Leading teaching as inquiry within professional growth cycles

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Teaching as inquiry (TAI) supports and informs professional growth cycles to enable teachers to identify and make quite specific changes in teaching to improve outcomes for their learners (Timperley et al., 2020). Inquiry when linked to professional growth cycles, links to a clear moral imperative to improve the life chances of learners (Conner, 2015). Importantly, TAI can be very effective when it takes an appreciative inquiry approach i.e. a positive focus on what teachers do well and do more of for continuous improvement (Jansen et al., 2010). Leading system-wide schooling improvement depends on the support provided for small changes by teachers in every learning context, whether that meets agendas such as improving literacy and applications of mathematics or to specific knowledge and skills outcomes in learning areas. The purpose of this paper is to discuss what kind of leadership and support is effective for teacher inquiry that shifts learners' outcomes.

PROFESSIONAL LEARNING THROUGH INQUIRY CYCLES

Inquiry cycles form the basis of teaching as inquiry (TAI) by focussing on improving students' progress. TAI is also known as Spirals of Inquiry, which builds on the OECD (2013) seven principles of learning and indigenous funds of knowledge (Kaser & Halbert, n.d.), through iterative cycles: starting with a hunch or question of practice; identifying what we need to learn or change; identfying and taking actions that will make a meaningful difference; checking outcomes to make sure sufficient change has occurred; and checking on learner experiences to inform next steps. At each point in the process it is useful to dicsuss evidence and possibilities for further iterations with others (teachers, students, and families/whānau). The iterations for continuous improvement and evaluation need to be tightly coupled to identify what's likely to have more impact (Hamilton & Hattie, 2022). A similar cyclical evaluation process can be applied to changes at programme, school or cluster level as well.

LEADING TEACHING AS INQUIRY

Leading teaching as evidence-informed inquiry requires a range of resource support, mentoring and guiding so that authentic professional learning occurs (Webster-Wright, 2009). It involves multiple cycles of ongoing iterative learning-centred processes, both from a students' and teachers' learning perspective, that has derived from Dewey's (1933) understanding of learning as being holistic and integral with experience. This can provide authentic professional learning because it is situated directly in and relates to teachers' specific concerns related to their experiences of enabling their students' learning. Further Dewey's (1933) conceptions of "creative action" and "theory of inquiry" have expanded our use of experience, reflection and context to further extend PLD that is based on teachers' interventions. There is quite extant research to illustrate the benefits of professional learning when it is based on reflection and changing practice that is contextually mediated (Day, 1999; Garet et al., 2001; Hattie & Hamilton,Lieberman & Miller, 2001).

Teaching as inquiry is more than simply critically reflecting on practice and identifying the consequential learning needs of teachers. In the NZ school system, where individualized attention to progress and differentiated learning is highly valued (Ministry of Education, 2007), there is a need to align the TAI process closely with student-centred approaches to teaching and to keep it manageable. This coincides with the shifts in emphasis internationally, to put students at the centre of learning (OECD, 2013) and to consider the consequent shifts needed for teacher education for evidence-informed practice (Conner & Sliwka, 2014). As a result of these shifts, the Ministry of Education supports TAI development in schools through professional development funding (Regionally Allocated PLD), because supporting TAI can realise more system-wide shifts in students' outcomes, and support professional learning simultaneously.

When TAI was first introduced in New Zealand schools, it was seen as a vehicle to empower teachers to take on responsibility for their own learning and make changes to their practice, rather than passively accepting, modifying or rejecting others' expertise (Timperley, et al., 2007). However, for good reasons, school leaders also wanted all teachers in their schools to engage with TAI, but were not sure how to support them with evidence-informed practices or steps to redesign teaching. Effective TAI often starts with teachers observing 4-5 priority students' needs and then coming up with actions with the support of a subject mentor, guide or coach to evaluate cycles of implementation (Conner, 2015).

WHAT KIND OF SUPPORT FOR TEACHERS IS EFFECTIVE?

"Traditionally, those who provided professional development to teachers were considered to be trainers. Now, their roles have broadened immensely....they have to be facilitators, assessors, resource brokers, mediators of learning, designers, and coaches, in addition to being trainers when appropriate. " (Loucks-Horlsey, 1996, np)

Both mentoring by a more experienced teacher and coaching using questioning protocols can guide and challenge teachers to identify and make changes that are needed. Gathering vignettes of change and using student achievement data as tools for inquiry, has been shown to provoke teachers to be more aware of the importance of evidence-informed critical reflection on pedagogical development (Conner, 2015; Timperley et al. 2020). The themes that have been shown across multiple implementation cycles include:

- developing positive professional relationships (mentor or coach-teacher and teacher-teacher)
- developing pedagogical knowledge and implementing iterative changes
- using student voice to inform changes to teaching.

Seeking student voice as feedback to teachers is often not factored in to professional growth cycles. In our current work across New Zealand and Australia, in working with hundreds of schools and teacher leaders of learning, we find that seeking and analysing student voice is essential for supporting ongoing professional growth. Often teachers have little understanding of how their approaches influence students. Therefore we strongly encourage the inclusion of a mechanism to get student feedback to teachers (surveys or focus groups) as part of the support we provide for professional growth cycles.

LEADING, MENTORING AND COACHING TEACHING TAI

Mau ki te Ako was a Ministry of Education funded TAI implementation project across 47 secondary schools in New Zealand, where subject-specific mentors supported teachers to identify the needs of 4-5- priority learners. These priority learners were Māori and Pasifika students who had been identified as being "at risk" of not achieving, learners with special education needs and those from low socio-economic backgrounds. The teachers involved in the project were supported to implement their professional goals in relation to their students' needs and to link these changes in practice to students' outcomes. The mentors provided specific, concrete and practical ideas that related directly to the needs of students to advance students' learning in specific subjects, similar to what has been reported more generally about mentoring by Akharvan (2015), Arguila (2013) and Guskey (2003).

The examples illustrated below are drawn from the Mau ki te Ako project that was developed in partnership with runanga through a consortium, Te Tapuae o Rehua (University of Canterbury, University of Otago and Ngai Tahu). TAI has been continuously customized and appropriated within each school in relation to the specific needs of students and the consequent professional learning for teachers. The challenges that arose were discussed as part of the ongoing leadership of TAI as a whole school approach to PLD. The leaders, external mentors and coaches also discussed TAI success and how to circumvent challenges with individual teachers as they developed specific ideas, trialled them and reflected as part of their everyday teaching. The following sections illustrate the three key themes identified as being most important for making TAI effective.

Developing positive professional relationships

The mentors and coaches actively built positive rapport with teachers through respecting their strengths and extending them. All of the external mentors were recognized experts who understood the principles of adult learning such as finding out what teachers knew already, valuing teachers' ideas and situating next steps in relation to the learners' needs and next steps for teachers' professional needs. The mentors/coaches were also very aware of the expertise of teachers who hold knowledge about their learners and their particular teaching contexts. This supported teachers to target specific changes in their teaching to their students' needs. The discussions and feedback from mentors enabled them to make on-going refinements to their initiatives. A teacher commented about this:

> This is the best PD I've ever had because it is tailored for me and my students and, by doing the tasks set, my relationship with the students has immediately improved. This has improved the atmosphere in the class, and has given me information which allowed me to change my teaching to suit them which they love. I have been very open with them that they are my PD class, and I think they feel like we are all in this together - I'm learning more about how to teach...but we are all on a journey together. By having 'homework' I've not been talked at then left to do what I want with the information. I get feedback and encouragement to try new things. It's also given a real structure to learning as inquiry.

As illustrated by this quotation, the approach was learner-centric that built trust. When teachers were valued and then saw success in relation to the changes they made, they were inspired to make further changes.

Teachers and school leaders highly valued the support they were given by the mentors/coaches. For example, a middle leader in a rural school indicated how because of the focus on a small number of students, the inquiry seemed manageable and yet also transferable. She stated:

> I feel that a can-do attitude has been fostered through quality professional dialogue, a narrow and deep focus on target students and continued reflection around these individuals. Tools and resources have been provided to assist the achievement of this (focus) group and I have found that although the target is a small group, the wider cohort all gain the benefits of the project and assistance I am being offered. (School Leader)

The mentors/coaches also worked collaboratively as a team of 20 who connected informally as they worked in close or co-located work places. This involved sharing student success stories, problem solving, developing resources collaboratively and sharing successful resources. The mentors also shared teaching and mentoring strategies for improving students' learning outcomes at formal team meetings (hui). This meant the facilitation team also took on a national leadership role.

There were many examples of where mentors made suggestions about how teachers could work more meaningfully together to improve the outcomes for their learners. This included how heads of departments were encouraged by the mentors/coaches to have in-depth discussions with their staff about assessment activities, achievement data and changes to their localized curriculum implementation including specific literacy strategies. To help teachers be even more critically reflective on their practice, the mentors/coaches often suggested that colleagues work collaboratively to inform their professional growth cycles. An example is described by a mentor.

> Building positive relationships with colleagues
> The mentor encouraged teachers to observe each others' teaching to gather evidence related to how they were meeting the literacy needs of their students. The observer sought feedback from the students about what they understood by the terms used in NCEA levels of achievement.
>
> The students were uncertain about what "describe and explain" required in terms of what detail should be written. In fact they thought that writing more made the answer a higher grade. They did not understand that they had to both express the concept and provide a reason or make connections between ideas to get full credit. This was a surprise so the teacher decided to make this a focus of her inquiry for that year. She was able to identify this aspect due to inviting an observer in to talk to her students at the same time. (Teacher Mentor).

Another example below was when a mentor suggested to a science teacher that she could use a more "place-based" approach to connecting with another teacher and her learners in relation to earthquakes to make the learning situated and more experientially based and connected or authentic.

Vignette: Making links with a teacher and learners who have experienced earthquakes

The mentor discovered that a teacher from her science cluster in the North Island of New Zealand, was preparing her students for an assessment about the February 2011 earthquakes in Christchurch. While the mentor could have suggested she pick a geological event that was more local, instead she suggested that perhaps this class could have a Skype conversation with a class in a Christchurch school where the mentor had previously taught. At the same time the class in Christchurch were learning about the Greendale fault which was the centre of the September 2010 earthquake in Christchurch, so the timing coincided with their focus on earth science. The mentor put the two teachers in touch with each other. Students in the Christchurch school learned from having to answer questions on the earthquakes and both teachers felt it was a very worthwhile exercise.

Developing pedagogical knowledge and implementing iterative changes

The specialist mentors/coaches were very aware of the importance of working with contextual similarities and differences amongst the schools. There was a need to understand the specificity or advice and guidance in relation to content as well as other context characteristics of the learning environment including the learners, so that both successes and challenges could be identified. Seeking conclusions about effective pedagogies usually doesn't take account of how appropriate the pedagogy is for learning specific content (Schleichner, 2013). For schooling in New Zealand, it is important not only to get to know what interests individual students have but also what might support them in a broader sense to learn more effectively and use authentic learning contexts. The example below is where a teacher contacted the student's family (whānau) to find out what would work, especially for their priority students.

Developing knowledge of the learner's needs

The mentor, in discussion with the teacher about what information to collect in the first part of the teaching as inquiry cycle, emphasised the importance of contacting whānau to help 'get to know the learner' better.

As a result, the teacher rang the parents/guardians of all his focus students. One of these students had dyslexia and at the beginning of the year was completely disengaged in class. After speaking to his mother, the teacher decided to support the student in a more structured way by sending emails home that outlined the material for each lesson each night. This enabled the mother to read through the material with her daughter prior to class sessions as they had agreed during their telephone conversation.

The student now arrives in class with a smile on her face and fully engages in the lesson because she is pre-prepared.

Teachers also found it beneficial to discuss with the mentors/coaches how they could improve students' language skills and understanding about concepts. There were many literacy tools used to support aspects of reading, writing and communicating (Conner, 2015). One specific example is provided to indicate how the insertion of a literacy tool supported students' conceptual understanding and their consequent achievement in the topic test.

A practical idea for learning new science language

Teachers identified that their focus students needed support with learning scientific vocabulary. After explaining that students needed more than a glossary to acquire scientific vocabulary, the mentor provided the teachers with some templates in a booklet which showed them how students could divide a notebook double page into four, write a new word across the centre of the double page then, in each quadrant, process the word. The processing could include, for example, writing the definition, drawing a picture/diagram and labeling it, writing the word in a sentence and writing their own meaning of the word and/or in their language. The plan was for students to choose to write words they didn't know the meaning of in their notebooks.

During the teaching of genetics, one teacher adapted this 'practical idea' as discussed with the mentor. She asked her students to take a clean piece of paper, fold it in half and then half again and then unfold it. During each lesson (four per week) she gave the students a key word, like phenotype, to write in the middle of the paper. She provided time for the students to complete the quadrants, as suggested in a number of the templates provided. After this the piece of paper was pasted into the student books.

The teacher reflected that in her opinion, it was probably better to provide Year 10 students with the words rather than asking them to self-select. Students' oral feedback indicated that this was an enjoyable exercise, especially including an illustration of the idea. All of the students passed the end of topic assessment which in previous years was not the case for this topic.

There were a range of types of knowledge that benefited teachers and students who were involved, including knowledge of learners, knowledge of what literacy tools might support learning in specific content areas, and cultural knowledge that supported teachers to connect more meaningfully with learners and their communities/whānau.

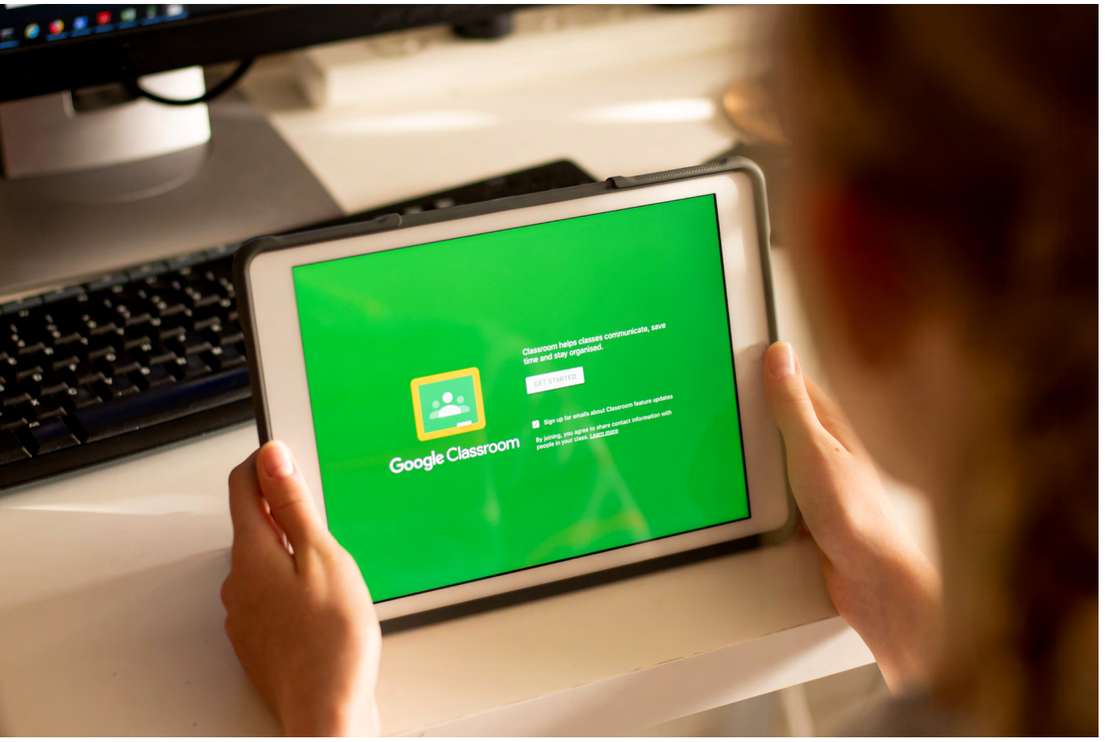
Using student and voice to inform changes to teaching.

Classroom teachers are the ones who should know their students and the vagaries and nuances of the context within which they are working. It is important for teachers listen to their students to enhance their knowledge and understanding of what is important for their students. Coaches provided a variety of tools for collecting student voice, for example, profile surveys (paper and on-line with the likes of google docs), as well as small group conferencing. A number of teachers commented about how much the students wanted them to know more about them and therefore volunteer information.

The literacy specialist mentors were very aware of the importance of basing pedagogical changes in context. The changes discussed with the teachers often related to using more structured literacy tools, more structured feedback to and from students such as giving them prompts and specific instructions about what to do next (e.g. through google docs), using digital tools to provide more scaffolded learning tasks, more structured formative assessment, the inclusion of culturally responsive approaches by actively seeking children's opinions about their interests and how they learn.

Using google classroom to provide on-going feedback

A number of teachers are now using google classroom to provide on-going feedback to their students. As one teacher recently commented, "I don't want to take their books in to mark as that could leave them without their notes for several days." By using google classroom the teacher can monitor the progress of all his students and provide feedback in a timely manner to allow the students to constantly see this feedback in real time and use it to improve.



SUMMARY

The examples above showed that the key factors for leading teaching as inquiry were; the development of positive professional relationships, developing pedagogical knowledge and implementing changes and using student voice or feedback to inform changes to teaching. Mentoring and coaching also provided opportunities for:

1. Professional dialogues about what could be done
2. Reconsidering professional practice as a way of supporting student learning
3. Developing a deeper perspective of issues related to student learning
4. Providing ideas for change and a consideration of alternative resources
5. Helping teachers to align small changes to practice with improved student outcomes.

It is critical that through supported professional learning, teachers have the opportunity to work beside mentors and coaches to critically 'inquire' into the shared meaning, purpose and nature of the evidence they obtain (Timperley, 2011). They appreciated having someone to discuss their identified issues with and to work together on possibilities for refinements to teaching. When the outcomes of such inquiries are shared amongst staff, both within their own schools and clusters, there are likely to be greater contributions made to teaching as a profession more generally.

This paper has provided examples of how teachers linked changes in their practice as a result of TAI to changes in students' outcomes. Our work at Cognition Education continues to support leaders of learning, especially to increase their confidence, agility and adaptiveness to be responsive to our new reality in an uncertain and constantly changing world. We are excited to provide a supportive coaching solution which offers ongoing guidance for robust leadership of learning by using a learning ecosystem approach, based on humanistic principles of empathy, respect, integrity and wellbeing, while 'learning on the go'.

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Lindsey brings a wealth of creative experience in leading curriculum development and assessment, supporting education systems and teacher education development in Asian and Pacific countries. She started as a Play Centre Supervisor, became a secondary science and mathematics teacher (and member of a school board), moving on to leading and researching teacher education in New Zealand and Australia. Her work spans multiple disciplinary areas and has focused more recently on the power of integrating learning areas to build learners' capabilities. In addition, she leads educators, collaborative teams and leadership groups to develop effective ways to infuse and apply appropriate and culturally congruent technology for more effective outcomes.

Lindsey has undertaken consultancy work for New Zealand Universities (Academic Quality Assurance), Fiji Higher Education Commission, National Institute of Educational Research (Japan), SEAMEO (South-East Asian Ministries of Education, 11 countries) and UNESCO. She has led multiple projects in New Zealand and across Pacific nations, helping teachers grow in their understanding about meeting student needs and transforming lives through education. Her inspirational "can do" approach within senior executive teams has enabled changes to strategic planning, digital solutions for educational services, extended external relations, improved quality assurance, augmented benefits of internationalization and effective management of human resources.

Her life goal is to find multiple ways to enhance human experiences through education. She strongly believes that there are powerful possibilities for public good when educators partner with communities to create and evaluate educational solutions that are culturally appropriate.

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