want from him. He finds it hard to cope with a lot of sensory information (e.g., noises, lots of children in his space) and tires easily. The school has a documented plan for supporting Rikki's personal care, and managing when he has a seizure; all staff who work in Miss Rose's classroom have a copy of the plan. Rikki has complex needs and receives additional support through the Ongoing Resourcing Scheme (ORS), which includes support from a multidisciplinary team from the local Ministry of Education office. He has an individual education plan (IEP) which documents the priority goals his team have agreed on and shows how Rikki will access the classroom curriculum.

## Teaching as inquiry

Miss Rose employed a range of evidenced-based strategies to support all the students in her class to participate and learn in this reading lesson. The students were working at different levels as they developed skills and acquired confidence in reading. She clearly differentiated content so all students could engage with *Lunch for Greedy Cat* and think about the book at their reading level. Miss Rose used a range of assessment approaches for this reading, including parental comments and learning stories.




Miss Rose actively supported reading across diverse contexts by providing multiple opportunities for students to engage with classmates and their families in a range of reading activities. Prior to this lesson, the class had worked on the topic of pets and their care. They had regularly shared the big book *Greedy Cat*, reading it together as a class and with a senior buddy during reading activities, listening to it with a friend on the computer and iPad, and using puppets to retell the story. They had multiple opportunities to explore the text and the vocabulary by creating and sharing digital flashcards on the iPad using the Write About This app and matching text to pictures as part of reading time activities. The students were all given a note to put in their homework books asking family to share the book with their child.

In this lesson, Miss Rose used senior student buddies to give her class support with reading. She made sure she used clear language, gave as few instructions as possible, and had visuals and signs to support task instructions. After grouping the students to do tasks with buddies, she worked more intensively with one group herself. She made some careful adaptations to ensure that other students could work with a buddy or teacher's aide. Students had multiple opportunities to engage with the vocabulary and explore the meaning of the text.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Miss Rose's students were at?*

Miss Rose had identified that some of her students would need extra support to access the reading task. She used formative assessment by listening to students reading within their guided reading lessons and taking anecdotal notes in the group modelling book. She completed running records every three to four weeks for five students (Cindy, Matthew, Hettie, Henry, and Rikki) who required additional support to progress towards literacy expectations. These students were also being closely monitored by the learning support coordinator (LSC), Mr Lee. The students in the class had instructional reading levels from Magenta to Purple. She understood that some students could read *Lunch for Greedy Cat* fluently while others were learning how pictures and text are related and beginning to recognise high-frequency or interest words, such as 'cat' or 'school'. She thought about students' ability to communicate and how their skills could best be used to engage with the reading content and support future learning goals.

| **Teaching inquiry**<br>*What teaching strategies (evidence-based) helped Miss Rose's students learn?* | **Learning inquiry**<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the task**<br>• Miss Rose had organised senior students to act as buddies for the juniors and had taught them how to support the juniors through peer tutoring. She set up the reading task with the buddies at the beginning of the lesson, and they shared the book with small groups working on one of the task options.<br>• Miss Rose then concentrated on working with Cindy's group. She gave them each *Lunch for Greedy Cat* and a photocopy of some pages of the book. In this copy, the students used a pen to highlight every place where the words 'Greedy Cat' were written. They were focusing on one-to-one matching and recognising the word 'cat'. As they were currently learning the alphabet and the sounds of each letter, they then looked through the text for every word starting with the letter 'c'. They practised retelling the story to Miss Rose based on what they understood from the pictures. They each took a photo of their favourite page from the book using the iPad. They practised reading the page and used the Book Creator app to record their reflection on the story. They were encouraged to read aloud, with a friend and along with the audio recording of the book. | Miss Rose: *It's important I spend concentrated time every day with these students so I really get to know how they understand concepts of print and the best way to teach them. Having a favourite page laminated is quite useful and I will get them to read this page to the class. Although I know it's mostly rote learning, it's great for their confidence to read to the class and have the class recognise them as readers.*<br>Cindy: *My name starts like 'cat', but it sounds different. We both have a big 'C'. I got a pink pen and coloured in all the 'c' words.*<br>Hettie: *I don't like broccoli either – I'd let Greedy Cat have cake 'cos it starts with 'c' too.* |

Through differentiations and adaptations, the teacher provided support for students to access the task.

**With your colleagues**, discuss:

How do you ensure that **all** students can access texts and develop as readers?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Rose's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Adapting strategies and materials**<br>• Mai Ling needed some adaptations to access the task. Miss Rose checked:<br>– that Mai Ling had her slope board to support the reading book and make it easy to see<br>– if Mai Ling wanted her buddy to help her turn the pages<br>– that the reading activities were organised in the classroom so that Mai Ling could independently use her walker to access them. | Mai Ling's mum: *She seems to be doing just fine with her work. The big thing for me is getting her to recognise when she is tired or might need help and to ask for it. She doesn't need any special plans or anything and she's keen to go to school, so it's all good really.*<br>Principal: *When I walk into that room, I always see Mai Ling being an active, participating member of the class, just like her peers.* |
| • Rikki was most likely to engage with learning material when it was presented on the desktop computer in the classroom. Rikki's senior buddy had read *Lunch for Greedy Cat* onto the computer. During the lesson, Rikki listened to the text. The computer also had software to support vocabulary and word recognition. Using this, Rikki listened to words from the book and clicked on the corresponding picture which made the written word appear on the screen. | Jack (senior buddy): *I sat with Rikki when he was listening to the story. He was looking at me, and I think he knew it was my voice on the computer. Rikki can't talk, but I'm sure he can read 'cos he pushes the button and turns every page, and smiles when the words come up.*<br>Miss Rose: *I'm noticing that Rikki seems to spend longer listening to the books in his library than he used to. I wonder if some of his family might like to read books for him onto the computer. He might like to hear their voices at school.* |
| • Mrs Conti, the class teacher's aide shared the story and flashcards with Rikki's parents using Dropbox so he could share his schoolwork at home with his family. | Rikki's dad: *We have the same software as school on the home computer. Rikki won't repeat at home any work that he's done at school, but he sees us look at what comes home, and it's good for us to know what he's doing. The computer is a useful way to get Rikki involved in learning. We don't always do the same home tasks as other kids in the class, but sometimes we do things in other ways. We have a good relationship with Emily (teacher) so we just text or email with how things are going at home.* |

The teacher provided practical and technological adaptations to help her students access the reading task.

**With your colleagues**, discuss:

What kind of adaptations could you use to improve your students' access to tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Rose's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Allowing for multiple ways of responding**<br>Miss Rose was aware that she needed to plan a range of reading responses to the text. Each response targeted a group of learners' next steps based on their reading goals.<br>• Cindy, Matthew, Hettie, and Henry's group (level Red 1) was learning to recall the order of the story and attend to the initial letter in a word. The activity that involved ordering pictures from the story and matching a 'food word' to each picture was developed for this group.<br>• The activity in which students wrote words that rhyme with 'cat' supported Mai Ling's group (level Green), who were developing their knowledge of rhyming words. Mai Ling was able to type her words on the iPad then used her voice to capture her sentences. She then shared this with a buddy.<br>• Rikki likes cats and had brought his cat to school recently to share with the class. He drew a picture of his own cat and with the support of the teacher's aide wrote about her under the picture. Rikki copied words like 'cat', 'brown' and 'my' from the flashcards while the teacher's aide wrote the rest of the sentence. | Miss Rose: *Planning the reading responses can take longer due to the way I am catering for group needs, but it's definitely worth it. Students are getting better at selecting the task that meets their group's goals and not just one they feel like doing because it looks fun. I try not to direct them to the task but refer them back to their goals sheet to think which task meets it.*<br>Mai Ling's mum: *I like the way Miss Rose considers Mai Ling's needs from the start in class activities. Mai Ling tires easily, so writing can be difficult for her. She is getting better at writing on an iPad using the on screen keyboard.*<br>Mrs Conti (class teacher's aide): *I noticed the high engagement from the class with the activities. Rikki loves cats and just wanted to tell his classmates, Miss Rose, and me all about his cat again.* |
| **Assessing to recognise learning**<br>• Miss Rose assessed an aspect of Rikki's word knowledge using word cards from the story of *Lunch for Greedy Cat*. She put two word cards on the desk in front of him (e.g., 'cat' and 'Katie') and said, *Show me 'cat'*. He pointed correctly to the words 'cat', 'cake', 'mum', and 'meow'. | Miss Rose: *Today Rikki and I spent some time looking at his Greedy Cat flashcards. I think Rikki has learnt lots of new words, and I'm learning, too, about how best to teach him and recognise what he knows.*<br>Mrs Conti: *I noticed that Rikki is now pointing to the start of the word on the flashcards, and for the first time he spelt the word 'cat' independently. Miss Rose suggested that I should add in other words that start with 'c' and see if he recognises 'c' and can sort them into groups with the same initial letter.* |

The teacher planned a range of reading responses that allowed all students to work independently.

Read more about ways to differentiate the classroom programme to ensure that curriculum content and expected responses to it are adjusted to each student's strengths and needs.

**With your colleagues,** discuss:

How do you ensure that **all** your students are able to access planned reading responses and experience success in the shared reading lesson?

The teacher used modelling books and flashcards to assess reading achievement, and learning stories to share individual goals.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Rose's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Miss Rose used a modelling book with each reading group as a way of collecting ongoing evidence of learning. She and her students all wrote in the book, and she wrote students' names beside the responses. For example, when working with Cindy, Matthew, Hettie, and Henry, she was observing how each student put words together in simple phrases, used initial letters to decode new words, and which punctuation they knew. She had drawn a table at the bottom of the page and wrote the students' names in the grid as she noticed. | Miss Rose: *The modelling books are really useful in maths for gathering evidence over time, so I decided to try them in reading too. I use the table approach all the time, as it's a quick way to record against the literacy progression indicators. Today I noticed that all students were attending to initial letters in unknown words. Henry and Cindy need further support to read with some expression when there is an exclamation mark. I'll get their buddies to practise with them next week.* |
| • Miss Rose and Mrs Conti had set up an individual blog for Rikki to share his learning with his family. Rikki's IEP goals include interacting with his classmates during learning activities, and engaging with a chosen book on the computer and turning the pages. The teacher's aide made notes when she noticed Rikki engaging in a positive way with his peers and materials, and she took photos and videos to capture evidence of Rikki achieving his IEP goals. She posted the photos and videos to the blog to document Rikki's learning, and she showed the photos and video to Rikki to see if there was anything he'd like to add. Over time, these posts began to demonstrate Rikki's progress and achievement. | Miss Rose: *Using technology such as video and photos are an excellent way of capturing learning. This year we're trying a blog as it's more interactive and evidence of Rikki learning can be added at school or by his parents at home. The use of small video snapshots has been a hit. Rikki is really keen to show his classmates and his parents each video as it's posted to the blog.*<br><br>Rikki's mum: *I loved reading about how Rikki is learning lots of new words. We did a similar task at home – we all use little whiteboards as placemats now. I write words on them at teatime and we practise them. Rikki is really fast at trying to recognise the word. His brother wrote "Dad is greedy" on his placemat. Rikki looked at it and must have understood because he pointed at his dad and really laughed. I wrote about this on Rikki's learning blog for his teacher and teacher's aide to read.* |

Read more about how contributions from whānau can help you build a rich knowledge of the learner.

**With your colleagues,** discuss:

How do you ensure meaningful assessment to recognise learning for **all** your students?

How can you ensure that **all** students have sufficient opportunities to practise and respond to content?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your English teaching to ensure *all* your learners are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Ready to Read Teacher Support Material can be found on Literacy Online.

# Example 2: English, Writing, Levels 2-3 - Haiku

This example demonstrates how a teacher differentiated and adapted an English task so that all her students were able to explore syllabification and write a haiku. Haiku give students an approach to writing poetry that allows creativity within a defined structure. The content and purpose of this lesson was appropriate for students working at levels 2–3 of the curriculum.

## Task

The task was to write a haiku that captured an image through text. The students needed to understand the concept of syllabification and collaborate to explore vocabulary and create  a poem in the structured form of a haiku. As haiku are usually connected to nature, the students were creating haiku about trees. They were able to choose the way they presented the text.

© mychillybin.co.nz/Karen Doidge

## New Zealand Curriculum achievement objectives

- Use language features appropriately, showing *some understanding* of their effects:
  - uses oral, written, and visual language features to create meaning and effect (level 2).

    At level 1, students use language features and show *some recognition* of their effects; at level 3, they show *a developing understanding* of their effects.
- Show a *developing understanding* of how to shape texts for different purposes and audiences:
  - constructs texts that show a growing awareness of purpose and audience through careful choice of content, language, and text form (level 3).

    At level 1, students recognise how to shape texts; at level 2, they show some understanding of how to shape texts.

## Opportunities to use and develop key competencies

Students *used language, symbols, and texts* as they made meaning through writing poetry. The students were *relating to others* as they worked collaboratively to create a haiku verse.

## Class description

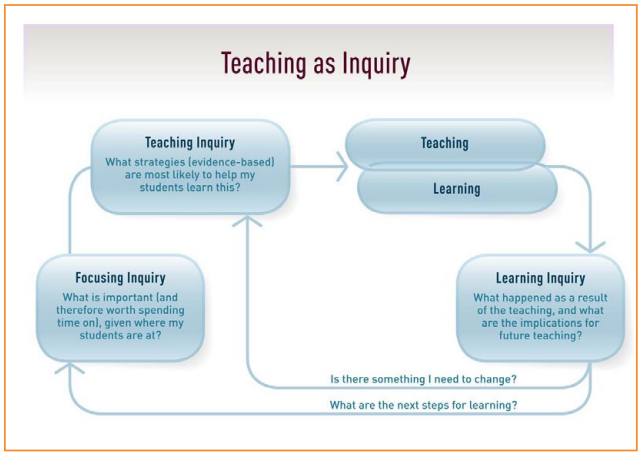
Ms George teaches a year 4–5 class. There are 29 students, 11 girls and 18 boys.

- The learning support coordinator had identified a group of 4 students (**Noah**, **James**, **Emma**, and **Sam**) who need significant support and are working at level 1/early level 2 in literacy and numeracy. She provides support in class on a Wednesday at writing time. She also works with Ms George and a teacher's aide on ways to keep these students engaged with the class work.
- **Mele** has difficulty organising, processing, and recording her thinking. She often chooses to use one of the class iPads and finds this useful for expressing her ideas.

- **Esther** has life-threatening allergic reactions to egg products, dairy products, and all types of nuts. Because of the severe risk these items pose to Esther, the entire school environment requires close monitoring to ensure she is not exposed to any of these items. Esther has a detailed care plan which is implemented by Ms George and a teacher's aide. She also has a risk management plan which details the process for administering medication and for contacting Esther's parents if she goes into anaphylactic shock. This additional support is funded through the School High Health Needs Fund (SHHNF). Ms George monitors meal times, washes down tables and other classroom furniture after meal times, and is very careful to not use any items that Esther is allergic to for learning activities. Esther's peers are also aware that they cannot expose her to the things she is allergic to. She is learning at an equivalent level to her peers and increasingly is able to keep herself safe within the school environment.
- **Jeremy** has cerebral palsy. He uses a power chair and communicates using eye gaze technology. Jeremy has complex needs and receives additional support through the Ongoing Resourcing Scheme ORS that includes specialist teacher and teacher's aide time and support from a multidisciplinary team from the local Ministry of Education office. To stay well, Jeremy needs ongoing review and monitoring of his positioning in the classroom by a physiotherapist and occupational therapist. He also has a specialised programme for eating and swallowing.

## Teaching as inquiry

Ms George employed a range of evidence-based strategies to support all her students to participate and learn in this English lesson. She linked to prior learning and provided additional opportunities for students to engage with the content.




Prior to the poetry lesson, students had been taught how to recognise syllabification through clapping natural 'sound bites' of a word and thinking about how each syllable contains a vowel or vowel sounds. Ms George planned a range of tasks across learning areas to explore and reinforce syllabification. Within the poetry lesson, she provided visual reminders about syllabification.

The students were creating haiku about trees that had particular meaning for them. Tree huts, tree swings, fruit trees, and trees growing at home or at school were all considered as motivators for this writing. Students were given time to explore the school grounds, and several commented on the large beech tree in the playground, which was the anchor point for a very popular flying fox. The students were encouraged to check with their families about any trees that had special significance at home or in the community. The teacher gave the students the Māori names for the trees and invited Sam's grandmother, who lives on the marae, to speak to the children about correct pronunciation of tree names such as mānuka.

During the poetry lesson, Ms George gave the students examples of haiku to use as reference. Students were able to work with a peer of their choosing and create a haiku collaboratively. They negotiated with each other where they wanted to work, with some choosing to work outside under a tree. Ms George enabled students to share their learning using multiple ways of responding. The learning was assessed in a variety of ways with high levels of student involvement.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Ms George's students were at?*

In preparing for this lesson, Ms George had identified that her students needed more experience in self-assessing their learning. She had also observed that some students' spelling and vocabulary were limiting their ability to create texts, and that several students would need additional support with syllabication to complete the task. She thought about how she could engage students through connecting to their interests and peer collaboration. She recognised that differentiating the task and allowing a variety of ways of presenting the haiku would allow these students to achieve.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms George's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Making connections to prior learning and student interests**<br>• Students had been learning about syllabification in a range of contexts over a couple of weeks:<br>– Ms George had made flashcards with a word and picture on one side for students to practise identifying syllables. On the reverse of the card, the word was broken into syllables for students to self-check. She had written each syllable in a different colour to help students recognise the component word parts. These flashcards reinforced the skill of syllabification, and provided some prompts for students beginning to create their haiku. | Ms George: *The flashcards were useful to reinforce learning. Noah and James used them as a practice activity during reading lessons. It was a good way to give extra opportunities to get the concept of syllabification secure in their thinking. I've noticed that it is much easier for Mele to practise clapping syllables with a flashcard when each is a different colour.* |
| – Ms George had asked students to call the attendance register each morning. They said each name, clapping the syllables. The person responding also clapped in syllables, e.g., "Rich-ard is here." | Ms George: *James and Sam often call the class role, practising syllabification together. Neither would be confident to do it on their own but they do a great job supporting each other.* |
| – Jeremy could indicate the number of syllables in a word by blinking. When it was his turn to help with the attendance register, Ms George or another student read each student's name and Jeremy indicated the number of syllables with the corresponding number of blinks. | Emma: *I like doing the register with Jeremy. He's pretty fast at blinking syllables. Some people think he's not listening because he doesn't talk, but he's actually really smart and he can do the same stuff we do. We always try to ask him yes/no questions, because that's easiest for him to answer. He blinks for 'yes' and sort of rolls his eyes to the side for 'no'.* |
| • A group of students needed consolidation on syllabification, so the learning support coordinator worked with them to create a poster with the names of TV characters written in syllabic form. Each student searched the Web for a photo of their favourite TV character. They imported the image to the Pic Collage app on the iPad and added text in syllabic form (e.g., Cap-tain Hadd-ock). They shared their e-posters with the class. | James: *It's good that we could make a poster on the iPad about whatever we wanted. Mine's a One Direction poster and I did all the syllables in names in different colours.* |

The teacher provided support so that the students could use their prior knowledge and interests to access the task.

**With your colleagues,** discuss:

How can you ensure that your students recognise prior learning and use this existing knowledge to support new learning?

How can you build on students' interests and personal experiences to scaffold new learning?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms George's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Allowing for multiple ways of responding**<br>• Ms George provided multiple examples and suggestions for students to create and present their haiku poems:<br>– in collaboration with a peer<br>– made into a movie using the Sock Puppet app on the iPad and shared with the class<br>– shared with the class using sign language<br>– performed as mime<br>– painted on a poster<br>– created as a collage<br>– written on the smart board<br>– typed into a Google Doc and shared with the class and/or families<br>– written in ink on the back of a large leaf. | Ms George: *The students often produce much better work when they choose a partner and have lots of options about presentation.*<br>Ms George: *I was very careful not to provide any paint products, glue, or collage items that might be a problem to Esther, and I reminded the class to think about this too. Esther is aware of the kinds of trees that can trigger her allergies so I made sure she thought about this during the lesson.* |
| • Ms George provided word-bank posters, for example, a page of 'winter' words, and a page of 'tree' words. These could be used to support students who found it difficult to generate text. | James: *I can do the poem, but I get stuck on some of the words, so I get the spelling from the tree-word poster. I didn't know how to spell 'branches'.* |
| • Mele took one of the class iPads and chose to work on her haiku in the resource room next door to the classroom. She often works in the resource room as Dragon software is most effective in a quiet environment. | Mele: *I wrote my haiku on the iPad. I'm proud of what I do when I work on the iPad, but I don't like it when I have to write.*<br>Ms George: *Mele knows how to use various writing apps on the iPad and is working in every way at the level expected for her age. It's just a shame she spent most of the lesson by herself in the resource room – I need to find ways to make the most of the technology but also include peer interaction.* |

The teacher provided practical and technological adaptations to help her students access the reading task.

Read more about adapting supports to ensure that all students can access lesson content.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms George's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • The specialist teacher had loaded pictures of different trees and associated word lists onto Jeremy's computer before the lesson. Julie, the teacher's aide, supported Jeremy to open the files with the tree pictures and words. He looked through the pictures and selected one to base his haiku on using eye gaze. Julie worked with Jeremy and a fellow student to select words from the lists to create the poem in a Google Doc. Once she saw that the student understood how the technology worked, she left the pair to work together and she supported other students in the class who wanted assistance. At the end of the lesson, she showed Jeremy and his buddy how to share the haiku document with Ms George and each boys' family. | Ms George: *It's important I find a couple of minutes before a lesson to chat to Julie. She then knows what is required and can set up Jeremy's computer so he is ready to participate in the learning along with everyone else. I prefer that Jeremy work with his peers when he can and that the teacher's aide buzzes around the class helping anyone who needs it.*<br><br>Ms George: *Jeremy and his buddy wrote an excellent haiku. Jeremy's literacy is progressing well, but much of his learning is about making choices rather than generating ideas. I will talk to the specialist teacher about this the next time we meet.*<br><br>Specialist teacher and teacher in discussion: *We've noticed that towards the end of the day, Jeremy seems to get tired and slumps slightly in his chair, which means his eye gaze isn't as accurate. We need to talk with Jeremy's mum about whether this happens at home and to ask the physiotherapist for advice.* |
| **Assessing students meaningfully to celebrate learning**<br>• Ms George wanted the students to self-assess their performance in this task. She gave them a couple of options for this:<br>– complete a self-evaluation sheet with sliding scales to indicate their level of engagement in the task and how much they thought they had learned; there was also a space to write what they wanted to learn next (the specialist teacher had adapted a version of this sheet on Jeremy's computer)<br>– have a short video interview with Ms George, where the student showed their work and she asked similar questions to those on the self-evaluation sheet.<br>• Using Evernote, Ms George created an e-note for each student that included a photo or link to the student's work, a photo of their self-evaluation sheet or embedded video of their interview, and her feedback. Each student's note was emailed to their parents as a weblink. Ms George also emailed the link to Jeremy's e-note to the specialist teacher. | Noah: *I like doing the sheet about what we've learnt. I like showing it to Ms George.* |

Read more about networks of support and how you and your students can be supported by the school community and specialists from outside the school.

**With your colleagues,** discuss:

What opportunities can you provide for **all** students to express their learning in multiple ways?

The students evaluated their learning, and the teacher shared this with their parents.

**With your colleagues,** discuss:

How do you support **all** your students to assess their own learning?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your English teaching to ensure *all* your learners are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

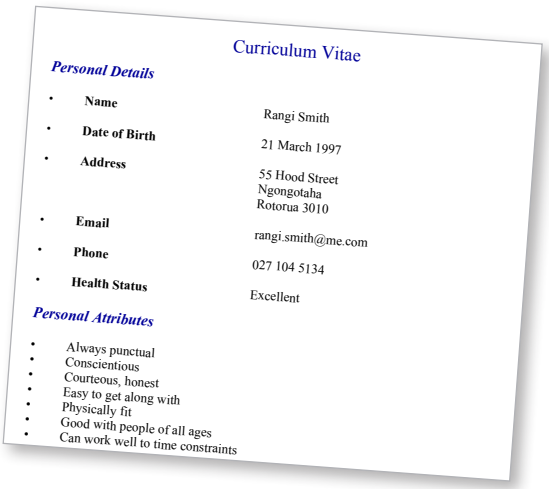
Support and information about poetry and haiku can be found on English Online.

# Example 3: English, Writing, Level 6 - Curriculum vitae

This example demonstrates how a teacher with a year 11 class differentiated and adapted an English task to support all his students to create a curriculum vitae. This task was appropriate for students working at level 6 of the curriculum. However, the teacher focused on strategies that enabled students working at early level 5 of the curriculum to successfully participate and learn.

## Task

Most of the students were working towards Unit Standard 504: Produce a CV (curriculum vitae), (NCEA Level 1, 2 credits). For this unit standard, students assemble documents to prepare and produce a CV with logical flow, headings, consistent layout, and correct spelling and grammar.



Curriculum Vitae

*Personal Details*

- **Name** — Rangi Smith
- **Date of Birth** — 21 March 1997
- **Address** — 55 Hood Street, Ngongotaha, Rotorua 3010
- **Email** — rangi.smith@me.com
- **Phone** — 027 104 5134
- **Health Status** — Excellent

*Personal Attributes*

- Always punctual
- Conscientious
- Courteous, honest
- Easy to get along with
- Physically fit
- Good with people of all ages
- Can work well to time constraints

## New Zealand Curriculum achievement objectives

- Show a *developed understanding* of how to shape texts for different audiences and purposes (level 6).
  At level 5, students show an *understanding.*
- Integrate sources of information, processes, and strategies purposefully and confidently to identify, form, and express increasingly sophisticated ideas:
  - creates a range of increasingly varied and complex texts by integrating sources of information and processing strategies (levels 5 and 6).

## Opportunities to use and develop key competencies

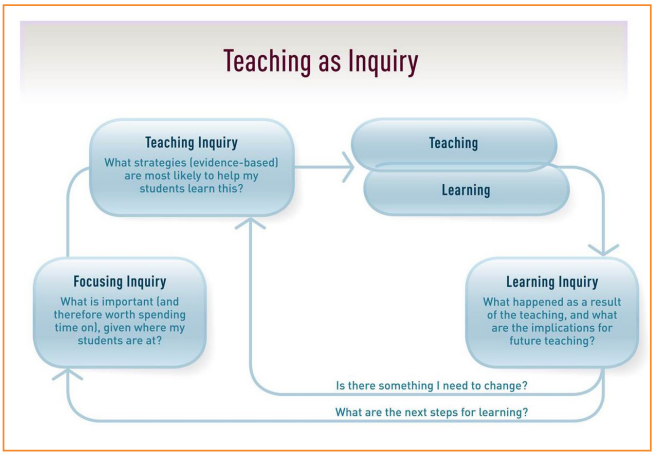
Students were *thinking* critically about the differences between skills and knowledge. They were imagining their curriculum vitae from the reader's perspective. Students *used language, symbols, and texts* to organise and communicate key information required for a curriculum vitae. They used a range of skills to convey main ideas in a formal document. In recognising their strengths and using this knowledge to articulate goals, they were *managing self*.

## Class description

Mr Masters teaches a year 11 English class in a co-educational high school. There are 27 students in the class, 16 boys and 11 girls. Most of the class are expected to achieve Level 1 NCEA this year. A teacher's aide works in the class to provide additional support to students who need it.

- Three students, **Lewis**, **Natalie**, and **Abby,** have been identified as requiring additional support in English. Each week they attend an extra period of English with the learning support coordinator (LSC), Miss Chen, that provides additional opportunities to consolidate learning in the subject. The teacher and LSC communicate regularly to ensure that the extra period focuses on up-coming or current units of classroom work. The LSC also makes suggestions for appropriate strategies and differentiations to use in the classroom so that these students can successfully access the learning content.
- **Teika** has autism spectrum disorder (ASD). She had support from the Resource Teacher: Learning and Behaviour (RTLB) service for years 9 and 10, and data was gathered in year 10 to support her special assessment conditions for year 11. The LSC meets regularly with Teika to plan and set up supports for her learning. She finds group work difficult and environmental factors (such as noise) distracting. Taking short breaks during class helps her remain settled and focused. She likes clear instructions that are presented visually and to know what is expected of her. She has a learning plan for English that sets out her goals for the term and that was developed collaboratively with her, her mother, Mr Masters, and the LSC.

## Teaching as inquiry




Mr Masters used a range of evidence-based strategies to support all his students to participate in the curriculum vitae task. He clearly differentiated content so all students could engage at their level. Most students produced their work on a computer, which readily enabled a range of adaptations. Mr Masters provided several curriculum vitae as models and provided feedback that supported learning through the writing process.

This example covers a number of lessons as students inquired into their own strengths and skills and organised text in a way that clearly communicated personal information. The students began by working collaboratively to understand the difference between skills and knowledge. They thought about accessing documents such as education or training records, testimonials, references, first aid certificates, and their passport and driver's licence. Students collated and managed these documents and assembled information from them into a coherent whole. The next step involved formal writing in which they practised the skills of editing and proofreading, with a focus on spelling and grammar. Finally, they paid attention to headings, layout, and spacing.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mr Masters' students were at?*

Earlier in the year, Mr Master's class had completed a unit of work where they produced a written narrative. In assessing this work, Mr Masters had noticed that his students would benefit from more practice writing for a specific audience, organising information from different sources, and structuring ideas. He was also aware that several students in the class were intending to look for casual work in the next holidays. He chose the curriculum vitae task as it provided a useful and functional context for engaging all the students, would help develop their writing strategies, and would be a good scaffold for a later more substantive writing task.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Masters' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Adapting the supports to access the learning**<br>• Mr Masters created his plan for the CV task using Google Docs and shared it with Miss Chen, the LSC. He used the comment function to add his observations about the support that Lewis, Natalie, and Abby might need to organise and structure ideas in a text. | |
| • In the additional English period, Miss Chen carried out a mindmap sorting task with these students. They worked collaboratively on a Lucidchart Mindmap. Miss Chen had pre-prepared nodes on the mindmap that corresponded to the headings in a CV and a list of information about a young person. They sorted and connected each item on the list to one of the CV headings. | Lewis: *We did a CV mindmap with Miss (LSC) so I know what we need to do in Sir's class. At first I wasn't sure of the difference between skills and knowledge, but I've got it now. And I can look at the mindmap we did with Miss if I forget.*<br>Miss Chen: *Finding time to keep in touch with all the subject teachers can be hard, but sharing unit plans using Google Docs and giving each other updates over email about how the programme is working is a big timesaver.* |
| • After this lesson, Miss Chen commented in Mr Masters' CV unit plan about the task the students had completed, where they might still need some support, and included a link to the collaborative mindmap. | |
| • To begin the CV unit, Mr Masters shared the unit standard with the class via Google Docs. They read it together and highlighted all the words that needed explanation. This resulted in an additional document that listed all the highlighted vocabulary and their explanations. This was also shared with all students and could be accessed at any time by those who needed it. | Abby: *Doing the word list with the class was really good. It just helped me get the key ideas. I'm going to keep checking it when writing the bits for my CV.* |
| • Mr Masters talked to Mrs Goldie (the teacher's aide) about the unit standard and the students who might need some extra support. He told the class Mrs Goldie was available to support anyone who asked. | Mrs Goldie: *I really value Mr Masters taking time to go through the content of the unit standard with me. It means I can help students and actually know what they're trying to achieve.* |

The teacher and LSC used strategies that supported all the students to access the content.

Read more about how shared planning can support effective teaching and learning for students with additional learning needs.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Masters' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Teika had a small koosh ball on a keyring that she kept in her pocket. She liked the rubbery feel of the ball and rolling it between her hands helped her to stay calm and listen. Mr Masters has a small box of such objects at the back of the room that other students can use. He frequently holds a koosh ball himself and has told the class that, as for Teika, it helps him to concentrate and learn. | Mrs Goldie: *I notice lots of students seem to work better and concentrate more when they have these small items to hold. I know Teika is listening even when she is not looking at the teacher. She sort of rolls the koosh ball around in her hand but is sitting very still.* |
| • Teika is better able to learn and engage with lesson content when she is able to take breaks. Mr Masters and Teika had negotiated that she could leave the class for a drink or a two-minute walk without asking his permission. She had a small laminated card that sat on Mr Masters' desk. Teika turned the card to read 'out' as she left the room, and turned it to 'in' when she returned to her work. | Teika's mum in conversation with Miss Chen (LSC): *I really appreciate the school understanding that Teika works best when she can take breaks. She learnt how to manage that at intermediate and it helps her take responsibility for herself. I think it's great that you just emailed all her teachers and explained it to them, and told Teika you'd done it. Makes it much easier for her. I think most of her teachers are very happy for her to do this.* |
| **Using technology to support learning**<br>• Mr Masters supported students to design a template for their CV. A group including Lewis, Natalie, and Abby got together around a computer and jointly designed a template that worked for them. Mr Masters talked with them about key content in each part of the template and referred to the mind map the students had made with Miss Chen. He wrote little tips in the template to remind them what was needed. This also reinforced the vocabulary work they had done. Mr Masters then shared the template with the class, and students could choose whether or not they used it. | Mr Masters: *I often find that when I put strategies in place for the students who I know need help, they are of benefit to lots of others as well. So now I tend to set up a group scenario in the class and offer extra support to anyone who thinks they might need it. It's more helpful not to target help to specific students sometimes.*<br>Abby: *I don't like getting help on my own, but it's good being part of a group. Sometimes other people ask the questions that I want to know, and then I don't always feel like the person who doesn't know stuff.*<br>Abby's mum in conversation at a parent interview: *Abby says it's great to have small-group work in her class. I know she needs lots of help sometimes, but she hates when it's aimed just at her. So thank you for that.* |
| • Lewis and Natalie used WordQ predictive text software to support their writing. It was useful for spelling and when editing. When students typed a full stop, the computer read the previous sentence aloud, highlighting each word as it was spoken. | Mr Masters: *WordQ software really helps Lewis's and Natalie's writing. I'm going to talk to Miss Chen about arranging access to this technology for other students in the class.* |

**With your colleagues,** discuss: What strategies do you use to ensure that **all** students can successfully access the content of a lesson?

The teacher supported students to use technology to scaffold the task and complete it.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Masters' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Teika is easily overloaded by content and expectations when completing tasks with a number of steps. Mr Masters checks with Teika that the amount of work expected is achievable. In this unit, he used a small whiteboard on which he listed the expectations for Teika's learning and the order of each lesson. He helped Teika to complete small chunks of work, and the teacher's aide was available to help her as needed.<br>• Teika worked mostly on the computer for the curriculum vitae task. She used an adapted template that the LSC had created with clear distinctions between the sections of the CV to help her organise her ideas. Mr Masters highlighted in bold text her work for each lesson, which linked to the list on her mini whiteboard.<br>• Natalie liked to wear headphones when working independently during the task. This meant she could block out other noise and focus on her work. Mr Masters recognised that other students might benefit from this strategy and allowed students to wear headphones during individual writing time. | Teika: *The teacher writes on my whiteboard what I have to do. I rub things off when they're done. Sometimes I finish my list before the bell goes. If my work is finished, I get to spend free time on the computer. Mr Masters doesn't mind if I don't get finished. He says it's fine to start at that place next class.*<br><br>Glynn (classmate): *Mr Masters lets us wear headphones in his class. It helps me motor through the work when I'm not distracted.* |
| **Assessing to support learning**<br>• Mr Masters suggested students could hand in parts of the task for feedback before the final assessment, providing multiple opportunities for them to learn the required skills and for him to understand how they were progressing. Students who were creating their CV in a Google Doc shared it with Mr Masters and he used the comment function to provide his feedback. | Lewis*: I like handing in bits of work to get it checked when I've had a go. That way I know if I'm on the right track and Mr Masters can help me if I need it. If I hand it all in at the end and it is not right, then it is too hard to fix it all up. I like to learn as I go from what I hand in.*<br><br>Mrs Goldie (teacher's aide)*: I really notice in this class how the students like getting bits of work marked and written all over by the teacher as they go. It seems to make for better quality work, I think.*<br><br>Mr Masters: *It gives me a more well-rounded picture if I look at students' work as it develops. I'm going to try and achieve this much more often.* |

Read more about adapting supports so that all students can access the task and experience success.

**With your colleagues,** discuss: How can you ensure that **all** students can effectively use technology to scaffold, support, and demonstrate their learning?

The teacher used assessment flexibly to understand and support his student's learning.

| | |
|---|---|
| • Mr Masters had high expectations of Teika achieving the credits for this unit standard, but he was aware that she might not complete tasks in the same timeframe as most of the other students. He organised for Mrs Goldie to spend time with Teika in her study period to provide extra support on her curriculum vitae, and he provided regular feedback on Teika's progress with it. | Teika: *I don't like study. I only like class time. I like working in the library on my CV. I'm sorting my certificates so I can scan copies of them. Some bits of my CV are finished. I think I will get the credits for this. I want to pass Level 1.* |

**With your colleagues,** discuss: How do you ensure that assessment supports ongoing learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your English teaching to ensure *all* your learners are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

An assessment resource to support the unit standard in this example can be found on the NZQA website.

Resources to support a special assessment conditions application can be found on the Ministry of Education's website.

# Example 4: English, Speaking, Level 8 - Oral presentation

This example demonstrates how a teacher differentiated an oral presentation task so that all students in the class could participate and achieve in the Speaking, Writing, and Presenting strand of the English curriculum. The teacher used strategies that supported the meaningful participation of students who were working at a different level from the majority of their peers. Most of this year 13 class were working towards NCEA Level 3, with some students working towards NCEA Level 1. A student working at level 1 of the curriculum joined the class for this unit and was engaged in a learning goal related to Visual Arts.

## Task

The oral presentation task was part of a term-long unit around the topic of Greenpeace. Most of the class was working towards Achievement Standard 91476: Create and deliver a fluent and coherent oral text which develops, sustains, and structures ideas (NCEA Level 3, 3 credits, internal assessment). Students must demonstrate an understanding of purpose and audience through the development and integration of ideas, oral language features, and structure to create meaning and sustain interest. The text is primarily spoken and can include other appropriate presentation techniques.



Two students were working towards Achievement Standard 90857: Construct and deliver an oral text (NCEA Level 1, 3 credits, internal assessment). One student was working on a photography project towards a goal in her IEP.

## New Zealand Curriculum achievement objectives

English – Speaking, Writing and Presenting:

- Integrate sources of information, processes, and strategies purposefully, confidently, and precisely to identify, form, and express increasingly sophisticated ideas.
  - uses an increasing understanding of the connections between oral, written, and visual language when creating texts (level 8)
  - creates a range of increasingly coherent, varied, and complex texts by integrating sources of information and processing strategies (level 8).
- Integrate sources of information, processes, and strategies purposefully and confidently to identify, form, and express increasingly sophisticated ideas:
  - uses an increasing understanding of the connections between oral, written, and visual language when creating texts (level 6)
  - creates a range of increasingly varied and complex texts by integrating sources of information and processing strategies (level 6).

The Arts – Visual Arts

- Share ideas about how and why their own and others' works are made and their purpose, value, and context (level 1).

## Opportunities to use and develop key competencies

Students were *thinking* and *using language, symbols, and texts* as they planned, collated, and organised material to present to their peers in an oral language assessment. They were *managing self* as they created an individual presentation, dealt with nervousness, and developed confidence in their delivery to the teacher and their peers. Part of the assessment was based on how they *related to others* as they worked with partners or in small groups to develop this work and as they engaged the audience during the presentation.

# Class description

Ms Kennedy teaches a mixed-ability class of 23 year 13 English students.

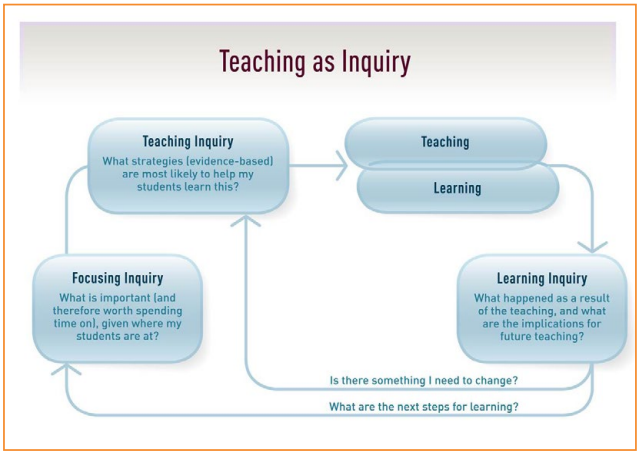
Most of the class have achieved NCEA Level 2 English and are working at level 8 of the New Zealand Curriculum. Ms Kennedy taught many of them last year. Several students required additional support to actively participate in the oral presentation task.

Mrs McLeod, the learning support coordinator (LSC) had liaised with Ms Kennedy at the start of the year about Ms Kennedy's plan for the English class that year. They had discussed the units she was likely to cover and whether any could be adapted for students learning at level 1 of the curriculum. Ms Kennedy felt the unit she was planning around the topic of Greenpeace could be adapted. She and Mrs McLeod agreed that Magda, a year 13 student who attended core subjects in the Learning Centre, would complete her visual arts unit within the context of Miss Kennedy's English class for that term.

- **Magda** has difficulty processing and retaining information, associated with an intellectual disability. She has support in class and is working within level 1 of the New Zealand Curriculum in most learning areas. She has a particular interest in the visual arts and photography. Acquiring language and literacy is a challenge for Magda, who has emerging skills in reading and writing. She has very high needs and receives additional support through the Ongoing Resourcing Scheme. A specialist teacher from the Outreach Service supports her teachers and teacher's aides with suggestions for teaching and learning strategies.
- **Natasha** has verbal dyspraxia. She struggles to convert her thinking to spoken language, and others find her speech slow and difficult to understand. Natasha is aware of this and is not confident speaking in front of people. She prefers to do as much writing as possible on the computer, and benefits from breaks if a task requires significant writing, reading, and speaking. Natasha is working within level 8 of the New Zealand Curriculum for English.
- **Chaz** and **Sarah** both find English challenging. Both have some NCEA Level 1 English credits and have chosen to stay with their peers in a Level 3 class. They work in the same English strand but towards Level 1 credits. They both benefit from some additional support in class. Sarah prefers to be helped by an adult, whereas Chaz doesn't like to be singled out and prefers to work alongside another student in the class.

# Teaching as inquiry

Ms Kennedy focused on a range of evidenced-based strategies to support all her students to create and deliver an oral text. Her teaching emphasises co-constructed learning, in which she uses peer support for enhancing student access to curriculum content and to scaffold learning. Throughout the teaching and learning in this unit, she differentiated aspects of the task to allow multiple means of accessing it and assessing achievement.




Mrs McLeod had liaised with Ms Kennedy to share her planning for Magda's visual arts learning goal. The teachers had discussed Magda's project as well as strategies that support her learning.

Ms Kennedy knew her English class well, and was aware that they were a group of mature learners, able to manage their own learning, and helpful towards their peers. She thought this was a good context for including Magda, and would provide learning opportunities for the rest of the class about understanding and accepting diversity. Before the Greenpeace unit, she had explained to the students that Magda would be joining the class for the following term and shared some of the information the LSC had given her about ways to support her learning. She reminded the students about the school's core values related to respect and celebrating difference.



Read more about ways of working together to share the responsibility of successfully including and teaching all students.

The class had previously researched the organisation Greenpeace, and most of the students had presented written work from the research as part of Achievement Standard 91475 (Produce a selection of fluent and coherent writing which develops, sustains, and structures ideas). Ms Kennedy had organised a class visit to a Greenpeace boat that was berthed briefly in the city. A researcher from the boat had talked to the class about the goals and activities of the organisation and given them a feel for life on a Greenpeace boat. This meant students had material that they could use for their oral presentation. They were given the option of basing their presentation on an organisation of their choice (approved by the teacher) or on an aspect of Greenpeace. Most students chose an aspect of Greenpeace. Ms Kennedy had also organised a performing arts lecturer to talk to the class about how to make an oral presentation coherent, interesting, and effective.

The example covers a number of lessons as the students selected and organised their information, prepared their visual supports, and practised and delivered their presentation (on which they were assessed). Ms Kennedy encouraged students to work together in class, either with a partner or as part of a small group, to share ideas about content and visual supports. She booked an extra classroom for students to practise their speech with a peer, critique and support each other, and time the length of each other's presentations. She also encouraged students to submit early drafts of their work as a basis for discussion on how it might be further developed.

In groups, the students had analysed an online exemplar of the standard they were working towards and had created a checklist of things to consider when preparing their own presentations. They were clear about the requirements to achieve with merit or with excellence.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Ms Kennedy's students were at?*

Ms Kennedy had identified several students in the class who needed additional support to participate in the oral presentation task. While formal assessment and achievement of three Level 3 achievement standard credits was the aim for most students, Ms Kennedy recognised that she needed to differentiate the task and assessment to enable some students to work to their potential and demonstrate their knowledge and understanding. She took a formative approach and asked the students to review their oral presentations from the previous year. Those who had practised their presentation with others felt that they had done better, and some students realised that they had needed better visual supports to enhance their presentation. From individual discussions with students, Ms Kennedy identified that they needed multiple supports and ways to respond to the task.

For the two students working on a parallel Level 1 NCEA standard, Ms Kennedy recognised that she needed to provide scaffolding for the tasks of organising material and practising presentation skills.

Magda's IEP included goals associated with her strengths and interest in photography. She was working towards producing photographs and talking to others about why and how she made them.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Kennedy's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the task**<br>• Ms Kennedy noted that Magda loved the trip to see the Greenpeace boat and took lots of photos on her iPad, particularly of the Greenpeace emblem and the sails. She had one of the other students show Magda how to select photos from the gallery and upload them into the Show and Tell app. She asked Magda to present her photo selections to the class.<br>• Ms Kennedy took time early in this piece of work to check that Natasha understood the process of preparing for the oral language presentation. She made brief notes about the order of the required tasks as she talked to Natasha and left the list with her. Ms Kennedy also shared the notes with Gloria (the teacher's aide) and unpacked them with her. She also encouraged Natasha to do a little bit of writing each class and either talk to her about it or email it to her. This ensured that Natasha had some feedback before she built on her writing the next time.<br>• While Gloria helped the rest of the class, Ms Kennedy sat with Sarah and Chaz. Their speeches for Level 1 only had to be three minutes instead of the five minutes required for Level 3. They made a template together, with a question at the top of each section. Chaz intended to write about some of the really interesting things that happened on the Greenpeace boat the class visited. Sarah wanted to do her speech about the All Blacks – something that she was passionate about would help keep her interested and focused. Once they'd written their content, they worked together to connect the answers and structure their speeches. Ms Kennedy planned this support and plenty of opportunities to practise so they would have the best chance of achieving the standard. | Magda*: I can make a photo show. I make the photos go round and round in circles, then I make the next photo go on the show. Everyone will watch my photo show and I can tell them about my favourites.*<br>Ms Kennedy: *I noticed Magda talking about her photos to the other students, which is just what her goal is focused on. I'll let Mrs McLeod know what Madga's achieved.*<br>Natasha: *I ask Gloria help me. Know what to do, I think, but I just need get it organised.*<br>Ms Kennedy: *I've been talking with and watching Natasha. I think it might be better for her if we work together to make a bullet-point list of everything she wants in her speech. I think she is struggling to get started. If she does all the work on the computer, we could have an outline and some prompts for her to work with – and I could support her more easily and less intrusively.* |

The teacher differentiated the task and provided support to suit her students' varying needs and abilities

Read more about ways to differentiate the classroom programme by using curriculum overlapping.

**With your colleagues,** discuss: How can you support **all** your students to progress and achieve in their use of oral language and oral texts?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Kennedy's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using peer support**<br>• Ms Kennedy told the class that Magda was the go-to person for photographs. She had all the Greenpeace photos from the trip on her iPad. Students who wanted to use any of the photos in their presentations could talk to Magda and work with her to upload them to Picassa and share the link. | Magda: *I'm very busy – everyone wants my photos.*<br>Ms Kennedy: *It would have been easy enough to create one Picassa folder for all the students to access, but by working one-on-one with Magda, everyone's getting more opportunity to interact, and Magda gets more practice talking about the photos and with the technology as well.* |
| • Natasha found engaging with text for a whole period very hard. To support her (and several other students), Ms Kennedy asked the class to work with one another to prepare their visual supports at the same time as writing the speech, rather than preparing the visual elements at the end. That way, they could break up the harder task of writing with lots of collaborative technical creativity, which the class all found much easier. | Natasha: *I'm sick of writing now. I'm making folder of Magda's Greenpeace photos and adding lots of whale photos too. The ocean is red with whale blood – it's so gross and so wrong and cruel to kill whales.*<br>Natasha: *Is hard for me to talk and use the computer at same time. I'm working with Ellen.*<br>Ellen: *I'm helping Tasha. We've had fun making a slideshow using photos we got from Magda and Google images. When Tasha does her presentation, I'm just going to play the slideshow in the background the whole time. We might actually put some music in the background, too. I think it'll be cool. She'll do the talking and I'll do the tech stuff.* |
| • Ms Kennedy monitored Chaz as he worked with Henry, who was really happy to talk about his presentation and give Chaz some ideas too. She asked Chaz to make a bullet-point list of all the things he wanted in his speech and heard Henry talking with him about that. She planned to sit with Chaz next period and help him get all his material into a structure. | Ms Kennedy: *I see both Chaz and Henry spending quite a bit of time with their heads down writing – they seem to be really onto it.*<br>Henry: *I really like working with Chaz. We're both talking about joining Greenpeace when we leave school. Chaz knows heaps about pirates and about how countries protect the sea around them. I'm doing a Greenpeace interview as part of my research. Chaz isn't, but he's going to come and record the interview on his phone for me.* |
| • Ms Kennedy noticed that Sarah sat quite close to Gloria and asked Gloria how to spell some words. She decided to check in at the end of the period to see how they both felt about it. She wanted Sarah to work with some of the other students, but Sarah preferred to either be on her own or to have help from an adult. | Gloria: *I'm always trying to keep half an eye on Sarah. She is happy to have help, but she doesn't like asking. I always try to help someone near her before I go to her so she doesn't feel singled out.*<br>Sarah: *Gloria said I should ask everyone in the class who their favourite All Blacks are and make sure I have those photos in my PowerPoint. I think that's a good idea.* |

Students worked with partners to support their use of technology in their presentations.

**With your colleagues**, discuss:

How can peer interactions provide opportunities for **all** your students to contribute to learning tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Kennedy's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• Ms Kennedy reflected on the interaction between Magda and the other students in the class. She had noticed that students interacted with Magda more when Gloria wasn't helping her. She was pleased with how easy it had been to include Magda in ways that meant she was contributing to the class topic. | Ms Kennedy: *Lots of students have come to Magda for photos. If Gloria's sitting next to her, they ignore Magda and just ask Gloria. If Gloria is helping others, the students sit with Magda and together they organise photos in Picassa. I talked with Gloria about this and asked her to help all the Year 13 students, not just two or three.*<br><br>Magda's mum: *Magda tells me she likes English in Ms Kennedy's class. She says she has lots of friends in English, and I think that's because the kids work with each other and people talk to her during class. It's really important to us as a family that Magda is given the opportunity to connect with people who might continue to talk to her when they see her in town or after she's left school.* |
| • This assessment requires that students do not use a script – they can only have very minimal prompt cards. Ms Kennedy knew this wouldn't work for Natasha, so she asked her to think about the presentation and how she would like to do it. Natasha said she would do the writing but not the speech – she didn't care if she failed. Ms Kennedy suggested that Natasha give her speech in the lunch break in her office with a couple of friends instead of the whole class. She agreed and chose three friends, who listened to her speech while they ate their lunch. | Ms Kennedy: *Her peers gave Natasha brilliant feedback. It was casual, which was easier for Natasha. I didn't worry about timing her because I knew it was going to take her much longer to get through the content. She lost her place when reading a couple of times, but her friends helped her out and she carried on fine. She met all the criteria; we just had to make a few changes so she could succeed. Well done, Natasha, I say.*<br><br>Jonte: *Natasha did her speech in Ms Kennedy's office at lunchtime. She read it all off her cards, and she remembered to look at us. Natasha's speech was good; she talked about Greenpeace trying to stop whale killing. I sat next to her so I could help if she lost her place when she was reading.*<br><br>Natasha: *Jonte, Gabby, Ellen, and Ms Kennedy listened to my speech. I got through OK, I think. I was so happy to do the speech in the office. I thought I would just fail because I wasn't doing in front of class.* |
| • Sarah and Chaz worked with purpose and benefited from support from their peers. Ms Kennedy told everybody they could hand her a draft of their speech for early feedback. She made a point of checking Sarah's and Chaz's as they both wanted the Level 1 credits. | Sarah: *I failed this standard two years ago because my speech was too short and other stuff was wrong. Gloria has timed me and it's nearly OK now. Ms Kennedy said Rata and me have to go to the quiet room next door and time our speeches because she thinks ours might both be too short.* |

The teacher used different means of assessment to understand her students' learning.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Kennedy's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Ms Kennedy encouraged the whole class to buddy up and run through their speeches so they had an opportunity to practise and iron out any issues before the final assessment. | Rata: *Sarah's speech is really cool – it's so funny. She has some great photos in her visuals. She's found out all sorts of interesting information about the All Blacks. Our speeches are too short, so we're going to work together to see if we can get them to the right length, then time them again. We both really want these credits and we both hate doing speeches. Actually it's really cool working with someone who feels the same about it as I do. I never really talked with Sarah before today and she's not in any of my other classes.*<br><br>Ms Kennedy: *It was so lovely to see Sarah and Rata working together, both with a similar goal. We've now got some positive peer experience to build on for future units of work.* |
| • When it was Magda's turn to present, she showed the class her photographs and talked about the writing on the boat and the ropes making lines on her photos. Ms Kennedy asked one of the other students to video Magda's presentation and email it to Mrs McLeod. | Ms Kennedy: *I really enjoyed having Magda in the class and would be happy to have a student from the Learning Centre in my class again.*<br><br>*Ellen: It was good having Magda in our class. I understand more about people with disabilities now and know her better as well – she's just into the same things as us anyway.*<br><br>Mrs McLeod: *I watched the video of Magda's presentation with her and was blown away by her explanation of how and why she chose those particular photographs. I encouraged Magda to share the video with her family – I am sure they would love to see the progress she has made over this term.* |

**With your colleagues,** discuss:
What opportunities can you provide for **all** students to express their ideas in multiple ways?

How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your English teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen

## Recommended resources

Key information for the teaching of English in Years 11–13 can be found on the site for New Zealand Curriculum Senior Secondary Guides.

English subject resources can be found on the NZQA website.

# Example 5: Mathematics and Statistics, Number, Levels 2-3 - Entertaining patterns

This example demonstrates how a teacher worked with two colleagues to differentiate a Figure It Out task to support all his students to explore some key mathematical ideas in Number and Algebra. The teacher was focusing on students using their knowledge of number patterns to solve problems. The task allowed students to apply their number knowledge skills and strategies to work out the number of people in sections of the crowd at a kapa haka festival.

## Task

Entertaining Patterns (*Gala*, Figure It Out, Levels 2–3, p. 16)

The task was appropriate for students working in mathematics and statistics at levels 2 and 3 of the curriculum. With appropriate differentiations and adaptations, students working within level 1 and early level 2 could also achieve success using counting and early additive strategies.


Entertaining Patterns

You need: a classmate; square grid paper; a photocopy of the costume pattern copymaster

Activity One

A crowd is gathering to watch the kapa haka performance. Here is a bird's-eye view of the crowd.

a. Discuss with a classmate how you could count the number of people in the crowd without counting each individual.

b. Use this method to count how many people are in the crowd.

Activity Two

The kapa haka performance has started! The performers have the niho taniwha (taniwha's teeth) pattern on their costumes. There are eight rows of the pattern on the children's costumes.

1st row — 2 white, 0 orange
2nd row — 4 white, 2 orange
3rd row — 6 white, 4 orange
4th row — 8 white, 6 orange

1. a. There are 10 rows of the pattern on the adults' costumes. How many triangles of each colour will there be in the fifth row of the adults' costumes?
b. Draw the fifth row of the adults' costumes on your copy of the pattern.
c. Describe how the number of triangles changes from one row to the next.

2. After the fifth row on the adults' costumes, the number of triangles decreases.
a. How many triangles of each colour will there be in the sixth, seventh, eighth, ninth, and tenth rows?
b. Draw these rows on your copy of the pattern to check.

## New Zealand Curriculum achievement objectives

- Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions (level 1).
- Use simple additive strategies with whole numbers and fractions (level 2).
- Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (level 3).

## Opportunities to use and develop key competencies

Students were *thinking* about and building on what they already knew about number. They asked questions to clarify their understanding and justified their thinking. Students *related to others* when they worked with a friend and shared their understanding with others.

## Class description

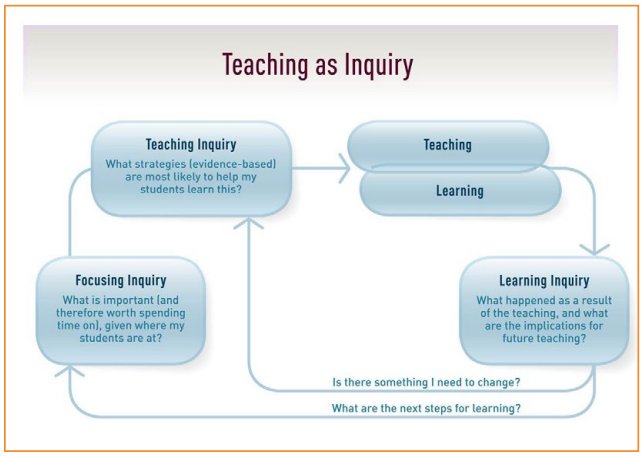
Mr Watson has a year 4–5 class. There are 32 students, 18 boys and 14 girls. 60 percent of the class identify as Pasifika, 20 percent as Māori.

- **Tali, Lasi,** and **Valentino** were identified by the learning support coordinator (LSC), Mrs Tane, as requiring additional support to actively engage in their learning. They are working at level 1 of the New Zealand Curriculum and received additional in-class mathematics tuition (45 minutes, three times a week) with Miss Kerr, the mathematics support teacher (MST) to help move them on to level 2. Miss Kerr and Mr Watson have a weekly catch-up to ensure that these three students receive cohesive teaching in all sessions. Mr Watson joins one of Miss Kerr's sessions each week to ensure that the students are transferring mathematical concepts between settings.

- **Hine** has mild cerebral palsy, which means she has difficulty with sitting, standing, getting into position, moving, communicating, using and manipulating classroom tools and materials, and self-care. She uses an iPad to support her literacy development and her spoken communication. Hine is working at curriculum level 1 in mathematics. Hine receives additional support through the Ongoing Resourcing Scheme (ORS), which includes specialist teacher time and teacher's aide support, and a Ministry of Education physiotherapist and speech-language therapist. Physiotherapy support is to help her access the classroom environment; the speech-language therapist supports the development of language strategies within the classroom.
- **Dave** is working at early level 2 in mathematics. He has a hearing loss and wears hearing aids and has an FM system to help him access and process auditory information. He is supported by the Resource Teacher: Deaf (RTD) during one mathematics session a week. The FM system helps to overcome competing noise in the classroom by increasing the signal-to-noise ratio when Dave needs to hear the teacher or fellow students. Dave likes to have information shared in manageable chunks, and he gets overwhelmed when he is given too many verbal instructions.
- **Sali** and **Imogen** are English language learners and receive additional support from Mrs Tane twice a week through their ESOL funding. At the start of the week, Mr Watson informs Mrs Tane about the key mathematical ideas he is focusing on so she can front-load the appropriate mathematical language to support Sali and Imogen to move towards working at early level 2.

Read about how working in teams is an essential part of supporting students with additional learning needs.

## Teaching as inquiry




Mr Watson uses mixed-ability groupings in his mathematics teaching. For this lesson, he was focusing on a range of evidence-based strategies to support all students to access the key mathematical ideas. Throughout the teaching and learning, he ensured he connected with students' prior knowledge and provided differentiated content that reflected the number strategies they were learning.

Students began the task by exploring the concept of a 'bird's eye-view' through a hands-on task that elicited their prior knowledge and connected it to the key mathematical language. The class worked in pairs to complete the activity and shared their mathematical thinking using multiple ways of responding, including digital technology. Mr Watson worked with a group of students who needed extra support to initially engage with the learning. The learning was assessed in a variety of ways with high levels of student involvement.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mr Watson's students were at?*

Mr Watson had identified that students were using number strategies from stage 2 to early stage 6 of the Number Framework (equivalent to level 1 to early level 3 in the curriculum). He gathered this information through the use of formative assessment strategies (observations, reviewing student work, conversations with students, a modelling book, and anecdotal notes) and assessment tools (GloSS and JAM). For the students who were working below expectations, his focus was on moving them from counting on to part–whole thinking. His teaching was focused on achieving this shift in his students' strategies.

| **Teaching inquiry**<br>*What teaching strategies (evidence-based) helped Mr Watson's students learn?* | **Learning inquiry**<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the content**<br>• Mr Watson initially worked with a group of ten students (including Dave, Tali, Lasi, and Valentino). He identified from the Kapa Haka picture key patterns that connected to the students' prior knowledge, for example, doubles to 20, making 10, and skip-counting in 2s to 20. He selected specific groupings of patterns that would encourage students to use these known addition facts and help shift their thinking from counting to additive thinking. | *Mr Watson: I really had to think about what Dave, Tali, Lasi and Valentino knew in order for them to access this task and each feel successful as a learner. I cut out selected patterns from the picture and reminded the students to think about what they knew to help them solve the problem. This enabled them to instantly think 'I can do this as I know this.' There was high engagement in the task from the group.* |
| • Mr Watson adapted the Kapa Haka picture for this group (Dave, Tali, Lasi, Valentino) by cutting out key groupings of patterns and enlarging the picture to A3 so all the students could access it. As students were selecting a grouping pattern with their partner, he asked them to think about the patterns they recognised to make it easier to work out the total number in the grouping. | Dave: *I know maths is hard for me and I get stressed when there is too much to do in the activity. Mr Watson gave us small pieces of the picture, and this helped me to just do small pieces. I liked looking for the doubles patterns as I know those and could see them quickly.* |
| • At the start of the term, the specialist teacher had prepared number grids in the ShowMe app and recorded each number in te reo Māori. Hine used these to support her spoken language during mathematics. | Mr Watson: *Having the numbers spoken in Māori on Hine's iPad is a meaningful and effective way for the whole class to learn their numbers in te reo.* |
| • Mr Watson worked with Hine and her partner, Julie, while the rest of the class explored the concept of 'bird's eye view'. He set up patterns on large tens frames and Hine counted these and indicated how many dots by touching the corresponding number on the iPad screen (the app also said the number in te reo). He then extended her by asking how many dots there were altogether on two tens frame patterns. Hine had moved on from counting a set and could now join and identify sets up to 6. | Mr Watson: *I always set aside time in maths to work with Hine individually or with her group. Today we worked together while the rest of the class went on with the starter activity. This gave me the opportunity to set up the task with her partner, Julie, and extend the joining of sets beyond 5 to 6. I will let the team know that Hine has made good progress and that we are now looking at patterns beyond 5.* |

The teacher provided additional support to ensure that the students could build on their prior knowledge to access the task.

**With your colleagues**, discuss:

What do you need to do to make mathematics content and key ideas accessible to **all** your students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Watson's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Reinforcing mathematical language**<br>• At the start of the lesson, Mr Watson wanted to draw on students' prior knowledge, so he made patterns using objects on desks around the class. He had identified that several students in the class (including Sali and Imogen) had limited understanding of the concept of 'bird's eye view' and how to name and identify patterns. Students worked collaboratively in pairs, using a rectangle frame to obtain a 'bird's eye' view of the objects and notice the patterns in them. This starter task connected mathematical language with objects students were familiar with. The frames were always accessible for students to use so they could practise at any time of the day. | Mr Watson: *It was lovely hearing Sali say, 'See the rows of doubles, Imogen. I can see four rows in the window.' I'm noticing mathematical language used naturally in this task, and I was excited to hear Sali increasing her mathematical vocab.*<br>Imogen (sharing with her classmate Nina): *I see it. I see groups. 6 there. 4 there (pointing through the frame). I know 6 and 4 is 10.*<br>Nina (rephrasing for Imogen): *You see 6 and 4 makes 10.*<br>Imogen: *Yes, 6 and 4 makes 10.* |
| **Allowing for multiple ways of responding**<br>• Mr Watson provided the class with a range of cut-out patterns from the task for students to select from. Students were able to record their thinking in a variety of ways. These included on a poster, on the iPad, in their mathematics book, on a mini whiteboard, and by photographing models they created with materials.<br>• Mr Watson encouraged students to use technology to help them show their thinking. Hine took photos on the iPad of patterns to 10 she had made with her partner, Julie. She showed Julie how to import the photos to the ShowMe app. Julie used the voice recording function in the app and recorded herself saying the number that matched the picture pattern. | Mr Watson: *I noticed that by giving students the opportunity to choose how to show their thinking in a variety of ways, they were more motivated and, there was a higher level of engagement in the learning task.*<br>Teacher's aide: *For one of the patterns, Julie tried saying the number in Māori. Hine laughed and shook her head. Julie had said 'nine' instead of 'ten'. Julie tried again and this time said the correct number and Hine gave her a high five.* |
| **Using peer support**<br>• Mr Watson allowed students to choose and work with a partner. The students had to first think individually about how they would solve the task, then share their thinking with each other and decide together how they would record their understanding. The class are used to working together in this way. | Dave's mum: *Dave was never that keen on maths, but since working with a friend he's much more motivated. His classmates have learned to give a few instructions at a time and check with him when he looks confused. He talks to us at home more about what he's learning at school.* |

The teacher provided materials to support students' understanding of key language for the task.

**With your colleagues**, discuss:

How do you support **all** students to identify and understand the key mathematical language in the tasks you set them?

Students used materials and technology to show their thinking.

**With your colleagues,** discuss:

How can you ensure that **all** students have sufficient opportunities to practise and respond to content?

Students worked in pairs on the task, using a structured approach to ensure both learned from solving it.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Watson's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Mr Watson reminded the students that they could get a talk stem sheet (see below for examples) for asking their partner questions or sharing their thinking. Miss Kerr (MST) and Mrs Tane use the same talk stems when they are working with the students in other teaching situations, for example:<br>When asking peers about their thinking:<br>– *I have a question about …*<br>– *Can you tell me more about …?*<br>– *What did you mean by …?*<br>To share their understanding:<br>– *I went …*<br>– *I know that … because …*<br>– *A bird's eye view is …* | Mr Watson with Mrs Tane: *It is useful for Imogen to have a talk stem to help her conversations with her partner. Her knowledge of English is really improving through using this tool. I need to ensure that these are available regularly.* |
| **Transferring the learning**<br>• Mr Watson recognised the need to transfer and practise the learning in other situations. For example, when the students were lining up, he asked them to work out how many students there were. When they were skipping in PE, he got them to skip in groups like those they had identified in their mathematics lesson. | Mr Watson: *I will keep looking for other opportunities to transfer this learning for my students.* |
| **Assessing to recognise learning**<br>• Mr Watson formatively assessed the students' mathematical learning based on their learning conversations (both with other students and with him) and what he noticed during the lesson. He made anecdotal notes in the class thinking book. He recorded each student's strategy stage and noted next steps for them.<br>• The class wrote a learning story together on the class blog at the end of the lesson. Students talked about their new learning and what they could learn next, based on what they knew about the patterns they saw in the picture. Mr Watson helped the students embed some pictures they had taken during the lesson, including some of Julie's and Hine's. From the blog, Mr Watson was able to identify shifts in student thinking and record them in the thinking book. | Mr Watson (commenting on the learning story): *I have just noticed that Tali, Lasi, and Valentino are now using addition facts they know to solve problems and not counting on from the biggest number. That is so exciting – to see them apply the doubles and make-10 facts to new problems. They're shifting towards additive thinking. Tomorrow I will get them to show this to Scott and Dave, which will embed their new learning.* |

**With your colleagues**, discuss:

How can peer interactions provide opportunities for **all** your students to contribute to mathematical tasks?

The teacher reinforced the learning in everyday activities that involved grouping.

**With your colleagues**, discuss:

What strategies can you use to transfer learning into other settings for **all** your students?

The teacher and students wrote a whole-class learning story that was shared with family.

Read more about how student voice can help you build a rich knowledge of your students.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Watson's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • The learning story post on the class blog could be read by students and their families. Sali and Imogen shared the story with Mrs Tane (LSC) in their next session together. | Sali's mum: *It's lovely to see the learning story from Sali's class. I don't really get this new maths, but the learning story shows me she knows about doubles and is starting to use them to solve problems. I will help her at home with more problems like the learning story shows.*<br><br>Hine: *I can join sets to 6.*<br><br>Hine's mum: *It was lovely to see the new learning story from Hine's class. It's great to see her learning with her peers and that they understand that she can learn like they do.*<br><br>Tali: *I like when Mr Watson asks me about what I know in maths. I'm learning.* |

**With your colleagues**, discuss:

How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your mathematics teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Accelerated Learning in Mathematics support materials on the NZ Maths website

Helping students to participate in learning conversations on the NZ Maths website

# Example 6: Mathematics and Statistics, Number, Levels 2-3 - Fraction problems

This example demonstrates how a teacher differentiated a problem-solving task to support all her students to explore some key mathematical ideas about fractions. The teacher was focusing on students using their prior knowledge of basic facts and their mathematical strategies and skills to help them solve word problems.

## Task

The task was for students to solve word problems involving fractions and to use think boards as a tool to show their thinking.

The think boards were used class-wide. This particular problem was appropriate for students working at early level 3 and developing simple multiplicative strategies. With appropriate supports and differentiations, students working at level 1 (using skip-counting) and level 2 (using additive strategies) could also be successful.

*There are 9 blue cars. That is ¼ (one quarter) of all the cars in the yard that are for sale. How many cars are there altogether?*

## New Zealand Curriculum achievement objectives

- Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions (level 1).
- Use simple additive strategies with whole numbers and fractions (level 2).
- Know simple fractions in everyday use (level 2).
- Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (level 3).
- Know fractions and percentages in everyday use (level 3).

## Opportunities to use and develop key competencies

Students were *thinking* as they made links to their prior knowledge of basic facts in their problem solving and as they justified their decisions. They were *using language, symbols, and texts* as they read the word problem, decoded what the problem was asking, and then used drawing or number sentences to record their thinking.

## Class description

Mrs Silvia has a year 4 and 5 class. There are 30 students, 17 boys and 13 girls. 27 percent of the class identify as Māori and 10 percent as Pasifika.

- **Alana** has Turner's Syndrome, which for her involves a hearing impairment, attention deficit hyperactivity disorder (ADHD, for which she takes medication), difficulty with memory, and issues with social skills. She wears hearing aids and is also supported by the RTD. Alana's priority learning goals are focused on mathematics, as she has difficulty retaining mathematics concepts and facts and her counting forwards and backwards in 1s and skip-counting are not always consistent. Alana is confident and likes to be the 'boss' of a group. Her peers are supporting her with fair play in the playground and providing good role models of group skills in her reading and mathematics groups.

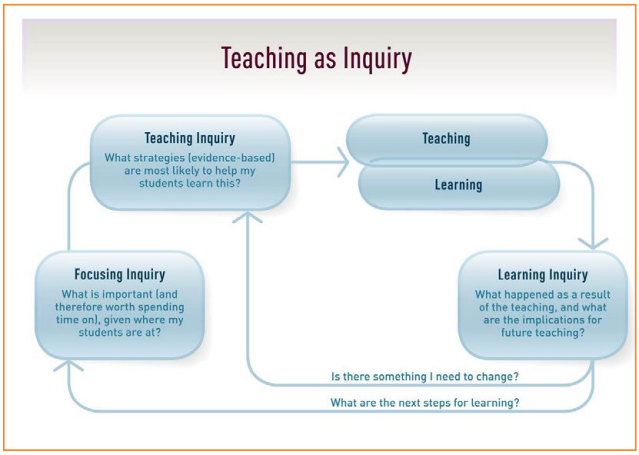
- **Kyle** has a diagnosis of global developmental delay. This means he finds it difficult to process information and to communicate with others. Kyle responds to his name and is learning to express himself by using a communication folder with approximately 70 vocabulary items. He is working within level 1 of the curriculum with priority goals targeting numeracy, literacy, and participating in classroom routines. Kyle receives additional support through the Ongoing Resourcing Scheme (ORS), which includes teacher's aide and specialist teacher time. He receives specialist support from a special education advisor (SEA), a speech-language therapist (SLT), and an occupational therapist (OT) from the local Ministry of Education office. They have helped the class teacher with strategies for keeping Kyle engaged and settled in the classroom and learning alongside his peers.
- **Percy** has a hearing impairment and ASD. He has hearing aids and is supported by the Resource Teacher: Deaf (RTD) during one mathematics session a week. He uses a small amount of spoken language to express himself. He also uses some gestures such as thumbs up or down when responding to a yes/no question. In class, Percy uses social cues from Tamati, his special friend and peer support, for what to do and when. He has an IEP and is supported by the school learning support coordinator (LSC). He is working at level 1 of the curriculum, his number range is 1–30, and his counting sequences forwards and backwards are not always consistent.

## Teaching as inquiry

Mrs Silvia sees working on word problems as an opportunity to unpack mathematical vocabulary. Within these problems, she draws on students' prior knowledge of basic facts and mathematical strategies and skills to help them develop new strategies. She bases the word problems on current topics, school events, and students' interests. Before this lesson, the class had had multiple sessions over two terms, developing and practising problem-solving strategies.

The whole class was working on using think boards as a tool for demonstrating their mathematical thinking. A think board is a visual representation of a student's thinking using a combination of materials, diagrams and pictures, statements, or key words. The class had been exposed to think boards on multiple occasions and across different number operations.

For this particular task, there was a focus on finding fractions of a set using addition and multiplication. The lesson was structured to give Kyle and a small group of students (including Percy and Alana), who were working below the expected level for year 5 students, multiple opportunities to learn. The teaching session happened on a day the RTD and a teacher's aide were working in the classroom.




Mrs Silvia introduced the problems, which she had differentiated for particular learning needs, to the whole class. While most of the class worked in mixed-ability pairs to solve the problems with a think board, using talk stems and questioning to articulate their thinking, she worked with the small group. They unpacked the problem and key words together, and then the RTD worked with the group on a shared think board and materials.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mrs Silvia's students were at?*

Mrs Silvia had identified that students were using number strategies from stage 4 of the Number Framework (level 1 in the curriculum) to stage 6 (level 3 in the curriculum). She had gathered this information through the use of formative assessment strategies (observations, reviewing student work, conversations with students, a modelling book, and anecdotal notes) and the assessment tools GloSS and PAT. She had identified that students had difficulty finding fractions of a set.

She collaborated with the RTD and LSC to discuss and agree on the learning goals and differentiations needed to support Percy and Alana. Her focus for their group was moving from counting on to additive thinking. She wanted to encourage students to use known addition facts (e.g., doubles) to solve problems. Grouping other students with Alana and Percy and having the RTD work with them also targeted Alana's and Percy's IEP goals by exposing them to more advanced thinking strategies and social interactions.

Working collaboratively with Kyle's IEP team, Mrs Silvia and the specialist teacher plan for and monitor Kyle's learning goals across the curriculum, including mathematics. In this task, Mrs Silvia was targeting Kyle's understanding of halves, quarters and whole using high-interest objects and pictures.

Read more about ways to differentiate the classroom programme so that you adjust learning outcomes for each student's learning strengths and needs.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Silvia's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Setting up the environment for learning**<br>• Percy and Alana were now able to decide on the best place to sit in the classroom for independent work and for group sessions on the mat. Mrs Silvia wore a digital FM system that transmitted her voice directly into their hearing aids. This meant they could hear her clearly during whole-class and group teaching sessions.<br>• Bennie (teacher's aide) made sure Kyle sat at the back of the group when he joined his peers on the mat at the beginning of the lesson. This catered for Kyle's preference to be able to scan the room and to have easy access to the door if he needed to take a sensory break. | Mrs Silvia: *As a teacher, having hearing-impaired children in my class was new for me. Ongoing conversations with the RTD throughout the year are important for me to learn how to set up my physical environment to best support these learners.*<br><br>Bennie: *I used to sit with Kyle at his desk when the rest of the class sat on the mat, but the occupational therapist suggested Kyle might be fine with the other kids on the mat. Now he feels included, and he can still make a bee-line for the door if he's getting agitated and needs some time out.* |

The teacher adapted the classroom seating and support to suit her students' varying needs.

**With your colleagues**, discuss: How can you ensure that the environment works for **all** your students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Silvia's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Scaffolding the demands of the task**<br>• Mrs Silvia then moved on to a whole class fraction problem:<br>*There are 9 blue cars. That is ¼ (one quarter) of all the cars in the yard that are for sale. How many cars are there altogether?*<br>She selected a quarter to prompt students to use their knowledge of doubles to solve the problem and to see if the students working at stages 5 and 6 would recognise they could use 4 x 9 and multiplicative strategies. | |
| • Mrs Silvia used a whole-class problem-solving modelling book to demonstrate the steps for understanding a mathematics word problem:<br>– Read the problem.<br>– Highlight key words.<br>– What is the problem asking us to do – addition, subtraction, fractions? (links to literacy and comprehension).<br>– What numbers do we need?<br>– What symbols do we need (x, +, etc.)?<br>– Talk through the problem first.<br>– Use materials and drawing as supports.<br>For the small group, she developed a simple poster with an acronym to show each step. | Mrs Silvia: *I've started to notice that Alana says 'key words!' when I give her group a word problem, then she jumps straight into trying to solve the problem by drawing a picture that may or may not be helpful. So the structured steps are scaffolding her to work more effectively and the poster helps her complete each step independently.* |
| • Mrs Silvia reminded the whole class to practise and use the talk stems *I think … because …* and *I agree/disagree because ….* | Mrs Silvia: *Students felt a bit 'silly' or obvious using talk stems to start with, but now during group or whole-class discussions they roll them out without prompts from me. Alana will use them if she is reminded; with a prompt of "I think …", she will repeat and add on her idea.* |
| • When Kyle started to look distracted during the whole-class teaching session, Bennie went with Kyle to his desk, where his work for the day was prepared and ready. | *Mrs Silvia: I noticed that Bennie made good use of the visual supports with Kyle today and talked much less – this seemed to help Kyle stay focused in the whole group session for longer.* |

The teacher provided a structure to support students' understanding of the task.

**With your colleagues**, discuss: What structures do you provide to scaffold all your students in the tasks you set them?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Silvia's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the content**<br>• Mrs Silvia then set up most of the class to work in mixed-ability pairs on a think board to solve the fraction problem.<br>• She had also prepared two other problems focused on 'finding the whole given a part', which were differentiated to cater for the different learning levels of the students: an enabling problem as an entry point for Alana's group and an extending problem for those requiring a challenge.<br>Enabling problem: *There are five tennis balls left in the bucket, which is ¼ (one quarter) of the balls that were in the bucket at the start of the day. How many balls were there at the start of the day?* | |
| • While most of the class worked in pairs on the fraction problem, Mrs Silvia worked with the small group on the steps to understand the enabling question. She placed the FM device in the centre of the group so that it picked up all the conversation for Alana and Percy. She referred to the visual poster showing the steps for understanding a mathematics word problem. Together, she and the students discussed key words and the numbers needed, then recorded them as a number sentence (co-constructed with different children highlighting or recording the numbers) on a joint think board. | Mrs Silvia: *Percy pointed to the part that showed ¼ and then his number sentence. I prompted his buddy to help him by saying "4 groups of 5" again.* |
| • Miss Jacobs, the RTD, sat alongside and observed Mrs Silvia in the small-group teaching session. Then she worked through the word problem again with these learners while referring to the visual poster showing the steps. When she moved on to solving the problem, she used a large think board with visual prompts in each section of the think board to remind students of the different strategies they could use. She was careful to feed in the specific mathematics vocabulary in context, giving the students another opportunity to use mathematics language correctly. | Mrs Silvia: *Having Miss Jacobs in class has meant these students have a 'double dose' of maths on Tuesdays. Miss Jacobs is really good at reinforcing the social skills of turn taking and listening to the ideas of others. This collaboration has led to Alana and Percy having success in fractions for the first time in their school learning, and without having to cut fruit up! It also helps to consolidate their basic facts and to see connections to their basic facts in other areas of maths.*<br>Miss Jacobs: *I've noticed how well these students are scaffolded within the classroom with written timetables, lists of tasks to do before and after finishing, and short instructions. Providing visual prompts on the think boards for each part is really effective scaffolding for Alana and Percy.* |

The teacher differentiated the task and provided support to suit her students' varying needs and abilities.

**With your colleagues**, discuss: How do you differentiate tasks to make mathematics content and key ideas accessible to **all** your students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Silvia's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using multilevel curriculum**<br>• While Miss Jacobs was working with the small group, Mrs Silvia roved to support the rest of the class working in pairs and then worked with Kyle on halves and quarters. She also used this as an opportunity to demonstrate to Bennie some of the strategies the speech-language therapist and occupational therapist had suggested. | Mrs Silvia: *I know that halves and quarters will be useful for Kyle, but it's unlikely that other fractions will be part of his everyday life. That is why we focused on these fractions. On this day, he was able to indicate where the halves and quarters of the shape were. He showed that he could go from whole to part for halves and quarters, and also from part to whole. He now needs to move on to more practical uses of these fractions in his life.* |
| • Mrs Silvia used a variety of media and materials to engage Kyle. For example, she used images of high-interest to him, such as of coke cans cut in half that he could put back together as a whole. One of them would draw a shape and the other would draw a line down the middle to show half. They repeated this to show quarters. Bennie then glued examples of Kyle's work into his mathematics book. They also had blocks and shapes in halves and quarters to put back together. By having the physical halves and quarters in front of him, Kyle was able to put the whole shapes back together. The blocks were colour coded, which acted as a support and drew on his matching skills. | Mrs Silvia: *In term one I didn't use any Coke imagery in the class with Kyle because it was at odds with the healthy eating unit we were doing at the time. I talked about this with Kyle's mum and the SEA, who convinced me in the end that this wasn't helpful for Kyle. He is so motivated by anything to do with Coke, and I can see now that when I incorporate this interest, he is much more engaged and willing to look at the maths task.*<br><br>Bennie: *The OT suggested using colour coding to give Kyle a head start in selecting the two halves or four quarters to put together.* |
| • Strategies that Mrs Silvia demonstrated and talked to Bennie about to support Kyle in the mathematics learning context include:<br>– talking in short, simple sentences<br>– giving him processing time after speaking to him<br>– modelling drawing and cutting shapes into halves and quarters<br>– using his highly motivating interests (without judging whether they are healthy or desired)<br>– using a variety of materials and keeping to consistent routines in using the equipment<br>– not commenting on his incorrect pencil grip when he is actually doing what is required of him in the mathematics task<br>– Kyle having a gesture or sign to show he is finished and making sure those working with Kyle acknowledge and accept when he communicates this. | SLT (to Mrs Silvia in a later discussion): *Functional language to work on with Kyle is: 'all, half, or a little bit'. He could move on to using the fraction maths in a practical everyday way, such as sharing a coke with a friend using this language. This practical application would link to his social skill goals in his IEP. So we need to think about what language he will need to use in order for this to be a success.*<br><br>Bennie: *When Mrs Silvia is working with Kyle in maths, she asks me to watch for some of the time to check for the strategies that the OT and SLT have suggested. The rest of the time, I move around the room and work with other kids who might need some extra help.*<br><br>Mrs Silvia: *The next time I'm talking with Kyle's Mum and the SLT, I'd like to ask them about how we could have a peer working with Kyle during maths time in ways that would target both students' maths learning.* |

The teacher used materials to work with one student individually.

Read more about the importance of day to day collaboration when supporting students with additional learning needs.

**With your colleagues**, discuss: What strategies can you use to ensure that **all** students can participate in mathematical tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Silvia's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• Mrs Silvia formatively assessed as she roved around the class. At the end of the lesson, she identified three pairs of students to share their thinking with the class and illustrate a variety of strategies: a pair who represented their thinking clearly and pictorially, a pair who showed a shift from counting to repeated addition, and a pair who were using known multiplication or division facts. | |
| • For the small group, Mrs Silvia made anecdotal notes in her modelling book of who was able to work independently, who used repeated addition, and who could explain why they had drawn the problem in a particular way. | Mrs Silvia: *I noted who needed extra support to record their thinking. Alana did not. Once she knew from our discussion that she was dealing with quarters, her pictorial representation showed her thinking more clearly. Alana said, "Oh a big number. Look, I got it right with a bigger number." She was able to use her knowledge of doubles to work out the answer; though she reverts back to counting on when it comes to adding pairs of doubles. A good next step for Alana is adding tens and ones using place value. I need to think about how we can use visual or pictorial supports to help her understand these concepts.*<br><br>*Percy found the task much easier once he could see groups of tens on the tens frames. Both Percy and Alana were much more confident working with big numbers today. I need to remember to keep pushing up this group's number range – it will improve their maths and build their confidence.* |

The whole class marked their work, then shared and discussed a variety of strategies that students had used.

**With your colleagues,** discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your mathematics teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

# Example 7: Mathematics and Statistics, Number and Measurement, Level 3 - Growth industry

This example demonstrates how a teacher differentiated and adapted a Figure It Out task to support the learning of all her students in Number and Measurement. The teacher was focusing on number strategies for solving problems involving area and perimeter. Students needed to apply their number knowledge and strategies to calculate the area and perimeter of a greenhouse and how much it would cost.

## Task


Growth Industry

Activity

The students at Pukeiti School want to build a greenhouse where they can grow cacti. They are investigating the cost of framing and plastic to go around the outside of the greenhouse. They want to build the greenhouse to have an area of 36 square metres (36 m²).

Here is one floor plan for the new greenhouse.

It's a bit long, isn't it?

The cost of the framing and plastic for each metre of outside wall is $80.

How much would the walls of the 2 metre by 18 metre greenhouse cost to build?

What other rectangular floor plans could Pukeiti School use that are 36 square metres in area?

What would be the cost of the outside walls for each plan?

Which plan is the most economical and why do you think this?

The local bank gives Pukeiti School enough money for a 64 square metre (64 m²) greenhouse.
Draw the floor plan for the cheapest greenhouse of this size that you could build.

What would be the most economical floor plan for a greenhouse with an area of 24 square metres?

Finding the areas and perimeters of rectangles

5

Growth Industry (*Measurement*, Figure It Out, Level 3, p. 5)

The task is appropriate for students working at level 3 of the curriculum for Mathematics and Statistics, but with well-planned differentiations and adaptations – reducing the mathematical demands of the task and the use of authentic contexts – students working at levels 1 and 2 could achieve success.

## New Zealand Curriculum achievement objectives

Level 1

- Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.
- Order and compare objects or events by length, area, volume and capacity, weight (mass), turn (angle), temperature, and time by direct comparison and/or counting whole number of units.

Level 2

- Use simple additive strategies with whole numbers and fractions.
- Create and use appropriate units and devices to measure length, area, volume and capacity, weight (mass), turn (angle), temperature, and time.
- Partition and/or combine like measures and communicate them, using numbers and units.

Level 3

- Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.
- Use linear scales and whole numbers of metric units for length, area, volume and capacity, weight (mass), turn (angle), temperature, and time.
- Find areas of rectangles and volumes of cuboids by applying multiplication.

## Opportunities to use and develop key competencies

Students were *thinking* as they asked questions to clarify their understanding and as they justified their answers. They were *relating to others* when they worked with a group and shared their understanding. Students *used language, symbols, and texts* to communicate their group's ideas, drawing on a range of representations including materials and digital means. Students were working in small groups, *participating and contributing* to complete a collaborative task.

## Class description

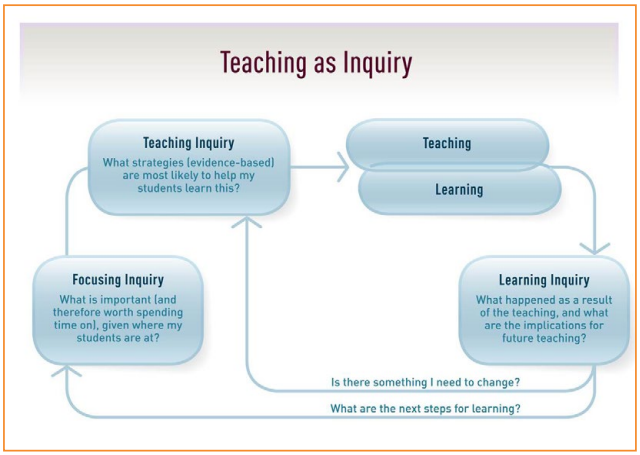
Ms Latu has a year 5–6 class that has 27 students, 10 boys and 17 girls. 45 percent of this class identify as Māori and 25 percent identify as Pasifika.

- **Moana** has low vision. Her visual acuity is 6/36, which means she needs to sit close to any material being presented in class. With adaptations to materials (e.g., enlarged print with no coloured background), she is able to participate and learn alongside her peers. Moana is working within the expectations of level 3 in mathematics. She receives additional support through the Ongoing Resourcing Scheme, which includes support for her teacher from Mr Richards, Resource Teacher of Vision (RTV).
- **Harry** has Down syndrome with learning delay. He communicates using body language and gesture, simple verbal language, and New Zealand Sign Language (NZSL). He is becoming more confident in expressing his ideas with people he knows and likes. He is progressing within level 1 of the curriculum and receives specialist services (from the local Ministry of Education office) and specialist teacher support through the Ongoing Resourcing Scheme (ORS). The priority learning goals in his Individual Education Plan (IEP) relate to building his knowledge of spatial vocabulary used in the classroom. Mathematics is an area of strength for Harry, which is why this learning theme has been identified for developing his use of NZSL. Each term, Ms Latu, Miss Meredith (the specialist teacher), and team members from the local Ministry of Education office meet to plan with Ms Latu for Harry's learning within the classroom. This term, the speech language therapist made suggestions about vocabulary Harry could learn within the mathematics unit on area and perimeter.

Read more about planning using an IEP.

- Four students (**Sara**, **Jenni**, **Yasmin**, and **Allana**) were identified by Ms Latu and the learning support coordinator as working at level 1 of the curriculum and using counting on to solve problems (stage 4 of the Number Framework). Through discussion with the students and their parents, it has been noted that the students do not see themselves as successful learners in mathematics. The students receive two layers of support: firstly they are grouped in mixed-ability small groups in the classroom, working with students at stages 5–6, and secondly they receive additional mathematics instruction (45 minutes, three times a week) with Ms Neilson, the mathematics support teacher (MST). Ms Neilson and Ms Latu work collaboratively with the four students once a week within the classroom mathematics lesson so that their learning transfers between settings.

## Teaching as inquiry




Ms Latu used a range of evidence-based strategies to support all students to access the key mathematical ideas about area and perimeter. She focused her teaching inquiry on the impact that mixed-ability groupings had on student attitudes towards mathematics and on shifting student outcomes. For this task, she differentiated the content so that students could access the key mathematical ideas, and she connected the context to the school-wide inquiry on developing a sustainable garden. She wanted the students to see how mathematics plays an important role in our daily lives. She provided a range of representations for students to use to explore the concepts, and she enabled them to share their thinking using multiple ways of responding, including digital technology.

Ms Latu used the Figure It Out task as a starter activity to introduce students to the key mathematical ideas of area and perimeter. She wanted the students to explore varying areas and perimeters, encouraging them to connect their strategies and basic facts knowledge to help them solve the problems. In this initial lesson, students were able to select from the following areas to explore: 12 $m^2$, 16 $m^2$, and 24 $m^2$. Learning about area and perimeter connected with the school-wide inquiry, which, for the class, involved building four garden beds to grow their own food.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Ms Latu's students were at?*

Ms Latu had identified that students in her class were using number strategies from stage 1 to stage 6 from the Number Framework (equivalent to levels 1 to 3 of the curriculum). She had arrived at this conclusion through the use of formative assessment strategies (observations, student work, conversations with students, a modelling book, and anecdotal notes) and assessment tools (GloSS and JAM). The class had also completed an e-asTTle assessment focused on measurement at the end of the previous term. In this, the majority of students had demonstrated confusion between perimeter and area and were using additive rather than early multiplicative strategies to solve area problems.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Latu's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the content and making connections to prior learning**<br>• Ms Latu carefully considered the areas that she wanted the students to explore and how to connect with their current knowledge to extend and challenge their understandings. She offered three areas for groups to select from initially (12 $m^2$, 16 $m^2$, and 24 $m^2$), before they could move onto the areas of 36 $m^2$ and 64 $m^2$ in the task.<br>– She selected 12 $m^2$ and 16 $m^2$ because she wanted Sara, Jenni, Yasmin, and Allana to use their doubles and experience success early in the task.<br>– She selected 24 $m^2$ because it would provide lots of opportunities for additive and early multiplicative thinking to surface in the mixed-ability group discussions.<br>– Once Harry's group had done 24 $m^2$, Sarah (the teacher's aide) took him aside to review Harry's new NZSL signs and to practice these. | Ms Latu: *Offering the students a choice of areas to work on made them consider how all learners in their group could access the ideas about area and perimeter. Harry was able to use some spoken language and NZSL to demonstrate to his group his knowledge. Sara and Yasmin decided to start with 16 as Sara quickly said, "8 + 8 = 16, so we can make two rows." The other two girls supported Sara and Yasmin to see this as a multiplication fact.*<br>Harry's group: *We didn't know Harry was so good at maths.*<br>Sarah: *Tomorrow I will review Harry's new NZSL signs with him before mathematics so that he is more confident in using these with his group.* |

The teacher provided support to ensure the students could build on their prior knowledge to access the task.

**With your colleagues**, discuss: What prior learning experiences and interests can you connect with to engage **all** students in mathematical tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Latu's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Providing engaging contexts**<br>• After talking with Mr Richards (RTV), Ms Latu started the lesson by getting all students to 'get a feel for a metre' by locating things in the class that were a metre long, identifying where a metre was on their body, and pacing out a metre. This supported all students to get a sense of size: of both a metre in length and a square metre. (This was especially important for Moana, as body referents are helpful for students with visual impairments.) | |
| • Ms Latu needed to initially engage two groups of students (including Sara, Jenni, Yasmin and Allana) in the task by questioning them about what they would grow in their garden box. It was important for all participants to connect with the task and context, so Ms Latu gave the students the opportunity to make these choices in this early part of the task.<br>• Following this conversation, Ms Latu noticed that the two groups were more motivated to participate in the task and, when questioned again, were able to discuss what area and perimeter were. | Ms Latu (in conversation with Jenni's group): *So what could you plant in your garden?*<br>Jenni: *Veges, I suppose.*<br>Ms Latu: *What else?*<br>Allana: *You mean it doesn't just have to be veges? We could plant flowers? Let's plan a rainbow garden with some flowers and some veges …*<br>Ms Latu: *The girls described the perimeter as the part where the flowers would be – around the edge; then with prompting, they used their doubles to show how they worked it out. They were no longer counting, so I have evidence of a shift in thinking towards level 2.* |
| **Identifying appropriate materials**<br>• Ms Latu carefully considered what materials would support all learners to access the key mathematical ideas of the task. For example, she provided:<br>– the task enlarged to A3 and in black and white for all students<br>– large pieces of card for all the groups to make 1 m squares that they could lay out on the concrete and draw around with chalk. Harry's group used this material to support them all to see the size of a garden<br>– multi-link cubes and a black-line grid so that groups could transfer their outside models to representations back in class. The grid was designed with Moana in mind; it had 2 cm squares and 3-point line thickness in black.<br>– NZSL prompt cards on a clip ring to support Harry to use his new NZSL signs. | Mr Richards (RTV): *At the start of the term, Ms Latu and I met to discuss the term's maths programme. This gave an opportunity for Ms Latu to reflect on the previous term and share about Moana's learning. We then looked at the key materials that would need to be adapted so Moana could access the mathematics in each task. As the year progresses, Ms Latu is transferring previous adaptations to the new learning.*<br>Ms Latu: *I noticed that the majority of the students selected the larger squares to work with in preference to the smaller grid lines in their maths books. Adaptations are good for all learners, not just the one student I had in my mind.*<br>Sarah (teacher's aide): *Harry's group were very interested in the NZSL cards and enjoyed practising the signs with Harry.* |

The teacher used practical means and contexts that engaged students' interest.

**With your colleagues,** discuss: How can you select contexts to ensure that **all** students engage and connect with mathematical tasks?

The teacher provided adapted materials to support students' access to key mathematical ideas in the task.

Read more about adapting supports so that all students can access the task and experience success.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Latu's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using peer support**<br>• Observing her students in mixed-ability groupings had confirmed Ms Latu's belief that all students can learn from each other and that it is important to take the time to develop collaborative working relationships. For this task, Ms Latu allowed the students to work in self-chosen groups of 3–4 students. Together they had to select an area so that they could all access the ideas about area and perimeter.<br>• The students then shared back to the class how their thinking had progressed in their group, and they answered questions about each other's thinking.<br>• Ms Latu reminded the students that they could get a talk stem sheet (see examples below) to ask questions of the group or to support sharing their thinking. These talk stems were generic and students used them across the day in other curriculum areas.<br>Two examples were:<br>When asking peers about their thinking:<br>– *I have a question about …*<br>– *Can you tell me more about …*<br>– *What did you mean by …*<br>To share their understanding:<br>– *I solved it by …*<br>– *I know that… because …*<br>– *I did it a different way, I went …*<br>• Harry had some talk stem cards with matching signs so that his peers could sign a question or feedback statement. Talk stems that Harry used included:<br>– *I counted …*<br>– *… and … makes … (He writes the numbers in).* | Ms Latu: *It was great to see the support within the groups. Moana was able to participate with her peers as the materials were big enough for her to see. As Moana finds black and white easier to view, her peers sorted out only black multi-link cubes for their group to use.*<br><br>Harry's mum: *I have noticed that Harry is using more sign language to communicate. I think the talk stems are helping him to communicate his ideas. I think I will get a copy to use at home.* |

Students worked in groups on the task, then shared back to the class.

**With your colleagues**, discuss:
How can peer interactions provide opportunities for **all** your students to contribute to mathematical tasks?

What strategies from other settings can you use to support **all** students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Latu's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• Ms Latu formatively assessed the students' mathematics levels based on learning conversations and what she had noticed during the lesson. She made anecdotal notes in her assessment book, indicating which numeracy strategy stage students' thinking aligned with. | Ms Latu noted: *I noticed Yasmin and Allana were using their doubles to solve problems when working out the 12 $m^2$ options. Their peers had encouraged them to use facts that they knew and they had instantly gone to doubles. Allana was very clear in her explanation, "3 + 3 = 6, then that is another 3 + 3 = 6, so I double the 6 and that gives us 12 squares." Tomorrow I will get their group to look at 24 $m^2$ to see if they can transfer this strategy to solve another problem. I will also feed in the language to shift them towards the language of multiplication rather than addition.* |
| • Ms Latu also looked at engagement in the task and within the groups and wrote down descriptions of it. She selected several to share back with the class to illustrate what engagement sounds like in mathematics as the class term goal was how to be an engaged learner. | |
| • Sarah (teacher's aide) recorded a video of Harry's group working collaboratively outside and the strategies the individual students were using to create their area model. The video captured Harry using his new NZSL signs and this was shared with the class at the end of the lesson to demonstrate shifts in learning. Sarah supported Harry to put the video on his e-portfolio page to share with his family. | Sean (responding on video after working with Harry): *I knew Harry was good at counting as he likes to do this when we line up. Having the NZSL cards helped us to understand Harry's signing. Tomorrow we will count the perimeter together and see if he can get even further.* |

The teacher documented learning shifts for some students and shared aspects of them with the class.

**With your colleagues,** discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your mathematics teaching to ensure *all* your learners are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Accelerated Learning in Mathematics support materials on the NZ Maths website

Helping students to participate in learning conversations on the NZ Maths website

Mathematics learning stories on the BLENNZ Learning Library (Search 'mathematics')

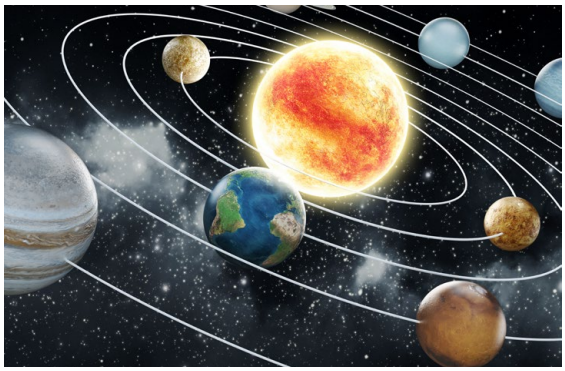
Resources for New Zealand Sign Language on the Deaf Aotearoa website, including toolkits for schools

# Example 8: Mathematics and Statistics, Number and Measurement, Level 4 - Planning a settlement on a new planet

This example demonstrates how a teacher established the mathematics content for an integrated unit on the solar system and then differentiated the content to support all his year 9 students to explore some key mathematical ideas in Number. The focus was on whole numbers greater than 1 000 000, which students would need to be able to work with in problem solving in the unit. The example shows how the teacher used adaptations and differentiations to ensure all students participated and learned.

## Task

When planning the integrated unit, the students' subject teachers adopted a team approach and collaborated to ascertain the needs of the students. The unit theme was "New worlds, new beginnings" – the United Nations had decided to fund a settlement on another planet, and the students were required to present a plan for this. As part of their learning in the unit and in their final presentation, they were to demonstrate the planet's characteristics and the size and scale of the new settlement.





## New Zealand Curriculum achievement objectives

Level 2

- Know how many ones, tens, and hundreds are in whole numbers to at least 1000.
- Create and use appropriate units and devices to measure length, ... temperature, and time.

Level 3

- Know how many tenths, tens, hundreds, and thousands are in whole numbers.
- Use linear scales and whole numbers of metric units for length, ... temperature and time ...

Level 4

- Know the relative size and place value structure of positive and negative integers and decimals to three places.
- Use appropriate scales, devices, and metric units for length, ... temperature, ... and time.
- Convert between metric units, using whole numbers and commonly used decimals.

Level 5

- Know and apply standard form, significant figures, rounding, and decimal place value.
- Select and use appropriate metric units for length, ... temperature, ... and time, with awareness that measurements are approximate.
- Convert between metric units, using decimals.

## Opportunities to use and develop key competencies

Students were *thinking* as they asked questions to clarify their understanding and as they justified their answers. They were *relating to others* when they worked together and shared their understanding. Students *used language, symbols, and texts* as they read out and recorded large numbers in a dice game using materials. Students were working in pairs or small groups, *participating and contributing* to complete a collaborative task.

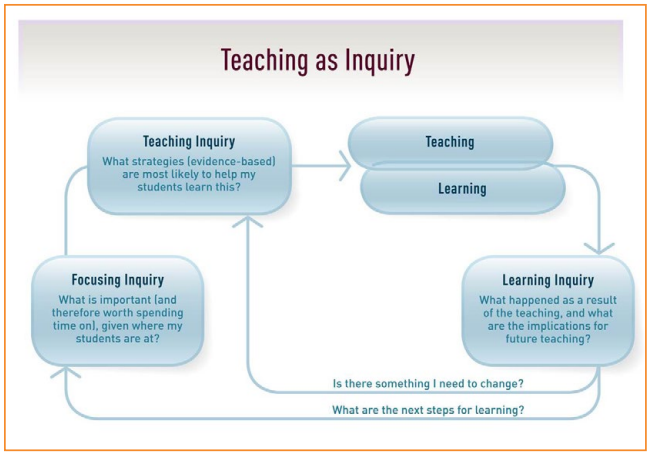
# Class description

Mr Babich teaches a year 9 mathematics class in an all-girls school with mixed ability classes in years 9 and 10. The students in the class were working in curriculum levels 2–5 for mathematics and statistics.

- **Aria** is a Māori student in her first year in an English-medium setting. Her attendance at kura during her primary years was irregular as a result of changing schools frequently. She has trouble reading and understanding English and Māori, and receives support for reading from a specialist literacy teacher. Aria is able to use Google Translate to translate unfamiliar English words into Māori. Her reading and writing ability generally allows her to work within level 3 of the New Zealand Curriculum. She is working at curriculum level 2 in mathematics, progressing towards level 3. She enjoys looking things up on electronic devices, including her phone. She is still developing peer relationships at school. A teacher's aide attends some of Aria's mathematics and English classes each week to provide her and her teachers with additional support.
- Three students (**Maria**, **Cala**, and **Tia**) are working at level 2–3 in mathematics. While lacking confidence in their work and having low expectations of themselves as mathematicians, they are capable of achieving in level 3 and working towards level 4. The mathematics focus for these students is to develop number knowledge and skills and to build their ability to apply this learning within diverse mathematics contexts. The teacher is working on developing their confidence to take risks in a safe environment and to see the relevance of mathematics in their lives.
- **Lien** is an English language learner (ELL) who recently arrived from China and is becoming familiar with a new culture and way of learning. She usually sits by herself and tends not to interact with her peers due to a lack of confidence and limited English. She is attending three ELL classes a week. Lien is able to work with numbers within equations, but when the problems are put into context, English is a barrier and she is unable to interpret and therefore solve the problems. Within the New Zealand Curriculum her mathematical knowledge is at level 5, but her literacy ability only allows her to work within level 2.

# Teaching as inquiry

At the start of this project, Mr Babich led a discussion with the class about settling a planet to ascertain what mathematical ideas would support students' learning in this context. He and the students made a list of content that could be included in their project, and he identified skills gaps as well as connections with other learning areas (such as science). For this series of lessons, he was focusing on supporting all students to access key mathematical ideas about place value and to use decimals and whole numbers into the millions to solve problems involving distance and time. (In the project, students would be looking at the distance to other planets and the time needed to get there.)



In this class, students' understandings of Number ranged from level 2 to 5. Mr Babich conferred with the English teacher to ascertain the students' literacy levels so that he could support them in both accessing information and articulating and recording their mathematical understanding. He represented content in multiple ways and worked with students with additional learning needs one-on-one and in small groups to reinforce mathematical ideas and practise the required skills.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mr Babich's students were at?*

Mr Babich had previously gathered information through formative assessment, an end-of-term test, conversations with students, and students' notes in notebooks and on electronic devices. He had identified that some of the students showed a lack of understanding of whole numbers into the thousands (which relates to achievement objectives at level 3). Both Mr Babich and the science teacher, Mr Sims, identified that this was mathematics knowledge that all the students needed at the start of the project.

Mr Babich wanted to focus on moving the students towards recognising, understanding, and using large whole numbers. He collaborated with Mr Sims so that students' understanding of these numbers would be reinforced in a science context. He also wanted to build on students' prior knowledge about decimals, which they had learned about in the previous term.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Babich's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Scaffolding to support understanding**<br>• As a starter activity, Mr Babich had an enlarged A3 'place value houses' diagram on the whiteboard. Students took turns reading numbers aloud while referring to the diagram on the whiteboard. He put the word 'and' underneath the relevant places on the diagram as a scaffold to support students to say numbers correctly. | Mr Babich: *I noticed that students were reading numbers as a list of digits and not correctly saying them as a written numeral. Once I started using the word 'and' as a visual prompt, they became much more proficient at this task.* |
| • The students then played a dice game in pairs, using a laminated copy of the place value houses diagram and a 0–9 dice. The aim was to create the biggest number possible from their dice throws. They then formed into groups of three or four pairs. As a group activity, they looked at each pairs' numbers and read them all out before ordering them from biggest to smallest. | Cala: *I have learnt how to say big numbers before, but I can't remember which number goes in which place, so seeing the diagram really helps.* |
| • Using Quizlet, Mr Babich had developed sets of flashcards for matching numbers expressed as numerals and as words: one set to 10 000, one to 1 000 000, and another over 1 000 000. While the class were doing their pair activities, he worked with Aria on a memory game using the flashcards to 10 000. | Mr Babich: *I knew that Aria had difficulty reading numbers to a million, given their many zeros and place holders. I realised that she needed more intensive work on this, so developed the flashcards to give her practice.* |

The teacher differentiated the task and adapted materials to support all students to access the mathematics knowledge.

Read more about making learning accessible for all students using differentiation and adaptation.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Babich's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching* |
|---|---|
| • While Mr Babich worked with Aria, the teacher's aide worked with Lien on the same activity using the flashcards over 1 000 000. This was to give Lien extra practice reading English words. She was given a diagram of the place value houses with the English words to help her connect the words to her mathematics knowledge.<br>• As a follow-up, Mr Babich asked two students to partner up with Aria and Lien to play the memory game with the flashcards. | *Mr Babich: The numeral system in China is different, but Lien has picked up the English system of place values by using the diagram.*<br>*Miss Tupelo (teacher's aide): Lien used to say the number first in Cantonese, then English. By the end of the activity she was saying the numbers in English first.*<br>Aria: *I've got this. Let's move to the next set! I want to work on numbers with seven digits with lots of zeros.* |
| **Making mathematical concepts visible and tangible**<br>• Mr Babich realised that some students needed to understand how to multiply and divide by a power of 10. He designed an activity to target Maria, Cala, and Tia, using a physical representation of the process. He prepared cards showing the numbers 0–9, a multiplication and a division sign, and a decimal point.<br>• He recapped with the class how to multiply and divide by 10, 100, and 1000. Volunteers then lined up with the cards in the front of the classroom. The student holding the decimal point was asked to multiply or divide by 10, 100, or 1000. She stayed in the same place while instructing the others to move around her in keeping with the operation they were enacting. | Mr Babich: *I believe this really helped the girls' understanding. It was great to see Tia, who barely puts up her hand normally, raise her hand and correctly answer my question.*<br>Tia: *I really have got this. It's not the decimal point moving – the numbers are ten times smaller or ten times bigger.*<br>Mr Babich: *I believe the concrete and physical nature of this activity played a big part in helping the girls understand how to multiple and divide by a power of ten. I need to find different ways of presenting other mathematical concepts when students don't appear to be making sense of my teaching.* |
| **Making connections to the context**<br>• Mr Babich had a discussion with the class about the solar system and showed them a website that had an interactive tour function. He encouraged students to use their electronic devices to explore the website further and look up the sizes of different planets and their distance from Earth. He asked them to work individually to choose three planets, find the distance from Earth for each, then order and say the distances.<br>• While most of the class worked independently on this task (asking the teacher's aide if they had a question), Mr Babich worked with Aria, Lien, Maria, Cala, and Tia. They took turns reading the numbers out to each other and writing them as words and as numerals. | Mr Babich: *I noticed in both the small group and the pairs that some students didn't have any concept of how long a kilometre is. I'm going to work on this with the class tomorrow by having them walk a kilometre and then estimate how far from the school their homes are. I'll get them onto Google Maps to check the accuracy of their estimates.* |

**With your colleagues**, discuss: What do you need to do to make mathematics content and key ideas accessible to **all** your learners?

The teacher used a whole-class activity to illustrate place value and connect with students' prior knowledge of decimals.

**With your colleagues**, discuss: What can you do to make mathematical concepts more tangible for **all** your students?

The teacher applied the recent learning within the wider context of the unit.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Babich's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • The whole class then paired up to compare their numbers and find the difference between their smallest and largest distance using a subtraction calculation.<br>• Mr Babich roved the classroom to support students with their calculations and to take note of the strategies they were using to guide future teaching. | Mr Babich: *Lien was extremely quick at subtraction with the big numbers. Maria, Cala and Tia found this task hard, so I need to address this in my next unit with this class.* |
| **Transferring the learning**<br>• Mr Sims (science teacher) planned a series of activities in subsequent science lessons to consolidate the students' learning.<br>• In the main activity, he provided balls and other round objects for the class to use to form a representation of the solar system. The students wrote on strips of paper the distances between Earth and other planets that they had identified in their mathematics class. They then developed a scale model using the round objects and strips of paper attached to string.<br>• Mr Sims finished the series of lessons by talking about how fast light is, how long it takes light to travel from the sun to Earth, and the idea of a light year. | Mr Sims: *I did the solar system activity straight after the students had been finding out distances between planets in maths. We used a basketball to represent the sun and found objects (pea-sized things, ball bearings, etc.) that were the approximate sizes of the planets relative to the sun. We measured out the distance between planets at the same scale. We could only fit the first four planets on the field, then we had to start wrapping around … Once the students had walked a kilometer in maths, Maria, Cala, and Tia were able to estimate that the outermost planets would be in the next suburb!*<br>Maria: *I can see how what I learnt in maths I can use in science!*<br>Mr Sims: *Usually when I teach a year 9 class they find it difficult using large numbers. But it's different this time. The kids were not afraid of them and could move on to the science concepts. Though I noticed that Maria and Cala need further work on scale. They were fine dividing by ten but need more practice with larger numbers. I'll feed this back to Mr Babich, as I know he's working on this in maths.*<br>Mr Sims: *Because of the joint focus in maths and science I'm sure this class understood the scale in these concepts much better than classes in previous years.* |

**With your colleagues,** discuss: How can peer interactions provide opportunities for **all** your students to contribute to mathematical tasks?

The science teacher reinforced the learning by applying it in a practical context.

Read about how working with others can help you know more the students you teach.

**With your colleagues**, discuss: What strategies can you use to transfer the learning into other settings for **all** your students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mr Babich's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• Both teachers used formative assessment, noting who could read the numbers, who could multiply by 10, 100, and so on, and who could complete the calculation between the biggest and smallest distance. Mr Sims also made observations about students' ability with scale for the anecdotal notes on individual achievement.<br>• For self-assessment, the students filled in a profile sheet that included assessing their reading and understanding of numbers into the millions against achievement levels defined on the sheet. | Lien*: I couldn't read numbers before, but now I know I have to say 'and' in the right place. I'm not scared to read out big numbers in class anymore.*<br>Mr Babich: *I noticed that Lien is making really quick progress. I am going to make a time with her to talk about what English support she needs next in maths.* |

The students completed a self-assessment sheet.

**With your colleagues,** discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your mathematics teaching to ensure *all* your learners are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

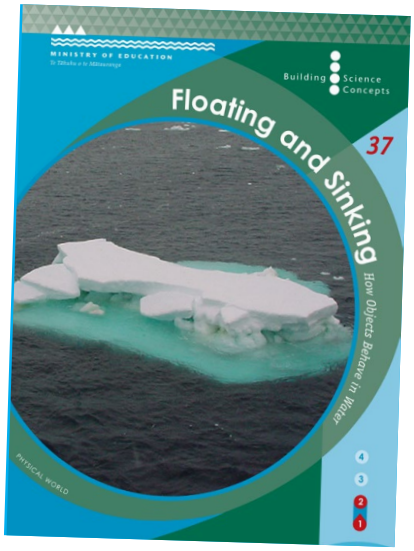
## Recommended resources

NOVA website has information about the solar system with an interactive tour function.

# Example 9: Science, Physical World, Level 3 - Floating and sinking/buoyancy

This example shows how a teacher used differentiation and adaptation within an introductory lesson on floating and sinking/buoyancy to support all her students to explore key ideas in understanding and investigating in science. The focus was on students experimenting with a variety of objects to expand their understanding of floating/buoyancy and being able to justify their statements with evidence. They were also learning to take turns and to make points concisely in their explanations.

## Task




The task involved activities from Building Science Concepts, Book 37, *Floating and Sinking*: *How Objects Behave in Water*; and Book 38, *Understanding Buoyancy: Why Objects Float or Sink* (available at Science Online).

The task was appropriate for students working in science at level 3 of the curriculum. With appropriate differentiations, students working within levels 1 and 2 could also achieve.

## New Zealand Curriculum achievement objectives

- Explore everyday examples of physical phenomena (levels 1 and 2).
- Seek and describe simple patterns in physical phenomena (levels 1 and 2).
- Explore, describe, and represent patterns and trends for everyday examples of physical phenomena (level 3).

## Opportunities to use and develop key competencies

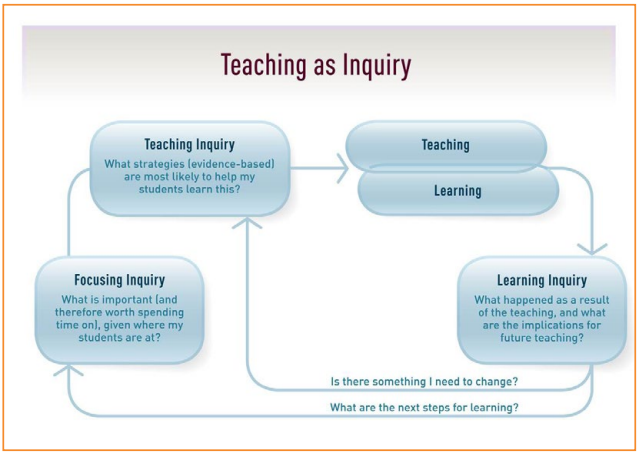
The students were *managing self* and *relating to others* as they learned to work within groups independently of the teacher. They were *thinking* as they developed an understanding of the need to provide evidence to support scientific investigation and as they made and tested predictions about whether objects would float or sink, supporting their ideas with evidence.

## Class description

Mrs Phipps has a year 5 and 6 class.

- **Jamail** has English as a second language. Initially, his teachers thought he was struggling to learn English; however, a bilingual assessment has shown that his oral language level is similar in both languages. He knows some vocabulary, such as numbers, in English and not his first language. Jamail is an emergent reader and writer. He is learning to work with others. Unless learning activities are carefully planned to meet his needs, he observes but does not participate. Mrs Phipps and the learning support coordinator are currently making a referral to the Resource Teacher Learning and Behaviour service for additional support for Jamail.
- **Netty** arrived from Sāmoa two months ago. She attended school there and her mathematics shows she is working at level 3 for knowledge in that learning area. There are a number of Samoan-speaking students in the class and a Samoan-speaking teacher's aide at the school. Netty is confident speaking in her first language; she has been producing her written work in Samoan with the teacher's aide translating it to English for her. She is quickly learning the language skills required in social situations. She needs tasks in other learning areas to provide practical contexts to help develop her academic vocabulary and concepts such as comparing and classifying.
- **Ethan** attends school erratically and is often absent for a couple of days per week. He finds the morning transition from home to school challenging. He arrives hungry and often seems angry, does not have clothing appropriate to the weather, and does not have food for the day. In class he finds it hard to maintain attention and is easily distracted. His responses to tricky situations can vary from hitting out to running away. Some of the other students in the class are wary of him. He has good ball skills and plays with some of the boys on the field at break times, but this can turn into a fight if he gets hurt in any way. Mrs Phipps has been unable to engage him in any formal assessment, but her observations and formative assessments lead her to believe he is struggling with learning and is working within early level 2 of the curriculum.
- **Grace** has Down syndrome and is working within level 1 of the curriculum. She has high needs and receives additional support through the Ongoing Resourcing Scheme, which includes specialist teacher and teacher's aide time and specialist services from the local Ministry of Education office. Grace has an Individual Education Plan (IEP) that shows how she will access the classroom curriculum, the goals her team have agreed on, and the support she needs. She has difficulty with fine motor skills and needs particular support to process information as she has a minor hearing loss. She is learning to manage distractions and to return to her learning with minimum disruption to herself and others. Environmental factors, such as noise, can distract Grace; allowing her a break helps her refocus. Grace thrives on routine and structure, so any change to routines is best handled with pre-warnings. Her current interest is horses.

## Teaching as inquiry




Mrs Phipps planned the lesson to ensure that all her students could understand the key ideas about floating and sinking and participate meaningfully in the scientific investigation. She provided a chart to introduce the ideas and to structure the investigation. In this lesson, the class was working in groups for up to twenty minutes to focus on problem solving together without teacher support. During this time, Mrs Phipps was able to work with a small group of students to check their understanding, scaffold the necessary language, and make connections with their prior experience. She planned differentiations and adaptations based on the strategies for this unit in 'Opportunities to learn at different levels' on Science Online. When all the groups began testing their predictions, she monitored their thinking and helped them focus on the key science concepts.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mrs Phipps' students were at?*

Mrs Phipps thought about the range of abilities in her class for working independently and collaboratively. From her observations of individual students and their reading and writing, she realised that certain students required one-to-one support to stay on task or access the content. She also considered what she could differentiate or adapt to help them work with others. She knew that the practical element in the lesson would be really beneficial in meeting the needs of all the students. It would support language learning and help develop the concepts of floating and sinking, particularly for the students working at levels 1 and 2 of the curriculum. Practical work would also be helpful to Netty, given she was a recent arrival in the country still learning English for communication. Mrs Phipps thought about how she could use her other Samoan language speakers to support Netty. Given that a basic science capability is to use evidence, Mrs Phipps knew that it was essential to put strategies in place to support her students to be able to use evidence to support their ideas.

Mrs Phipps knew that Ethan needed a lot of support to see himself as a capable learner, and she wanted to find any opportunity to show him he was. Her knowledge of Grace as a learner was informed by conversations with Grace and her parents. To support her in planning this unit, Mrs Phipps had involved members of Grace's wider IEP team (specialist teacher, teacher's aide, speech-language therapist, and Grace's mum) and together they had agreed on Grace's learning goals and the differentiations needed.



Read more about adapting supports so that all students can access the task and experience success.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Phipps' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Creating a supportive learning environment**<br>• Mrs Phipps had primed Grace for this science lesson, preparing her visual timetable the day before so Grace knew the routine. She had emailed her mum to let her know that Grace should bring two items to school to put in the water: one that was heavy and one that wasn't.<br>• Grace's classmate Molly went over the daily timetable with Grace when she arrived. Grace put the pictorial timetable up on the class whiteboard alongside the written one.<br>• Mrs Phipps began the topic by checking the students' understanding of floating and sinking. She did this by getting the students to fill in a pre-prepared chart (see following page) with their predictions, first individually and then sharing their ideas in their seating groups of four. She rearranged some of the seating to ensure that each group had a mix of abilities. | Mrs Phipps: *Grace's mum, Helena, is a great resource. Her mum knows her best, and I find if I ask Helena about things in advance, Grace really learns because we set her up for success. It was Helena who taught me that using Grace's special interests in class can have a positive effect on her learning.*<br><br>Mrs Phipps: *I've noticed since I've had Grace in my class and the timetable is written and pictorial, this helps other students as well.*<br><br>Mrs Phipps: *I felt I needed to scaffold the task and that it would accelerate Netty's learning to have support in her first language. So I swapped a few students and put Samaria (another Samoan-speaking student) with Netty's group. This meant that Netty worked collaboratively with Samaria and the other students instead of asking Nola, our Samoan-speaking teacher's aide, for help.* |

The teacher prepared supports so that all students could access their prior knowledge in starting the task.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Phipps' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| <table><tr><th>Statement</th><th>True or false?</th><th>What's your evidence?</th></tr><tr><td>All heavy objects sink</td><td></td><td></td></tr><tr><td>All rocks sink.</td><td></td><td></td></tr><tr><td>All wood floats.</td><td></td><td></td></tr><tr><td>Air trapped inside things helps them float.</td><td></td><td></td></tr></table><br>• Mrs Phipps had a more challenging activity for any student or group who was finished before the allocated time: *Come up with your own statement, e.g., 'Everything made of plastic will float.'*<br>• While the class was completing the chart, Mrs Phipps worked with a group of students that included Jamail, Grace, and Ethan to complete the task. She has two teaching stations in her room and she chose the one where she could scan the rest of the class and where Ethan could take himself off for a quick break on the bean bag if he needed to. | Mrs Phipps: *I asked the class if anyone else wanted to work with me and the group at the teaching station. Piri chose to join us which was great as he and Ethan play rugby together during some lunch times and I know Ethan enjoys his company and looks up to him* |
| **Scaffolding the language demands**<br>• Mrs Phipps introduced the task to the small group she was working with by scaffolding the language needed. She chose different objects (from materials of different sizes, shapes, and densities that she had provided or the students had brought in). She modelled the language: *The toy car is heavy, the scissors are heavy, the paperclip is not heavy.*<br>• She had the students hold the objects and find more that they thought were heavy. She asked the students to label the objects, based on her example.<br>• Some of the students who were working in their seating groups, including Netty and Samaria, chose to come over to the teaching station and observe the conversation and jokes about the heavy objects. | Mrs Phipps: *Jamail participated and contributed well in the small group when prompted, and he shared with a partner. He knew the names of some of the objects, so it was useful to have the students naming the materials to reinforce his understanding and language. He had learned about 'heavy' and 'light' in measurement in mathematics last term, so I was able to link this task to his knowledge in that learning area.*<br>Mrs Phipps: *I asked Piri to go first as a model for the other students. He mimed not being able to pick up the scissors because they were so heavy. The other students laughed and did this with each heavy object they held and labelled.*<br>Mrs Phipps: While Netty and Samaria were at the teaching station, I took the opportunity to demonstrate floating and sinking. I asked Samaria to translate 'all' (in 'All heavy objects sink') to Netty, as I did not think Netty understood 'all' in English. I could see Netty's face light up when Samaria explained it to her; she understood immediately. Netty and Samaria then went back to their desks and successfully completed the chart. I have to think about how I can use peers in other ways to support learning. |

**With your colleagues**, discuss: How can you support **all** your students to draw on their prior knowledge during tasks in science?

The teacher provided materials and support to ensure that students understood key language for the task.

**With your colleagues**, discuss: How do you support **all** students to identify and understand the key scientific language in the tasks you set them?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Phipps' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Providing multiple opportunities to learn**<br>• In her small group, Mrs Phipps asked the students to choose four heavy objects and predict whether they would float or sink. She let them test their predictions straight away. | Mrs Phipps: *Most students in the small group needed a concrete experience from the outset. This was the reason for them testing their predictions straight away. When they rejoined their classmates later in the lesson, they would have a repeated opportunity in a different context, providing another opportunity to learn.*<br>*Grace used her horse toys as some of the materials for floating and sinking. This helped her engage and she was less concerned with the noise of the class. I'll look at how I might be able to use other things she is really interested in to help her focus.* |
| • She then used the chart and the statement 'All heavy objects sink', which she had drawn up on a large sheet of paper. The group completed this collaboratively, also answering 'What's your evidence?' on the chart. Photos were taken to add later. | |
| • Mrs Phipps gave Ethan and Piri the choice of working with their seating group or with her group at the teaching station to complete the chart. Ethan initially wandered away from the teaching station, but returned when he saw that Piri had chosen to stay with the small group and Mrs Phipps. | Mrs Phipps: *Ethan's behaviour escalates when he thinks he is being made to do something. I was confident that his curiosity and motivation to work with Piri would get the better of him and he would join us. Once he did, I was able to engage him in trialling the objects in the water. I had to ignore the water splashing all over the place. This was really difficult, but I knew that any comment about the splashing would escalate the behaviour.* |
| **Making connections to prior learning and experience**<br>• Mrs Phipps made links between students' knowledge of fishing and the relevance of this to the topic of floating and sinking. | Mrs Phipps: *When it came to the statement 'All rocks sink', Piri picked up the pumice and explained to the group that it was a rock and that in the olden days people used pumice for floats when fishing. He said his koro had told him. Ethan was captivated! I hadn't realised he was so interested in fishing. Piri didn't know the Māori word for pumice, so I asked him and Ethan to look it up on the computer.* |

The teacher allowed students repeated opportunities to use materials to investigate their ideas.

**With your colleagues**, discuss: How can you ensure that **all** students have sufficient opportunities to practise and respond to content?

The teacher picked up on students' prior knowledge and made links with it to help them access the task.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Phipps' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Mrs Phipps built on Piri's comments about pumice to move on to discuss a later linked statement on the chart – 'Air trapped inside things helps them float'. She used practical materials to consolidate students' ideas. They floated an inflated balloon and the pumice. They talked about the pumice and decided that perhaps it had air in it too. | Mrs Phipps: *Ethan related this to the modern fishing floats that are plastic with air inside them. He also talked about the old fashioned glass ones. Ethan and Piri found a picture on the Internet to share with the class.*<br><br>*I said to the boys, "I was trying to figure out a way to show air inside things, and you really helped me."*<br><br>*Ethan surpassed my expectations. He usually doesn't engage and share like this: it was a real teachable moment, and I knew I needed to listen to him and make the most of this opportunity to build his confidence and his relationships with other students. It made me realise how important it is to go off on a tangent sometimes. Who knew that a conversation about fishing would help all the students' understand objects with air inside them?* |
| **Facilitating shared learning**<br>• Once the seating groups had completed their charts, the class came together and shared some of their predictions, then worked in their groups again to test them and gather their evidence. | |
| • The students in Mrs Phipps' small group then joined their usual seating groups. She supported some to compare their predictions with others in their group and hoped they would test them together. | Mrs Phipps: *I noticed Netty using some English and gestures to share with her group that she thought Maisie's train would sink. I asked her, "What makes you think so?" Samaria translated Netty's response in Samoan: "It is heavy and it will fill up with water".* |
| • Mrs Phipps was then able to move around, look at each group's chart, and ask questions of both individuals and groups. She modelled questions that would encourage the students to ask and answer questions within the group:<br>– *How do you know that?*<br>– *What makes you think so?*<br>– *How could you check that?*<br>– *So an example of this would be …?*<br>– *Can you think of an example when this wouldn't work?* | Mrs Phipps: *I noticed Jamail sharing his predictions in his seating group. I really have to prepare him for participating like this and to deliberately create opportunities. I am going to help him set a goal around sharing his ideas.* |

**With your colleagues**, discuss: How can you build on students' prior knowledge to help **all** your students access learning tasks?

Students worked in groups to test their predictions using materials.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Phipps' students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Grace got over-excited by the activity and started skipping around the room. Mrs Phipps asked one of the students to approach Grace and bring her back to the task. | Mrs Phipps: *It was a busy lesson – the students were moving around quite a lot and bowls of water were being filled and splashed. I think it got too much for Grace. I've learnt that when this happens it works well to give her a short movement break and have a peer re-direct her. Grace is transitioning to intermediate next year, and it's strategies like this that teachers at her new school should know about.* |
| **Assessing to recognise learning**<br>• In this lesson, Mrs Phipps was assessing the students' ability to give explanations supported by evidence that is based on observations of the natural world.<br>• As she observed the students, Mrs Phipps was asking herself:<br>– *Can students talk about the science concepts we've been exploring?*<br>– *Can students provide evidence to support a statement?*<br>– *Can they explain how their evidence supports the statement?* | Mrs Phipps: *In assessing the learning, I based my observation on a combination of:*<br>– *the statements the students had written on their sheets*<br>– *reflections students had made in conversations when they were testing their predictions*<br>– *discussions I had with individuals.*<br><br>Mrs Phipps: *Netty has an understanding of the science concepts as long as she has some language support. The practical, hands-on element is essential and is really enhanced with a classmate's support. The combination of peer language support with a practical task optimises the learning, so I will try this strategy in other areas of the curriculum.* |
| • Mrs Phipps' particular focus in this lesson for Jamail and Grace was whether Jamail had retained the concept of 'heavy' and 'light' from mathematics in the previous term and whether Grace was developing an understanding of the concepts 'heavy' and 'not heavy'. | Mrs Phipps: *By the end of the lesson, Grace had an understanding of 'heavy' and 'not heavy'. She sorted items into two groups and said of one, "These heavy. They sink." She took a photo of the items with her iPad.*<br><br>*She didn't appear to understand the idea of air trapped inside objects. I think I'll have to get some more objects where she can see the space inside, like a clear plastic container with the lid on.*<br><br>*She can show understanding through what she does, so I need to be able to create practical tasks and activities throughout this unit so she can demonstrate what she is learning.* |

**With your colleagues,** discuss: How do you support **all** your students to work and learn with their peers?

The teacher used observation and reflective questions to assess learning and plan next steps.

**With your colleagues**, discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your science teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Strategies to develop capability in using evidence at different curriculum levels can be found on Science Online.

# Example 10: Social Sciences, Levels 2-3 - School election

This example shows how a year 3–6 syndicate at a multicultural, urban primary school designed and carried out a 10-week unit focused on civics education, which involved learning about and participating in a democratic process. A school election provided a rich context for teaching and learning at multiple levels of the curriculum and for developing literacy skills to meet the demands of reading and writing in the social sciences. Teachers focused on specific adaptations and differentiations to ensure students with additional learning needs participated and learned alongside their peers.

## Task

The unit drew on tasks in *Your Voice, Your Choice: Have Your Say*, a teaching resource provided by the Electoral Commission. The students in Year 5 and 6 classes were divided into political parties and the Year 3 and 4 students were the 'voting public'. Over the term, each party elected a leader and developed their 'policies' for improving lunchtimes at the school, using a $100 budget. The parties developed election campaigns and created a range of texts for communicating their ideas to the voters. The unit culminated in an election day. Ballot papers were provided, and a polling booth was set up in the school hall. By casting a vote for one of the parties, students had their say on decisions that would improve lunchtimes at the school.




## New Zealand Curriculum achievement objectives

Level 1

- Understand that people have different roles and responsibilities as part of their participation in groups.

Level 2

- Understand how people make choices to meet their needs and wants.

Level 3

- Understand how groups make and implement rules and laws.
- Understand how people make decisions about access to and use of resources.

Level 4

- Understand different aspects of leadership and the consequences these can have (simplified version).
- Understand how people participate individually and collectively in response to community challenges.

## Opportunities to use and develop key competencies

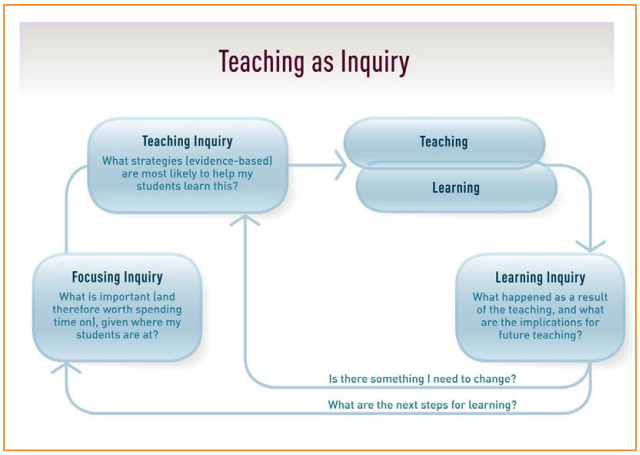
Students were *thinking* as they made sense of information, experiences, and ideas related to an election in order to develop their understanding of the process and make decisions. The election context helped develop their intellectual curiosity and problem solving as they asked questions and challenged assumptions and perceptions. Students were *relating to others* as they listened actively to recognise different points of view and share ideas. They had opportunities to take on different roles and increase their awareness of how their words and actions affect others. The students developed collaborative and leadership skills as they *participated and contributed* to the school election.

# Syndicate description

This task was undertaken across a syndicate that covers years 3–6 and is highly diverse, with 22 cultures including Māori, Samoan, Indian, Somalian, Chinese, and Filipino. The teachers in the syndicate shared responsibility for meeting the special needs of particular students.

- **Brigitte** (year 4) has a learning disability. She can participate in most learning tasks, but requires frequent support to stay on task; otherwise she drifts into her own world of singing or reciting favourite stories. Brigitte is reading at reading year level 2 and is challenged with comprehension. She is generally positive and cheerful, though can become anxious if familiar routines or activities are changed. Brigitte's teacher is Mr Fareh. A Resource Teacher Learning and Behaviour (RTLB) has provided strategies for supporting Brigitte to cope with change. Working with the RTLB, Mr Fareh has also identified individual literacy goals for her: to talk about books she has read and make meaning from them, and to write and shape ideas in her own words.
- **Elliot** (year 5) has ASD. To communicate, he uses some simple sentences and longer learned scripts that are appropriate to the activity he is doing. Elliot uses 'self talk' to help stay calm and on task. Routine, repetition, and consistency are extremely important to reduce his anxiety. He is reading at reading year level 2. Elliot's teacher is Mrs Jebb. Elliot receives support through ORS, which includes teacher's aide time and specialist services from the local Ministry of Education office. An occupational therapist has worked with Mrs Jebb and provided a range of strategies to meet Elliot's sensory processing needs. He has an individual education plan (IEP); his priority learning goal is to manage his sensory processing needs, identifying when he needs to take a break.
- **Charles** (year 5) is a gifted and talented student with ASD. He is highly interested in alternative theories of evolution and science fiction and is constantly trying to work out how society and rules work. Charles has difficulties interacting socially with other children. Many aspects of school life make him feel anxious, such as new learning activities and tasks that involve choice and ambiguity. Sometimes when very anxious, Charles responds by shouting, throwing things, and hitting. To get some 'down time', Charles takes regular breaks from the classroom. The RTLB has supported Charles's teacher, Mrs Jebb, to manage these breaks by setting a time limit and negotiating with Charles what he does during this time. This has been documented in a Collaborative Action Plan.
- **Amira** (year 6) has recently come from Syria and began the school year with no English. She is shy and has taken several months to feel comfortable with others in the class and to start to build friendships. Her teacher is Mr Melvin. Amira takes part in daily oral language lessons that include other children throughout the school and that are run by the ESOL teacher. She has also spent time in the 'Writing Club', which has helped unpack writing tasks that are set in the classroom. Amira's priority learning goals are to speak confidently and fluently, leading to initiating speech in class, and to increase her vocabulary.

## Teaching as inquiry




The idea to conduct a school-based election was ignited by the New Zealand elections taking place at the time and the ideas in the educational resource *Your Voice, Your Choice*. This unit was developed across four classes. Two classes were the political parties and two were the public who voted. The political parties focused on how they would persuade and influence the other classes and what information they would need to gather and produce to do this. The 'public' classes focused on the ways in which they were persuaded and influenced by text and visual representations in the election campaign.

The learning activities were designed to promote students' critical thinking and their knowledge of citizens' rights and responsibilities to participate in decision-making. Students also learned about past events as they researched and shared information about New Zealand political personalities and leaders and discussed the impact they had had on New Zealand. This was a key element that teachers differentiated across literacy levels, by selecting historical figures and information about them to match the interest and maturity of their students. This unit of work was integrated into the literacy programme across all classes; students read texts related to the election topic, and they used a range of oral and writing skills to communicate their understanding or persuade others of their policies.

The teachers designed a range of activities that allowed the students to experience and understand the democratic process. The culmination of these activities was 'voting day'.

This example focuses on two aspects of this 10-week unit: the literacy tasks associated with the context and the day of the election. The example shows how tasks were adapted and differentiated to ensure students with additional learning needs participated and learned alongside their peers.

Read more about how shared planning can support effective teaching and learning for students with additional learning needs.

### Focusing inquiry

***What was important (and therefore worth spending time on), given where the students were at?***

Earlier in the year, teachers had identified that their senior students had limited ability to work collaboratively and to provide leadership that contributes to the well-being of others. They had targeted these areas at camp, and the election provided an opportunity to further develop collaboration and leadership.

During the initial planning stage, the teachers suggested activities based on their knowledge of the students in their classes. They identified students' strengths and weaknesses in relation to the social sciences achievement objectives and planned the unit accordingly. Because the students in the syndicate included several with ASD and a number of English language learners, they focused on specific strategies to help the students understand the concepts involved in an election. The teachers emphasised learning activities that were active and participatory as they knew the most powerful vehicle for embedding learning is experience. They collaborated with the learning support coordinator (LSC) to provide a high level of predictability and structured routines to support the students with ASD to participate.

The teachers knew the literacy demands of this topic would be high, so they employed specific strategies to enable the students to understand the necessary concepts. From observations, running records, writing samples, and e-asTTle, they knew that reading and writing year levels within the syndicate ranged from level 1 to 8. They ensured there was a range of visual and written tasks that could be adapted to suit this range.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped the students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Personalising the context and differentiating the task**<br>• Each class researched and shared biographies of New Zealand politicians and leaders appropriate to the literacy levels of the students. They discussed the impact these figures had had on New Zealand. The biographies also became a context for literacy learning as students navigated the structures, language, and literary features of biographical texts in hard copy and online. | |
| • Ms Laidlaw wanted to make the task as concrete as possible for her year 3 class. She decided to use well-known leaders on New Zealand bank notes. | Ms Laidlaw: *The students got really engaged in the people and the money! Because of the students' high interest, I decided to do some work on place value in maths, using money.* |
| • The LSC and Mr Fareh worked together to differentiate the biographies task for Brigitte. They developed a simple writing frame to help her understand the concept of biographies and to write one. To keep the task concrete and relevant for Brigitte, the teacher suggested she create a biography about her mum, starting with the qualities she admired. | Brigitte's mum: *Brigitte came home and asked all sorts of questions about me. She seems very motivated because she's writing a biography about me.* |
| • The year 5 and 6 classes looked at historical New Zealand politicians, drawing on information from books and online resources. Elliot's teacher had him look at the bank-note leaders instead to make the context concrete for him. | Mrs Jebb: *Planning at multiple levels across the syndicate made it so easy to differentiate this task for Elliot. I used the activities and resources Ms Laidlaw had developed for her year 3 class. They were really visual, which worked well for Elliot. The other students were interested in what he was doing with the money, so there were some nice interactions happening with his peers too.* |
| • The students all identified qualities that they thought were important in a leader. They could then transfer this thinking to the leaders in the school election to help them make a choice. | Mr Melvin: *The students worked in groups to make mind map posters about leadership qualities. The ESOL teacher had done the same activity with Amira the week before. (They use mind maps a lot in the ESOL classes.) Amira was 'scribe' in her group – this is a big step up for her. I'm sure this was due to the pre-teaching and being familiar with mind maps.* |

The teachers established the context through reading and research tasks.

Read more about ways to differentiate the classroom programme.

**With your colleagues**, discuss:
How can you select contexts that are relevant to **all** students and engage and connect with the real world?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped the students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Allowing for multiple ways of understanding and responding**<br>All classes participated in a range of literacy-related activities to increase students' understanding of the election issues and the topic:<br>• Two classes produced promotional videos about their political party. They posted them on the school's YouTube channel so the 'public' classes could watch them several times and discuss them. | Mr Fareh: *Brigitte responded well to the visual nature of this task – the videos really engaged her.* |
| • Each political party created a campaign poster and pamphlet to communicate their main ideas, which the 'public' then read and responded to. | Mrs Jebb: *I showed the class some commercial posters that use visuals to represent ideas. Then I had the teacher's aide show the class how to search for images on Google. The speech-language therapist had suggested that I incorporate more visual information in my classroom and teaching to support Elliot. I noticed he was much more engaged in this activity and I think it was due to it being so visual. It worked really well because all the students were using visual information.* |
| • To ensure that students in the 'public' classes understood what each party was promising, they were asked to record questions they wanted to ask each candidate in a Q&A forum. | Ms Laidlaw: *Having the posters to refer to really helped the year 3 and 4 students to come up with questions before the forum.* |
| • Brigitte's teacher supported her to write questions using a writing frame with these starters:<br>– I would like to know …<br>– How will you …<br>– Why are you … | Mr Fareh: *Reading the posters and thinking of questions to find out more information were challenging for Brigitte. With the support of a writing frame she could write some simple questions that showed she was making meaning from the posters, which relates to her identified learning goal for literacy.* |
| • In the forum, candidates answered the questions the 'public' classes had written. Two local politicians also attended the forum to talk to the students and answer their questions about politics in New Zealand. | Mr Melvin: *Students were highly motivated and interested in asking questions, sharing opinions, and being actively involved in the process. It's good to consider what's relevant to our students and what topics will encourage them to make sense of the world.*<br>Mrs Jebb: *Charles had written a very interesting question about world government (a concept he learned about from science fiction). During the forum, he got too anxious to ask the question, so afterwards I suggested he message the question to one of the politicians via their Facebook page, and she responded.* |

The teachers integrated a range of literacy tasks in the activities leading up to the election.

**With your colleagues**, discuss: What opportunities can you provide so that there are multiple ways in which students can respond?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped the students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using oral and visual language to support understanding**<br>Throughout the topic, there was strong use of visual and oral language so all students could be involved in learning.<br>• Copies of the posters were put in each class and around the school to reinforce what each party was promising. Some year 6 students used the Comic Life webtool to make a poster with a photo of each candidate and a symbol for one of the promises they were making beside them. Elliot accessed the poster on the computer and iPad in their class.<br>• As well as watching the speeches several times on YouTube, the candidates repeated them on election day in front of the whole syndicate to reinforce the main ideas and to support all students in their decision making.<br>• Before the students voted, the teachers verbally recapped on the process up to now and how everyone had a role. They reminded the students of what the result would contribute to. | Amira: *I like the speeches of the party leaders. I can choose a party.*<br>Mr Melvin: *Students listened and watched intently during the speeches. The difference between the recorded speeches and the ones on election day was very noticeable – the 'party leaders' gave the speeches with so much feeling on election day!*<br>Mr Fareh: *Many students later discussed and recorded in their reflection what they were thinking and feeling as the time came closer. The majority understood the implication of their one vote.*<br>*They knew the political parties needed them to vote, and they could explain that their say would make a difference in their school community.* |
| **Using adaptations to support participation and learning**<br>• On the day of the election, before the syndicate voted, two teachers' aides showed Elliot, Charles, and Brigitte the 'polling station'. Elliot practised the voting process with a senior buddy – they lined up, collected a form, and walked to the voting booth. Charles and Brigitte watched and a teachers' aide explained the sequence to them. | Mrs Jebb: *The preparation and rehearsal really helped Charles. It reminded me to be aware of what triggers his anxiety and to manage this when possible.*<br>Ms Laidlaw: *We realised in the lead-up that election day would be a totally new and possibly stressful experience for some of our students, particularly those with ASD. Doing a practice prepared these students and reduced their anxiety. Sometimes it's necessary to remove the environmental stress so that it's not a barrier that stops students being part of the experience.* |

Teachers supported students' use of oral and visual language to communicate their key messages.

**With your colleagues,** discuss:
How can you use oral and visual language to scaffold new learning?

Peer support and simple visual representations were used to support some students' participation and learning.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped the students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • When the classes were lining up to vote, Elliot queued with his buddy. Once they had their voting form, the buddy showed Elliot the e-poster of the candidates and their 'promises'. They were then ready to cast their vote. | Elliot's mum: *Elliot sometimes doesn't take part in whole-school activities because they are too overwhelming for him, so I was so excited to see the photo of him casting his vote with all the other kids. I've kept that photo on my phone. I talked about it with Elliott, and I'm going to use it when Elliott comes with me when I go to vote in the elections next week.* |
| **Assessing to recognise learning**<br>• Teachers formatively assessed students' teamwork and participation during the election and their thinking as expressed through discussions and questioning.<br>• They assessed students' literacy learning by reviewing the year 5 and 6 students' presentation skills in making posters and videos of the party policies and by looking at the written reflections of all students after the voting. | Mr Fareh: *This journey has been very powerful for our students. They were so serious as they went to vote and listened carefully to the speeches. They truly had a sense of the power of their vote and that it counts. They each had meaningful roles so they owned the process and outcome.*<br>Charles: *I liked that it was a secret who I voted for. I learnt that you can't always get the party you want to win. Everyone took voting seriously because their vote might have an impact on the school. I liked that I was able to vote because now I know what it feels like. I want to watch Mum and Dad on their election day.*<br>Charles's mum: *This was an excellent learning opportunity for Charles. He had a chance to practise making choices. He understood he needed to choose based on what was most important to him. It didn't cause anxiety for him because the purpose of the activity and follow-through of the result was clear.* |

**With your colleagues**, discuss: How can you manage or remove barriers in order for **all** students to be part of the learning?

Teachers formatively assessed learning during the activity.

**With your colleagues**, discuss: How can you provide opportunities for **all** your students to 'experience' a topic (rather than just reading or hearing about it)?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your social sciences teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Your Voice, Your Choice: Have your say can be found on the Electoral Commission website.

# Example 11: History, Level 8 - Research on a historical event

This example demonstrates how a teacher used adaptations within a history task so that all students in the class could participate and achieve. The task requires students to research an historical event or place of significance to New Zealanders. Some of the students in the class required additional support; the teacher chose strategies that ensured they meaningfully participated and learned alongside their peers. All of the students were working towards a Level 3 NCEA achievement standard, although one student was planning to use the credits towards a Level 2 NCEA pass.

## Task

The class was researching Chinese gold mining in Central Otago. All of the students were working towards Achievement Standard 91434: Research an historical event or place of significance to New Zealanders, using primary and secondary sources (NCEA Level 3, 5 credits, internal assessment). This achievement standard, together with the one that follows (AS 91435: Analyse an historical event, or place, of significance to New Zealanders), forms a major focus of year 13 history teaching, learning, and assessment. Together, the standards require students to communicate key historical ideas, with supporting evidence.



## New Zealand Curriculum achievement objectives

- Understand that the causes, consequences, and explanations of historical events that are of significance to New Zealanders are complex and how and why they are contested (level 8).
- Understand how trends over time reflect social, economic, and political forces (level 8).

## Opportunities to use and develop key competencies:

Students were *self-managing* as they investigated a range of sources to collect meaningful information about their chosen research questions. They *related to others* as they worked with the teacher and their peers to check their research questions were purposeful and well-constructed before seeking materials to answer them. Students *used language, symbols, and texts* as they investigated a range of material and were *thinking* as they synthesised this material and assessed its relevance to their key questions.

## Class description

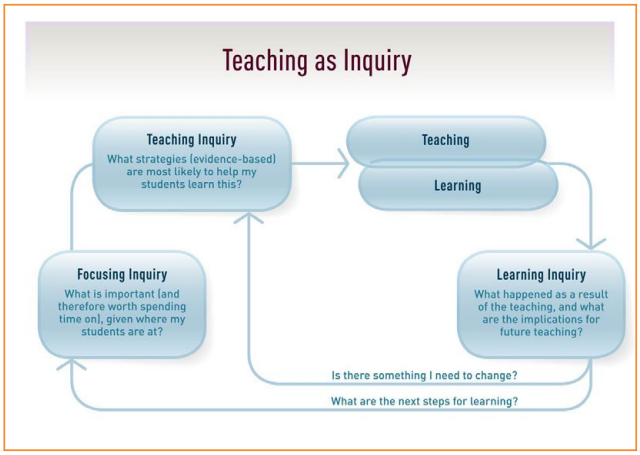
Mrs Cleaver teaches a class of 20 year 13 history students.

Most of the class have achieved NCEA Level 2 history (for which Mrs Cleaver taught them last year). Most of the students in the class are working at level 8 of the curriculum. Some students require additional support to actively participate at that level.

- **Nikoro** is visually impaired. He uses a cane to move safely around the school and has a range of technological supports in place to help him access text. He receives additional support through the Ongoing Resourcing Scheme (ORS). A Resource Teacher of Vision (RTV) visits the school weekly to support Nikoro and his teachers. A teacher's aide is available to provide support in class, but Nikoro usually chooses to be independent. He passed Level 2 history with excellence last year and is planning to go to university next year. Nikoro can read braille; classroom material can be converted to braille if it is provided to the RTV in advance of when it is required.
- **Kyla** has spina bifida. She has limited power in her hips and legs and uses a walker to support her mobility. Her walker has a built-in seat that allows her to rest when needed, as she tires easily. Kyla also has epilepsy. Recently her medication has not been effective in managing her epilepsy and is being reviewed. She uses an iPad at school and receives additional support through the Ongoing Resourcing Scheme (ORS). Kyla has had some long absences from school and has not yet passed Level 2 NCEA. This year she is finding it more difficult to keep up with her peers. She particularly enjoys history and has chosen to stay with her peers and attend year 13 classes. She plans for any credits gained this year to be put towards a Level 2 NCEA pass.

## Teaching as inquiry

Mrs Cleaver employs a range of evidenced-based strategies (both adaptations and differentiations) to support all the students in her class to access key ideas in history. She teaches in a way that emphasises co-constructed learning, in which peer support is valued in helping students to access curriculum content. Throughout teaching and learning, she also thinks about the environment and the physical needs of her students. She is aware of how to best use the enabling technology that benefits Nikoro.




Mrs Cleaver began the unit by bringing in a recognised national expert on the history of gold mining in Central Otago to speak to the class. She then brainstormed with the students a range of areas that they could research within the topic. Having chosen an area of interest, the students wrote some key questions to focus their research. After they each discussed their questions with the teacher, they focused on individual research.

The students visited a university archival library and were shown how to access a range of resources. Their range of primary and secondary sources was to include newspaper articles, parliamentary records, personal accounts, tables and graphs, and carefully chosen websites. Students assessed the quality and usefulness of the material and systematically presented resources in a way that demonstrated clear connections to the focus questions.

The example covers a number of lessons as the students gathered, collated, and categorised their information and then presented it for assessment. The students were clear about the requirements for this standard, as Mrs Cleaver had provided examples of past students' work and encouraged the students to use these when critiquing their own work. They understood that detail, breadth, depth, and critical analysis were required to achieve merit or excellence.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Mrs Cleaver's students were at?*

Having taught most of the class year 12 history, Mrs Cleaver was aware of the students' learning pathways in terms of the credits they had already achieved and units of work they had already completed. All the students had elected to work on the Level 3 achievement standard. Mrs Cleaver thought about what her students would need to do as a class so that they could all be successful. She recognised that knowing her students is an essential part of being able to provide a quality teaching and learning environment. From previous assessments, both formal and informal, Mrs Cleaver had a strong sense of each student's strengths and areas for improvement in history as a social science discipline. Although she knew them well, she made times to meet with Kyla and Nikoro so that they could talk about the particular support they would need to complete this unit of work.

| **Teaching inquiry**<br>*What teaching strategies (evidence-based) helped Mrs Cleaver's students learn?* | **Learning inquiry**<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Adapting the environment**<br>• Mrs Cleaver had noticed that Kyla focused more when she was sitting at the front of the class. However, it isn't considered 'cool' to sit at the front, so she usually lets her students sit wherever they like. For this class, however, she instituted a seating plan so that she could put Kyla at the front in a seat that gave her room to fold up her walker and put it against the wall. | Kyla: *The seating plan is a good idea. I get to sit at the front without looking like a suck-up. Mrs Cleaver can see when I'm getting behind and can help me out.*<br>Mrs Cleaver: *I think the seating makes it easier for Kyla, and certainly easier for me to keep an eye on her without being too obvious about it.* |
| • Mrs Cleaver had taught Nikoro for three years. She organised with the deputy principal to move senior history to a downstairs classroom better suited to him and others. She let Nikoro sit where the light conditions were most suitable and used the smart board to access video material for him. Miss Wikaira (the RTV) organised the curtains they needed and helped work out the screen resolution that provided Nikoro with the best visual access. | Nikoro: *It's good not having to go upstairs to history because the stairwells are usually chaotic, and it's a stress I don't really need. The seating plan works because the seat where I am is at the best angle to avoid reflection on the smart board. Miss Wikaira helps with that stuff so that I can just get on with schoolwork.* |
| • The move to a downstairs classroom also benefited Kyla. Mrs Cleaver ensured the classroom had at least one chair on castors so Kyla could move in and out from the desk independently. | Kyla: *One of the cool things that happened last year was the school managed to get hold of a few extra chairs that work for me. I can't move the classroom chairs. In some classes I used to sit on my walker seat, but that really hurt my back.* |

The teacher adapted the classroom situation and seating support to suit her students' varying needs and abilities.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Cleaver's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • When the class visited the university archival library, Mrs Cleaver rang the librarian in advance to let them know their group had a student with mobility issues and another with low vision. | Mrs Cleaver: *Our Head of Learning Support is great – she talked with Kyla and her mum and IEP team at the start of the year and found out that Kyla wants to be more independent. This information was passed onto all of Kyla's subject teachers with ideas about how we can help Kyla in our classes. This prompted me to think about how I support Kyla in situations like the library visit. The advanced planning worked well. When we got there, the librarians had already got out a whole heap of relevant stuff for Kyla. It was a really worthwhile trip.* |
| **Supporting students to access the task**<br>• A large part of this unit involved students researching and locating information sources independently. Mrs Cleaver ran two classes in the school library, in part to help Kyla get some sources for her questions. A number of other students also sought help, while others worked independently. | Mrs Cleaver: *Running extra sessions in the library worked well. Next time I teach this standard, I'm going to make sure that I am available to students in the last ten minutes of each period to have a quick look over what they have done to date. It would make it easy for them to have ongoing feedback. It would also signal to me who might need a bit more support or who could do with some extra challenge.* |
| • Mrs Cleaver spent one lesson creating a grid in a Google Doc on the smart board to show the students how to record their sources, the key information from them, and how this linked to their research questions. She decided to use Kyla's research questions as a practice example for the class. At the end of the lesson, she shared the document with the class. This meant Kyla had a structure well under way and the other students had a template and example to guide their own research. | Kyla: *I was so glad Mrs Cleaver picked my work as an example. It helped me to know what I was doing.* |
| • Mrs Cleaver emailed as much lesson content as possible to Nikoro in advance. Nikoro had his own computer and a range of software to help him access and manage text, including a screen reader that converted written text to spoken language. Using the screen reader made the process of researching slower for Nikoro than for other students. The RTV suggested that Mrs Cleaver or Ms Daish, the teacher's aide, could do an initial search and narrow down a list of websites that would be useful for the topic. | Miss Wikaira (RTV)*: There's heaps of amazing technology out there to help Nikoro to access the curriculum and get all his written work done. For me, it's about knowing expectations so that I can ensure Nikoro has the tools he needs to show his capabilities and work towards his potential.*<br>Mrs Cleaver: *Initially when Miss Wikaira suggested helping Nikoro with the internet search I wasn't keen as I know Nikoro is so independent and able. But I watched him on the internet one day and noticed just how much longer it took him to go through a search using the screen reader to weed out the less useful hits. We're not doing the work for Nikoro – we're just speeding up the process so he is not disadvantaged time-wise.* |

Read more about how contributions from whānau can help you build a rich knowledge of the learner.

**With your colleagues,** discuss: How can you ensure that the learning environment works for **all** students?

The teacher modelled research techniques with the students and used technology to assist students with particular needs.

Read about networks of support and how you and your students can be supported by the school community and specialists from outside the school.

**With your colleagues**, discuss: How can you address barriers so that **all** your students can access the teaching and learning?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Cleaver's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using peer support**<br>• With the class, Mrs Cleaver had co-constructed a list of criteria for what constitutes a useful resource and had drawn up some key questions to use in checking. For the last 10 minutes of each lesson, she organised students to work with buddies to check the relevance of each other's most recently collated sources. | Mrs Cleaver: *Kyla has a few good friends in class who understand her well. I watched them providing really skilful support and helping her manage her sources. They asked gentle questions and helped with writing a bibliography.*<br>Ms Daish (teacher's aide)*: I'm sometimes aware that Kyla is a little lost, but I know she values her independence. It's nice for me to see students helping each other. I quite often intentionally work with a couple of students, not just one-to-one.* |
| • Mrs Cleaver monitored the conversations with buddies to check that these were relevant and helpful. Given it was year 13, as much as possible she left students to problem-solve and creatively support one another. | Mrs Cleaver: It's useful to structure the teaching in a way that encourages the students to talk to each other about their work and to perhaps share the resources they have gathered. Some of the students found some particularly useful material through accessing old microfiche, and it was lovely that they could share it with each other. |
| • Mrs Cleaver made sure that Nikoro's buddies were open to both providing and receiving support. | Mrs Cleaver: *Nikoro is particularly friendly with a couple of classmates and they've worked out how best to support each other. It's not just about someone helping Nikoro – it's about establishing protocols so they can support each other. I'm always conscious of the extra effort Nikoro puts in and the fact that lots of things take him longer than his peers, so I often allow him and his buddy to start checking a little earlier.*<br>Makere (classmate): *I always work with Nikoro as a buddy because he knows so much more about gold mining history than I do. He's got a fantastic memory, so he is really good at critiquing articles. He listens and relates stuff to the questions without having to go back and check what the questions say – I never remember.* |
| • Mrs Cleaver had classmates help Kyla with her project. She felt that when they worked together and talked about their research sources, it helped all of them clarify their ideas. Even though it was an individual research task, working together strengthened each student's approach to their own work. | Kyla: *I really love working with friends on projects and assignments. It's so much more fun than working on your own or with a teacher's aide. But Ms Daish can help us if we need it, so that's really cool.* |
| **Assessing to recognise learning**<br>• The students each collated a range of sources that were categorised, referenced, and annotated in relation to their key research questions. They could choose to present their work in a hard copy clear file or in an electronic notebook (which they shared with Mrs Cleaver). | |

The teacher organised buddy support for checking work towards the end of each lesson.

**With your colleagues**, discuss: How can peer interactions provide opportunities for **all** students in your class to contribute to the task?

The teacher supported students to participate in a range of assessments to demonstrate their learning.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Mrs Cleaver's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Mrs Cleaver supported Kyla to hand in the same research project as everyone else. She had noticed that Kyla found it difficult to stay organised, so talked with her about electronic options for storing and arranging her sources. Mrs Cleaver showed Kyla how to use Evernote to organise her sources, and asked if she wanted to try it. | Kyla: *Sometimes I'm disorganised and forget stuff I need, but sometimes I forget to bring things to class on purpose to get out of doing the work. Mrs Cleaver asked if I wanted to use an electronic notebook that she can access. I thought this was a pretty good idea actually because it's hard managing all the sources, and the reading and filing, and writing content about the questions. And now it means I can't pretend to forget stuff for history anymore! If Mrs Cleaver hadn't helped me set up the electronic notebook, there's no way I'd pass.*<br><br>Mrs Cleaver: *Kyla shared her Evernote notebook with me so I could see week by week that she was adding more resources.* |
| • Nikoro participated in the same assessments as everyone else, which included a final 30-minute written response to questions on Chinese gold mining. Mrs Cleaver emailed the questions to Nikoro, and he accessed them using the screen reader. He had software for typing answers, so he needed a quiet space for the assessment because he talked to his computer. He also required extra time to create his written response. | Nikoro: *I have someone with me in assessments just watching and making sure the technology works fine. I have great systems for data management, so it would actually be really easy for me to cheat in tests – maybe that's why there's someone with me! As long as the technology is working, I can do the same assessment as everyone else. I'm determined to get excellence in this – no reason why I shouldn't. I had to work quite hard when I started high school to get people to see me as capable and not just the 'blind student'.* |

The teacher organised buddy support for checking work towards the end of each lesson.

**With your colleagues,** discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your social sciences teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

Key information for the teaching of history in Years 11–13 can be found on the site for New Zealand Curriculum Senior Secondary Guides.

History subject resources can be found on the NZQA website.

Resources for teachers of students with visual impairments can be found on the New Zealand Blind Foundation's website.

# Example 12: Technology, Level 1 - Making and evaluating a biscuit

This example demonstrates how a teacher used differentiation and adaptation in a practical technology session to support all her students to explore the idea that food can be a technological outcome. She was focusing on developing the students' understanding of technological outcomes and processes.

## Task

The task was to create a new technological product: a biscuit that might not have been made before. Students were also asked to evaluate the final outcome and the process they had followed. Miss Peacock wanted her students to realise that food could be a technological outcome in a fun and practical way. Within this session, the students created a new type of biscuit from a selection of six possibilities. They selected a filling and decorated the top to create their own biscuit that looked great and tasted 'yummy'. To achieve this, they had to discuss together and trial and test their biscuits. In the discussion, students were identifying the attributes of a good biscuit – look, taste, shape, texture, size, and so on. This gave them a context to develop their understanding of attributes and extend their technological literacy.



The task was appropriate for students working at level 1 of the curriculum in technology. Carefully selected differentiations and adaptations supported the meaningful participation of students working at a different pace or level of understanding from their peers.

## New Zealand Curriculum objective

- Investigate a context to communicate potential outcomes. Evaluate these against attributes; select and develop an outcome in keeping with the identified attributes (Technological Practice, Outcome development and evaluation, level 1).

## Opportunities to use and develop key competencies

Students were *thinking* as they asked questions to clarify their understanding about what they needed to do and as they built on what they already knew to ensure their biscuit tasted nice and looked good. Students were *participating and contributing* when they worked collaboratively to create a delicious biscuit.

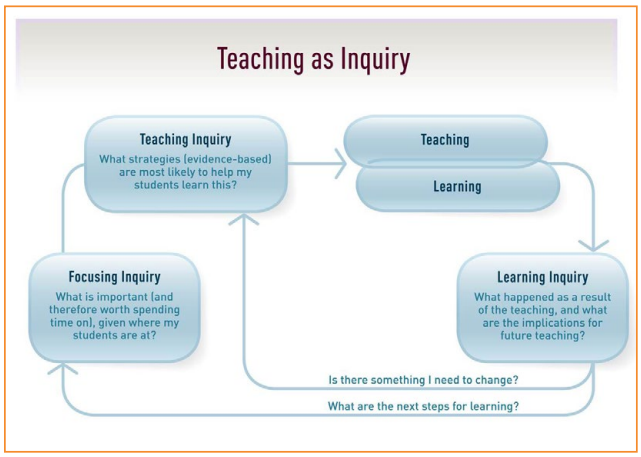
## Class description

Miss Peacock has a year 1–2 class of 23 students.

- **Kaija** has multiple challenges that have implications for how she learns and the support she requires. They impact on her ability to communicate, to process information, and to attend to and stay on task. Kaija is mainly non-verbal and uses a communication board to express herself. She has a walker and a wheelchair for mobility. She has very high needs and receives additional support through the Ongoing Resourcing Scheme (ORS), which includes teacher's aide and specialist teacher time. The specialist teacher spends time in the classroom to support the teacher, the teachers' aides, and Kaija's peers to become more confident communicating with Kaija using her communication board. The classroom team is supported by a multidisciplinary team from the local Ministry of Education office.
- **Molly**'s development was progressing normally until a near-drowning event when she was four and a half. She now has difficulty concentrating and learning. She has a mild hemiplegia which affects her coordination and balance, and she needs some help to transition from the floor to standing. Molly has a recognised claim through the Accident and Compensation Corporation (ACC), which provides the school with teacher's aide funding and other support. She has difficulty attending to tasks and processing teacher instructions. She requires additional support to actively engage in most tasks and is working towards the level of understanding that most of her peers are at.

## Teaching as inquiry

Miss Peacock used a range of evidence-based strategies to support all her students to access the key technological ideas within this lesson. She wanted students to identify and describe potential outcomes that were in keeping with the chosen attributes and then make a product with these attributes. Throughout the teaching and learning, she connected with students' prior knowledge and adapted teaching and task materials to maximise opportunities for all the students to make a biscuit based on criteria for appearance and taste. The learning was assessed in a variety of ways with high levels of student involvement, and expected responses were differentiated for one student.




Miss Peacock knows her students well and understands their likes, dislikes, strengths, and barriers to learning. Based on this knowledge, she organises the class into mixed-ability groups that allow each student to contribute. Some students are able to work in pairs but not groups, and Miss Peacock pairs these students to complement their skills (for example, a student who is good at following instructions with a peer who needs support). Miss Peacock was very aware that for this unit to be successful there needed to be lots of discussion at each stage of the process, especially the trialling stage. She scheduled the lesson for a day on which a student's grandmother and a teacher's aide were working in the class. She asked them to each work with a group and modelled how to question the students to hear their thinking in the biscuit-making process.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Miss Peacock's students were at?*

From her observations of the class and her knowledge of each learner, Miss Peacock realised that she needed to support several students to understand the process of making a biscuit, to work with others, and to then evaluate the outcome. She thought about the range of abilities in her class for working independently and collaboratively. Some students require additional support, so she considered what she could differentiate or adapt to help them work with others. She also realised that she needed to model and use a speaking frame to support some students to converse with their peers when evaluating the process and product.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Peacock's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Connecting to prior knowledge and key language**<br>• Miss Peacock introduced the concept of exploring a new food product through discussion about some well-known biscuits. She brought packets of biscuits to class for this discussion and to prompt ideas about how a company creates new biscuits. She introduced the concept of attributes by creating a mindmap on the smart board using the Popplet web tool. She grouped the students' comments about the biscuits by look, taste, shape, and texture.<br>• The students discussed how people get ideas for new products from thinking and talking together and that the testing and trialling process includes deciding whether an outcome should be developed further. Through this discussion, Miss Peacock elicited students' prior knowledge and connected with key technological ideas. | Miss Peacock: *Student engagement in the task was high. The students started talking about what they liked and disliked in biscuits. They decided that it would be a good idea to evaluate the taste of the biscuits after they made them.* |
| **Adapting strategies and materials**<br>• Miss Peacock provided visual support by displaying the sequence of the task on the whiteboard, with each step shown by a photo and a caption with instructions. | Miss Peacock: *I am going to use this approach in all subjects where possible. Breaking the task into steps added structure to the lesson. It allowed the adults in the room to see that everyone could manage the task, and it helped us see at which stages of the process we might need to provide support.* |

The teacher provided support so that the students could use their prior knowledge and interest to access the task.

**With your colleagues**, discuss: How can you build on students' interests and personal experiences to scaffold new learning?

The teacher provided visual and practical support to ensure that all students could approach the task step-by-step.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Peacock's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Miss Peacock adapted the whiteboard instructions for Molly and Kaija. Both students had the instructions on a small visual board in front of them as they worked with a partner. At the completion of each step in the process, they took turns pulling the instructions off the board and inserting them in a post box. | Molly: *I liked doing the biscuit with Amy. She helped me do the step (in the biscuit-making process) and she said "What next?" She does high-fives and makes me laugh.*<br><br>Kaija's mum: *We are using a similar visual sequence at home to help Kaija go to bed. This simple sequence of photos and a post box has made our lives so much easier and can be used in lots of ways.* |
| **Supporting peer interactions**<br>• Miss Peacock used speaking frames to support student conversations when evaluating the biscuits made at the trial stage. She had several sentence starters on strips of paper. As she and the other adults in the classroom worked with groups of students they modelled a comment or question that used the sentence starter and gave a copy of it to the students to refer to. The speaking frames encouraged students to use and extend attribute terminology. Examples of the sentence starters included:<br>– My biscuit looks ...<br>– My biscuit tastes ...<br>– Why did my biscuit ...?<br>• Miss Peacock made adjustments to ensure Molly could use the speaking frames. She ensured there were no more than three words in the starter, and she repeated it twice before the student held it and said it.<br>• Molly was also given a talking stick to hold when it was her turn to speak.<br>• Each week, the specialist teacher works with Miss Peacock to decide on new vocabulary items for Kaija's communication board based on the classroom programme and themes. This week, they added 'biscuit' and some simple attributes such as 'yum' and 'yuck'. | Miss Peacock: *This was the first time I have used speaking frames, and they generated more conversation between the students than normal. I heard two students discussing why their biscuit broke and what they could do to fix it. It was great to hear the students' rich descriptions of attributes when evaluating their biscuits.*<br><br>*The scaffolding these starters provided enriched the learning. I will use them in so many contexts. As the students become more familiar with them, I will have a box of laminated ones that they can use in independent reading and writing activities to question each other.*<br><br>Miss Peacock: *Molly was very excited that she could talk to a peer, as usually she needs support to ask a question. The next day at news time, she asked if she could use a speaking frame. Of course I said yes.*<br><br>Molly: *I liked holding the talking stick. When I had it in my hand, it was time to talk.*<br><br>Miss Peacock: *Initially I used the talking stick just with Molly and her partner. By the end of the week, many students had a talking piece when working in groups. It was like magic – they wouldn't speak if they weren't holding it. I still need to work on a strategy to get them listening to the speaker, as often they are more focused on getting the talking piece!* |

**With your colleagues**, discuss: What do you need to do to make sure tasks in technology are accessible to **all** your learners?

The teacher used speaking frames to support students' conversations about the task.

**With your colleagues**, discuss: How can peer interactions provide opportunities for **all** your students to contribute to technology tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Peacock's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Allowing for multiple ways of responding**<br>• In Kaija's group, Miss Black (teacher's aide) modelled comments about the biscuits using the speaking frames and Kaija's communication board. | Miss Black (teacher's aide): *It was great to see Kaija so involved in the conversations about the biscuits. One of the students in the small group used Kaija's communication board to make a comment about her biscuit. At the end of the session, Kaija used her board to reply 'yum biscuit' – I have never seen her put two symbols from her board together to make a comment like that before.* |
| • When evaluating in relation to the criteria, Miss Black asked Kaija short questions about the biscuit she had made (e.g., *Does your biscuit taste yummy? How does your biscuit look?*) | Miss Peacock: *The evaluative thinking and concepts in this lesson were more complex than where Kaija is at. But when Miss Black asked yes/no and other simple questions, Kaija pulled the answer from her communication board to indicate her response. I'll show this to the speech-language therapist when she is in next and see if there is anything else we can be doing to support Kaija's communication.* |
| **Assessing to celebrate learning**<br>• Miss Peacock formatively assessed the students' learning by observing and participating in group discussions during the biscuit-making process. | Miss Peacock: *I noticed that one of the groups had biscuits that were overflowing. I asked the students why they thought that had happened and encouraged them to explain what they would do differently next time. Molly's group used thin biscuits that broke when sandwiched with peanut butter. Molly was able to explain what happened to their biscuit, and her partner explained why this had happened and that they would use ginger nuts next time to make the biscuit stronger.* |
| • Miss Peacock gave all the students a self-evaluation sheet that linked to the attribute terminology they had used to describe their biscuits. On a sliding scale, they rated their biscuits on the attributes of look, size, and taste. They had a space to write what they would do next time to make the biscuit tastier and better looking. The self-evaluation sheets were put in the students' portfolios to share with family. | |
| • Students took photos of each other holding their biscuits, using the iPad. With the Story Creator app, they then recorded a comment about their biscuit or added a speech bubble and the word for what it tasted like. Molly completed this task with verbal support from one of her peers. Each student's photo story was shared with their family via email. | Molly's mum: *I love getting the stories and snapshots from school that show what Molly is learning. I looked at the biscuit story with her and she could tell me all about the biscuits and why she will use ginger nuts next time so the peanut butter won't break them. This was so cool, as usually Molly doesn't talk in this much detail about school.* |

The teacher differentiated the expected response so that a student could meet planned learning outcomes.

Read more about ways to differentiate the classroom programme.

**With your colleagues,** discuss: How can you tailor activities to support appropriate learning outcomes for **all** your students?

The students completed self-evaluation sheets, which were shared with their families.

Read more about how perspectives of whānau help build a rich knowledge of students' capabilities, needs, and aspirations.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Peacock's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Miss Black added some additional photos of Kaija's communication board and recorded a comment about how Kaija used her new vocabulary in the lesson. | Miss Peacock: *As well as emailing Kaija's story to her mum, I also sent it to the specialist teacher. One of Kaija's IEP goals is to learn and use new vocabulary that enables her to engage and communicate with her peers in classroom activities. This story shows Kaija is making good progress with her goal. We'll ask Kaija's mum if we can share this at her next IEP meeting.*<br><br>Kaija's mum: *Wow, great to see Kaija using her communication board to talk with the other students.* |

**With your colleagues**, discuss: How do you ensure meaningful assessment to celebrate learning for **all** your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your social sciences teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.happen.

## Recommended resources

Is food a technological outcome? – Teaching snapshot on Technology Online

Introducing technology to juniors – Teaching snapshot on Technology Online

# Example 13: Technology, Level 3 - Making a lantern

This example demonstrates how a teacher of a year 5–6 class differentiated a technology task (Planning the stages for making a lantern) so that all her students could explore the ideas in Technological Practice. The content and purpose of the task was appropriate for students working at level 3 of the curriculum, but through use of adaptations and differentiating the expected response, students working at levels 1 and 2 were also successful.

## Task

In this unit, students were working through the technological process of making a lantern: planning and producing the lantern to meet their design brief and evaluating the outcome. The example covers part of the unit – a number of lessons in which students developed a plan for producing their lantern. Students first constructed a simple lantern. This introduced them to the materials, equipment, and a simple plan that could provide guidance and direction when producing their own. For most of the class, working at level 3, the plan would be in the format of words and diagrams. For students working at levels 1 and 2, the objective of the lesson was to produce a plan that could be pictorial. The context also allowed for two students to work on the priority goals in their individual education plans (IEPs).



## New Zealand Curriculum achievement objectives

Technological Practice – Planning for practice

- Outline a general plan to support the development of an outcome, identifying appropriate steps and resources (level 1).
- Develop a plan that identifies the key stages and the resources required to complete an outcome (level 2).
- Undertake planning to identify the key stages and resources required to develop an outcome. Revisit planning to include reviews of progress and identify implications for subsequent decision making (level 3).

## Opportunities to use and develop key competencies

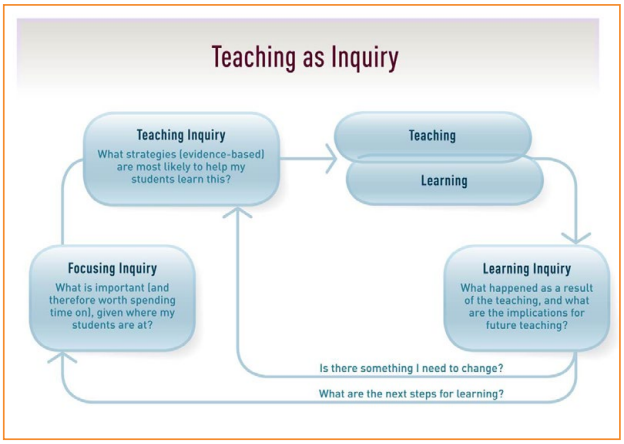
Students were *thinking* as they asked questions to clarify their understanding about planning for an outcome and as they justified their decisions. They thought about and built on what they already knew about planning an outcome within a technological framework. Students were *participating and contributing* as they negotiated who they would work with and collaborated with peers and the teacher to share their ideas and understanding. They *used language, symbols, and texts* when creating their plan.

## Class description

Miss Kendall has a year 5–6 class of 28 students. Within this class, the following students have been identified as needing support to access learning.

- **Braxton** has difficulty relating to others and maintaining friendships. He has recently been diagnosed with Oppositional Defiance Disorder (ODD). He has difficulty expressing his feelings and becomes very anxious when asked to complete most tasks. Braxton has an IEP, and one of his priority goals relates to learning to express his anger or frustration in an appropriate way. His teacher and school are supported through the Severe Behaviour Service, which includes teacher's aide time and support from an educational psychologist from the local Ministry of Education office. Miss Kendall has been unable to engage Braxton in any formal assessment, but her observations and formative assessments lead her to believe he is working within early level 2 of the New Zealand Curriculum.
- **Ruby** has autism spectrum disorder (ASD) and is working within level 1 of the curriculum. Visual cues and supports (for example, a pictorial timetable) assist Ruby's understanding of tasks and expectations, and so help her to engage in learning. Ruby has complex learning needs and receives additional support through the Ongoing Resourcing Scheme (ORS), which includes specialist teacher time. She has an IEP and one of her current priority goals is to use her visual supports to stay on track in classroom learning tasks.
- **Harry** has Duchenne muscular dystrophy. He has limited strength in his lower body. He is able to hold and write with a pencil but tires very easily. Harry learns at the same level as his peers, but he needs adaptations to the environment to support his mobility and uses a laptop to reduce fatigue during written activities.

## Teaching as inquiry




Miss Kendall focused on a range of evidence-based strategies to support all her students to access, engage with, and learn throughout these lessons. Based on observations she had made during group work in mathematics, she was aware that some students responded better to working with a peer or in a group, while others found the social demands of group work an added challenge. For the tasks in these lessons, Miss Kendall gave the class the option of working individually, in pairs, or in a small group of three. Students self-selected their partner or group and had to establish ground rules for how they would work together. They negotiated with each other where to work within the classroom (for example, quiet booths, the cloakroom). The lessons took place when a teacher's aide, Mrs Knowles, was working in the classroom. She roved between the groups and pairs to ensure that students were aware of what they were meant to be doing and to give support when they were unsure. She and Miss Kendall worked with students who needed extra support at agreed times throughout the lessons.

Prior to these lessons, the students had looked at a range of technological outcomes for lighting to explore how different products are made. They had discussed what lanterns are used for, what they can be made from, some common features of lanterns, and where and when the students had seen lanterns. The class decided they would make lanterns to show the school's cultural diversity during International Cultural Awareness Week. They were keen to look at different lanterns across a range of cultures, their purpose, and the materials and attributes of different lanterns. Following this, the class collaboratively created a design brief.

The example covers a number of lessons as the students took what they had learned so far and applied it to planning their own lanterns that met the design brief. They were able to plan using different media (iPads, drawn models, and construction). Their learning was assessed formatively throughout the lesson. Miss Kendall was monitoring how students managed their time, the decisions they made, and their ability to identify their next steps. The students self- and peer-assessed using a simple flow chart with key reflective questions. After these lessons, students went on to make and evaluate their lanterns.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Miss Kendall's students were at?*

Based on discussion with a colleague who had taught her class the previous year, Miss Kendall established that most of the students had completed technology units in the past and had a basic understanding that a sequence of steps needs to be taken in order to move through the design and construction process. Most students had limited knowledge of what was involved in the iterative stages of technological practice, particularly around developing a plan and knowing which materials would be appropriate. For Ruby and Braxton, the lantern task was a good context for building on their emerging understanding of developing a plan, while also providing a context to target a specific goal from each student's IEP.

| **Teaching inquiry**<br>*What teaching strategies (evidence-based) helped Miss Kendall's students learn?* | **Learning inquiry**<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Adapting the environment**<br>• Miss Kendall set up the classroom to maximise learning opportunities for all the students. She arranged the desks so that pairs and groups could concentrate on the task together. She also allowed students to work in other areas, such as the cloakroom. | |
| • Miss Kendall also had a number of individual work stations in the classroom. | Miss Kendall: *Work stations work well in my class. Some students recognise they work better in an environment where noise and visual distractions are reduced. We started off with one for Ruby and now we have seven, as more students want to use them.* |
| • Ruby chose to work on the lantern task by herself and sat at a workstation with partitions and headphones. She also had a Swiss ball to sit on, as she tends to stay focused for longer when she can still move while sitting. | Miss Kendall: *If Ruby sits on a chair, she gets up and down all the time. The specialist team suggested we try a Swiss ball and Ruby definitely sits for longer when she uses one. She even takes it to assembly and sits at the end of the row. It's great, as she didn't come previously because she would run out all the time. Now she stays for at least 10 minutes.* |
| • Miss Kendall made sure there was clear access between the different areas of the classroom to ensure Harry could move around the room without tripping over. She reminded the class to be considerate and not create obstacles where people would be walking. | |
| **Scaffolding the process**<br>• Miss Kendall knew many students in the class would benefit from the hands-on experience of making a simple lantern before developing a plan for making their own. This would support them to make appropriate decisions during their planning. | Miss Kendall: *Before the students had even started making the simple lantern, I could hear several groups talk about the features and uses of lanterns – they were using some of the language we had covered in our previous discussions about lanterns leading up to this lesson.* |

The teacher adapted the classroom seating to support her students to engage with the task.

**With your colleagues,** discuss: What changes do you need to make to the environment to ensure that **all** students have the opportunity to engage and participate in learning tasks?

Students completed sequencing tasks and made a simple lantern as preparation for creating their plan.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Kendall's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Miss Kendall gave the students photos that showed the steps involved in making a simple lantern. Students worked individually, in pairs, or in groups to order the pictures in the correct sequence. They could choose to print the page of photos and then cut and order the hard copies, or to complete the task on iPads in the Popplet app. | |
| • Miss Kendall had a range of follow-up activities prepared:<br>– Sorting a list of items (e.g., stapler, coloured card) used to make a lantern into 'equipment' and 'materials'. This was followed by a discussion with a partner on the role of each item and when it is used in the process.<br>– Reading a list of verbs used in the steps (e.g., cut, press, roll) and labelling the pictures with the appropriate verb.<br>– Reading written descriptions of each step and matching each pictured step with the written description. | Miss Kendall: *I could see I needed to differentiate the sequencing task for Ruby. I asked Mrs Knowles (teacher's aide) to reduce the number of cards Ruby had to sequence from 8 to 4. Ruby can read single words and works well when the task and concepts are concrete. So I used the list of item words in a follow-up task for Ruby. Categorising the items would be too tricky for her so, instead, I asked Mrs Knowles to work with Ruby to cut up the words and label the pictures with them. This provided a good model of a plan for Ruby.* |
| • After completing the sequencing tasks and follow-up activities, students moved on to make the simple lantern. | Miss Kendall: *This was the first time in teaching this unit that I had students make a simple lantern before developing their plan. It worked really well – several students referred to the simple lantern as they identified the steps in their plan. I'm sure this activity helped students create more detailed plans and consider the implications of each step in terms of resources required and completing the outcome.* |
| **Personalising the context and differentiating the task**<br>• When it came time for the students to develop a plan for their own lantern, Miss Kendall knew that Ruby and Braxton would be more engaged in the task if the context was meaningful for them. Ruby has a special interest in cats and is more engaged when learning material has cats in it. Braxton is more likely to stay on task when rugby is part of the context. In discussion with these students, it was decided that Braxton would make a lantern for a rugby field and Ruby would make one shaped like a cat. | Miss Kendall: *Changing the context was easier than I thought, and what a difference it made to those students. They were both really focused on their plans. Great to see Braxton laughing and talking with other students during the planning lesson. I don't see this very often.*<br>Braxton's mum: *I have never seen Braxton so excited about his schoolwork. He asked his dad if he would help him add to his plan. He has never done this before. So good to see Braxton and his dad working together.*<br>Miss Kendall: *I noticed it was easier for Ruby to access the lesson because she was so excited about making a cat lantern. She showed everyone who came into the class.* |

The teacher provided support so that the students could use their prior knowledge and interest to access the task.

Read more about ways to differentiate the classroom programme.

**With your colleagues**, discuss: How can you provide and differentiate tasks that scaffold learning for **all** your students?

The teacher chose contexts that were relevant to her students' interests to engage them in the task.

**With your colleagues**, discuss: How can you build on students' interests and personal experiences to engage them in new learning?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Kendall's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Allowing for multiple ways of responding**<br>• Miss Kendall provided Braxton with six pictures of lanterns from rugby grounds. Each picture was cut into three (top, middle, bottom). From the pictures, Braxton chose the top, middle, and bottom he liked best and pasted them onto his paper. Mrs Knowles then guided a peer to help Braxton write the materials he would need beside his diagram. | Miss Kendall: *It's important that the teacher's aide and I work closely together. If Braxton had his way, Mrs Knowles would do all his work. We noticed that bringing in Braxton's interest in rugby meant he was much more engaged in the task.*<br>Mrs Knowles: *Once the other boys found out that Braxton's lantern was for a rugby ground, I had plenty of volunteers to help him write his list of materials!* |
| • Miss Kendall gave Ruby lots of pictures of cats and a lantern template. While the other students were working on their plans, Miss Kendall spent a few minutes with Ruby discussing the materials and equipment she would need for her lantern. She referred Ruby to the labels she had cut and glued in the previous lesson to help her generate a list. Miss Kendall wrote these on a sheet under two headings: 'Materials' and 'Equipment'. | Ruby: *I need glue and scissors and grey paper to make my cat lantern.*<br>Miss Kendall: *Having the pictures and labels from the previous task really helped Ruby to understand my questions about what materials and equipment she would need to make her cat lantern.* |
| • Miss Kendall suggested to Harry that he make his plan on the iPad. He and his partner, Joe, asked Miss Kendall if they could make a plan together instead of one each. | Miss Kendall: *I had intended for each student to develop their own plan and agreed somewhat reluctantly to Harry and Joe working collaboratively on a single plan. Their work output was amazing, however, and the results blew me away. Harry's and Joe's plan was more detailed than most of the other students' – they had clearly identified what resources they thought they would need for each stage. So I am going to give students the option to work in pairs when they move on to making their lanterns.* |
| **Assessing to recognise learning**<br>• Miss Kendall formatively assessed the students' understanding of planning for practice based on what she noticed during the lessons and by looking at their plans. She made anecdotal notes on her technology unit and noted next steps for the students. | Miss Kendall: *I noticed that I need to develop students' ability to add more detail when writing written instructions. I will add this to the writing activities that they complete in literacy time.* |

Students used different approaches and worked with others or individually to develop their plans.

Read more about Universal Design for Learning: how to present information in multiple ways and allow for different ways for students to respond to and engage with learning.

**With your colleagues**, discuss:
What opportunities do you provide for **all** students to express their ideas in multiple ways?

How can peer interactions provide opportunities for **all** your students to engage with technology tasks?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Miss Kendall's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • Throughout the planning process, the students used a simple flow chart to assess their learning. The flow chart included:<br>– What did you achieve today?<br>– So what did you notice?<br>– Now what will you do in the next lesson?<br>Miss Kendall encouraged the class to use the 'now what' question to review whether they needed to adjust the resources and materials they would need for each step. Some students working in pairs or groups chose to complete this as a peer assessment. | Miss Kendall: *The data from the flow charts showed that most of the students needed to explore materials more to enable them to make appropriate choices for their lantern. I will ensure we make time at the beginning of the next lesson to discuss this and revisit our plans before going on to the next stage.* |
| • As well as assessing in relation to level 1 and 2 technology achievement objectives for Braxton and Ruby, Miss Kendall also assessed these students' learning against individual goals from their IEPs. She did this through observation and conversation with the students. She was looking for Braxton's progress in managing his behaviour when working with a peer and Ruby's use of visual supports to stay on task. | Braxton talking to Miss Kendall: *I took turns with Jack. He's my friend and he said he would help me tomorrow with my maths. He said I'm a great sharer.*<br>Miss Kendall: *Working with the specialist teacher, we have developed a range of visual supports for Ruby, such as visual timetables and activity sequences. I noticed in the lantern activity that we didn't need these supports as much. I think this was because the task itself was so visual and incorporated her interest in cats. I used to worry that I was not meeting Ruby's needs. Now I know that I can meet her individual needs within the class context. This is great, as she gets to fully participate and meet her goals.* |
| • When it was time for students to start making their lanterns, Miss Kendall gave the class the choice to produce their own lantern or work with a buddy to make a lantern collaboratively. | Miss Kendall: *Introducing the option to work in pairs added a further element of peer assessment to the task. Students who decided to collaborate had to decide which plan they would follow to make their lantern. Listening to the students select a plan, I heard many of them weigh up which one would be more likely to successfully achieve the outcome.* |

The teacher used varied means of assessment to recognise her student's learning.

**With your colleagues**, discuss: How do you ensure meaningful assessment to celebrate learning for all your students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your social sciences teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

A teaching and learning sequence for making lanterns for years 7-8 with a focus on ESOL students can be found on ESOL Online.

# Example 14: Physical Education, Level 5 - Invasion games

This example shows how a teacher used invasion games as a context for facilitating both physical and social-emotional development. Her priorities were to develop the movement concepts and motor skills required for invasion games and to foster students' ability to relate positively with others. She used a range of strategies to include students working from levels 1 to 5 of the curriculum.

## Task

The task was to learn and apply the skills, strategies, and concepts that enable successful participation in an invasion game. These included both the movement and the interpersonal skills and understandings required to take part in such games. Basketball was the context for a unit of learning that took place in six lessons over three weeks.

## New Zealand Curriculum achievement objectives

Movement skills

- Develop a wide range of movement skills, using a variety of equipment and play environments (level 1)
- Practise movement skills and demonstrate the ability to link them in order to perform movement sequences (level 2)
- Demonstrate consistency and control of movement in a range of situations (level 4)
- Acquire and apply complex motor skills by using basic principles of motor learning (level 5).

Interpersonal skills

- Express their own ideas, needs, wants, and feelings clearly and listen to those of other people (level 1)
- Express their ideas, needs, wants, and feelings appropriately and listen sensitively to those of other people and affirm them (level 2)
- Describe and demonstrate a range of assertive skills and processes that enable them to interact appropriately with other people (level 4)
- Demonstrate a range of interpersonal skills and processes that help them to make safe choices for themselves and other people in a variety of settings (level 5).

## Opportunities to use and develop key competencies

Students were developing the skills and understandings associated with *managing self* and *relating to others* as they learned to work as teams and had opportunities for both competition and co-operation. They were *participating and contributing* when they played games together.

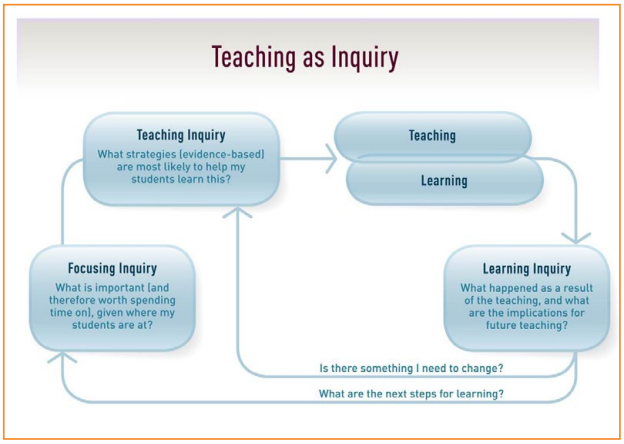
## Class description

Ms McKinnon teaches a year 10 class of 24 students who are working within curriculum levels 1–5 of the health and physical education curriculum. Her class is ethnically diverse, with most students being Asian, Indian, or Pasifika. Approximately one third of the class are working at level 4 of the health and physical education curriculum. The area is a strength for others, who are working within level 5. Several students who have significant learning needs are working at levels 1 or 2. For some of these students, the development of social and emotional skills is currently a higher priority than movement skills.

In her planning, Ms McKinnon works to include the whole class from the outset, particularly considering the needs of three students with additional learning needs:

- **Salisi** has had an above-knee amputation. He wears a prosthetic leg and does not need crutches. Salisi's natural ability, love of sport, and sociable nature mean that he enjoys and can succeed in several sporting codes. He is very independent and enjoys rough and tumble, managing his disability so capably that his classmates barely notice it. He is working within level 5 of the health and physical education curriculum.
- **Maria** has attention deficit hyperactivity disorder and is on the autism spectrum. She has teacher aide support in her other classes and an individual education plan that focuses primarily on social and communication skills. Maria attends classes with her peers for all subjects and receives support from the school's Learning Support Centre, where she enjoys caring for the plants. She is working within level 2 of the health and physical education curriculum.
- **Teuila** is a kind, friendly student who wants to get involved and make people happy. She has a global developmental delay and currently attends most of her classes in the Learning Support Centre. Given her successful integration in the health and physical education programme, the centre is exploring opportunities for her to attend other classes with her peers. Teuila is very compliant and eager to please, but can quickly lose focus. She loves Samoan dancing and enjoys performing for others. She is working within level 1 of the health and physical education curriculum.

## Teaching as inquiry




Ms McKinnon teaches this class for three periods a week, focusing on health in one period and physical education in the other two. Relationships and interpersonal skills are a year-long focus, providing good opportunities for students to explore and develop the key competencies. The class began the school year by sharing their thoughts about how they wanted to relate to one another. Ms McKinnon collated the students' ideas into a class contract, which they all signed. The contract provides a reference point for conversations about whether the students are succeeded in meeting their own expectations for behaviours such as respectfulness and humility.

Term 1 began with units on adventure-based learning activities (ABL) and swimming. The ABL unit provided an opportunity to start generating social cohesion through group activities that require communication, cooperation, and problem-solving. The final unit was to be on invasion games, where teams must attack each other's territory to score points. A survey had told Ms McKinnon that many of her students liked basketball. She hoped that by starting with a relatively familiar game she could encourage participation and foster skills the students could later transfer to less familiar invasion games.

Given the students' wide range of ability, Ms McKinnon had to think hard about how to include them all in the task. She used the Halberg Foundation's STEP model to think about the four aspects of a game that can be modified:

- Space: Changing the area to make a game more or less challenging
- Task: Changing the demands of a task to match participants' skills
- Equipment: Modifying the size, shape, colour, or arrangement of equipment
- People: Being flexible about groupings to accommodate participants' various and changing skill levels.

The Halberg Foundation emphasises the importance of maintaining a balance between inclusion and the integrity of the sport. Too many adaptations or the wrong adaptations may spoil the experience for everyone. Ms McKinnon suggests, "It can be better to start by modifying just one or two aspects of the game. Then you inquire into what did and didn't work, and what that means."

Ms McKinnon planned her unit to ensure all students were able to participate and achieve, adjusting her adaptations and differentiations as they gained in confidence and expertise:

- In Week 1, less confident players learned the basics of the game while others took part in more competitive play.
- In Week 2, students developed their skills and strategies through a variety of modifications involving the task, space, and people.
- In Week 3, the students applied their learning by playing more traditional games of basketball.

### Focusing inquiry

*What was important (and therefore worth spending time on), given where Ms McKinnon's students were at?*

Ms McKinnon used a variety of sources to understand her students' strengths and needs. She began by accessing a range of documentation from the previous year. For some students, this included individual education plans and for all, it included the results from the 'common assessment tasks' (CATs) the school sets its junior students. Each CAT describes what students need to be able to do in relation to a particular aspect of health and physical education, setting out success criteria on a continuum from 'not achieved' to 'excellence'. Both teachers and students use these criteria to make judgments about achievement and progress.

Ms McKinnon noted how her students had done the previous year in the CATs for "Relationships with Other People: Interpersonal Skills" and "Movement Concepts: Invasion Games". She asked the students to rate themselves again, justify their assessments to a partner, and set themselves personal goals. She also made her own judgments, based on her initial observations of the students.

Ms McKinnon found out more by talking to the students' previous teachers and by asking the students themselves about their likes, dislikes, strengths, and weaknesses in health and physical education and how they learn best in this area. She also spoke to teachers in the Learning Support Centre and to some family members. For example, a conversation with Salisi's sister alerted Ms McKinnon to his membership of a representative sports team and that his hip hurts when he moves around too much.

The units on swimming and ABL enabled Ms McKinnon to observe the students' interactions with each other and their movement concepts and motor skills. She asked herself questions about their agility, the ways they moved, their willingness to co-operate and participate, and how they communicated. She built opportunities for student reflection into the lessons, using the CATs and class contract to help guide discussion.

Ms McKinnon wanted all her students to develop their physical skills and ability to navigate relationships and for the class as a whole to become a more cohesive unit. She knew that some students would be unlikely to achieve excellence, but she wanted everyone to participate and make progress in their own right. For example, she knew that Maria would need support to manage her emotions and abide by social rules. Teuila would need help to stay focused and remember instructions. The unit offered Salisi an opportunity to demonstrate his ability to compete and contribute to a team, but would also pose physical challenges.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms McKinnon's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Activating students' prior knowledge**<br>• Ms McKinnon began by discussing the learning purpose and the specific movement and interpersonal skills the class would be working on. She introduced the concept of invasion games and explained that the context for learning would be basketball. | |
| • Ms McKinnon put the students into teams and gave each team a selection of balls. The students had five minutes to play a simple invasion game using a segment of the court. Their aim was to get their balls into a basket on the other side of the court while stopping the other team from scoring. | Ms McKinnon: *The class discussion was much richer once students had had the chance to experience an invasion game.* |
| • Ms McKinnon brought the students back together for a think, pair, and share about the experience. She drew out their knowledge of invasion games, including the language and strategies. *What did you have to do to try to win the game? What did you mean when you said you need to "mark" the opposing players? You mentioned teamwork. What makes a good team player?* | Pita: *I told the class that when we started playing rugby, we'd all run after the ball, but now we spread out and work together. It's about the team, not the individual.* |
| **Using flexible groupings and opportunities for reflection**<br>• Ms McKinnon asked the students to form a 'confidence line' from those who felt most confident about playing basketball to those who felt least confident. She split the line down the middle to form two groups, each of which she split again into two teams that would compete against one another. | |
| • Ms McKinnon allowed the two more confident teams to be more independent while she gave the other teams a basic understanding of the rules of basketball and the use of space in invasion games. She began a game, but periodically blew her whistle as a signal for the players to freeze and think about what they were doing. *Where are you? What are you doing? What is happening in your team? What are you wondering about? Who could you ask?* | Salisi: *I liked that we all got a chance to play at our own level. And the kids who aren't so good were able to focus on learning the basics.* |

The teacher set up an initial activity to help the students surface and share their knowledge about invasion games and the skills and expertise involved.

**With your colleagues**, discuss: What strategies do you use to ensure students bring what they know to their learning?

Following the STEP model, the teacher differentiated the *task* and adjusted the way she grouped *people* in the task. She used freeze frames strategically to provide students with opportunities to think about what they were doing.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms McKinnon's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • All the girls had placed themselves in the least confident group, though two were among the better players. Ms McKinnon accepted their choice but asked them to be team leaders and to ensure all team members participated. The leaders decided that each person would have to handle the ball before their team could score. | Mele: *I'd rather play with my friends than play with the boys. Leading my team took me out of my comfort zone, but I liked it. It made me think about how to be a good captain and help all my players do their best.* |
| • Ms McKinnon monitored what was happening with both groups, prompting the students to think about what makes a team more inclusive and more effective. *Remember that one of the criteria for invasion games is team play. What could you change to make sure you all work together as a team?* | Ms McKinnon: *Maria got upset and walked off when a boy laughed at her. I checked she was okay and asked what needed to happen for her to get back into the game. We agreed she could step out of the game for a while and get in some shooting practice with another girl. That got her confidence back up and she then rejoined the game.* |
| • Salisi wasn't getting involved in the passing game, as he couldn't move as fast as the others. Ms McKinnon blew the whistle and asked the students to reflect on what was going on. They decided to change the rules so they had to pass the ball three times before shooting. | Hiram: *We already knew Salisi was good at shooting, but when we changed the rules, we found out he's awesome at passing!* |
| • The next day, Ms McKinnon wanted the students to take greater charge of the game and think more strategically about how they could work together. She repeated the confidence line, this time using it to create four mixed-ability teams. She had the students allocate positions and then used the freeze-frame technique to interrupt the games for the students to stop and reflect. *Look around you. What is happening? What could your team change to give you a better chance of scoring?* | Ms McKinnon: *Using the freeze-frame technique gave the more able players time to think more strategically. For the less experienced players, it slowed the game down so they could gain confidence and apply their new knowledge.* |
| • Ms McKinnon wanted the students to understand the importance of communication for relationships in general and teamwork in particular. This was especially important for beginner players and those who needed extra help to understand and remember what to do. | |
| • Teuila was happy just to stand and watch. Each time Ms McKinnon checked with her team, she reminded them that Teuila was part of the game, too, and asked questions to help Teuila remember the rules. *Remember, Teuila, you're playing, too. Where do your team mates need you to be? Remember they have to pass to you in order to score.* | Daphne: *Ms McKinnon asked me to be Teuila's buddy and make sure she stayed involved. It turned out everyone helped. We'd call out "Here's the ball, Teuila," so she could have her hands ready. She'd go to pass to the other team, so we'd call out, "Teuila, that's the wrong person! I'm in your team!" It was fun.*<br><br>Teuila: *I scored a goal. Everyone clapped! I felt happy!* |

Read more about the STEP model and watch videos to see its implementation.

**With your colleagues**, discuss: How might you apply the STEP model to a favourite sport or activity at your school to better include all students?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms McKinnon's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Differentiating the task and providing support to enable full participation**<br>• By the second week, all students understood the concepts of the game and Ms McKinnon moved to a greater focus on skills such as shooting, dribbling, and passing. Everybody could work on the same skills, but she differentiated the drills, for example, having some students stand still to practise shooting, while others practised jump shots. She set up stations with different drills that people could work through at their own pace.<br>• The lesson always finished with a game. Ms McKinnon continued to use the freeze motion technique to get students to think about their strategies and to check that everyone was involved. | Ms McKinnon: *Maria can dribble, shoot, and pass. Her main issue is teamwork. But she's learning to tell me when she's upset instead of walking off. Now I need to help her express her needs more appropriately and take more account of other people's feelings.*<br><br>Maria: *I got annoyed when Sofia didn't pass me the ball. But Ms McKinnon asked how I was going and I realised it wasn't that bad, and that everyone's got to have a turn.* |
| **Balancing the integrity of the game with the goal of inclusion**<br>• In the first two weeks, the games were played over a smaller area than usual for basketball and often in smaller teams (for example, three on three). This supported inclusion, but it also reduced the integrity of the game.<br>• In the final week, the class moved to using the full court. Ms McKinnon put six students in each corner of the gym, and those in opposing diagonals took turns to play each other.<br>• When they weren't playing, Ms McKinnon encouraged the students to watch the game and analyse the strategies of each team, using an observation sheet she provided. *What are they doing? What's working? What do they need to do to include everyone? How could they improve their invasion strategies?*<br>• The unit concluded with a 'top team' competition. | Ms McKinnon: *The observation sheet prompted the students to give feedback on communication and teamwork. Sometimes the losing team got better feedback than the winning team, because they were doing better at including everyone.*<br><br>Maria: *The kids said I did a good job today. I was more involved.* |

Following the STEP model, the teacher differentiated the tasks so that all students worked on the same set of skills, but at a level to match their ability.

Read more about making learning accessible for all students using differentiation and adaptation.

**With your colleagues**, discuss: How can students at differing levels of ability be supported to play the same sporting activity?

The teacher reduced the level of adaptations to give students greater satisfaction while still supporting them all to take part.

**With your colleagues**, discuss: How can you incorporate students' perspectives to ensure modifications to a game enable inclusion without taking away from the fun?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms McKinnon's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• Throughout the unit, Ms McKinnon referred the students to their CAT assessments for both inclusion and invasion games. *Remember what we're working on – interpersonal skills – how you're interacting with others. We want to keep to our contract. We want everyone to do well.*<br>• At the end of the unit, the students used the CAT assessment sheets to judge their progress and write reflective comments. They were prompted in this by a set of questions based upon the SOLO taxonomy. Teuila circled where she thought she was on the continuum and then Ms McKinnon helped her to reflect. *Tell me something you learned. How do you feel about that?*<br>• Ms McKinnon also provided feedback on the CAT sheets. When she returned them, she gave the students more time for reflection and to discuss the feedback with her if they wished.<br>• The class then discussed the shifts they had made and their goals for the next term. *Where have we got better? How can we improve? What do we need to focus on as a class from here on?* | Ms McKinnon: *Teuila is on the pre-structural level of thinking in the SOLO taxonomy, so I questioned her about simple, central ideas, like having a part to play in her team. Maria is at the next level where she can deal with questions like, "What do we mean by a 'team'?"*<br>Mr Brown (Learning Support Coordinator): *Teuila's goals are to be involved and physically interact with a range of people. It's great to see that she's finding a place in her health and PE class. Maria's goals are for her to develop her social skills, avert meltdowns, and feel safe, included, and more confident. For her to deal with challenges without storming off is important progress.*<br>Ms McKinnon: *Basketball proved to be a good context for introducing invasion games. Everybody took part in all the lessons and the class culture has become more caring and respectful. Students are using the language of invasion games and talking about how to work as a team. We'll continue to work on both CATS over the course of the year. We'll talk about how the students can transfer their learning from this unit to other contexts, including other invasion games.* |

The teacher used the school's CAT assessments and questions based on the SOLO taxonomy to get each student thinking about where they were in their own learning and development and what their next steps would be.

Read more about including all students through the use of self-assessment.

**With your colleagues**, discuss: How can you support individual students to assess their progress in ways that are positive and self-affirming?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your physical education teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.

## Recommended resources

To learn more about STEP and adaptation/modification training, contact your local Halberg Adviser about No Exceptions Training (NET): www.halbergallsports.co.nz/contact-us/

# Example 15: Music, Level 4 - Exploring the elements of music through composition

This example shows how a teacher differentiated a task to ensure that students working at a wide range of curriculum levels could create and perform a composition based upon a natural phenomenon. Most students were working within level 4 of the curriculum, but some were at level 5 and others at level 1. Some but not all students could play an instrument.

## Task

The task was for students to work in groups to create and perform a piece of programmatic music (that is, music that conjures up visual images to tell a story). The composition was to represent a natural event (for example, a storm, sunrise, tsunami, or volcanic eruption) by focusing in particular on the musical elements of timbre, texture, tempo, and dynamics. The unit took place over three weeks, with three lessons per week.

## New Zealand Curriculum achievement objectives

Developing ideas

- Explore and express sounds and musical ideas, drawing on personal experience, listening, and imagination (level 1)
- Express, develop, and refine musical ideas, using the elements of music, instruments, and technologies in response to sources of motivation (level 4)
- Use musical elements, instruments, technologies, and conventions to express, develop, and refine structured compositions and improvisations (level 5).

Communicating and interpreting

- Share music making with others (level 1)
- Respond to live and recorded music (level 1)
- Prepare, rehearse, and present performances of music, using [a range of] performance skills and techniques (levels 4 & 5)
- Reflect on the expressive qualities of their own and others' music, both live and recorded (levels 4 & 5).

## Opportunities to use and develop key competencies

Students were *relating to others* and *participating and contributing* as they worked within groups to develop and perform their compositions. They were using *language, symbols, and texts* as they explored the language of music.

## Class description

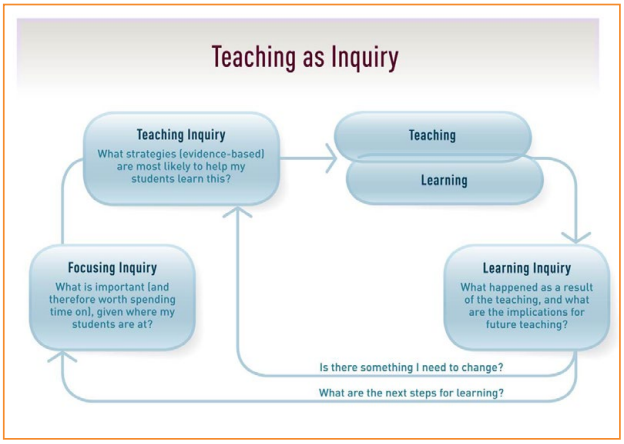
Ms Bennett teaches a year 9 class of 26 students who have chosen to take music as an option for half the year. Most of the students are working within level 4 of the curriculum. Some are just beginning to learn 'traditional' musical notation, while others have been taking lessons for several years and belong to music groups. Some of these students are working within level 5.

The class includes several students with additional learning needs. The school's Learning Support Centre ensures these students are supported to participate in learning alongside their peers.

- **Leon** is on the autism spectrum and has echolalia – he doesn't speak much, apart from repeating lines from movie or television shows, often to reflect his mood or what's happening around him. He is keen to be included with his peers and this is a focus of his individual education plan (IEP) and teacher aide support. His IEP stresses the importance of teaching strategies such as breaking tasks down into chunks and allowing opportunities for sensory breaks. He is working within level 1 of the music curriculum.
- **Xavier** has dyslexia and challenges with visual perception (the ability to make sense of visual information). He can appear to be engaged and understand instructions when, in reality, he needs a little more time and support to do so. Xavier is a mature, friendly student who enjoys music. He is working within level 4 of the music curriculum.
- **Violet** has dyslexia and dyscalculia (severe difficulties in making arithmetical calculations), both of which impact upon her ability to read music. She is a keen and able singer who enjoys singing and performing. Violet is socially engaged and displays great generosity in her interactions with other students. She is working within level 4 of the music curriculum.

## Teaching as inquiry

Ms Bennett teaches this class for three one-hour periods a week. When working with junior students, her aim is to provide all students with opportunities to play music and create their own original compositions. At the end of each two-term block, students always perform their compositions for their families, who are invited to a class concert.




This unit took place in the first weeks of Term 2. During Term 1, the class had worked through a logical progression of activities that ensured all students had the basic skills required to participate in this task. They worked first with rhythm and then with melody, finishing the term by working in groups on original compositions.

Ms Bennett had also conducted a 'round robin' activity so that students with expertise in singing or the piano, guitar, bass guitar, or drums could teach their peers. The groups spent three days learning the basics of each instrument and then performed a simple piece to their peers. This gave the 'experts' the opportunity to lead the learning and ensured all students had the skills they needed to participate in further activities. Throughout the term, Ms Bennett introduced basic musical terms using practical activities that provided multiple opportunities for the students to hear and use the terms.

In the unit, all students worked towards the same outcomes, but Ms Bennett adapted and differentiated tasks to ensure they all could participate. For example, she adapted the task for Leon by breaking it down into its parts, which she itemised on the interactive whiteboard he carries. Adaptations for Xavier included checking understanding and, for Violet, an opportunity for her to showcase her singing ability by performing a solo for the class.

## Focusing inquiry

*What was important (and therefore worth spending time on), given where Ms Bennett's students were at?*

Ms Bennett used a variety of sources to understand where her students were in their learning and development. Her primary approach was to closely observe the students to find out about their musical abilities, their confidence in performing, and their interactions with her and each other. All performances were followed by a session when she and the students engaged in constructive feedback. The round robin experience was particularly helpful for the students themselves when they discovered that they had an aptitude for particular instruments.

There is not much 'bookwork' in the year 9 class but early in the year Ms Bennett followed some basic work on rhythm and notation with a brief assessment. This gave her an insight into each student's developing ability to read and notate music.

At the start of the year, the Learning Support Department supplied Ms Bennett with written information about Leon, Xavier, and Violet. They also hosted a meeting with Leon's parents, which Leon and all his teachers attended. Ms Bennett adds that she also learns a lot from observing the teacher aide's interactions with Leon.

Ms Bennett observed that Leon is drawn to percussion. In the first week of the year, he always hunted out the cowbell and would bring it in to play. It became apparent that he can work with basic rhythm and that he appreciates a range of sounds and is willing to try different instruments. This has led to three specific goals for Leon in his music lessons:

- To copy a simple rhythm that is played to him, with a view to extending the sequence of beats
- To perform with his group
- To extend his time on task.

Ms Bennett always uses a three-pronged approach to explain a task: writing about it, talking about it, and demonstrating it. Her observations in Term 1 led her to realise that while Xavier would say he understood, his body language suggests otherwise. Because of this, his is the group she always checks first in the practice rooms.

Ms Bennett realised that performing is important to Violet and that she relishes the positive feedback she gets. She works well with other students, but needs support to access written information.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Bennett's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Laying the foundation**<br>• The unit began with a pre-task to introduce the students to the concept of programmatic music and start them thinking about how a composer uses the elements of music to create a particular mood. Ms Bennett played the piano to demonstrate styles of music associated with different television and film genres – for example, a set of lush chords to suggest a romance; loud, 'busy' music for action; and a simple, repetitive song for a children's television theme. The students had to listen to the music and guess which genre was being represented. They discussed the elements they could hear being employed, recalling some of what they had learned in Term 1. As the students named the different elements, Ms Bennett noted them on the board as a reminder. | James: *That's gotta be a horror movie.*<br>Ms Bennett: *OK, so what's happening with the elements of music to make this sound like a horror movie?*<br>Violet: *It's the harmony – those are weird, dissonant chords.*<br>Murray: *And the rhythms, all jerky and irregular.* |
| • Ms Bennett invited the students to join in the demonstration. When the teacher aide, Johnno, played the two key notes from the theme for the *Jaws* movie, Leon jumped up to join in. | Johnno (teacher aide): *As I began to play, I could see that Leon was listening attentively. To my surprise, he got up and played with me. He was improvising, but it made sense with what I was playing. It was a big moment for Leon. The other students were very accepting and clapped for him. He doesn't speak very much, but he beamed.*<br>Ms Bennett: *Leon loves the movies. I think that helped capture his interest.* |
| • Ms Bennett then set a 'quick-fire task', for the students to create their own theme music. Their piece needed to be about 30 to 60 seconds long and represent a particular movie or television genre. Afterwards, they would have to demonstrate their piece to the rest of the class. She scaffolded the task by explaining it in writing, verbally, and through the practical demonstration. | Ms Bennett: *Think about the instruments, which can include voice, and how you'll use the elements of music to create the effect you're after.*<br>Ms Bennett: *I knew that Leon needs a clear plan to follow, so I sat down with him and talked about what he would do during the lesson. Johnno wrote this down on his whiteboard.* |

The teacher set an open-ended task that would build initial knowledge and that was achievable for students at all levels of musical ability.

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Bennett's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| • The students formed into small groups and went to the practice rooms. Ms Bennett waited for a few minutes to let them get started. She knew that while Xavier had paid attention, he might not have understood the instructions, so she went to his group first. She found that they had chosen a genre and had a few notes, but it was pretty clear they were procrastinating, with one boy playing on his phone. She re-directed them: *Oliver, what do you think the task is about? Can you show me what your group has so far? Okay, you have three notes and about 10 seconds of music. How are you going to get that up to 30–60 seconds?* | Ms Bennett: *I find that letting the students negotiate their own groups usually works well. It's not often that anyone is left out. And as much as possible, I let the groups develop their own solutions. I try not to give too much scaffolding, because then it can end up being my work.*<br><br>Oliver: *What if Xavier joins me and plays those three notes at a different part of the piano?*<br><br>Xavier: *And I could try playing them at half speed.* |
| • The class began their second lesson with a reminder of their task and time to practise their pieces. Leon had participated with his group, while needing several breaks. Earlier, Johnno had noticed that Leon could sing well and had asked Leon's mother about the songs he knows. The group decided to do a young children's show for their genre, for which Leon sang "Twinkle, Twinkle Little Star". | Ms Bennett: *I've learned to make the expectations public. Everyone needs to know Leon's boundaries. I told Kyla's group, "I'm so pleased that you've volunteered to work with Leon. He may only last five minutes, so don't worry if he wants to leave partway through. But do remember to invite him back after a while."* |
| • With half an hour to go, the students reassembled to listen to each piece and provide informal feedback. Ms Bennett prompted the students to guess the genre and provide constructive feedback on the compositions. They discussed what was happening in each piece and how it was producing its effect. | Ms Bennett: *What did you think of that, Xavier?*<br><br>Xavier*: It sounded like a thriller – it had lots of suspense.*<br><br>Ms Bennett*: How do you think they got that effect?*<br><br>Xavier: *It went from really soft to really loud, and it was fast.*<br><br>Ms Bennett: *What do we call that in music?*<br><br>Violet: *Dynamics – it went from piano to forte. And (looking at the board) the word for speed is tempo. It had a quick tempo.* |



Read more about drawing on whānau knowledge to support students' learning.

**With your colleagues**, discuss:
How can you facilitate group interactions that enable learning for all participants?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Bennett's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Building shared understandings** | |
| • The third lesson was a whole class lesson that required active listening. Ms Bennett began by asking the students to discuss with each other what's required when we listen to a piece of music. | Ms Bennett: *OK, so the question was 'What does it mean to be an active listener?' What did you decide in your group discussions?*<br>Violet: *To not talk while the music is playing.*<br>Max: *To concentrate on what the music is saying to us.* |
| • She then played the opening bars of Richard Strauss's *Also Sprach Zarathustra*, asking the students to focus on three questions: *What is the first instrument you hear? What is the last instrument? What words would you use to describe the music?* The students' answers included 'majestic', 'bright', 'light', 'brassy', and 'luscious'. | |
| • The second time Ms Bennett played the music, she told the students the name of the composer and work and explained that the music represents a sunrise. She asked the class to close their eyes to see what they imagined when hearing the music. | Xavier: *I knew right away that the music was from 2001 Space Odyssey. When I closed my eyes, I could see the darkness of night. Then a finger of light starts to creep up over the hills and spread across the sky. It lightens and there's pink and purple. Then suddenly it explodes in a bright orange ball.* |
| • For the third listening, Ms Bennett asked the students to describe what was happening in the music. She drew out their responses and, where necessary, she or another student gave them the musical terms for what they were describing. She supported these explanations with demonstrations on the piano, and one of the students talked about his experiences as a trumpet player. | Violet: *The start opens up. It makes you expect something is going to happen.*<br>Ms Bennett: So *which element of music is the composer using there?*<br>Beth: *It's pitch, those two notes.*<br>Ms Bennett: *Yes, it's that perfect fifth, the brightest interval in music. [She plays it on the piano] The music for Star Wars also starts with a perfect fifth.*<br>Tane (trumpet player): *And The Last Post!* |
| • The strongest response was from Leon, who was entranced. | Johnno: *Leon got out of his seat and walked right up to the speaker, opening up his arms in this huge gesture. The music triggered something in him that I've never seen before. I'll have to tell his Mum about it!* |

The teacher supported students to listen actively, systematically helping them to build a shared understanding of how a composer had used the elements of music to portray a sunrise.

**With your colleagues**, discuss:
How do you support your students to develop the important skill of active listening?
In the first three lessons, Ms Bennett and her students chose musical examples that were appropriate for their particular context. What examples would you and your students choose?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Bennett's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Using adaptation and differentiation to enable full participation**<br>• Ms Bennett explained that the major task for this unit was for the students to create their own piece of programmatic music to portray a natural event like a sunrise or storm. She pointed out that they had already succeeded in creating mood music in their pre-task. Now, they were to create a longer piece of music with a beginning, middle, and end. | |
| • Using her three-pronged approach, Ms Bennett wrote the brief and success criteria on the board, talked the task through, and demonstrated with examples. | Ms Bennett: *Think about how you can create a structure. Something needs to change. It might be to do with the tempo, the dynamics, the timbre, or the pitch. Feel free to use 'found sounds' like a door or footsteps. And your instruments don't have to be used conventionally – what happens if you tap the guitar?* |
| • The students organised themselves into their groups and then departed for the practice rooms. When Ms Bennett checked in with Xavier's group, she found they'd decided to do a storm. They had the piano and had chosen a bongo and guitar. They were working well together, but Xavier was finding it difficult to bring the multiple aspects of the task together. She helped the group to chunk the task. | Ms Bennett: *Let's look at the opening 10 seconds, when it's calm. Xavier, can you show me what you're doing? Now stop and focus on what Tom is doing. What do you two sound like together?*<br>Tom: *Now let's add Oliver in with the bongo.*<br>Xavier: *This'll be our middle section, when the storm arrives.* |
| • Violet continued to work with Beth and Murray, two very capable students who play the piano and drums respectively. Their group developed quite a complex piece, which Beth and Murray captured in a score. Violet couldn't read the score, but recorded the piece on her phone so that she could practise it at home. Then the group realised that Violet could use coloured pens to create a simpler version of the score. She highlighted her part and used colours to indicate changes, such as from loud to soft. | Violet: *It was great when we worked out that I could have my own score. It made me feel more independent.*<br>Ms Bennett: *This made me wonder whether the reason Violet hasn't joined the choir is that she can't read music. I'm going to follow up on that hunch. We've found ways to get around that issue before.* |
| • On the first day, Leon managed longer with his group than ever before. On the second day, his group leader said, *I have a drum kit for you, Leon. Come with me.* To the teacher and teacher aide's surprise, Leon went with her straight away, a breakthrough moment for him. | Kyla: *It just felt natural to include Leon. He's been with us before and he's part of our group.*<br>Johnno: *It was so good to see Leon being included in the group so naturally and that he just went with them. It was a big step for him!* |

The teacher and students responded in the moment to ensure everyone in each group was able to participate and learn.

Read more about making learning accessible for all students using differentiation and adaptation.

**With your colleagues**, discuss: How can students at differing levels of ability be supported to participate in the same activity and work towards similar outcomes?

| Teaching inquiry<br>*What teaching strategies (evidence-based) helped Ms Bennett's students learn?* | Learning inquiry<br>*What happened as a result of the teaching, and what were the implications for future teaching?* |
|---|---|
| **Assessing to recognise learning**<br>• There was no formal written assessment for this task, but the groups were encouraged to self-assess and the audience were encouraged to peer assess by commenting in relationship to the success criteria. Ms Bennett also provided feedback based on her observations throughout the unit.<br>• Ms Bennett emphasised that this was a composition task, not a performance task. The focus was on learning to use sounds to create a particular effect. *Does the piece have structure – a beginning, middle, and end? How have the elements of music been used?*<br>• Ms Bennett explained that the focus was also on participation. *I'm looking for group co-operation. Your performance will show how well you worked together. Was everyone participating and involved? What part did each person play? Who took the lead? Who came up with ideas? Who kept everyone on task?*<br>• The class also agreed on criteria for giving feedback, which Ms Bennett explained must be positive. *You can question where things have gone right or wrong, but it must be constructive.*<br>• Ms Bennett was pleased with the quality of the compositions, all of which met the success criteria and some of which showed considerable accomplishment. She was equally pleased with the way in which the groups had worked together. | Ms Bennett: *Xavier's understandings and involvement have definitely improved; his group's piece was so well crafted.*<br>Violet: *I feel so good performing for people. My group did an earthquake. We had lots of contrasts in dynamics and texture, and we varied the timbre by beginning with one instrument and gradually adding others.*<br>Ms Bennett: *There have been some big breakthroughs for Leon. His notes show that he doesn't participate in his other classes so well, but in music he's taking part and has discovered new interests. His response to Kyla's invitation was one of those moments you cherish.*<br>Johnno: *I wrote down the feedback Leon received from the other students for his family: "Leon, you played that so well. Your drumming stood out. You were in time. You faced the class."*<br>Ms Bennett: *Each of the students brings something special to our class. The world is a diverse place. It's wonderful that our students are learning how to actively include all the people in their community without making a fuss of it.* |

Assessment was informal and involved teacher observation and student self- and peer assessment.

Read more about what makes for effective teacher observations

**With your colleagues**, discuss:
How do you prepare for and conduct your observations of students?

## Next steps

Now that you have explored this example, work with colleagues to:

- consider the challenges and opportunities in relation to inclusion for *your* students
- decide on the next steps in your music teaching to ensure *all* your students are participating, learning, and achieving
- plan for a future meeting to review the impact of your next steps and what *now* needs to happen.