



TEACHING AS INQUIRY / OVERVIEW

How to undertake Teaching as Inquiry



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Summary *Teaching as Inquiry is one of the most powerful forms of teacher learning and is a vital strategy to improve student learning. It involves a continuous cycle of investigating student learning, identifying and focusing on one or two specific areas to improve, thinking critically about the link between teacher action and student learning, coming up with a ‘hunch’ or a theory about what teacher action could best support that identified change in student outcomes, learning more from research and colleagues, then trying out a new or modified practice and checking its effect, leading to framing a new inquiry. Teaching as Inquiry is no quick fix: requiring sustained investigation and action over 1–3 years, but it can be transformative and greatly satisfying for teachers. It is characterised by deep reflection and questioning of the links between your actions as a teacher and student learning, being honest in your self-reflection, openness to new ideas and colleagues’ input, and being prepared to learn from failures as well as success. Here, we outline how to do it step by step, expanding on the NZ Curriculum model by providing guidelines for a six-stage ‘spiral of inquiry’.*

What is Teaching as Inquiry?

Teaching as Inquiry is an approach to teaching in which teachers continuously inquire into the impact of their teaching actions on student learning, and make informed changes to improve their teaching practice so as to enhance student learning.

Inquiry occurs when teachers:

- turn intuitive judgements about teaching and learning into more structured investigations
- systematically and consistently examine the relationship between their actions and what learning is happening for the students
- make good use of evidence and research in order to stimulate new ways of thinking about teaching and learning
- try out new ideas and evaluate the impact of these changes to practice.

Teaching as Inquiry is:

- locally-situated: developed in teachers' actual teaching context
- deliberate: has clear purposes
- problem-defining: teachers identify a question, challenge or area to investigate and improve
- action-oriented: focused on making and evaluating specific changes to practice
- reflective: characterised by deep thought and careful consideration of the relationship between teaching and student outcomes
- iterative: involves several repetitions of key inquiry tasks, in a cycle from collecting evidence, to interpreting evidence, through to taking action, and returning to collecting evidence of its impact
- self-regulated: all actions are determined by the teacher
- collective or individual: involving a team of teachers within a school or personal to an individual teacher
- formal or informal: carefully planned and documented
- focused on knowledge generation and the advancement of the teacher's learning and practice.

Why Teaching as Inquiry?

Teaching as Inquiry is about powerful learning for you as teacher in order to improve classroom practice. Inquiry encourages questioning, exploration and experimentation in your practice. It helps you to make revisions to your teaching that lead to new insights into your practice and your students, and results in specific gains for students.

Research shows that classroom practice is the most significant school-based influence on student achievement. In turn, teacher learning and professional development have the greatest effect on classroom practice. Effective teaching will vary with context — including the students, subject taught, time of day, teaching environment and resources. This means that there cannot be a 'one size fits all' package of professional development for teachers. To learn how to improve their teaching, each teacher needs to investigate the impact of teaching practices on student learning in his or her context – the core of Teaching as Inquiry.

While Teaching as Inquiry is about teachers' learning, it is important to emphasise that the key aim is to better meet the needs of students. It is not focused on teachers' interests or a predetermined personal or school-wide professional development plan.

Teachers involved in inquiry report that it is a highly satisfying and energising form of professional development which supports their self-reflection and critical examination of practice, and encourages them to try new challenges and explore different ways of teaching.

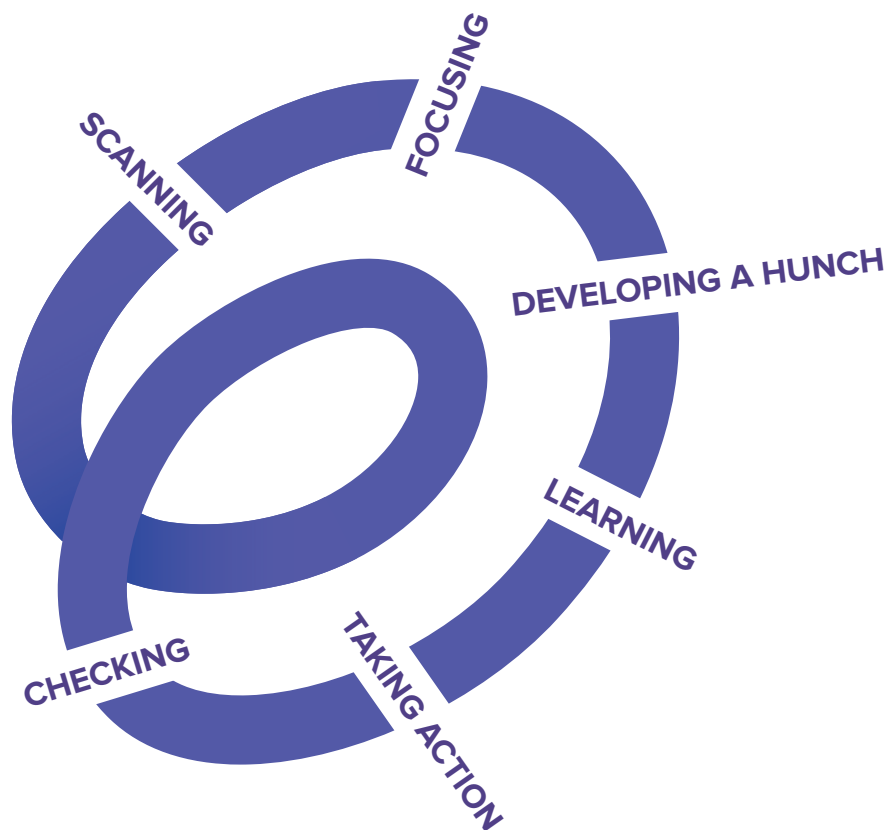
A spiral model for inquiry

In the New Zealand Curriculum, the teaching as inquiry process is divided into three related investigations:

- focusing inquiry
- teaching inquiry
- learning inquiry.

Timperley, Kaser and Halbert (2014) outline a useful expanded model, the spiral of inquiry, which extends the focusing, teaching and learning phases to include six phases:

- scanning
- focusing
- developing a hunch
- professional learning
- taking action
- checking



SCANNING

Key question: What is happening for students in your classroom?

Scanning is about getting an overview of the whole group of students — their areas of strength and need. This should be broad, not just focused on easily measured academic outcomes. It should also include student behaviour, engagement, learning dispositions and teacher practice. Evidence collection also involves getting the perspectives of learners, families and communities.

Why do it

Scanning establishes a foundation for your future learning and teaching. It helps you become aware of a range of impressions, opportunities, and challenges relevant to your teaching. It should enable you to ‘unpack’ curriculum requirements and come to understand where there are differences between students’ expected and actual learning, so that you can identify gaps in your teaching repertoire and plan appropriate action towards improvement.

How to do it

Question

- Develop an inquiry mindset. Be *curious* about learners and their learning.
- *Get started*. Scans may be imperfect initially, but the key is curiosity and an inquiring frame of mind.

Investigate

- *Seek evidence*. Don’t just rely on evidence already available.
- Aim to understand where students are in their learning, alongside the desirable outcomes at their level in national and school-level curricula. (It is best to use curriculum-related assessment information rather than normative achievement.) *Try to describe student learning as accurately as possible*.
- *Include diverse areas of learning* such as the arts, physical activity, and socio-emotional learning.
- Look at *students’ learning processes* (what a student is saying or demonstrating about his/her thinking during a task) as well as outcomes.
- *Informal assessment* can be just as important as *formal assessment*.
- *Invite student, family and community perspectives* (for example, through questionnaires), especially for evidence about areas other than achievement. Students will often willingly talk about what does and doesn’t work for them if listened to with respect.

Reflect

- *Analyse the evidence with colleagues*. Reflect on what the data might be telling you.
- *Stay open to new information* and insights: scanning doesn’t mean finding evidence to support the status quo.
- *Maintain high expectations for students*. Ask yourself whether the experiences of students reflect best practice for learning.

Take time. Don’t rush, but don’t get bogged down in this phase either. Get an overview, not perfect coverage. Expect the process of scanning in the first cycle of inquiry to take about two months.

SCANNING QUESTIONS

- *What is happening for students in your classroom?*

Possible questions include:

Current student progress and achievement

- What do your students already know?
- What do they need to learn and do?
- What should your students achieve?
- Where are they in relation to school goals and priorities?
- Which key competencies do your students tend to be most / least motivated to use?
- What contexts do they demonstrate key competencies in? What other contexts could be important?
- Can students comprehend the connections across content areas in their learning? How much time is spent making connections across learning areas?

Students' understanding of their learning journey

- Can your students tell you where they are going with their learning?
- Can they describe what they are learning, and why it is important?
- Can they explain what quality work would look like, and evaluate their own learning in relation to that?
- Are your students confident and comfortable in giving and receiving peer feedback?
- Do your students have opportunities to teach someone else and to make contributions to the community?

Non-cognitive outcomes

- Do your students have the social and collaborative skills needed for teamwork and citizenship?
- Can your students monitor and manage their emotions?
- How emotionally supported do your students feel? Can they name two teachers/adults who believe they can succeed?

Best practices for learning

- Do your students use a range of ways to demonstrate their learning?
- Do your students receive good quality feedback offering clear directions for improvement?
- To what extent are your students independent? How well can they self-organise their learning?
- What is your students' involvement in setting and managing their own learning goals?
- What is your students' involvement in other decisions about teaching and learning?
- What evidence might indicate students' current competencies?
- How engaged are your students? How would they categorise their engagement?
- Do your students feel their teachers know their individual interests and strengths, and what they find challenging or difficult?
- Do your students feel that their prior knowledge and cultural backgrounds are valued and utilised?
- Are all your students doing engaging and challenging work that is achievable and not overwhelming?
- Do students receive enough direct instruction?

Questions adapted from Centre for Education, Statistics and Evaluation (2016), Halbert & Kaser (2013), Ministry of Education (2011), Sinnema & Aitken (2016), Te kete ipurangi (n.d.), and Timperley, Kaser & Halbert (2014).

FOCUSING

Key question: *Where should you concentrate your energies in order to change the experiences and outcomes of your learners?*

Focusing is about establishing the priority for improvement. In this phase you use information from your scan about areas of students' strengths and needs so that you can determine where your time and energy need to be invested.

Why do it

The broad scan will have led you to many new perspectives on your students' experiences. The focusing phase narrows and hones the area of investigation. It involves breaking down larger issues into something more workable, and explores close-up questions that offer additional insights.

How to do it

Interrogate your evidence

- *Review the evidence and question your findings* from the scanning process. Ask yourself "How do I know?" and "Why does this matter?" Don't assume you've got it all figured out.

Select an area of focus

- Focus on areas of student learning that are most important and which you have the *greatest ability to influence*. (Be careful not to choose according to your own interests.)
- Ensure that your area of inquiry focuses on *investigating teaching* practice (rather than, for example, creating a unit of work).
- *Focus on what your scan shows is happening*. Don't introduce completely new areas unrelated to the scanning process.
- Consider whether there are common areas that you might *collaborate* with other teachers on.
- Ensure the selected focus is *manageable*. Select no more than one or two small and specific areas. Think deep and focused inquiry rather than shallow and scattered. However, don't constrain your area of focus too tightly. Sometimes areas are related or reinforce one another (for example, attitudes to mathematics and achievement in mathematics) and so can be tackled at the same time.
- Think about how to *build on strengths* and positives as well as *gain clarity on challenges*.
- Try to decide *what changes* you would like to see, so that in the checking phase you can assess whether your actions have made a difference.

Collect further evidence

- *Don't rush into 'doing something'*. Don't jump to solutions: make sure you understand the issues fully.
- *Collect further information* to clarify what is happening and ensure an accurate understanding of the situation. Ensure your analysis is thoughtful and based on multiple, rich sources of information.

FOCUSING QUESTIONS

- What popped out at you during the scanning process?
- What are the strengths that your students show? How might you build on these strengths? Are there things you can strengthen or do more of?
- What's not working well?
- Are some issues recurring, year after year, or pervasive across multiple classes or groups?
- Which issues consume the highest levels of energy, time and resources?
- In which learning areas have students had the least opportunity to apply their learning?
- What really matters most for students?
- What is going to make the biggest difference to learning for your students?
- What could you tackle effectively over the next few months?
- What is important (and therefore worth spending time on) given where your students are at?
- What do your students need to learn next?

Questions adapted from Centre for Education, Statistics and Evaluation (2016), Halbert & Kaser (2013), Ministry of Education (2011), Sinnema & Aitken (2016), Te kete ipurangi (n.d.), and Timperley, Kaser & Halbert (2014).

An outcome of the focusing phase might be a working map of the elements that comprise the area that needs improving, and identifying pathways toward potential approaches to trial. You should now have a good idea of what you want to focus your ongoing inquiry on and what it might involve.

DEVELOPING (and testing) A HUNCH

Key question: How is my teaching contributing to this situation?

In this phase you reflect upon how your teaching practices have contributed to student learning in the area you have identified as a potential focus for improving. The evidence you have uncovered will not provide absolute answers about what is going on for students, and you will have to make guesses or develop 'hunches'. Framing your theories and beliefs as hunches enables you to subject them to scrutiny.

Example hunches

- Is our lack of confidence in teaching the process of inferencing contributing to students' difficulties in this area?
- If I ask students to articulate their understanding orally before writing, then their work improves.
- If we provided choice in assignments, such as how many or which examples to complete, then students would be more likely to complete their homework.

Why do it

Hunches are an opportunity for you to put your teaching intuition into play, based on your observations and experiences with this group of students. The aim of this phase of the inquiry is to generate a plausible theory about how particular teaching practices (current or desired) influence learning and outcomes, with which you can structure the rest of the inquiry. You need to test your hunches by seeking evidence and determining which hunches are most accurate. You should be reasonably confident about what's causing particular outcomes before you start experimenting with teaching practice in the next phase.

How to do it

Express hunches

- Find a way to *question your teaching* beliefs and behaviours, which enables you to be honest.
- Remain *positive and constructive*. (This is not an opportunity to complain about things you have little control over, to blame others or to vent your feelings about issues.)
- *Think about, and make conscious, your hunches* about how you have contributed to existing student outcomes, particularly *reflecting on practices you can do something about*.

Interrogate your thinking

- *Pose questions to critically examine* the key part of your hunch about the relationship between teaching and learning outcomes.
- *Consider all possible interpretations* of the evidence, and develop multiple explanations which may turn into new hunches.
- Develop a collective set of hunches by *collaborating with others*.
- *Be cautious about coming to conclusions*: for example, there might be a correlation between factors and outcomes, rather than causality.

Create hypotheses

- Construct “*If...then...*” statements, for example, “If I take this action ... then the following outcome will result...”, and list evidence that supports and does not support this statement.
- Be *courageous and confident* about putting your hunches on the table to discuss with others, and challenging well-established routines and structures.
- Consider how you might (fairly quickly) *test* out these hunches.

Test hypotheses

- *Seek out evidence* to support or dispel your hunches. *Consider all data*, not just the data that confirms your hunches. Use evidence to confirm or modify a hunch, or reject it and develop a new one.
- Don’t worry if none of your hunches have any evidence base. *Move on to the next phase*, professional learning, which may help you to devise and test new hunches.

Five areas for developing hunches

The hunches you develop usually fall into one of five categories. Use this list to develop hunches to explain what you have found out.

1. Curriculum
2. Instruction (including materials)
3. Teachers
4. Students
5. Infrastructure (for example, timetables, classroom set-up)

PROFESSIONAL LEARNING

Key question: *How can I learn more about what to actions to take?*

In this phase, you plan how you can deepen your professional learning in order to bring about the changes in student learning you identified earlier, and how to translate what you learn into practice.

Your professional learning will involve drawing on research evidence, as well as your own and other teachers' experience. You may revisit your hunches as your growing knowledge enables you to construct more hunches and theories to test during the course of your inquiry.

Why do it

The aim of this phase is to increase your knowledge about how to bring about the desired changes in your students' learning.

How to do it

Create a plan

- *Plan with 'the end in mind'*: Plan your desired outcome for students (including what the evidence would show this was happening). From there, work out the skills, knowledge and dispositions students need. Then you can determine a desired outcome for your teaching, and the skills, knowledge and dispositions that you as a teacher need.
- *Decide what you need to learn*, and how to learn it: Create SMART (specific, measurable, attainable, results-oriented and time-bound) goals.

Find relevant resources

- *Consider what you already know* that might be useful.
- *Identify resources* to inform your thinking, and plan strategies for your learning (for example, creating a study group, participating in an online community).
- *Access current knowledge and expertise* in your area of focus to evaluate strategies you are considering.
- Ensure teaching strategies are *evidence-informed* and *fit with your context*.
- *Link opportunities for professional learning to your inquiry* focus. (Don't just select professional learning activities that are convenient and readily available, or recommended or imposed by someone else.)
- Consider who you can *link with for support*, and what resources are available. Think about what research evidence you can gain from professional discussions.

Engage critically with ideas

- *Think beyond obvious solutions* — draw on colleagues, reading, research, resources and experts to expand your thinking.
- *Be open-minded.* Gather ideas from all sources and guard against being drawn to familiar ideas that fit with your existing beliefs about the right way to teach.
- Aim to *understand new ways of doing things* in a deeper way, including their purposes and underpinning theory.
- *Be aware of the fallibility of research* — research findings are always conjectural, and not necessarily transferable to your context.
- Consider what connections there are between your *context* and that in which the research was undertaken. Think about how you might adapt new knowledge to make it relevant to your particular teaching environment.
- Identify what implications the knowledge has *for your teaching*; consider strategies or actions which will implement it.

Revisit

- *Allow frequent opportunities to engage with new learning over an extensive period of time.*
- *Sustain your learning over time* and consider how you will maintain motivation. The integration of substantial knowledge or very different ways of working and thinking will take at least one year, and often two or three years of engagement, for real transformation to occur and for that learning to become embedded in your teaching routines and practices.

Potential sources for professional learning

- the accumulated knowledge of teacher colleagues within your school, association or online community (for example, engaging in professional discussions or observing them teach)
- practical knowledge gained through workshops and courses
- academic research – found in books, educational journals and in summaries on portals like the Education Hub; presented at conferences
- school records and data

Consider also looking at:

- other schools with a similar focus
- forming study groups and collaborative work
- partnerships with university researchers
- school libraries.

TAKING ACTION

Key question: What will you do differently to make enough of a difference?

Taking action involves learning more deeply about new ways of teaching by exploring different teaching strategies in action, informed by a thorough understanding of why they might be effective in your teaching context.

Taking action is a much more informed and critical process than simply implementing new strategies or trying out innovative or exciting ideas suggested by research or teaching colleagues. It also takes account of contextual knowledge, and complex relationships between teaching and learning, as well as student voices in decision making.

Why do it

No matter strong the support or evidence is in another context, every idea and strategy needs to be tried out and evaluated for your students.

Deep learning occurs when we try something out in action, reflect on how it went, discuss it with others and get their perspectives, and then try it out again. In this inquiry model, taking action occurs after much reflection on your students and your own teaching actions and beliefs, and after carefully considered learning, so it prevents you jumping in too quickly with ill-considered ideas, which are usually followed by disillusion and desire to give up further attempts.

How to do it

Select

- Select from the knowledge and ideas you have learned and put them into *focused, informed action* to test out. Ensure your inquiry is tight, focused and manageable.
- Focus on *outcomes*, rather than activities.
- *Avoid pre-packaged programmes* which rarely are able to address the specific dimensions of a local problem.
- Be *systematic, targeted and explicit* about what actions you are taking and how you are going to monitor and modify them.
- *Be aware of the assumptions and beliefs* underpinning your plan for action and carefully consider the validity of these.
- Have a *planned timeframe* which includes monitoring strategies.
- *Set goals for your teaching practice* as well as for student outcomes.
- Ensure there is *alignment between* the *needs* the inquiry is responding to, the resources available, the actions to be undertaken with those resources, and how these actions will deliver outcomes.

Plan

- Think about how you will *communicate* to parents and students that you are going to try something new and why. Find out what they think.
- *Build trust*. Be aware that taking action and implementing change engenders feelings of vulnerability.
- *Encourage students to be involved* in the inquiry and to take responsibility for goals they have identified with you.
- *Anticipate potential barriers* and consider strategies to overcome them.

Trial new actions

- Try out your informed strategies and actions.
- *Expect dips and plateaus.* When progress dips, clarify and refocus your efforts with the intended outcomes. See plateaus as opportunities to consolidate gains.
- *Take risks, make mistakes and try again.* Have courage and experiment.
- *Support teaching colleagues in their inquiries,* and be there to support each other when the going gets tough.
- *Celebrate successes* and expect some failures.

Monitor your impact

- *Engage in ongoing monitoring and evaluation.* Check what is going on for learners as a result of your actions. Keep a diary to note the progress of an intervention, and use it as a tool for reflection.
- *Ask students, review their work, or observe them* to see if they are responding differently.
- Create opportunities for *observation* (peer observation or video recording: these are less intimidating when you take charge and determine what will be observed) to aid your reflection. Observations will enable you to develop a sense of what new practices are like from the students' perspectives.
- *Review the use of the strategy or action with others.* Ensure you have a schedule for reporting to others which helps maintain momentum. Create opportunities for dialogue to get ideas from other people.
- *Evaluate actual outcomes rather than your intentions.* Ask yourself "How do I know?"

Adjust

- Consider how you might need to *modify the strategy* or action. Try it again with modification.
- *Show persistence* as you inquire again and again.

A tool for successful peer observation

Create an evidence-gathering tool by listing the elements important to your inquiry. Then use peer or video observation to measure the extent each element is present in every lesson. This provides a foundation for readily sharable experiences, grounded in evidence, as the focus for teacher discussion. It might also be used as a self-checking tool while observing a video recording of your practice.

CHECKING

Key question: Have we made enough of a difference?

This phase involves you checking the effectiveness of the actions you took in the taking action phase, by assessing the impact on students and their learning. You need to collect and evaluate information on the impact of your actions on your students' learning: the learning environment and student outcomes. This will inform where your inquiry might go next.

Why do it

This is a crucial phase. In the scanning and focusing phases you will have already made decisions about the methods and evidence you will need in order to check the impact of your inquiry. The checking phase enables you to determine what inquiry comes next. It is not the last phase of your inquiry, but a bridge between this part of the inquiry and the next part of the learning cycle.

It also brings intellectual discipline to your inquiry as you systematically analyse data and other information to discover which strategies have been successful and how they might be improved.

How to do it

Clarify what counts as success

- *Check back to the intentions* for improvement identified earlier in the spiral. A lack of clarity about what the action was intended to achieve makes it difficult to measure its success.
- *Maintain high expectations* that your inquiry-led actions should make a significant difference for all your students.

Determine methods and timeframes

- Adopt the *data and methods of evaluation that best suit your evaluation question*. Consider data of all kinds: formal test results, accounts of learning from work samples, images, observations, ongoing assessment information, and student reflections or surveys.
- *Consider creating your own inquiry tool*, such as a questionnaire.
- *Involve students and their families* in the checking process. As well as finding out about student achievement or progress, investigate students' experiences; for example, the impact on engagement, motivation, enjoyment or their perception of themselves as learners.
- Try to search not for evidence that proves your actions to be effective but instead *search for evidence that suggests the approach might not be working* (for example, for particular groups of students or specific subjects).
- *Consider different levels of impact* – the impact on groups, classes, and individual students as well as particular gender or cultural groupings.
- Set up a *baseline or comparison group* or both to assess impact. Examine the same sources of evidence that you used in the scanning and focusing phases to see what gains the changes have made for your students. (Bear in mind that while taking before and after measures is useful, outcomes will change over time without intervention, just through the course of normal classroom instruction.)

- *Perform checking regularly* so that adjustments can be made in a timely fashion. Don't leave checking for the end of the year as there is then no opportunity to improve on issues that are identified. Make informal checking integral to all phases of the spiral process.
- *Give your innovation and change time* to have an impact, but don't leave it too long in case the strategies you are exploring are ineffective. Generally, a school term is a sufficient period of time to trial a new practice before beginning to check its impact.

Investigate findings

- Pay attention to *evidence that indicates the impact may not have been as positive* as anticipated.
- *Ask critical questions*, and don't use checking to justify your actions.
- *Be open to what the evidence says* about the effects on your students' learning.
- *Celebrate learning gains*.

Adjust practice

- *Make adjustments immediately*.
- If you do not get the results you hoped for initially, remember there is always something to learn. Deepen your processes of observation, listening, and critical thought. *Be patient, and be willing to risk being wrong and learn from failure. Try again.*

General checking questions

- What happened as a result of the teaching?
- How effective has what you learned and put into action been in promoting your students' learning and well-being?
- What learning happened for your students?
- What did you learn about your students?
- Did the changes made achieve the intended outcomes? If not, why not? If so, how will you sustain the effective practices and what are your next steps?
- Did the change impact all students? In what ways? Or why not?
- Why is it that your teaching was less successful for this group of learners compared to another?
- Who did the changes work for? Under what circumstances?
- Why is it that your teaching was successful in one aspect, but not in another?
- Did the changes have any unintended (positive or negative) outcomes?
- Is this the most efficient way to use limited resources?
- What different approaches could you try? Should you ask the students?
- What are the implications for future teaching?
- What can you adapt, refine or revise in your understanding of your students' learning?
- What will you do next to ensure that your students continue to achieve?
- What new goals do you want to set? (Return to scanning)

Questions adapted from Centre for Education, Statistics and Evaluation (2016), Halbert & Kaser (2013), Ministry of Education (2011), Sinnema & Aitken (2016), Te kete ipurangi (n.d.), and Timperley, Kaser & Halbert (2014).

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