Using inquiry to document changes relating to SiE

(May 2016 version)

Introduction

This document discusses some ways a **learning inquiry process** can be used to document the changes occurring in classrooms as part of Sport in Education (SiE). It includes information on:

• Teaching as inquiry processes (including learning inquiry)

• Collecting evidence for learning inquiries about:
      1) changes to student engagement
      2) changes to student achievement and learning
      3) development of students' competencies through leadership and coaching experiences

Teaching as inquiry
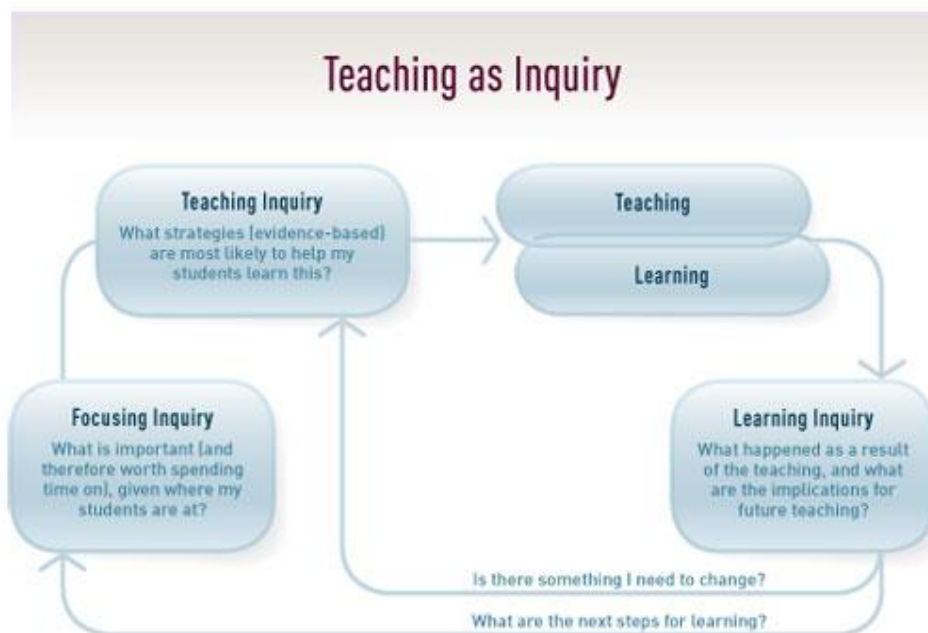
What is teaching as inquiry?

The NZ curriculum describes teaching as inquiry as a process that supports teachers to ensure their pedagogy is effective for a range of students. Through inquiring into the impact of their teaching on students, teachers strengthen their ability to create learning experiences that support all learners. The teaching as inquiry process has three parts (**Focusing inquiry**, **Teaching inquiry**, and **Learning inquiry**; see diagram below).

The **Focusing inquiry** is about identifying students' learning needs. In the **Teaching inquiry** part of the process teachers use evidence from research and practice to plan new approaches to support learning (in the case of SiE, one example is topics or units that use sports contexts in Maths and English).

The **Learning inquiry** aspect of this process is most relevant for identifying examples of good practice that occur as new approaches are trialled as part of SiE. This part of the process is where we consider what evidence to collect about learning, and what this evidence tells us about what students gained from the learning situation.

Learning inquiry: What happened as a result of the teaching and what are the implications for future teaching?
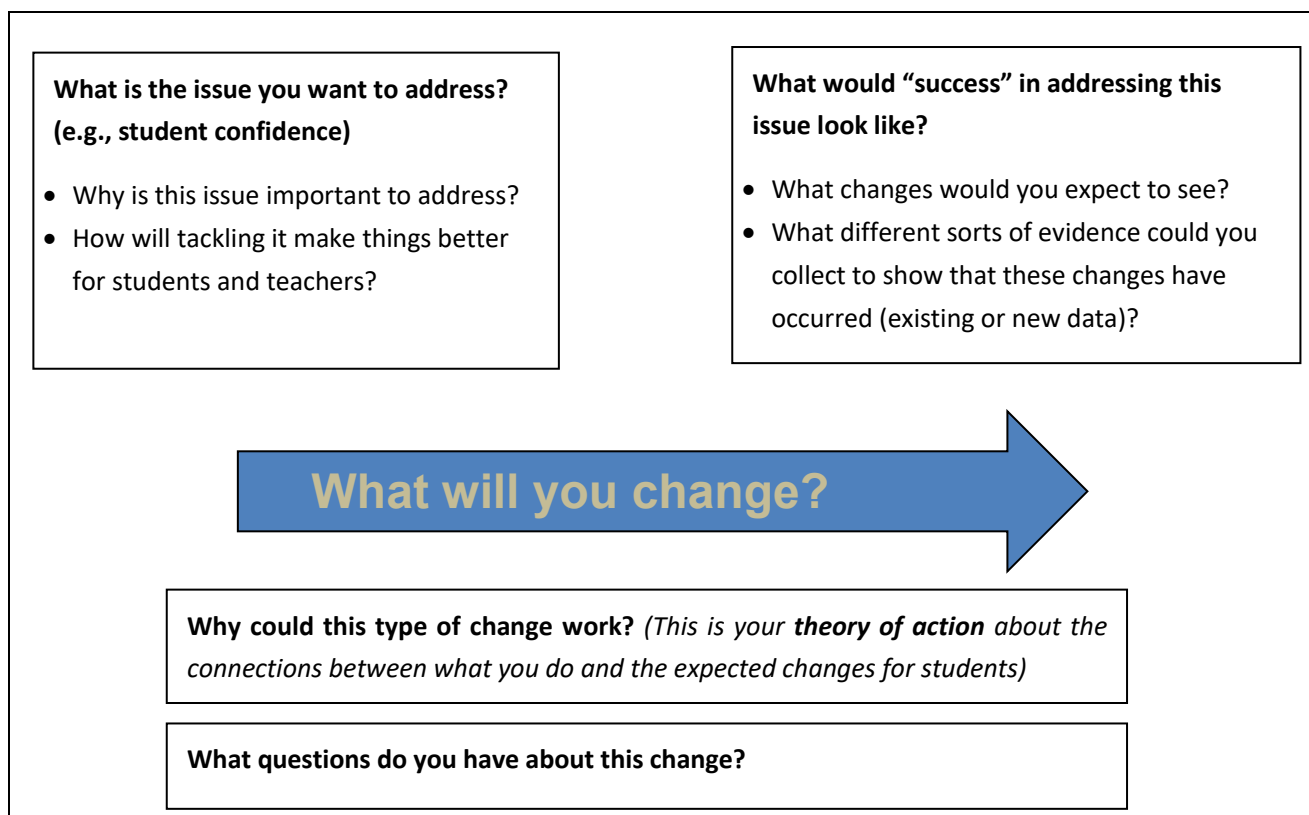
In a *learning inquiry* the teacher investigates the success of the teaching in terms of the prioritised outcomes using a range of assessment approaches. They do this both while learning activities are in progress and also as longer-term sequences or units of work come to an end. They then analyse and interpret the information to consider what they should do next.

From: http://nzcurriculum.tki.org.nz/Curriculum-documents/The-New-Zealand-Curriculum/Effective-pedagogy (p.35, NZC)

Refining the focus of your inquiry

The model below can be used to help refine the focus of your inquiry and develop inquiry questions.

What is the issue you want to address? (e.g., student confidence)

- Why is this issue important to address?
- How will tackling it make things better for students and teachers?

What would "success" in addressing this issue look like?

- What changes would you expect to see?
- What different sorts of evidence could you collect to show that these changes have occurred (existing or new data)?

What will you change?

Why could this type of change work? *(This is your **theory of action** about the connections between what you do and the expected changes for students)*

What questions do you have about this change?

What are some things to consider when planning a learning inquiry?

Some things to think about as you plan and carry out a learning inquiry are:

- **What are the big questions we have about student learning?** What is most important? What changes to student learning are expected?

- **How will we support each other?** Research suggests that inquiry processes are best done within the framework of a professional learning community in which teachers support each other, share ideas and data, and engage in critical reflection. What processes will you use to share ideas with colleagues and get feedback? Will you also have a critical friend or mentor? How often and where will you meet?

- **How will we record our inquiry journey?** Will you use a shared space or an individual reflective journal, blog or e-portfolio to record your journey and thoughts along the way?

- **What different sources of data will we collect?** Gathering a range of data can assist you to answer your questions about learning. Gathering more than one source of data is likely to strengthen your inquiry.

- **How will we make sure the data we collect is consistent across classes?** If teachers in different classes are collecting similar data, it is helpful to develop a shared template or way of collecting this information.

- **How will we gather feedback from students about the changes we are making?** Feedback from students is one important source of data about the success of new approaches. This feedback can assist you to improve approaches over time.

- **How will we share and analyse data and get feedback from the team?**

- **What processes will we use to make sure we use our inquiries to improve curriculum and lesson planning?**

Things to look out for

- You may have many questions about students' learning that are important to you. To help focus your inquiry, choose a **small number of questions that are the most important**.

- There are many different ways you can collect data. You will need to decide your main priorities that are related to your big questions. **It is important that any data collection process is manageable**. One source of data for your inquiry is data that already exists in your school. This includes usual classroom assessments and school-wide data such as attendance rates.

- Don't worry if you don't "get it right the first time". Inquiry is about taking calculated risks and engaging in cycles of change.

Teaching as inquiry web resources

- This site includes case studies of inquiry processes in secondary schools, and practical tools for teachers:
  http://assessment.tki.org.nz/Assessment-in-the-classroom/Teaching-as-inquiry/
- This site provides teaching as inquiry resources with a key competency lens:
  http://keycompetencies.tki.org.nz/In-teaching/Discussion-tools/Teaching-as-inquiry
- Claire Amos talks about a teacher as inquiry process used by curriculum teams at Epsom Girls' Grammar:
  http://edtalks.org/video/using-teaching-inquiry-guide-elearning-action-plan
  http://nzcurriculum.tki.org.nz/Curriculum-stories/Media-gallery/Effective-pedagogy
- The Team Solutions site offers links to lots of different teaching as inquiry resources:
  http://teamsolutions.wikispaces.com/Teaching+as+Inquiry

Teaching as inquiry articles, reports and books

Amos, C. (2010). Using Teaching as Inquiry to Improve Student Outcomes. *English in Aotearoa*, Issue 71 (Jul 2010). http://search.informit.com.au/documentSummary;dn=385908449342601;res=IELHSS

This article describes an inquiry process and discusses questions teachers can use to guide inquiry.

Cardno, C. (2003). *Action research: A developmental approach*. Wellington: New Zealand Council for Educational Research.

This book provides a practical guide and frameworks for teachers who are undertaking research.

Erb, W. (2009). *Teaching as Inquiry. Ask yourself the big questions*. NZ Gazette, July 2009. http://www.edgazette.govt.nz/Articles/Article.aspx?ArticleId=7880

This article talked about the different stages of the teaching as inquiry process in NZC.

Piggot-Irvine, E. (Ed) (2009). *Action research in practice*. Wellington: New Zealand Council for Educational Research.

This book outlines a model for conducting action research and presents a series of teacher case studies

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration (BES)*. Wellington: Ministry of Education. At: http://www.educationcounts.govt.nz/__data/assets/pdf_file/0017/16901/TPLandDBESentire.pdf

This report outlines the place of teaching as inquiry within effective PLD processes.

Collecting evidence for teacher learning inquiries

Some things to consider when planning an inquiry are discussed below.

How do we know if the changes we see are due to SiE activities?

For a number of reasons it can be difficult to say for certain that the changes that you make to curriculum and teaching practices are **causing** any changes you see in student achievement and engagement. For example, you might find that student achievement data is changing as you trial SiE activities. Although these changes appear to be related this does not necessarily mean that one **caused the other.** One reason for this is that most schools have many inter-related activities underway at any one time. Any number of initiatives could be contributing to any changes you see. For example, a number of SiE schools are also part of PB4L School-Wide.

Some ways to address this challenge include:

- **collecting a range of data from a variety of sources (called triangulation).** If the data from similar sources shows a similar picture – then you can be more assured that the changes you are seeing are related to the new ideas you are trying.

- asking **students for their feedback** about what has changed about their learning situation (this information can help you understand any patterns you are seeing in assessment data).

- collecting data in a way enables you to **compare SiE students' performance or views** over time or with another group. This could include:
  - Comparing SiE students' **current performance on a sports-focused task to their past performance on a similar task** that did not have a sports context
  - Comparing SiE student data with data from students who are not experiencing the changes you are trialling. This could include:
    - o Comparing SiE students' current performance or views about learning to similar peers
    - o Comparing different groups of SiE students over time, or to patterns observed for past students

(see the *Overview of Me and My Class* for more information about comparing groups).

How long will it take before we see change?

It can take a while to make changes to practice. Most studies suggest it takes 3-5 years to fully embed new practices in schools.

A study led by Helen Timperley[1] showed that a group of teachers who attended literacy PLD spent 1-2 years trialling ways to make changes to their literacy teaching. It was 3 years before any substantial changes were clearly obvious in student achievement data.

However, it can be possible to see more immediate changes in student data, if an initiative or change is intensive.

Things to look out for

It is important not to feel disappointed if you do not get the results you expect in the first year. Making changes to practice is best seen as an ongoing cycle. The first year is usually a **set up year** when schools trial new approaches and ways of collecting evidence about these. During the next two years the focus can shift towards more formally exploring the impact of changes to practice on student achievement and engagement. If you see similar patterns over the next 2 or 3 years from a range of data sources **then you can be more assured that the changes you are seeing in student achievement and engagement are related to the new ideas you are trying.**

When you are in the middle of trying new ideas, it can be challenging to find a space to step back and reflect on what is happening. A process that gives you space to share data with colleagues and hear their feedback can support critical reflection.

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[1] Timperley, H. (2003). *Shifting the focus: Achievement information for professional learning. A summary of the Sustainability of Professional Development in Literacy: Parts 1 and 2.* Wellington: Ministry of Education.

Which students should we focus on?

For your learning inquiry, you will need to decide the extent to which you are going to collect data about the whole class or a target group of SiE students (e.g., students who appear disengaged from learning or appear to need more support with learning.)

Why focus on the whole class?

Having a focus on the whole class enables you to explore changes for all students. Collecting data from a larger number of students also gives you more assurance that any patterns you see are not due to chance. If you use whole class data that you are going to collect anyway (such as assessment results), extra work is kept to the minimum.

Why focus on target students within a SiE class?

Focusing on the experiences of a few target students within a SiE class can enable you to do a more in-depth analysis of change. This approach is often used in literacy professional development to assist teachers to focus on the students who are the most in need of support. If you focus on a small number of students it is easier to develop a quick system for noting any observations about how students responded to lessons or particular learning experiences.

Things to look out for

Activities that work well with one group may not work as well with another group. If you have a sole focus on target students this may not give you information about how other students are responding to new learning experiences.

How could I document my learning inquiry journey?

Using self-reflection to document your inquiry journey

Documenting your journey, including the decisions and changes you made to your practice along the way, can assist you with your learning inquiry. You can also document your observations about any changes you are starting to see in students' learning, achievement, or engagement. Tools like reflective journals, e-portfolios, or blogs are commonly used for this purpose.

Your school may have developed a process for teachers to record their learning reflections. Alternatively you could work together to develop a shared format for SiE teachers to use. The Most Significant Change (MSC) technique below could be used to as a tool to support groups of teachers to engage in shared reflections and to document change.

Things to look out for when completing reflective journals

People tend not to complete reflective journals if they take too much time. It is important that whatever process you use is manageable. **Remember to keep it simple; reflections do not have to be complex** *(see example below).* Reflections are best done as near to the action as possible. It can be helpful to develop a system for noting your observations as soon as possible.

Example: Reflection questions for an e-portfolio or blog

1. **What changes am I planning?** (To curriculum planning, teaching practice or assessment?)
2. **Why am I making these changes?** (What assumptions do I have about the students I am working with and what the changes I am planning will achieve? What ideas or evidence did I use to develop the planned changes?)
3. **What happened?**
- Did I change my teaching practice? How?
- What formal and informal evidence do I have that the changes are assisting student learning? What do different data sources tell me? E.g.:
    - o My observations on teaching and learning
    - o Students' feedback and reflections
    - o Comments or observations from other teachers (you may want to invite a member of your support team to observe lessons and give you feedback about your questions).
    - o Achievement and engagement data

4. **What does this mean?** (Critical reflection – Does this data show what I expected? Was I surprised by anything? Has this changed my beliefs about teaching?)
5. **What happens next?** What changes will I make next year or for the next unit?

Existing resources

A range of sites have structures to support teacher reflection. One example is the online reflective journal at: (http://myportfolio.school.nz/)

Examples of teacher inquiries can be found at: http://nzcurriculum.tki.org.nz/Curriculum-stories/Case-studies/Teachers-as-learners-Inquiry/Learning-stories

Example: Most Significant Change (MSC) technique*

What is it?

Most Significant Change (MSC) is a story-based technique for identifying the changes that are happening as part of an initiative. MSC is a form of continuous inquiry during which groups of stakeholders search for significant program outcomes (stories of change) and then discuss the value of these outcomes in a systematic and transparent manner. Its primary purpose is to facilitate improvement by identifying what changes or outcomes are important and valued and focusing the direction of work towards these outcomes. MSC was developed by Rick Davies and expanded on by Jessica Dart.

How do you do it?

The general MSC process can be described using ten steps. These are:

1. Starting the process and raising interest

2. Defining the domains of change: What is the focus? What changes are we interested in evaluating and collecting stories on?

3. Defining the reporting period: How often will we collect stories about the domains of change?

4. **Collecting the significant change stories:** These stories are collected from those most involved in the change by asking a simple question such as: *"During the last month, in your opinion, what was the most significant change that took place in this class or for this group of students?"*

5. **Selecting the most significant of the stories:** This involves deciding on a group process for reviewing the stories and selecting which are the most important

6. Feeding back: If the initiative involves a lot of people, the results of the selection process can be shared

7. Verification of stories: One way the stories can be verified is by checking whether other people (e.g., other teachers, students, or parents) have also noticed the changes described in the selected stories

8. **Quantification:** MSC is mostly about collecting qualitative evidence in the form of stories. However where quantitative data exists, it is important to use it as one form of verification of the stories. (Different types of school data are suggested in this guide)

9. Secondary analysis: The themes that emerge across all the stories can also be analysed to look for commonalities and differences between teachers' and students' experiences in different settings

10. Repeating and revising the MSC process

Why is the MSC technique useful?

The MSC approach can be useful as an evaluation technique which supports people to work together to share important stories and clarify what are the most valuable aspects of the changes they are seeing. In schools, MSC could provide a more structured format to collect and analyse day-to-day reflections on practice. Students could also be involved in this process by identifying the most significant change for their learning.

What to look out for

MSC can be more effective when combined with other data sources. MSC was developed to assist people working on development projects that were likely to have a systemic effect and a wide range of expected and unexpected outcomes (e.g., rural community building). These projects could impact on the physical environment as well as a broad range of stakeholders. However, there might not be much available quantitative data as evidence of change. In schools, key outcomes are perhaps easier to define (e.g., changes to student achievement, engagement or retention). There are also existing data sources that give information about these expected outcomes (e.g., student achievement data). Therefore this data should also be used as part of the MSC process to confirm the stories of change (i.e., in Step 8: Quantification).

Resources

*This description of MSC was adapted from material provided by the developers of the technique including:

http://www.clearhorizon.com.au/wp-content/uploads/2008/12/dd-2005-msc_user_guide.pdf

For a quick start guide to MSC see:
http://www.clearhorizon.com.au/resource-hub/flagship-approaches/msc-resources/
For more detail about MSC see:
Rick Davies and Jess Dart (2005) "The Most Significant Changes (MSC) Technique: A Guide to its Use" .
http://www.mande.co.uk/docs/MSCGuide.pdf

Will student feedback assist my inquiry?

As well as using your own reflections as data, you can also collect information from students about their views on teaching practice in target SiE classes or about other SiE activities.

Why is student feedback about pedagogy useful?

It is important that students see teachers as learners. One way of modelling the idea that you are a learner is through telling students what you are trying to work on and improve, and then asking for their feedback. Students can give you feedback about the activities and contexts they found engaging and which assisted their learning. Their perspectives can be a very effective form of feedback about whether the changes you are making are supporting students' learning.

Involving students in the design and improvement of new approaches is likely to increase students' interest in the learning situation. Some strategies for gathering student feedback are suggested below and elsewhere in this document.

 Two approaches are:

- Using the *Me and My Class* or *Me and My School* surveys. *Me and My Class* collects data from students about their engagement in a particular class and their perspectives on effective teaching practices *(see the Me and My Class overview for more information). Me and My School* is focused on engagement at school overall (rather than relating to a particular class or subject).
- Asking students for feedback about the contexts and teaching approaches used during units of work *(see strategies below).*

Examples of strategies for gathering student feedback on teaching practice

Leaving slip/"Ticket out the door": What is this and why is it useful?

"Ticket out the door" is a quick formative assessment that can be used to check understanding and engagement during a class. It can also be used to hear students' feedback on pedagogy and activities. In the last few minutes of each class students are asked to answer one or two questions. They write their answers on a post-it stickie or piece of paper (the ticket). The teacher collects these as students leave the class and uses this feedback to plan the next classes. Technologies such as tweeting or texting can also be used instead of a "ticket" of paper.

Examples of questions about learning and understanding are:
- Two big ideas I learnt today were…
- If I was going to tell my friends one thing about what we learnt it would be…
- I would like to learn more about…
- One thing I found hard to understand was…

Examples of questions about engagement and pedagogy are:
- The thing that I found most interesting today was….
- The _____strategy we used help me by….
- My rating of today's class is 5 (really interesting) 4 3 (middle) 2 1 (not interesting)
- The thing that most helped my learning today was…
- One thing I would like to change to make learning better is…
- The activity I enjoyed the most today was…

Straw poll: What is this and why is it useful?

A straw poll is a quick vote at the end of class about an aspect of learning or a question that is posed by the teacher. Students can vote using a thumbs up, or thumbs down, system. A straw poll can be used to give quick feedback about students' level of engagement in learning activities, the extent to which they feel they have mastered the lesson content, or to collect feedback about what concepts or activities students might want to revisit.

Brainstorms: What is this and why is it useful?

Students can be involved in class brainstorms about topics designed to support teachers to plan the next lessons or next year's lessons (e.g., The areas of sport I am most interesting in learning about are…? The areas of sport I think next year's students will most enjoy are…?)

Existing resources

For ideas about "Ticket out the door" questions see:

http://www.district6.org/cra/wp-content/uploads/2009/02/Ticket-Out-the-Door-Ideas.pdf

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Student reflections: What are they, and why are they useful?

Including a focus on SiE activities within end of unit reflection processes can support student learning as well as give you feedback about the changes you are making. Supporting students to reflect on their learning is one way of encouraging students to be self-managing learners. An analysis of students' reflections can give you feedback about how students perceive SiE activities.

Example: SiE students could be asked to complete reflections or take part in discussions or think-pair-share exercises about their learning in SiE classes.

Question prompts for an end-of-unit reflection, discussion or think-pair-share exercise

• The most important things I learnt during this unit were…
• A focus on sports helped me learn maths/English because…
• The thing that most helped me to understand_____ was…
• The things I enjoyed most about the _____ unit were…
• I would like to learn more about…
• One thing I would like to change to make learning better is…

Using technology to capture student reflections

A joint class learning log or facebook page could be set up for students to post comments and responses to reflection questions. Using a blog enables you to keep a record of students' reflections over time.

Why are reflections useful for evaluation?

Analysing the responses of the class or target students can give information about how sports contexts are supporting learning and what aspects of learning are most engaging students. This information can assist you to see whether the approaches you are designing are effective. This information can also be used to improve approaches for the next unit of work.

Things to look out for

Students may need to be provided with models that show ways of giving effective feedback. One way to do this is through co-constructing ground rules and examples of effective and not so effective feedback.

Students may also not be clear about which processes support their learning or may perceive the learning situation quite differently to how it was intended. These differences in perceptions can give you information about aspects of learning that might require more explanation. The more specific you can be about the aspects of learning you are working on, and what effective learning looks like, sounds like, and feels like, the more insightful students' comments are likely to be.

As students become experienced at giving feedback they can also get more discerning. This is helpful as it is likely to improve the quality of their feedback. You may also find you start to get many more suggestions about what could be improved!

Students may also offer feedback about activities that may not necessarily assist their learning in relation to the approach you are trialling (e.g., I want to spend more time talking to friends/using computer). Therefore it is important to have a view about what perspectives can be used to improve approaches and which are not so useful.

The Hawthorne effect

The "Hawthorne effect" refers to the situation in which people modify or improve their behaviour because they know they are being watched or studied. Once the study finishes they return to previous patterns. One main focus of SiE is on supporting disengaging students, therefore this effect may be less of a concern as this group of students are less likely to have a desire to act in this way. For this reason, it is probably unlikely that any changes to student achievement data will be due to the Hawthorne effect.

It may be important to consider this effect when asking students for their feedback about their learning experiences or any changes you are making. They may wish to provide the desired answers. To minimise the likelihood of this happening, you could use approaches that encourage students to provide a balanced perspective. Students could be asked to identify which aspects of learning they liked the most and the least. They could also be asked what could be improved. Or they could be asked to stand in a continuum line to show their level of interest or engagement in a new approach.

Collecting evidence for learning inquiries

1) How can we collect evidence about changes to student engagement?

Assumptions about how the use of sports' contexts in English and maths might impact on **student engagement**

- Using sports' contexts for learning can offer relevant and **authentic learning contexts** for study that make closer connections to students' interests.
- Learning which is more closely associated with students' interests is likely to increase **engagement** (as well as understanding of the learning context, and therefore hopefully will **improve achievement**).

Key question 1) Is the use of sports' contexts making any difference to **student engagement** in learning in Maths and English?

If sports' contexts are engaging students in class learning you might expect to see:

- Increases in student-initiated dialogue about a topic in class
- Increased reports of enjoyment of learning activities (e.g., Students may volunteer this information. They can also be asked for their views about how engaged they were in learning a particular unit or in a class)
- Increased on task behaviour in class (including increased completion of assignments, homework, or NCEA standard requirements)
- Increased voluntary engagement in learning (e.g., volunteering to extra activities or reports of continuing learning in students' own time)
- Higher attendance rates in class
- Lower levels of behaviour incidents in class

Some ways of evaluating changes to engagement

Strategies for collecting students' self-reports of engagement include:

- Using the "ticket out of class" or "straw poll" strategies to quickly gauge students' level of interest in the lesson context.
- Noting student comments about their enjoyment and interest in learning activities in a reflective journal or e-portfolio.
- Using repeat versions of the Me and My Class survey. This can be used as a measure of student engagement in a particular class. The survey also asks questions about effective teaching practice in a class *(see the Me and My Class overview for information)*
- Asking students what they are finding engaging or about their level of engagement via reflections, group discussions, or through use of technologies such as Wordle or social media *(see examples below).*

Strategies for evaluating changes in the amount of student dialogue about a topic include:

• Teacher peer observations could be used to record the level of conversations and who initiates these, the teacher or student?

• Noting evidence of increased dialogue by target students in a reflective journal or e-portfolio.

Strategies for evaluating changes in attendance and behaviour include:

• Compare the assignment completion/attendance/behaviour incidents rates for a target class during a SiE unit of work with **data from the same class prior** to the unit of work.

• Compare the average assignment completion/attendance/incidence rate for the target class or unit **against average school rates for similar classes this year or for the last few years**.

Using technologies to document students' engagement in a lesson and to collect feedback on teaching practice

Why is it useful to use technologies to document engagement?

Technology can be used as a way of engaging students in learning and as a tool to document the aspects of learning students found engaging. Technologies can also be used to collect students' feedback about teaching practice. A range of technologies can be used during or at the end of a SiE unit or at the end of a term or year to collect data about students' views on the use of sports' contexts in Maths/English classes. Students can also be involved in the analysis process.

Example

All SiE students could text, tweet, blog, film, or audio-record their views on questions about a unit of work or class.

If your question is about what is engaging students in learning you could ask…

• The thing that most interested me in the_____ unit was…
• The thing I was least interested in the_____ unit was…
• The best thing about the _____ unit was…

If your question is about how teaching practice is supports learning you could ask…

• A focus on sports helped me learn maths/English because…
• A focus on sports was useful for this unit because…
• One thing I would like to change to make learning better in this class is…

Students' responses to these questions can be collected into themes and analysed by students and teachers using tools such as Wordle, or a mind map.

What is a Wordle?

A Wordle is a "word cloud" that is generated from text. The size of each word represents the frequency it was mentioned in the text, for example, in the Wordle below, writing was mentioned the most. To create a Wordle, the main theme words from students' feedback could be collated into a document. A Wordle could then be created from the site below.

Wordle image and tools from: http://www.wordle.net/

Why are Wordles useful for evaluation?

Wordles are a visual and appealing way to quickly capture key themes. Constructing a Wordle can be one way to collect and organise data about engagement. Questions such as "The thing that most interested me in the_____ unit was…" can give you information about the aspects of learning that students found the most engaging.

You could create and compare Wordles about units of work that have a sports-context and units that do not. The discussions that students have as they create and compare these Wordles could also provide you with further feedback about how they perceived their learning.

Things to look out for

Wordles are easier to generate from lists of single words or themes. They can be generated from questions such as: The thing that most interested me in the_____ unit was…"   It can be helpful to identify groups of synonyms and allocate them the same word as a code (the most used synonym).

Notes

Wordles can also be used to collect information about the extent to which students recognise and understand the key concepts in a unit. Questions could include:

- The three big ideas I learnt in this unit were….
- One thing I found hard to understand was…

A Wordle that focuses on the big ideas in a unit can show the range of key concepts students can identify, as well as which of these are most frequently mentioned.

Things to look out for

Students may be engaged by activities in class that may not necessarily assist their learning (e.g., spending time talking to friends about topics that are not related to the lesson focus). Therefore it is important to review students' feedback about the activities that engaged them and consider which might activities are most directly beneficial to learning.

Not all students are engaged by sports' contexts. Some students may feel that sport is over-emphasised at the expense of other aspects of school life. It is important to consider whether these students are being catered for. Make sure you engage these students in discussions and include their perspectives as you plan further units.

2) How can we collect evidence about changes to student achievement and learning?

Assumptions about how the use of sports' contexts in English and maths might impact on **student learning and achievement**

- Using sports' contexts for learning can offer relevant and **authentic learning contexts** for study that make closer connections to students' interests.
- Learning which is more closely associated with students' interests is likely to increase students **understanding of the learning context**, and therefore improve a**chievement.**

Key question 2: Is the use of sports' contexts making any difference to **student achievement** in Maths and English?

If sports' contexts are assisting students to learn about a topic you might expect to see:

- Greater depth of student-initiated dialogue about a topic in class
- Increased conceptual understanding about a topic
- Improved results on class or NCEA assessments

Some ways of evaluating achievement gains

Strategies for using achievement data to look for changes include:

- Evidence from class assessments on particular tasks can be used to compare the literacy/numeracy performance by SiE students compared with non-SiE students or similar students in previous years *(see example below).*
- Evidence from summative assessments such as exams or standardised tests can be used to compare the overall literacy/numeracy performance of SiE students with non-SiE students or similar students in previous years. The actual progress of SiE students can also be compared to their expected progress.
- Evidence from NCEA sport-related assessments and data from internally assessed standards could be compared to previous years. The overall number of students achieving these standards could be calculated, as well as the proportion of those who receive excellence, merit, or endorsement.
- Narrative assessment approaches could be used to do a detailed analysis of the learning of target students *(e.g., See the Learning stories example discussed below.)*

Strategies for analysing achievement data

Year 9 and 10 students: Comparing the average class score and standard deviation from classroom assessments

- Compare SiE students to similar peers who are doing a non-sports context OR compare this year's SiE students with similar students from previous years.
- If the learning context is supporting achievement you would expect to see:
  - A higher average mark overall
  - A smaller standard deviation (i.e., a smaller spread of marks, or lower numbers of students in the bottom quarter. This would suggest that fewer are struggling with the content).

Year 11-13 students: Comparing the grade point average of a group of students on NCEA assessments

- Compare SiE students' results on an assessment that used a sports context to the average results of other **similar students** who did the **same assessment** without the sports context (either this year, or similar students from past years)
- A simple formula for calculating grade point average is to allocate each grade a score (Excellence is a score of 4 points, Merit 3 points, Achieved 2 points, and Not achieved 0 points). The class average can then be calculated and compared.

Thinks to look out for

See the *Me and My Class overview* for cautions about comparing groups.

Strategies for documenting the achievement and engagement of target students

Learning stories

Learning stories are a form of narrative assessment initially developed by Margaret Carr[2] for use in early childhood settings. Learning stories have also been used to document the learning of students in primary and secondary schools, and of students who have special education needs.

Learning stories use narratives and evidence such as photos, to document the unique situation of a student, and what they can do and understand. These stories are built over a period of time and usually include contributions by students and parents and whānau.

Why are learning stories useful?

Learning stories engage students in exploring their learning and provide a record of learning that students and families can refer to. Learning stories enable teachers to closely document the learning of target students in a holistic manner. They can provide information about how to best support students who may be struggling with learning.

Thinks to look out for

Learning stories can be detailed and take time to complete. It is important to document clear incidents of learning rather than every detail about what a student did in class. Effective learning stories are underpinned by clear learning intentions, and consider how a particular episode of learning is related to this intention.

Existing resources

Guidelines about how to do narrative assessments:

http://www.throughdifferenteyes.org.nz/__data/assets/pdf_file/0010/57925/Narrative-Assessment_a-guide-for-teachers.pdf

Examples of learning stories being used to document mathematics learning:

http://nzcurriculum.tki.org.nz/Principles/Learning-to-learn/Tools/Learning-stories

Research on using learning stories to document learning in secondary school social sciences:

http://researcharchive.vuw.ac.nz/handle/10063/2447

[2] http://www.waikato.ac.nz/php/research.php?mode=show&author=margcarr

Strategies for evaluating changes to conceptual understanding include:

• Using the "ticket out of class" strategy to quickly assess students' understanding of the key concepts in a lesson.

• Noting evidence of increased conceptual understanding by target students in a reflective journal or e-portfolio. In order to be able to explore students' conceptual understanding of a topic you will need to use tasks that surface students' thinking such as the concept mapping technique suggested below.

• Techniques such as concept mapping can be used to show the extent of students' prior understanding of the core concepts in a unit. This information can be used to plan learning. At the end of the unit the concept mapping exercise can be repeated and the two maps compared to see how understandings have shifted *(see example below)*.

• Using student peer assessment feedback as a source of data. This feedback can show you how students understand key concepts and likely issues. If the feedback is done online then you have a source of data that you can analyse.

Strategies for documenting understanding of key concepts

Concept mapping: What is it, and why is it useful?

A concept map shows *relationships* between ideas. Each idea is recorded in a box and boxes are linked with arrows. A brief explanation is recorded on each link. Concept mapping is not the same as "mind mapping". In mind maps, links between ideas are not necessarily explained. The example of a concept map at this link could be useful because it uses a context related to PE/health and the ideas and links are easily accessible.

http://library.usu.edu/instruct/tutorials/cm/CMinstruction2.htm
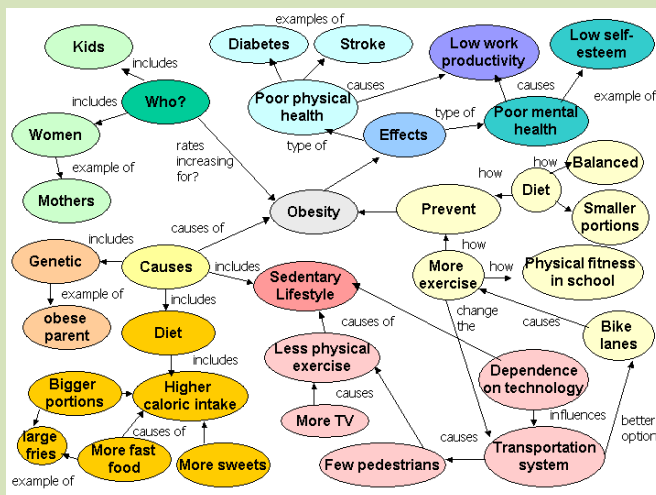
This example suggests beginning with a student brainstorm but you could adapt this suggestion:

• If the activity is unfamiliar you could begin with a basic map and ask students to simply add words on the links. This will quickly give you insights into how they understand relationships, as well as teaching them what concept maps are.

• For a new topic you could give students a set of words and see how they connect them. (This is a good group activity using Post-its and large sheets of paper).

Use critical questions to discuss challenges raised by completed maps. For example, the obesity concept map in the link above appears very strongly weighted to an "individual responsibility" perspective. The students who made this could have been challenged to pick out any sociocultural ideas and then discuss why they had included so few of these.

How can concept mapping be used as an evaluation tool?
The above ideas are useful for formative assessment/assessment for learning. You and/or students could document questions or issues raised by the activity, and ideas for next learning steps.

It is possible to gather other quantitative and qualitative data by doing pre- and post-unit concept maps. Students could amend their beginning maps to add new learning or create how new maps and compare these.

- Quantitative data could include the number or relevant concepts included in the map and the number of links correctly explained
- Qualitative data could include more sophisticated map design as evidence of deeper understanding. Compare this map with the one above:
 http://www.leeds.ac.uk/educol/documents/000000811.diag.01.gif

In place of a simple "tree" structure, which is also typical of a mind map, this example shows ideas organised as a hierarchy. A broad overview at the top branches out into to various layers of detail as you go down the map.

 If you are thinking about using this strategy as an inquiry tool consider downloading and reading the whole article from which this second diagram was taken.

Things to look out for
Some software conflates mind mapping and concept mapping. They are not the same thing! Mind mapping can be useful in the classroom but it is not as *disciplined* as concept mapping so it's not as useful for evaluation.

Strategies for evaluating changes in the quality of student dialogue about a topic include:
- Noting evidence of increased dialogue about learning in a reflective journal or e-portfolio.
- Teacher observations could be used to record conversations that suggest that students have developed a conceptual understanding of a topic. Classes can also be observed to tally who initiates discussions, the teacher or students? Observations in sports-related units could be compared with those in non-sports related units in the same class or a similar class.

3) How can we collect evidence about changes to students' leadership capabilities and competencies?

> ### Some assumptions about student leadership opportunities
>
> - Student leadership opportunities, such as coaching, offer learning experiences that support students to develop a range of **life interests, abilities, key competencies, and values.**
> - Student leadership opportunities can **increase students' sense of belonging and engagement at school.** A sense of belonging at school is linked to improved outcomes such as improved achievement, and less likelihood of early school leaving or engaging in risky behaviour.
> - Student leadership opportunities can **support students to gain qualifications** (e.g., health education, leadership, and coaching-related NCEA standards.)

> Key question 3) How do sports-related **student leadership opportunities** support student learning?
>
> If students are gaining value from leadership opportunities, you might expect to see…
>
> - Development of students' competencies (Such as self-management, relating to others, improved self-esteem)
> - Transfer of competencies to other aspects of school life (students taking on other leadership roles or mentoring other students)
> - Increased completion of sports-related qualifications
> - Increasing numbers of students taking part in sports-related leadership and coaching activities
> - Increased enjoyment and belonging at school (indicators include expressions of school pride, higher individual attendance rates, lower levels of behaviour incidents for individuals etc)
> - Improved motivation that might transfer to other contexts
>
> In the longer-term you might see:
>
> - Improved school culture (indicators include higher overall attendance rates, lower levels of behaviour incidents, less tagging and vandalism, improved achievement)

Why is it useful to collect information about the competencies students are developing?

Experiences such as being a coach for a junior sports team offers students rich opportunities to display and develop the key competencies. Focusing on the key competencies can enable you and students to explore in detail the range of capabilities students are developing through coaching and leadership experiences. For example, analysing a sample of student reflections at the end of a coaching experience can give you data about the range of competencies students are building over time, as well as what you could focus on next. Watching videos students have made of a peer's coaching session could be a useful in-class reflection tool that could assist students to consider the complex range of

knowledge and skills they draw on in the moment of a coaching situation. This information can also give you ideas about the competencies students are developing and which aspects to focus on next.

Ways of documenting students' development of the KCs

Strategies include

- Noting evidence of target students' competency development in a teacher reflective journal or e-portfolio.
- Providing students with a quick survey at the end of a series of coaching sessions to gather students' perspectives on the competencies they are developing *(see example below).* The students who are being coached and their teachers can also be asked for feedback on the competencies displayed by the coaches.
- Creating opportunities for students to set goals in relation to the key competencies they plan to develop through coaching experiences. Students can then document how they are displaying these competencies, and reflect on their goals *(see examples below).*

Using a student survey to collect information about the key competencies

Short surveys can be used to collect information about the competencies students are developing through coaching experiences, and whether they consider they are transferring these competencies into other aspects of school life. These surveys can also support students to reflect on their experiences and give teachers feedback about how to improve approaches.

Example: See the **Student Coaching Survey** that has been developed based on the experiences of students and staff at SiE schools (This survey is on Yammer).

The survey includes questions about aspects of the key competencies:

- Relating to others (social problem solving, getting on with new people, leading others)
- Participating and contributing (working in a team, motivating others)
- Thinking (problem-solving if things don't go as planned)
- Transfer of competencies and self-confidence to other aspects of school life

The survey also includes questions about engagement and belonging, self-confidence, self-concept as learner, relevance to pathways, assessment, and teacher and peer support.

Why are surveys useful for evaluation?

Surveys are a useful tool to quickly collect information in a standard format from a large number of people. Analysing the responses of a class can give information about the competencies and capabilities students perceive they are developing. Surveys can also be designed so that they enable students to give anonymous feedback that can be used to improve approaches for the next unit of work. The results data from a class can be a useful discussion point to assist student reflection.

Thinks to look out for

Survey data can give a broad one-off snap-shot of the competencies students might be developing through coaching experiences. To support students to further build these competencies a survey would need to be combined with approaches that encourage goal setting and reflection *(see examples below).*

Documenting the development of learners' key competencies

Example: Reflecting on key competency development

Students can be encouraged to reflect as individuals or as part of a class exercise, about the skills and competencies they are learning through leadership activities at school, and the value they perceive these activities to have. Individual mind maps can be developed by each student, or class brainstorms or Wordles can be used to develop an idea of the range of competencies students consider they will develop prior to the coaching experiences (see *Growing coaches resources for ideas*). Repeating this exercise once students have had a number of coaching experiences can give both teachers and students information about how students' understandings about the dimensions of coaching have developed over time and the extent to which students are developing coaching competencies.

There are many other ways students can be supported to reflect on their development of the key competencies. For example, these reflections could be woven into English classes through a piece of writing about being a leader or a coach. Other ways students can be supported to document how they are developing the key competencies through leadership opportunities at school are summarised below.

Documenting the development of key competencies is not about recording indicators, criteria, marks, grades, or rubrics. (Adapted from: http://keycompetencies.tki.org.nz/Monitoring)

Documenting the development of key competencies is MORE about rich descriptions, examples, accounts, and narratives.

Some possible strategies for documenting learners' key competency development include:

Learning logs or journals – a learner record of competency-focused and other learning goals in which students record evidence of their success in meeting goals in particular situations, and reflect on their ongoing learning needs.

Portfolios - annotated evidence of learning. Students select items for inclusion and write descriptive reflections on what the evidence shows about their learning. This process promotes the idea of life-long learning. Portfolios accumulate evidence across a period of time rather than being a single snapshot. It's important that teachers provide models for students to follow and that each student feels safe to comment honestly on what they perceive to be their learning strengths and ongoing needs. Portfolios can contribute to reporting purposes when they are used as a basis of three-way teacher, student, and parent conferences.

E-portfolios - An e-portfolio is an electronic format for learners to: record their work, achievements and goals; reflect on their learning; and share and be supported in this. Learners are able to represent information in different formats and to take the information with them if they move between institutions.

E-portfolios can assist students to take increasing responsibility for their own learning. Technology enables the use of a range of media - video, sound and images, as well as text to show both the learning process and final products.

Learning stories - these short narratives provide evidence of a learner's development of the key competencies. Over time, the accumulated stories provide a picture of the learner's developing and strengthening competency. The stories may be instigated and written by the teacher, the student, a parent, or some other adult. Typically they will be developed collaboratively and may include photos or other evidence. While this assessment method was initially developed in early

childhood settings, it has recently been used at all levels including secondary school (Carr, 2001; and Ministry of Education, 2004).

Strategies for thinking about student development of the key competencies

Ticket out of class/Leaving slips: a small slip of paper where learners record a key thought about what they learned or their experience of the learning during the day. These can be placed in a box by the door on their way out for teachers to read. **(SEE earlier example)**

Learning blog: in which students detail their learning experience for teachers, parents and caregivers to share or comment on.

Reflection/discussion prompts: prompts relating to key competencies as suggestions for discussion as part of homework/home-learning.

Peer-recognition: an opportunity for peers to share with each other what they have noticed about each others' competencies in particular situations before, during, and after school as well as at break times.

Camera on hand: a call for students to use a camera or other recording device to capture examples of students using key competencies.

See: http://keycompetencies.tki.org.nz/Resource-bank/Monitoring-and-evaluating/Supporting-materials for more ideas about using e-portfolios and digital stories for documenting students development of the KCs.

SportNZ: Growing coaches and leaders resources

Growing coaches resources:

http://www.sportnz.org.nz/managing-sport/programmes-and-projects/growing-coaches-programme

Activities for students include assessment resources.

Growing Leaders resources:

http://www.sportnz.org.nz/managing-sport/guides/growing-leaders-growing-leaders-resources

Student leadership reflection sheet

- http://www.sportnz.org.nz/assets/Uploads/attachments/managing-sport/young-people/GL-LA-3-16-leadership-reflection1.pdf

Existing resources: Physical Education - annotated exemplars that use digital recording to document student evidence of learning

http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/physical-education/annotated-exemplars/) E.g., Annotated exemplars level 2 AS91332 (Resource A): Evaluate leadership strategies that contribute to the effective functioning of a group (2.6A)

Analysis of NCEA assessment data for evidence of key competency development

Students' NCEA internal assessment submissions can be analysed to explore what this information shows about students' key competency development. For example, submissions for the Level 2 standard AS90969 (Take purposeful action to assist others to participate in physical activity) could be analysed for information about:

- The strategies students used to engage with others to develop an action plan and work together to design activities (*relating to others)*.
- The dimensions of *managing self* students are displaying through the process of setting SMART goals related to their plans

The various dimensions of the leadership and coaching abilities students are developing can also be explored through other NCEA standards.

Things to look out for

It can sometimes be difficult for students to unpack their experiences to identify the competencies they are displaying. To assist students to consider the complexities of these competencies, you could provide scaffolding such as a list of key leadership or coaching behaviours. One starting point could be a class brainstorm of the different components of effective coaching (see *Growing coaches resources for ideas*). Students can use these to prompt their reflections.

Increased completion of leadership and coaching-related NCEA standards

If students are experiencing increased or more varied opportunities to engage in practical coaching and leadership tasks that are related to NCEA standards, this may support student to complete these NCEA standards, and/or gain a higher level of achievement in these standards. Data about the completion and achievement rates in relation to sports-related NCEA standards can be tracked over time and compared to past patterns.

Example: Exploring whether more SiE students are completing coaching and sports-related NCEA standards

Following are some suggestions for ways to compare the number of students who are completing coaching and sports-related NCEA standards over time.

- Look at data from 2011-2012, as well as the 3 years of the SiE project. Has **the overall number of students completing the requirements of coaching-related standards increased** in this time?
- Look at data from 2011-2012, as well as the 3 years of the SiE project. Has **the overall proportion of students gaining course endorsement increased** in this time?
- A comparison of **grade-point averages** over a number of years could show whether students are achieving at higher levels over time in NCEA standards. Ideas include:
  - o Comparing students' results on key coaching-related assessments over a number of years. Has the grade point average increased?
  - o Comparing SiE students' results on an assessment that had increased practical coaching opportunities to the average results of other **similar students** who did the **same assessment** without the increased practical opportunities (either this year, or similar students from past years).

How to calculate a grade point average
A simple formula for calculating grade point average is to allocate each grade a score (Excellence is a score of 4 points, Merit 3 points, Achieved 2 points, and Not achieved 0 points). The class average can then be calculated and compared.

Thinks to look out for
See the *Me and My Class overview* for cautions about comparing groups.

A note about sport and coaching participation data

Data about the number of students participating in sports-related leadership and coaching activities can be collected at a whole-school level. One way to do this is to use your school's participation data from the annual Secondary School Sports Council census http://www.nzsssc.org.nz/, You can look at this data to see if there are patterns of change over time (Are more students taking part? Is the range of activities on offer increasing?).